CARRYALL AND DRAG SCRAPER

INSTRUCTION BOOK

FORM O-122

OPERATING AND MAINTAINING

LeTOURNEAU EQUIPMENT

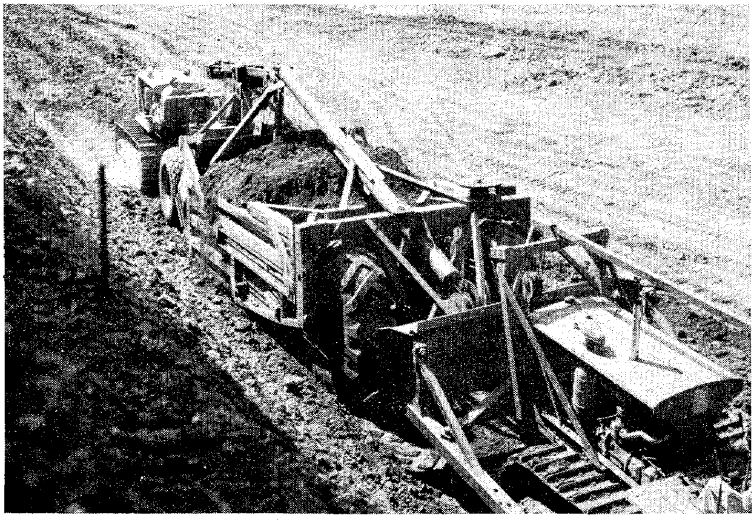
ALWAYS GIVE MACHINE NUMBER WHEN ORDERING PARTS

PRINTED IN UNITED STATES OF AMERICA

LeTOURNEAU

CARRYALL *and* DRAG SCRAPER

OPERATION *and* MAINTENANCE



R. G. LeTOURNEAU, Inc.

Peoria, Illinois Stockton, California

Printed in U. S. A.
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Form O-122

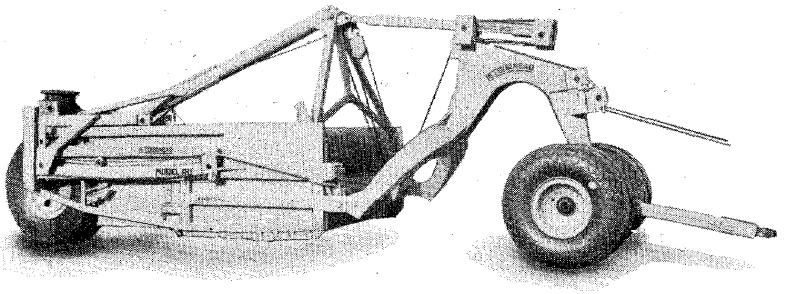
FOREWORD

This book, as the name implies, is for you, the LeTourneau Operator or Maintenance man who is interested in doing a better job. It is intended to be a handy reference book helping and solving the problems of both the man in the operator's seat and the man with the grease gun and wrench. By acquainting the operator with the best methods of operation and showing the man whose duty it is to maintain LeTourneau equipment, the proper adjustments and maintenance requirements for best service, we trust that we can help each do the best possible job in his field.

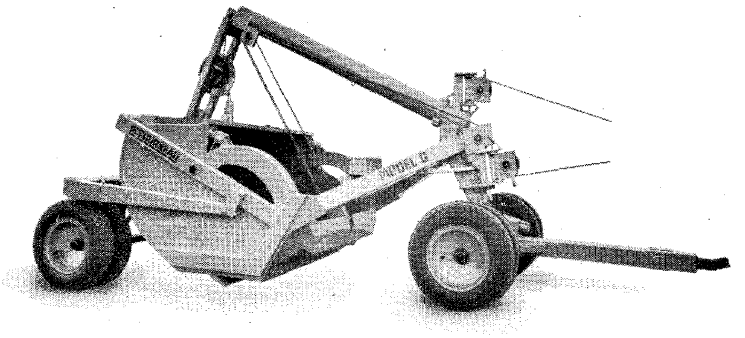
The Carryall Scraper is a self-loading, carrying and spreading tractor-drawn unit. It is one-man operated, cable-controlled by means of two ½" wire ropes, which are, in turn, operated through a LeTourneau Power Control Unit mounted on the rear of the tractor.

The different model Carryall Scrapers are designed to meet the various job needs and requirements of the many users of this type of equipment. Since the features of these Models vary, all operations are individually explained.

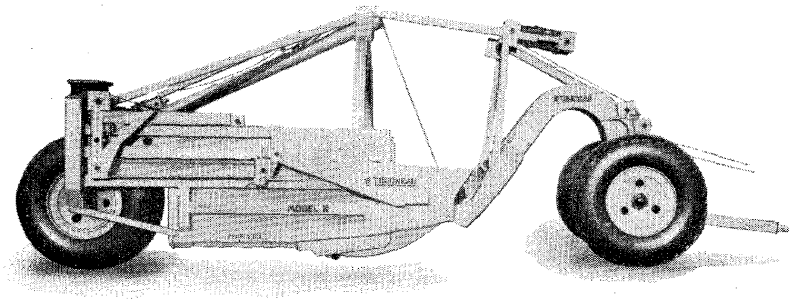
It is hoped that this book will be read carefully with the thought in mind that it was written under the direction of the designers and manufacturers of the equipment by highly skilled operators with years of field experience intending to convey to others the methods and practices which have proven to be best and which are now being universally accepted as such. It is further hoped that you may find something new in these pages that will be helpful to you in the future and make you a more valuable man to your employer.



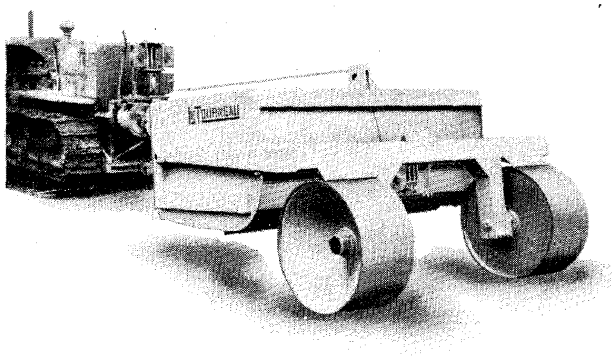
DOUBLE BUCKET CARRYALL SCRAPER



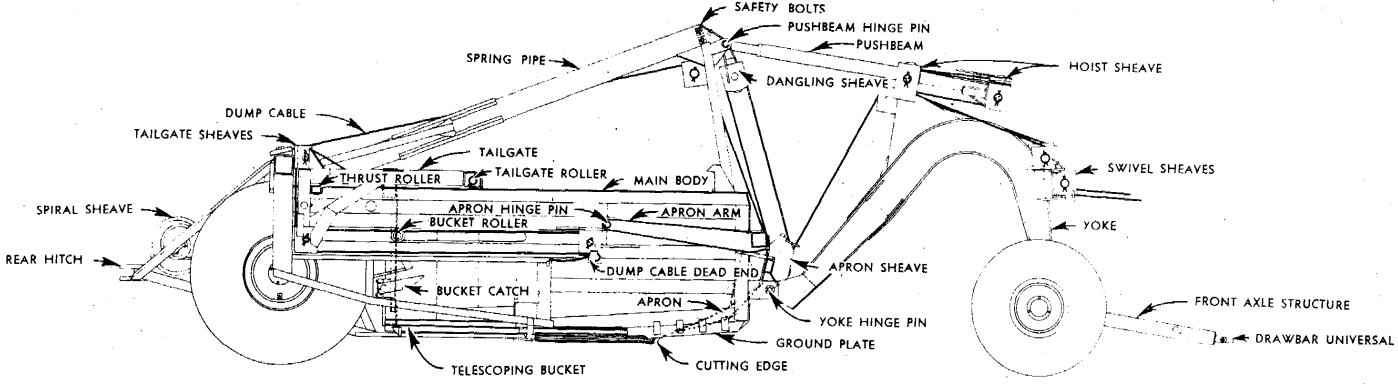
CURVED BOWL CARRYALL SCRAPER



SINGLE BUCKET CARRYALL SCRAPER



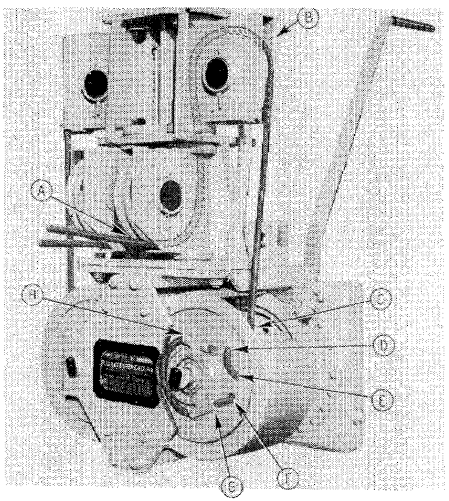
DRAG SCRAPER



DRAWING SHOWING THE VARIOUS SCRAPER PARTS, AS REFERRED TO IN THIS BOOK

SECTION 1.
STARTING EQUIPMENT

THREADING THE P. C. U.



To Thread Right Hand Drum of Double Drum Unit—First, enter one end of cable into bottom of sheave housing A. Force cable up through center of bracket until it enters the back side of sheave housing B. Pass cable over sheave and down to drum C. Loop cable clockwise once around drum and bring it out at hole D. Re-enter hole E and thread it back out of remaining hole F. Pass through loop G, which is welded on drum flange, then through final loop H, allowing an inch or less of cable to protrude from end of loop. Cable does not need to be secured in any other way.

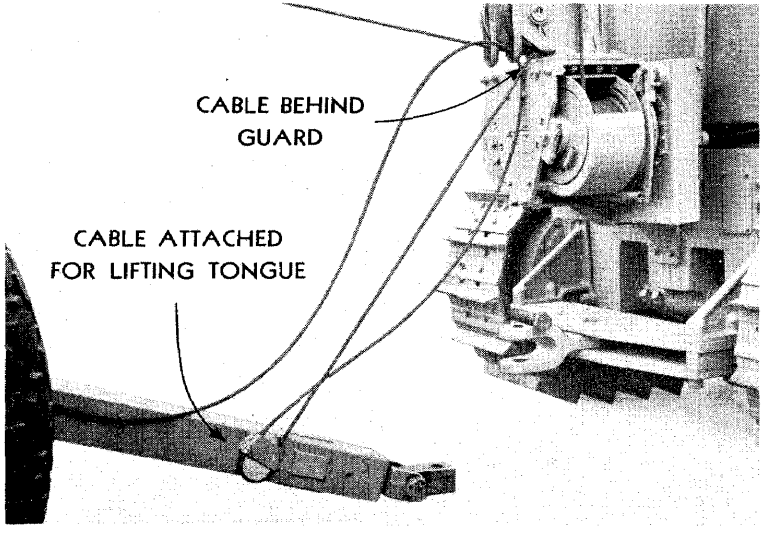
Thread left-hand drum exactly the same except that cable loops around drum counter-clockwise.

Threading four-drum unit is just like threading two double-drum units sitting side by side.

In threading single-drum unit, loop cable clockwise, except on Caterpillar 30 tractors, on which cable goes around drum counter-clockwise.

CONNECTING SCRAPER TO TRACTOR

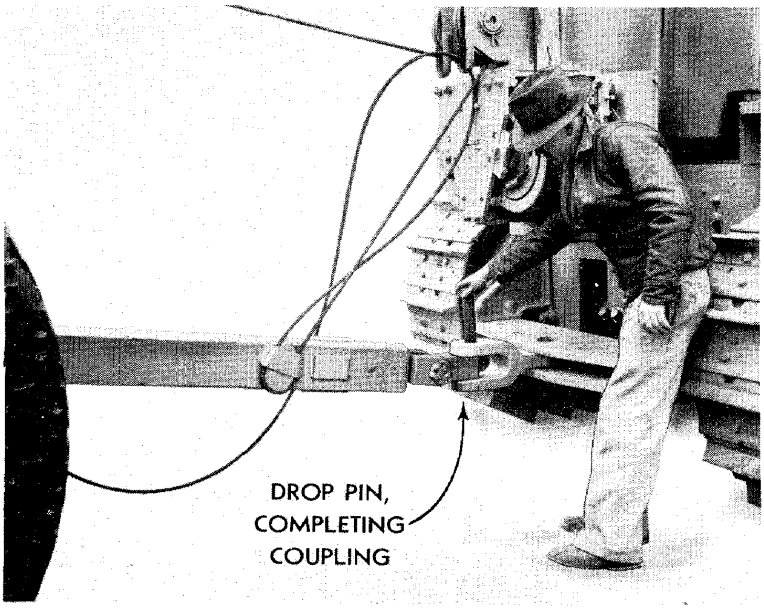
After backing the tractor up to the Scraper tongue, the next step in connecting the Scraper to the tractor is to raise the tongue on the Scraper and hitch tongue to the drawbar of the tractor. Since the tongue of the larger Scrapers is too heavy to lift by hand, a cable socket is welded to the side of each tongue so that it can be raised



Raise tongue and couple tractor and Scraper quickly and easily with Power Control Unit and hondu.

mechanically by Power Control Unit. To raise the tongue, put enough slack in the right-hand cable (looking from Scraper to tractor) to loop it down through the socket which is on the right side of the tongue and insert a large wedge from the bottom side, tapping it into place so that when the right hand Power Control Unit lever is engaged, by pulling it toward the center, the cable loop will pull up against the wedge and lift the tongue into position.

After the tongue has been raised into position, back the tractor and insert the hitch pin through the tractor



drawbar and Carryall hitch block, completing the connection. Then knock the wedge out of the socket on the top by tapping it from the top. Be sure to return the wedge to tractor tool box or some other safe place where it will be found readily. This completes the connecting of the Scraper to the tractor and it is ready to go to work.

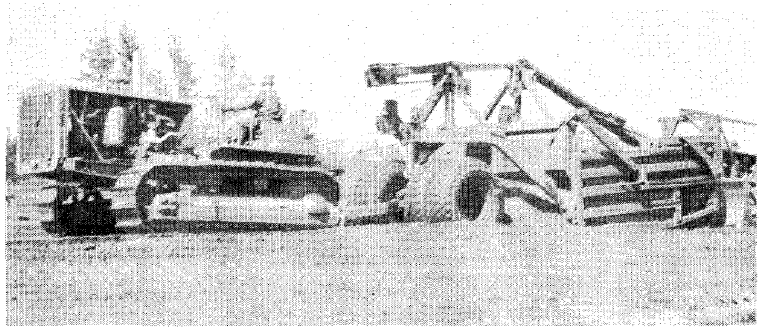
POWER CONTROL UNIT OPERATION

The right-hand lever of the Power Control Unit (viewed from Scraper to tractor) controls the raising and lowering of the bowl. Pulling the lever towards the center of the tractor raises the bowl and pushing the lever out lowers the bowl. The left-hand lever controls the tailgate. Pushing the left-hand lever toward the right side engages the clutch and pulls the tailgate forward and the reverse action releases the brake and allows the spring in the spring pipe to carry the tailgate back. The front apron is also controlled by the left-hand lever, since both the tailgate and the front apron are operated by the same cable.

SECTION 2.
THE LOADING CYCLE

LOADING SINGLE BUCKET SCRAPERS

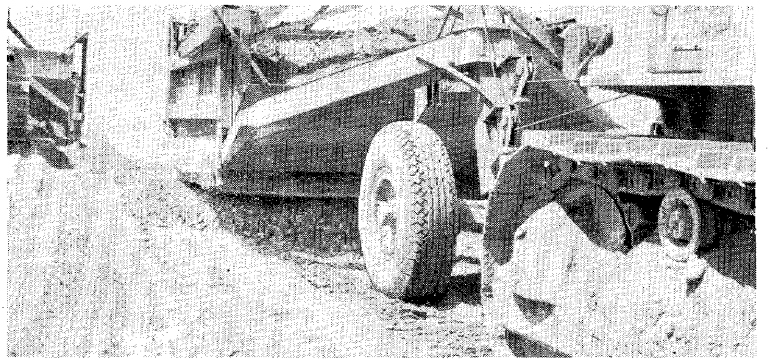
To load the single bucket Carryall Scraper and fully utilize its capacity, start loading with the tailgate all the way back and with the apron raised four to eight inches. The apron should be in this raised position before the cutting edge is dropped into the ground. Keep the apron down as low as possible, leaving just enough opening for the dirt to enter but be careful not to have the apron too low as this will cause material to bank up in front of the cutting edge.



As the unit moves forward, loading the dirt into the bowl, the material will fall forward against the apron as well as back against the tailgate. The weight of the material in the bowl will cause the cutting edge to penetrate deeper, thus speeding the loading. When the Scraper is loaded, drop the apron by pushing the tailgate lever slowly to the extreme left, thus releasing the brake and allowing the apron to close. The weight of the apron itself and the weight of the material in the apron makes for faster closing.

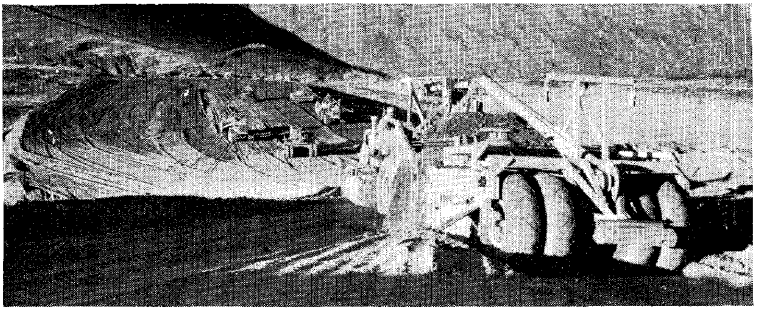
Engage the hoist clutch, thus raising the bowl until it clears the ground an inch or two and then travel a few feet before lifting the bowl to a higher position. This will spread the loose dirt that was in front of the blade with

the result that the pit will be smooth to pull in and out of, and your cut clean at all times.



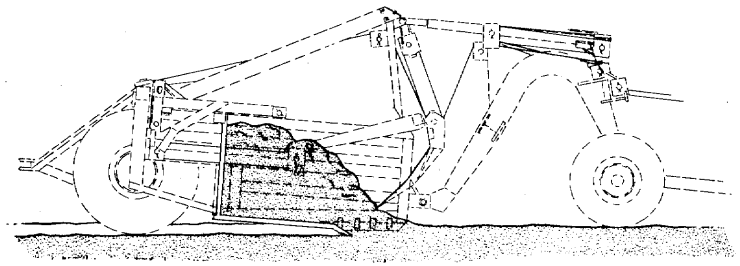
Level dirt in front of blade for smooth cuts.

All operators like to obtain as large a load as possible, but in some materials it sometimes takes as much time to get the last yard or yard and a half as it does to get an average load. On short hauls it is not profitable to take this extra time to get the last yard of dirt. However, on long hauls, it pays to take this extra time and effort to obtain the added yardage because on long hauls the extra loading time is such a small percentage of the total cycle time.

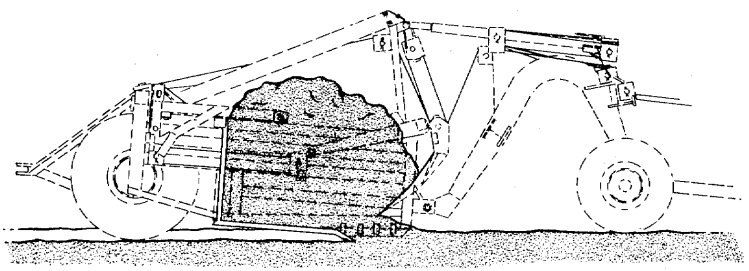


If possible, keep the cut and pit so that the Scraper can be loaded down hill, and in the direction of travel. It is rarely the case when a job is such that you have to load going away from the fill.

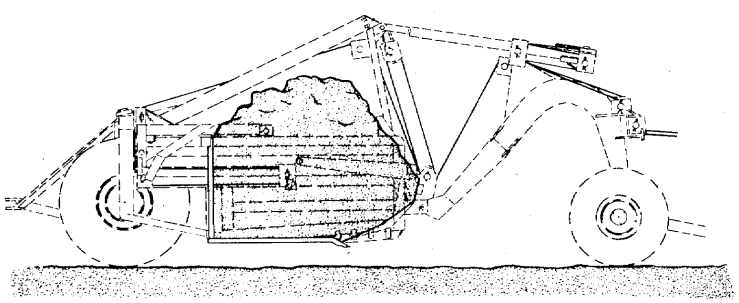
Loading cycle of Single Bucket Scrapers:



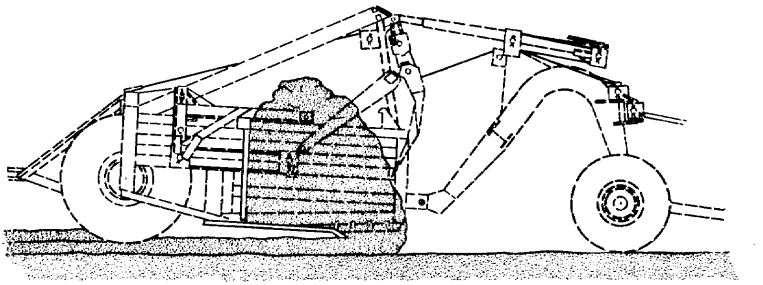
1. Entering the cut, the tailgate should be at the extreme rear of the bowl. The apron should be raised four to eight inches. Then, release the right-hand (looking from Scraper to tractor) Power Control Unit brake and lower the cutting edge into the ground to the desired cut.



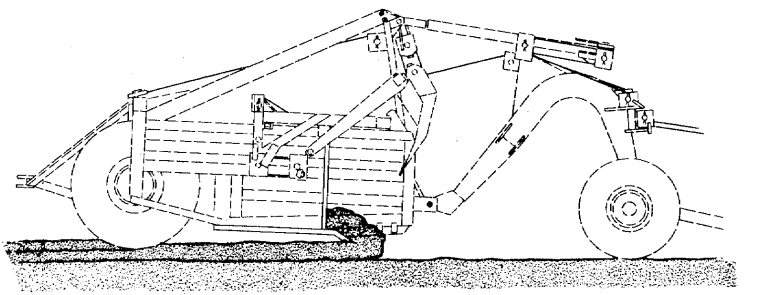
2. Back of the Scraper is now loaded and the dirt falling ahead will assist in closing the apron.



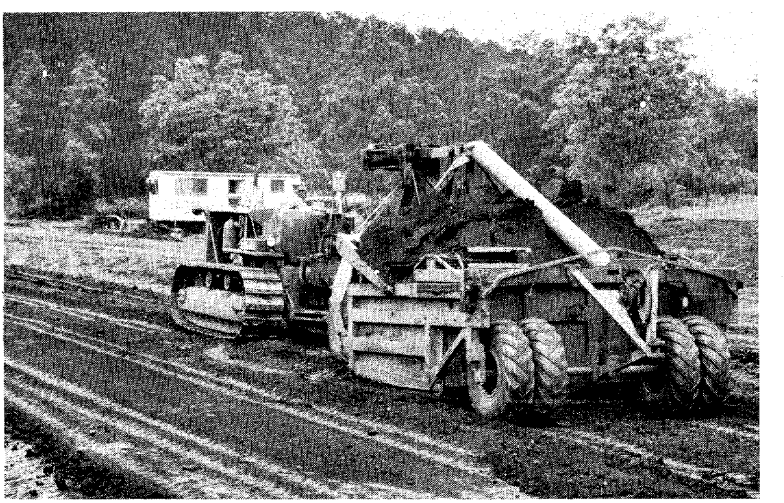
3. Release the brake slowly, letting the apron close to carrying position and at the same time engage hoist clutch, raising the bowl an inch or two above the surface ground. After moving ahead a few feet, fanning the dirt, the Scraper is ready for traveling.



4. Upon arriving at unloading point, raise or lower the bowl to the desired depth of spread and raise the apron to its full height. Shake the dirt from back of the apron by releasing the brake, dropping the apron about twelve inches and immediately engaging the clutch to raise the apron again. If in sticky material, repeat this procedure.

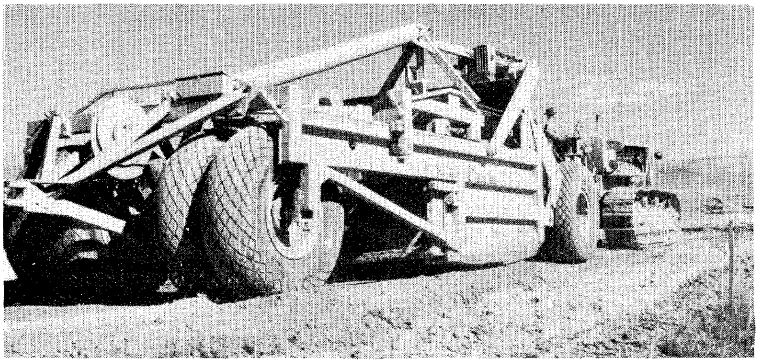


5. Engage tailgate clutch bringing tailgate ahead about twelve inches at a time until the bowl is completely unloaded and then release the brake, lowering the apron about six or eight inches. The Scraper is now in a traveling position.



LOADING DOUBLE BUCKET SCRAPERS

When beginning to load, bring the tailgate to the extreme front. This will automatically raise the apron to its full height. The sliding bucket is held forward by a latch on both sides of the bowl until it receives its load and the tailgate comes in contact with the latch trip arm.



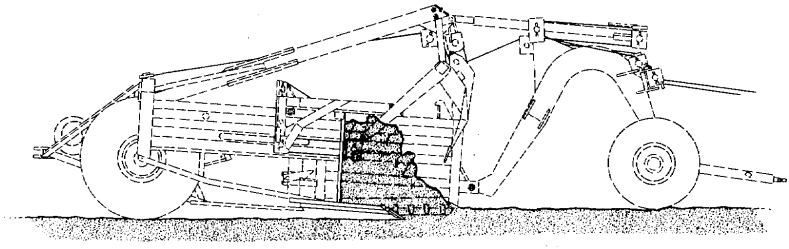
Drop the cutting edge into the ground and slowly release the tailgate as the dirt falls into the bowl. Let the tailgate go back about six inches at a time, loading high against it. If the tailgate is allowed to go back too fast, or more than six inches at a time, there will be low places and gaps in the load.

Experience in wet clay has proven that sometimes a double bucket Carryall loads easier with the rear bucket almost to the extreme rear, especially when a pusher is used, for the reason that this material enters the bowl in layers or ribbons which curl up and fall over as soon as they strike the tailgate. If the gate is too far forward, these layers or ribbons curl up and fall over ahead of the blade making dead dirt that will have to be pushed back into the bowl again, thus increasing loading time and decreasing loading efficiency.

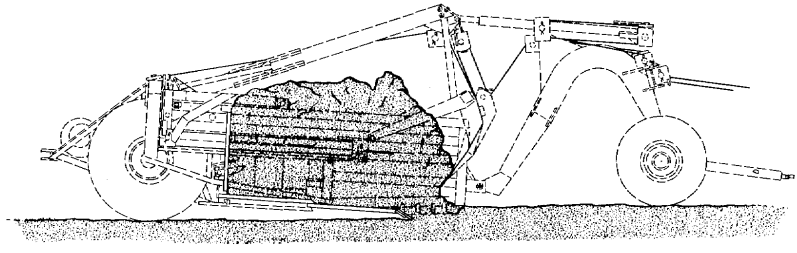
When a Scraper is loaded, drop the apron and raise the bowl until the cutting edge clears the ground an inch or two. Travel a few feet before lifting the bowl

higher. This will spread the dirt that was in front of the blade when the apron was closed and will keep the pit smooth.

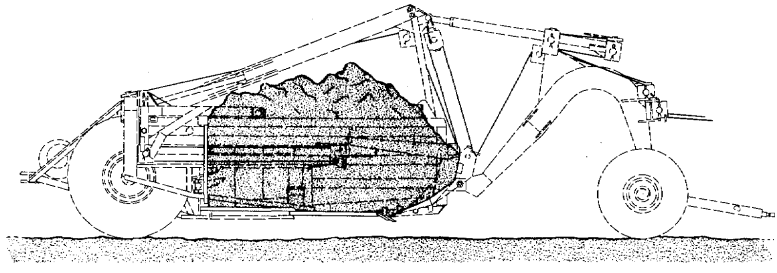
Loading Cycle of Double Bucket Scrapers:



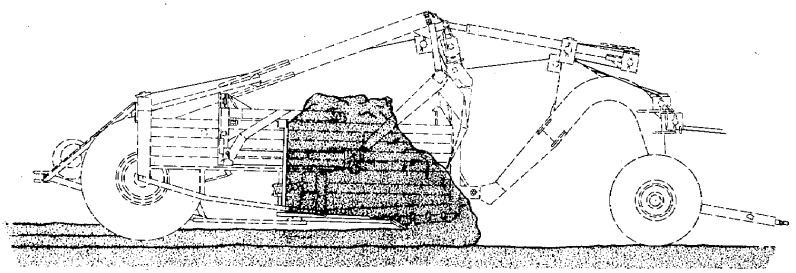
1. With apron raised, tailgate should be approximately 12 inches from the extreme front. Release the hoist brake, lowering the cutting edge into the ground. As dirt falls into the bucket and it hits the tailgate, release the brake enough to allow the gate to slide back about six inches. Repeat this until the gate is to the extreme rear and the Scraper is loaded.



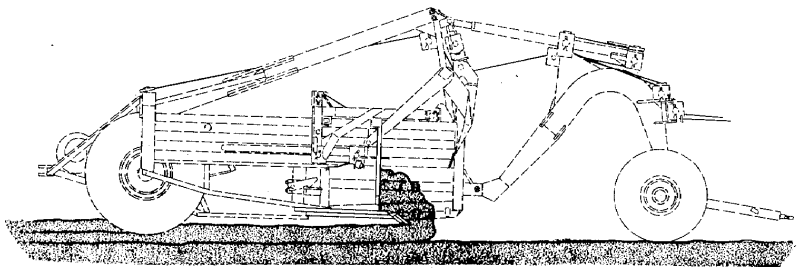
2. After the gate is at the extreme rear, release the brake letting the apron drop at a moderate speed to carrying position and at the same time raise the bowl until it clears the ground at least an inch.



3. After moving ahead a few feet, raise the bowl to the desired height and proceed to the fill area.



4. Upon arriving at unloading point, raise or lower the bowl to the desired depth of spread and raise the apron to its full height. Shake the dirt from back of the apron by releasing the brake, dropping the apron about twelve inches and immediately engaging the clutch to raise the apron again. If in sticky material, repeat this procedure.



5. Engage tailgate clutch bringing tailgate ahead about twelve inches at a time until the bowl is completely unloaded and then release the brake, lowering the apron about six or eight inches. The Scraper is now in a traveling position.

LOADING CURVED BOWL SCRAPERS

MODEL G

Due to the design of the Model G Carryall Scraper, loading operations differ from the independent apron type. The tailgate and apron are combined into one-hinged unit. As the apron drops down on a load, the tailgate is pulled back to the end of its arc at the back of the bowl by a steady even pull from the tailgate spring.

The narrow three-piece off-set blade with the center section projecting beyond and below the tip reduces

ground resistance and consequently decreases loading time.

The hoist sheave by which the bowl is raised and lowered is located on the rear of the Scraper.

In loading this unit, keep the apron as low as possible. In other words, keep it practically down on the incoming dirt. After obtaining a full load, release the brake letting the apron go down against the dirt. Under normal conditions, the spring and the weight of the apron will close the apron immediately after the brake is released. When the apron doesn't close quickly, the following procedure will help:

Hoist the bowl an inch or so and travel three or four feet. In doing this, the small pile of dirt which is in front of the cutting edge will back up against the apron, helping to close it. Then lift the bowl and start traveling, leaving the tailgate and apron brake released until the apron has completely closed.

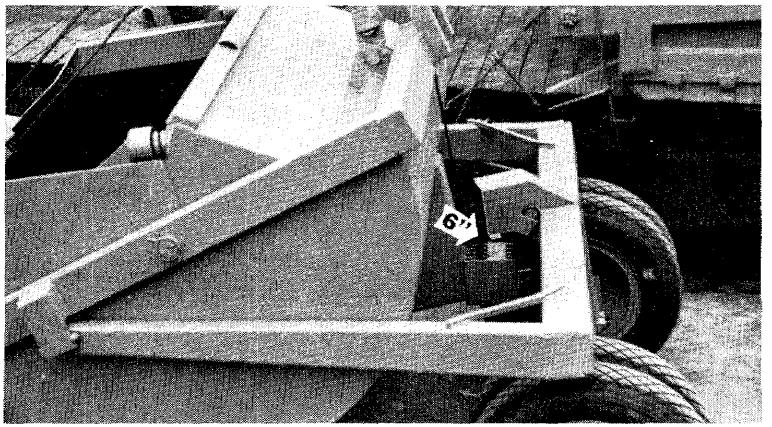
LEVELING HAUL ROADS WITH MODEL G

It is sometimes desirable to smooth up the haul road with Carryall Scrapers. With the Model G unit, as well as with any other unit that has an offset cutting edge, it is desirable to carry about a third of a load, thus adding a little weight which will hold the Scraper wheels down and prevent them from jumping. The dirt in the bowl will drift out into the low places and the high places will be cut off and added to the dirt in the bowl.

Caution should be used in dropping the cutting edge into the ground. Do not drop it while turning. Go into the ground gradually, just barely letting it touch the ground at first. Otherwise the Scraper will start pitching back and forth, gradually getting worse and worse, with first one corner of the cutting edge digging in and then the other.

On this model you are unable to see the raising and

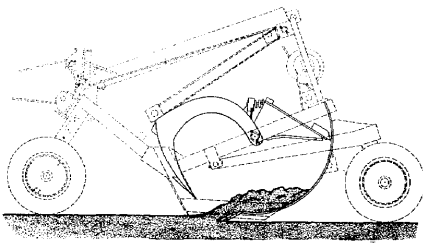
lowering sheave stops located at rear of the bowl (See picture).



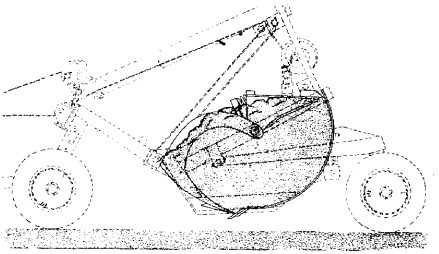
For this reason it is advisable to practice carrying the Scraper as close to the ground as possible while traveling. This will eliminate any chances of jamming the stops together and damaging or breaking the cable.

LOADING CYCLE OF MODEL G SCRAPER:

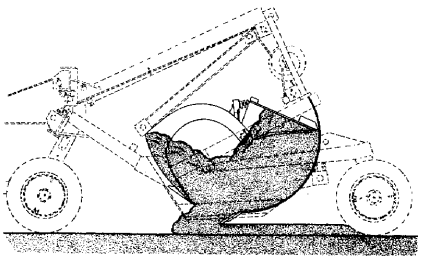
1. When entering cut, engage the left-hand Power Control Unit clutch, lifting the apron four to eight inches. Then release the right-hand Power Control Unit brake lowering the bowl into the ground to the desired depth of cut.



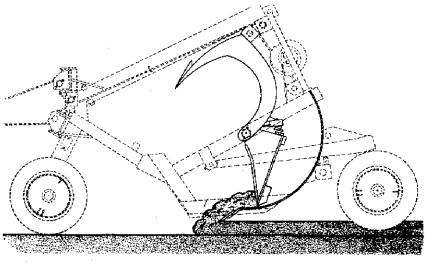
2. When the bowl is loaded, release the apron brake and engage the hoist clutch, raising the bowl just clear of the ground. Notice that in the curved bowl the dirt has a rolling action.



3. Arriving at the unloading point, raise or lower the bowl to the desired height of spread. Then engage the clutch, lifting the apron approximately six inches.



4. Repeat, raising the apron six inches at a time until the tailgate is to the extreme front. Then immediately release the brake letting the apron down about six inches or more. The Scraper is then in traveling position.

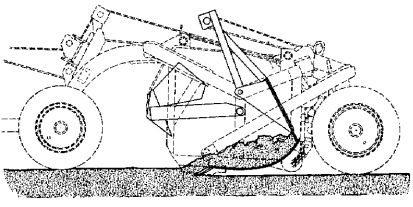


LOADING MODELS X AND Z

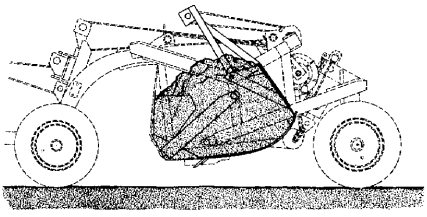
The loading of the Models X and Z requires virtually the same operation as the single bucket Carryalls.

LOADING CYCLE:

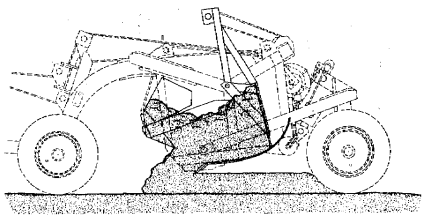
1. Entering cut—the tailgate should be at the extreme rear of the bowl and the apron should be raised four to eight inches to clear dirt entering the bowl. Release the hoist brake, letting the cutting edge into the ground to the desired depth of cut.



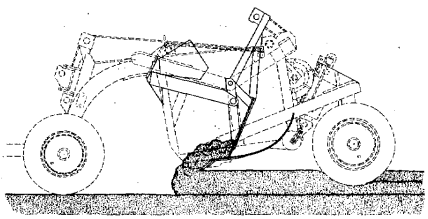
2. When loaded, release brake on left drum, letting apron close slowly. Then engage clutch on the right drum lifting the cutting edge until it clears the ground an inch or two, leveling the loose dirt. After traveling a few feet, lift the bowl to the desired traveling height.



3. Upon arriving at the unloading point, release the hoist brake raising or lowering the cutting edge to the desired depth of spread. Shake the apron by engaging the tailgate clutch, raising the apron to its full height and then releasing the brake, letting the apron drop six or eight inches. Engage the clutch again, raising the apron to its full height and pull the tailgate ahead about six inches.



4. Continue moving tailgate forward about six inches at a time until it is in the extreme forward position. Then release the brake, allowing the apron to drop six or eight inches. The Scraper is now in traveling position.



PULLING OUT OF BORROW PIT

In pulling out of the borrow pit, there usually are two routes that can be taken — one a short steep route that would require low-gear travel, and the other a long gradual incline that would allow fourth or fifth-gear travel with each route ending at the same place. In other words, in one case, you would have traveled about 50 feet in low gear and in the other case you would have traveled about 200 feet in fourth gear, taking practically the same time and arriving at the same point.

When this is the situation, it is advisable to travel the short, steep incline because the maintenance cost on tracks, roller bearings, etc., is higher while traveling at high speed than at low. Also, in the case of the long route, the tractor has traveled several times as far thus causing more wear.

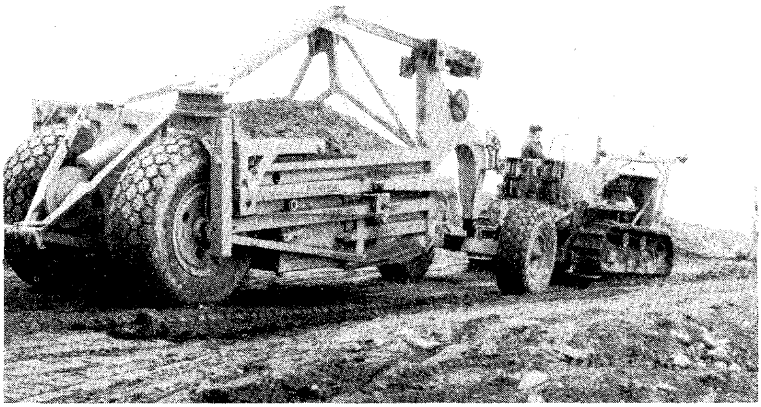
Of course, if the route with the long gradual incline will put you closer to the fill, then it is advisable to take it rather than the short one. The whole point is this —

in all cases when there are two or more routes that take the same time to travel, take the shortest route.

In returning to the pit, the shortest route should be taken unless the grades are so steep that the tractor engine will run faster than it should.

TRAVELING TO UNLOADING POINT

Traveling to the fill or dump with a loaded Scraper is usually done in the highest gear possible without overloading the tractor engine. The bowl of the Scraper should be carried fairly close to the ground in order to prevent upsetting. This is particularly true in hauling over rough ground. Carrying the bowl close to the ground prevents any danger of traveling with the pushbeams against its stops, which cause breakage of the hoist cable and also eliminates any chance of hoist cable turning Carryall over when turning short to the left.



Travel with bowl close to ground—stops at least 6" apart.

When turning sharply on extremely rough ground, the operator should be careful not to cramp the front axle structure beyond the intended throw, which would cut the tires on yoke post or yoke cantilever arm. A certain amount of slack should be allowed in the tailgate

cable when traveling. This will prevent damage when traveling over uneven ground or when turning and will eliminate any tendency of a tight cable upsetting the Scraper on a sharp turn to the right.

UNLOADING

Upon arriving at the fill with the loaded Scraper, lift or lower the bowl to the desired height of spread and engage the tailgate clutch on the Power Control Unit. The apron will raise to its full height, allowing the dirt in the apron to fall out. Disengage the clutch when the apron reaches its full height and release the brake allowing the apron to drop about twelve inches. Then immediately engage the clutch and raise the apron again. If operating in sticky material, repeat this operation to shake the dirt from the back side of the apron. After the dirt has fallen out of the apron, the tailgate clutch should be engaged and the tailgate brought forward about twelve inches at a time—and dropped back a bit each time—until the bowl of the Scraper is empty.

The operator should be careful not to force the dirt out too rapidly as this causes unnecessary action on the load and sometimes causes the dirt to pack up excessively in front of the blade thus adding more draft on the tractor. As the tailgate nears its forward position, it is advisable to apply less pressure to the Power Unit lever as load is decreased, unless pressure is required. By exerting less pressure as the tailgate nears its forward position, the clutch will slip and prevent cable breakage if a new operator should jam the tailgate against the stops by mistake. It is highly inadvisable to slip the Power Unit clutch as this is given as a safety measure only.

Unloading in the manner recommended above will add to the life of the dump cable, tailgate sheaves, bearings, tailgate roller, etc. The operator should be very careful not to keep the tailgate clutch engaged after the

tailgate has reached the front stop, thereby preventing excessive cable breakage. Avoid dropping the apron from its full hoisting position without stopping it before it hits the cutting edge. When the Scraper is completely unloaded, raise the bowl to the desired traveling position and return to the cut.

RETURNING TO CUT

When returning to the cut, allow enough slack in the dump cable to provide at least six inches of space between the apron stops. This will prevent cable breakage when traveling over uneven ground or when turning.

Return with bowl low, at least 6" between pushbeam stops, and and with apron raised at least 6".

It is sometimes advisable to smooth up the haul road with the empty Scraper by dragging the cutting edge on the ground. With the apron raised and the tailgate within six inches of the extreme forward position, an action similar to that of a 'Dozer or grader is obtained.

Traveling with the cutting edge close to the ground will prevent overturning.

SECTION 3.
CARRYALL APPLICATIONS

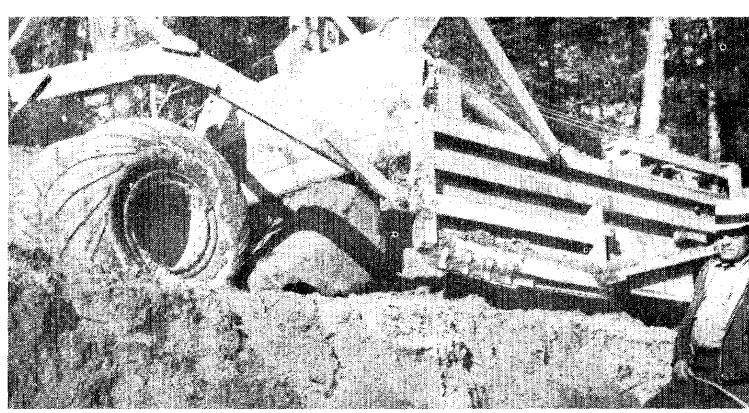
LARGE ROCKS & STUMPS

Carryalls are sometimes used in moving large rocks and stumps when a 'Dozer is not handy. Rocks and stumps that are too large to drive the tractor over and too large for the front axle structure to pass over can be loaded into the Scraper easily with correct operating.

When it is desired to load large rocks or stumps into the bowl of the Carryall, the following method should be used:

Come straight toward the center of the object and when the nose of the tractor gets to the object, swing either to the right or the left so that the tractor and front wheel of the Scraper fall on either side of the object.

When the tractor and front wheels of the Scraper are alongside of the object, cut short towards the rock or stump and at the same time drop the cutting edge to the ground. At this point, the tractor and the Scraper are in line and the object is between the front wheels and the cutting edge. With the apron raised to its full height, pull forward loading the rock into the bowl.



Jack-knife Scraper to load stumps and boulders.

By using this method, it is possible to load any object into the Scraper which will pass through the apron opening. When the apron is fully raised, it is sometimes necessary to load a little dirt into the Scraper in order to push the rock far enough into the bowl to allow the apron to close.

The repeated loading of such rocks and stumps is not a recommended process unless the operation is done with a certain amount of caution. Care should be taken not to abuse the Scraper and cause its working life to be shortened.

Rocks of such size that they would hardly go through the apron opening have been loaded. In unloading this size rock, quite often the tailgate will tilt the rock up from its flat side, making it too large for the apron opening. It is then necessary to return the tailgate until the rock falls back to its flat position. If the rock doesn't fall back, it may be necessary to repeatedly stop and start the tractor, thus shaking the rock into a flatter position for unloading.

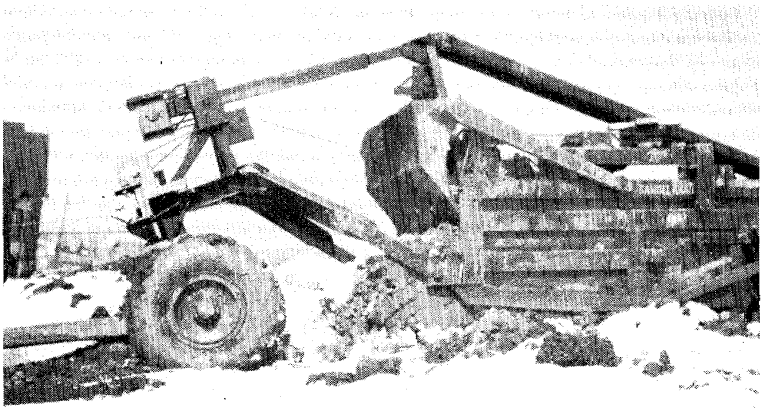
When unloading rocks, stumps or other large objects, lower the Scraper blade within six inches or more of the ground. Engage the tailgate clutch and use the regular unloading procedure. After the object has fallen out, back up and turn the tractor so that neither the front wheels nor the front axle structure will hit the object when returning to the cut.

WET OR STICKY MATERIAL

When unloading wet or sticky material, do not try to make too thin a spread. Material not having enough room to pass under the Scraper will roll up inside the bowl into a solid mass that will be very hard for the tailgate to push out, and will shorten the life of the tailgate cable.

Do not try to unload too quickly. That, too, will cause

wet material to wad up in front. For best results in wet or sticky material, bring the tailgate forward about twelve inches at a time. Then, by releasing the brake, let the tailgate go back about six inches, allowing material inside the bowl to fall down and loosen up. Repeat this operation until the bowl is unloaded. Keep your lift high enough and your spread thin enough so material passes under Scraper and is not dragged ahead.



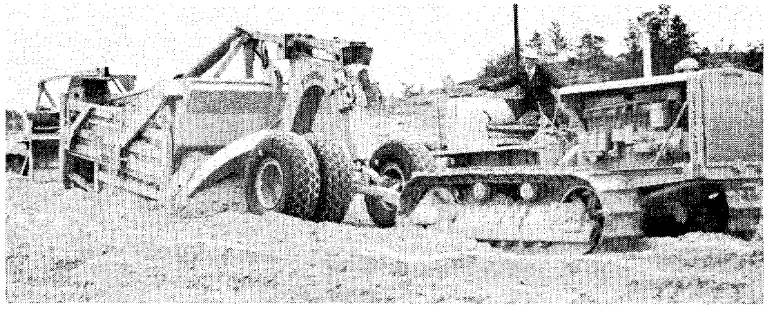
Often when unloading wet material, it will come out in a large mass. In spreading this material, the fill won't be as smooth as with drier material. If the haul is such that you turn and go back over your last spread, release the hoist brake letting the cutting edge drag off the high places. The tailgate for this operation should be about eight inches from its extreme forward position to give a 'Dozer effect.

LOOSE SAND

Picking up a full load of loose sand is easily handled with LeTourneau Carryalls if the correct method is used.

Start loading with the apron raised to its full height. When about a half a load has been picked up, release the brake letting the apron down upon the pile of sand which has crowded in front of the blade. Then raise the bowl

about two inches. When the tractor is moving forward freely, release the hoist brake, permitting the bowl to drop three or four inches. This will crowd some of the sand into the bowl.



Pump in loose sand by raising and lowering bowl and apron.

If necessary, repeat this operation of raising and lowering the bowl. This method of raising and lowering the bowl to obtain a load is sometimes referred to as "pumping in a load." Do not leave the hoist brake released long enough to allow cable to become slack on the drum as that will cause unnecessary cable wear and possible breakage.

In unloading loose sand, make the spread as thin as possible. This will give better compaction and will make traveling over the fill easier.

GRAVEL

In gravel, where it is necessary to load with the apron raised high, the material piled up at the blade may prevent the apron from closing completely, and frequently causes a partial loss of the load. You can overcome this by following this procedure:

Release tailgate brake and then back up, at the same time engaging the hoist clutch. As the bowl is raised, the apron will drop into completely closed carrying position.

SIDE EJECTION

On many jobs it becomes necessary to widen a fill or unload close to a bridge or head-wall. In such cases you cannot place the dirt in the desired spot by traveling straight ahead. When absolutely necessary this type of work can be done by side ejection, but we do not recommend it unless much caution is practiced on the part of operator.

First of all, the front axle structure can be cramped into such a position that the cable will fall on the yoke sheave or on the Power Control Unit neck sheave. The operator should look at the cables leaving these points to see that they are not fouled before starting to unload.

If the Carryall isn't in position so that the dirt rolls freely away from the blade as the dirt stacks up, back the tractor a foot or two and then move it ahead to its original position. This will loosen the dirt in front of the cutting edge and will avoid compaction of the outgoing dirt. Such compaction shortens the life of the tailgate cable, sheaves and bearings.

Even if utmost care is taken during this operation, the maintenance cost will be raised as the dirt won't

come out as easily when the scraper is standing still as when moving, because the dirt in the bowl is loosened by vibration of the scraper during travel.

COVERING A ROCK IN CENTER OF FILL

During the operation of most jobs you will dig up one or more large rocks. These rocks can be covered with a Carryall. For example, if the rock is three feet in diameter and the fill is to be four feet high, unload the rock in the center of the fill and spread dirt on both sides, filling up high enough to drive the tractor over it, making a final spread which will completely cover the rock.

COVERING PIPE WITH CARRYALLS

Under many fills there is a drainage pipe, which is usually laid before the earth-fill is made. A Bulldozer or Angledozer is best suited for this job, but if not available, many pipes can be covered with the Carryall.

First, providing the ground is solid enough so that you can drive the tractor and loaded Scraper alongside

of the pipe, unload the dirt as close to the pipe as possible without hitting pipe with either tractor or Scraper.

After a few loads, the dirt will pile up and at the same time get narrower on top. Then, when entering the pile with the tractor, release one steering clutch, turning the tractor short. Next, engage the steering clutch, immediately releasing the other. Repeat this operation across the pile; in other words, turn the tractor short first one way and then the other. In doing this, the tractor will push the dirt in closer to the pipe and also widen the unloading space, eliminating the chance of tractor or Scraper sliding to the pipe.

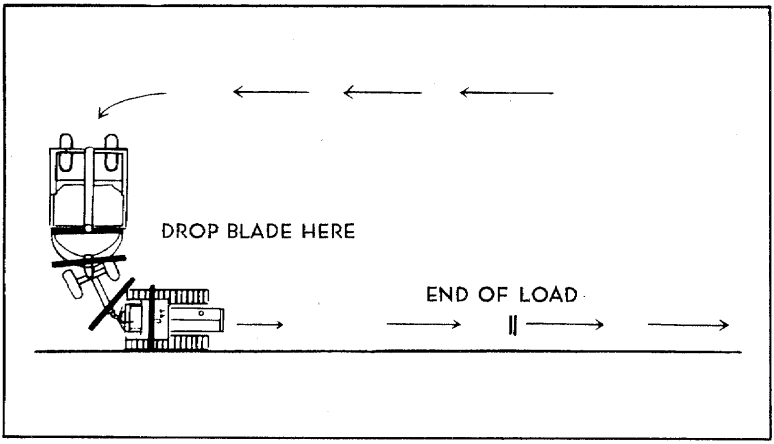
When dirt is level with the top of the pipe, use the same method on the other side of the pipe. Pile dirt eight to twelve inches above top of pipe on this side. After the dirt is above the pipe on both sides, use the tracks again, by turning short first one way and then the other to completely cover the pipe sufficiently for the tractor to travel across. The rest of the pipe can be covered in the following manner: Cross the covered pipe with the tractor and front wheels of the Carryall, then turn short, traveling alongside the pipe; as you make this short turn start unloading — this will spread dirt on the pipe.

If hand-tamping the dirt next to the pipe is required, haul in a few loads and while they are tamping, spread next to the outside slope stake.

MAKING SIDE HILL CUTS

Start a side hill cut with the unit parallel to and approximately seven feet away from the slope stake. Turn sharply toward the stake and when the tractor is in line with the stake, drop the cutting edge. As the Scraper continues to turn, one side of the cutting edge will cut into the hill. By doing this several times you will soon have a level bank on which to start loading (See diagram).

Always keep a side hill cut low next to the slope and

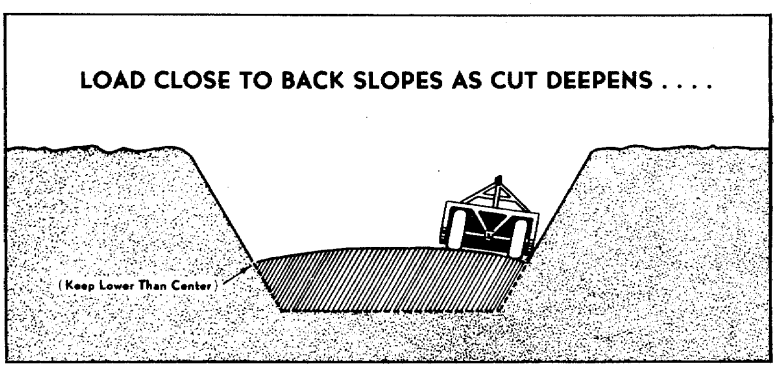


high on the outside. The result will be a neat, easily controlled slope with the minimum of finishing necessary.

Although it is possible to open a side-hill cut with a Carryall as described, it is much faster and more efficiently handled by a 'Dozer.

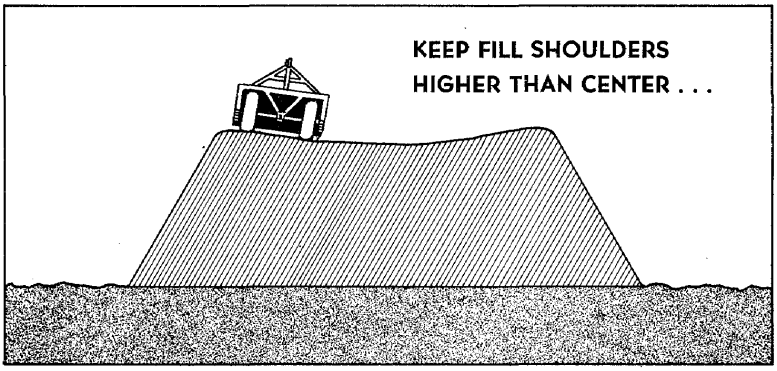
MAKING THROUGH-HILL CUTS

In making through hill cuts, always keep the cut low next to the slope and high in the center. This will help maintain a better slope and also make the loads larger and more uniform.



THE FILL

In building up a fill it is highly essential to keep the outside or shoulder of the fill higher than the center. This prevents the Scraper from sliding over the side while dumping close to the shoulders and carries



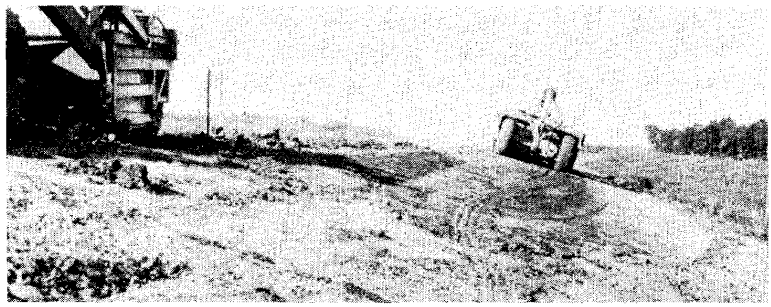
the slope upward safer, more easily and more economically. When the shoulders are at grade, the concave portion can be filled quickly, just before final leveling and finishing.

FINISHING

Carryall Scrapers eliminate an excessive number of expensive auxiliary tools for the finishing work.

With any LeTourneau Carryall, slopes up to 1½ to 1 can be finished. Do not try to load on a steep slope. If you do, the dirt will fall to the low side of the bowl causing that side of the cutting edge to cut in deeper than the other, and as a result dig a ditch in the slope.

The correct method of sloping is to first, pull the tailgate to within eight inches of the extreme front position. Then drive the unit on the slope, dropping the cutting edge when it is on the same angle as the desired slope. Release brake, lowering cutting edge into the ground. Do not try to cut too deep and do not raise or lower body more than is absolutely necessary.



If you can't cut your slope to the grade the first time, go over it again with the tailgate ahead and as the blade cuts the dirt it will roll against the tailgate and then roll off the lower side of the bowl, leaving a windrow of dirt at the bottom of the slope. By not cutting too deep, this row of dirt will help hold the rear of the Scraper in line with the slope. If the haul is such that you can clean this slope on the way back from the fill, come off of the slope and load this row of dirt.

Remember, one front wheel can be on higher ground than the other without changing the cutting angle of the bowl, even if the blade is in the ground. However, if one rear wheel should become higher or lower than the other, it will change the elevation of the bowl, thus making one side of the cutting edge cut deeper than the other.

It is very important to carry the same amount of air pressure in all rear tires. If pressure is low on one side, that side will cut deeper and you will be unable to get a full, level load. This will also leave an uneven cut.

Keep the haul road smooth at all times by dropping the cutting edge on the way back from the cut, to drag off the high places. The tailgate should be about 8″ from its forward position for an effect similar to 'Dozer or grader.

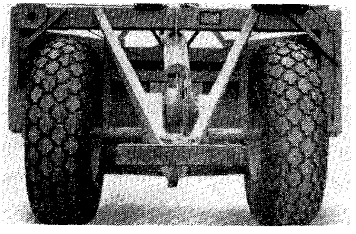
Keep cut and fill as smooth as possible. When you get to the final finishing loads it will be easier to see the low and high places so you can spread and place your load without loss of time.

SECTION 4. BOOSTING CARRYALL PRODUCTION

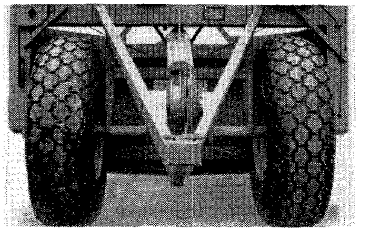
USING THE PUSHDOZER

In flat country where a downhill grade cannot be obtained for loading, a Pushdozer profitably takes the place of the grade and eliminates the uphill climb on the return trip.

In loading the Model RU Carryall for example, a CP8 Pushdozer on a low gear D8 tractor will add the power equivalent to loading down a 21% grade without the help of a pusher. In loading a Model W, a CP7 will add the yardage equivalent to that gained by loading down a 15% grade without the Pushdozer. These two Carryalls, RU and W, are designed to give the most yardage from pusher loading. Yardage output of other models is increased as much as 50% by using Pushdozers.



Pusher block for use with 'Dozer bowls



Pusher block for use with Pusher Cup

Bulldozers and Angledozers are frequently used in pusher loading. There are two disadvantages in using these two types of 'Dozers as pushers. First, the blade is a constant threat to Carryall tires and, secondly, it is added weight on the track and rollers. A pusher cup can be used on a C-type Angledozer yoke by merely removing the bowl.

The Pushdozer can also be used as a booster for the Extra Heavy Duty Rooter.

It is necessary for the pusher tractor operator to use the throttle frequently during the pushing operation

so as to give the most possible tractor power without crushing or jack-knifing units. It is also necessary, when first contacting the pusher cup with the pusher block on back of the Scraper, to have the tractor in line with the Scraper. If the Scraper should be pushed side-ways, release the throttle about one-half, to allow the leading tractor to pull the Scraper into line again. This will put the Scraper in line with the leading tractor. Oftentimes the pusher tractor will stall if the steering clutch is released. It is best to release the steering clutch rather than the master clutch. Using a steering clutch will also give the pusher tractor engine a chance to gain its normal r.p.m. At the time the Scraper operator should be hoisting the bowl a little so it doesn't cut too deeply.

After the Scraper is loaded, keep on pushing. The leading tractor can then shift from its loading gear to its traveling gear while still being moved by the pusher, thus making the gear shifting easier and faster. In doing this, the pusher tractor will travel a little further in a day but the Carryall will make more trips and maintenance will be less.

When shifting gears while moving never force gears into place. You wouldn't do that with your automobile, why do it with the tractor?

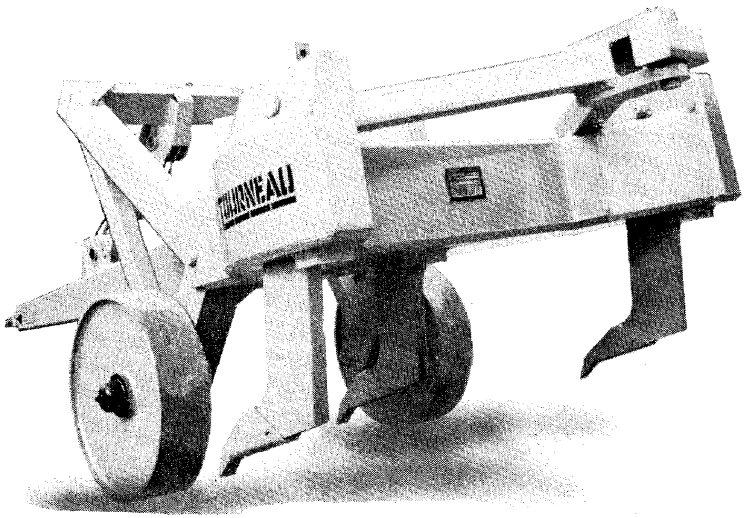
USING THE ROOTER

The loading efficiency of Carryall Scrapers in hard material can be greatly increased by employing a LeTourneau Rooter to break up the material.

The teeth of LeTourneau Rooters are spaced to break the material into pieces the correct size for easy loading. The LeTourneau Rooter is operated by a single drum of a LeTourneau Power Control Unit. An experienced tractor operator can control accurately the depth of penetration. Many contractors have found it an advantage to operate the Rooter in connection with an Angledozer or Bulldozer on a tractor equipped with a two-drum

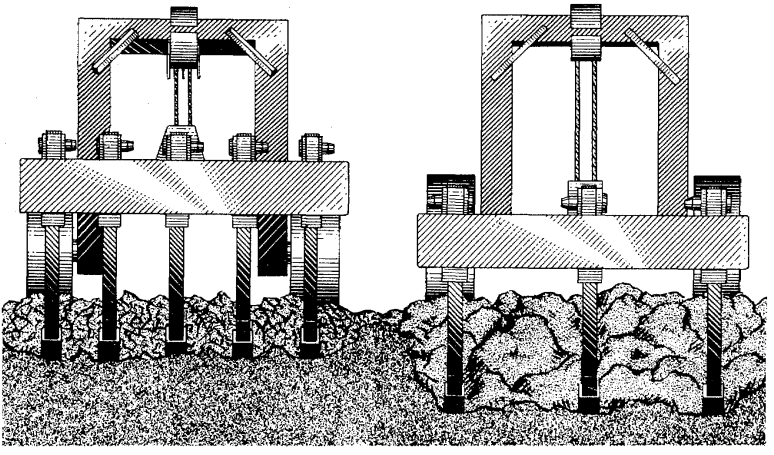
Power Control Unit. In such case, the Rooter cable is spooled on the left-hand drum.

These Rooters consist of a heavy welded steel frame carrying long, strong, alloy shanks or standards, and are mounted on steel wheels. The standards have both a forward and downward slant and are designed with a



natural digging angle, thereby making penetration easier. They are shod with replaceable alloy steel shoes which do the digging and take the wear. These shoes are heat-treated. In use, they automatically sharpen themselves until entirely worn out.

Two models of the LeTourneau Rooter are exactly alike in design — the S and the H. Both are furnished with three or five teeth as required but for most work three teeth are recommended. On the Heavy Duty Rooter, Model H, equipped with three teeth, the distance between them is 43½ inches and the Type S 31½ inches. Instead of merely scarifying the ground and pulverizing the surface material, the shoes or teeth on the Type S penetrate to a depth of 20 inches while the Heavy Duty Type H Rooter teeth tear through the ground at a maximum depth of 29 inches.



Naturally, the fewer the teeth, the deeper the penetration will be and the larger the breakage; and, vice versa, the more teeth the shallower the penetration the more pulverizing the action.

The largest LeTourneau Rooter, the Extra Heavy Duty, is built stronger and heavier throughout. It is limited to three teeth only with a penetration of 28 inches. A pusher frame is built into the rear of the main structure. With the power of one or two D8 tractors pulling and another pushing on a single tooth the toughest shovel materials can be quickly and cheaply broken up for Scraper handling.

With all models it is inadvisable to make turns while teeth are in the ground. In digging rock with the two outside teeth, watch when lifting that a large rock doesn't become fouled between a tooth and rear of wheel. This occasionally happens and causes cable injury or breakage.

Because of their correct design and rugged construction, their power and penetration, LeTourneau Rooters can tear through such material as decomposed shale, decomposed granite, tough clay, boulder-strewn ground, black top, etc., that otherwise might have to be blasted or broken with an air hammer. In extremely hard material, it is practical to use only one tooth, concentrat-

ing all the tractor's power on that tooth. Weight can be added on the deck to increase penetration.

Generally one or two teeth is all that is needed in toughest of material. Root as deep as you can with few teeth. This will leave material in larger chunks which will be ideal for loading.

Rooting will shorten the necessary loading time and, as a result, permit you to make a faster cycle and increase your production per hour.

TANDEM OPERATION

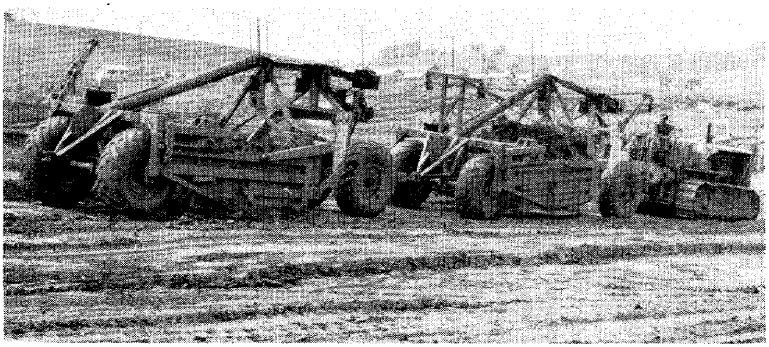
During the past few years, tandem Scraper operation has proven very satisfactory for the longer hauls.

For operating two Carryalls in tandem, it is necessary to have a four-drum Power Control Unit on rear of the tractor, as each Carryall has two cables — one for raising and lowering of the body and the other for unloading.

When using two Carryalls in tandem, one narrower than the other, it is best to place the narrower Carryall in the rear. The rear unit is rather difficult to see during

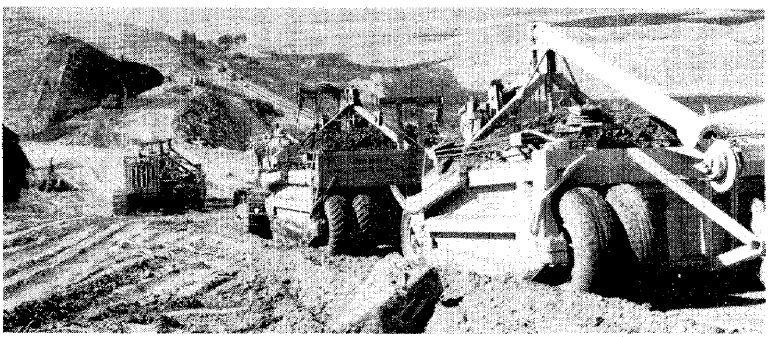
operation, and if it is wider, it may slip sideways when unloading close to the shoulder on a soft fill causing the fill to be too wide at that point. Also, a second advantage, the tandem unit follows better when traveling over crooked roads with the narrow Carryall in the rear.

Always load leading Scraper first, and rear Scraper last. When leading Scraper is loaded, before lifting it out of the ground, lower rear Scraper until the cutting



Load the lead Scraper first

edge just touches the ground — you will be unable to see the cutting edge of the second Carryall but can tell by sound of the tractor engine when it has touched the ground. Then raise the leading Carryall bowl. The rear Carryall will then start loading where the leading Carryall left off, thus maintaining a smooth cut at all times.



Load tandems down-hill

BOOSTING CARRYALL PRODUCTION

Always try to load downhill. By doing so, it will enable you to get large loads more quickly. If loading downhill, the second Scraper will also load easier than the first one for the following reason: After the first Scraper is loaded and raised for traveling, you have the weight of the first unit pushing against the tractor, which means added horse power to aid in loading second Carryall. It will be very difficult to get good loads on level ground in hard material without a pusher "cat".

Unload the leading Carryall first, carrying rear Carryall close to the ground. Traveling five to eight feet before starting to unload the rear Carryall so that it will start spreading where the front Carryall left off, leaving a uniform fill.

If, at any time, you should have to unload one Carryall and then turn around before unloading the other, it is best to unload the rear Carryall first. This will avoid jack-knifing to two Carryalls, and possibly breaking a forging on the tongue of the rear Carryall.

If traveling down steep grades while loaded, it will be necessary to drop the rear Scraper bowl, using it for a brake to avoid pushing the tractor engine too fast and also to avoid jack-knifing the Scrapers. Tandem Carryalls are operated exactly the same as the same model single Carryall. The only difference being that two Carryalls, instead of one, are loaded, hauled and unloaded.

There are two methods for threading cables into a Power Control Unit for tandem operation. Either method is correct. The method shown by diagram No. 1 has one advantage in that there is an even load on both the Power Control Unit and tractor. Method shown by diagram No. 2 sometimes throws more load on one side of tractor and Power Control Unit, but the control levers are more convenient to the operation.

Most Carryalls have a rear drawbar as standard equipment. Those not so equipped may have them installed, with the exception of Models G, X, and Z.

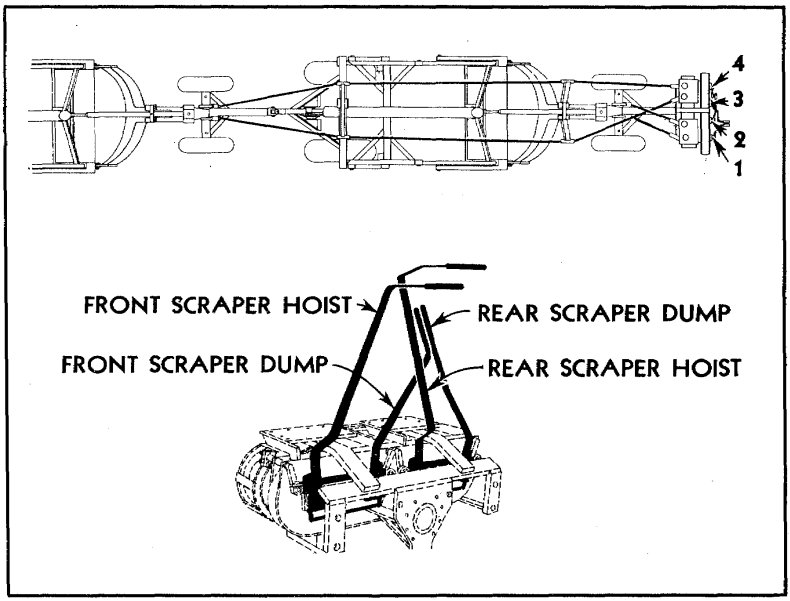

4
3
2
1
FRONT SCRAPER HOIST
REAR SCRAPER DUMP
FRONT SCRAPER DUMP
REAR SCRAPER HOIST

Fig. 1

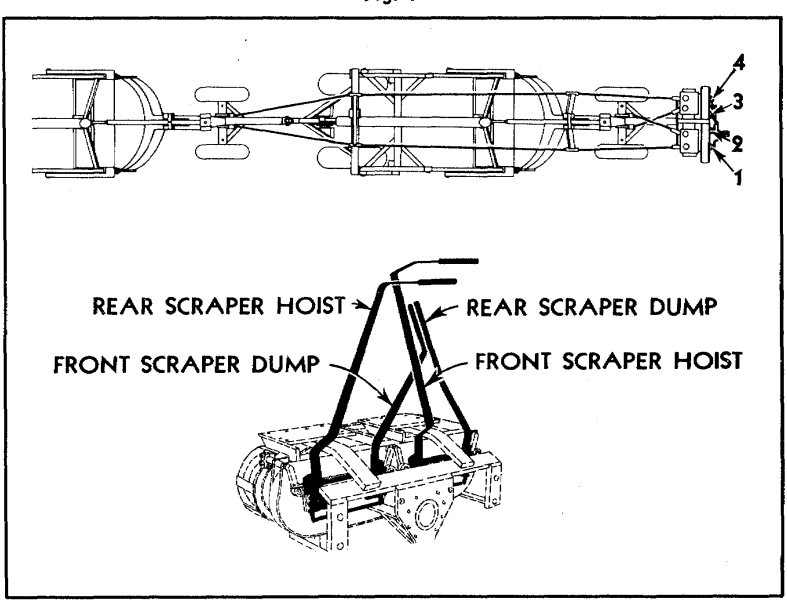
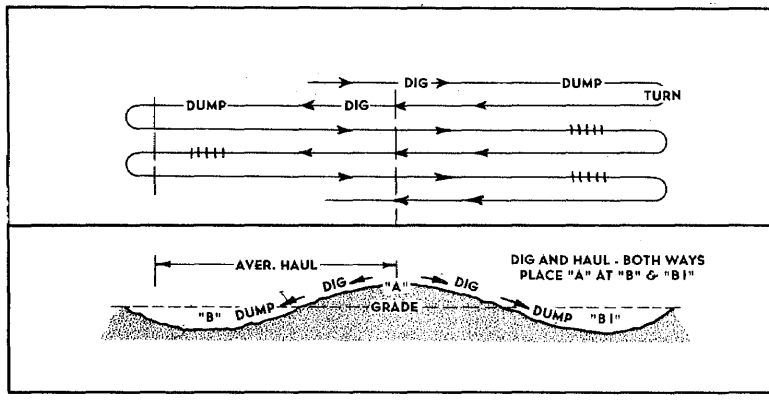

4
3
2
1
REAR SCRAPER HOIST
REAR SCRAPER DUMP
FRONT SCRAPER DUMP
FRONT SCRAPER HOIST

Fig. 2

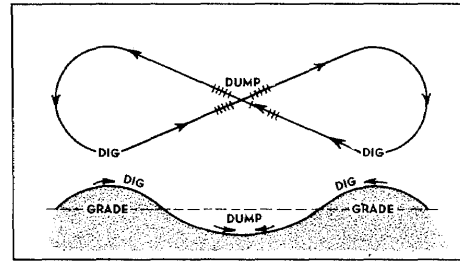
ELIMINATING TURNS

Where possible, you will find it highly possible to lay out the job so as to "work both ends against the middle", thus eliminating one turn.

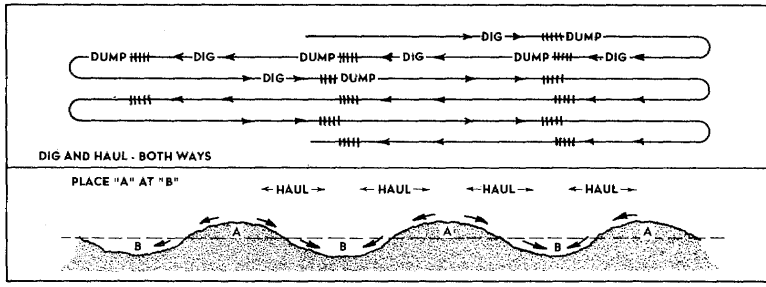
You undoubtedly noticed that it takes .3 of a minute or more to turn your equipment. Frequently it is possible to save many of these turning minutes and increase the efficiency of your job by taking advantage of your job layout, as illustrated:



Wherever possible, lay out your job so there is a cut with a fill on each side of it or a fill with a cut on each side. With a layout of this type, you can use the figure 8 loading and hauling cycle to great advantage, eliminating one turn per load. In the first instance take a cut going down the hill and continue with the load to the fill. Then turn and come back to the hill, and this time take a cut going down the opposite side of the hill, continuing to the second fill, as diagrammed:



This same job procedure is equally effective where there are two cuts on either side of the fill. In both cases only two turns are required while two full loads are delivered; whereas, with the usual method of cut, haul, spread, turn, return, turn, cut, two turns are required for each load:

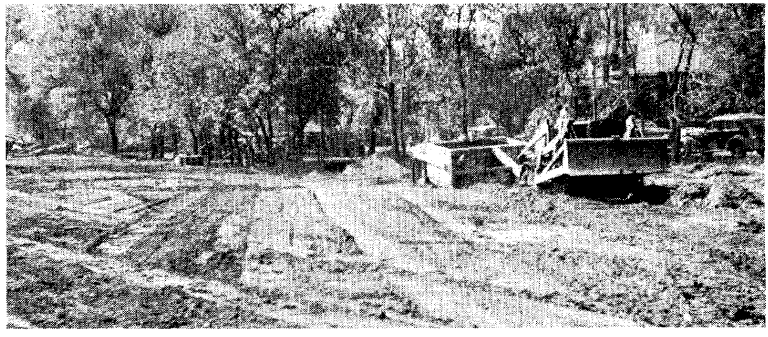


When you can cut your turn in half for hundreds of loads, you are really saving time and money.

SECTION 5.

THE R-5 DRAG SCRAPER

An R-5 Drag Scraper pulled by a D6 or D7 tractor, can handle economically jobs involving several thousand cubic yards of earthmoving where hauls are not to exceed 600 feet. This Drag Scraper can construct and



maintain highways, level land, build underpasses, and strip overburden. Because of its 9-foot 1-inch overall width and ability to cut to the edge of a slope or bank, it can dig and clean canals and ditches and handle other restricted types of excavation.

This Scraper is controlled by a single cable Power Control Unit on the tractor. The bowl can be raised or lowered for accurate cutting to a depth of 18 inches and for spreading to a maximum depth of 18 inches. Normal travel of the tractor and the Scrapers' 18-inch steel wheel rim will give all compaction necessary for many jobs.

Many contractors have increased their tractor efficiency by using a two-drum Power Unit to combine Angledozer or Bulldozer operation on the front of the tractor with a Drag Scraper on the rear for cleaning backslopes, cuts, and fills, as well as finishing on shoulders. The 'Dozer can be used for widening fills and cuts, digging out rocks and other pioneer work incidental to Scraper operation. The Drag Scraper can quickly be disconnected from the tractor by removing the one cable from Power Control Unit drum and removing tractor drawbar pin. With a double drum two-cable Power Control Unit, you can also operate a LeTourneau Rooter, together with a 'Dozer on the front of the tractor, since each tool requires only a single cable.

MAINTAINING THE DRAG SCRAPER

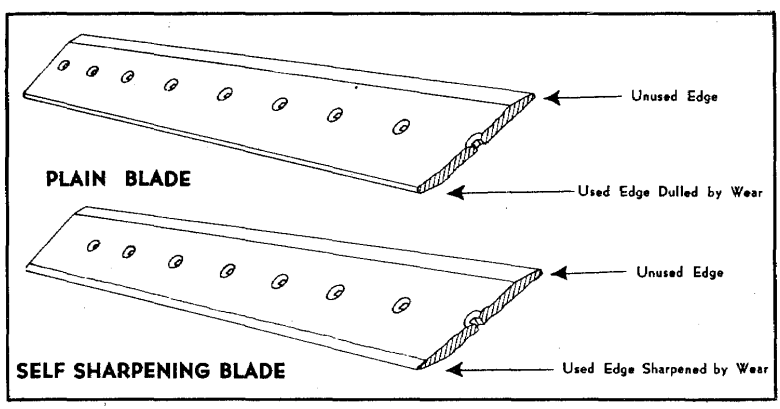
Grease wheel bearings and universal forging on tongue every 36 hours. Grease sheaves every eight hours. Check wheel bearings once a week for proper clearance. To do this, insert a bar between the axle boxing arm and the wheel. Remove capscrews from hub cap and tighten bearing nut. Then loosen it half a turn, checking to make sure that wheel turns freely. This procedure applies to all Carryalls as well as Drag Scrapers.

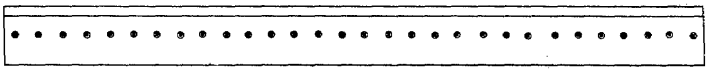
SECTION 6.

CARRYALL MAINTENANCE

BLADES

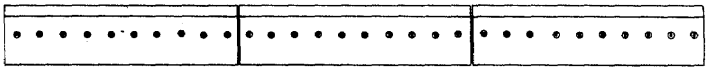
An assortment of different type LeTourneau blades are available to accommodate the varying job conditions. All blades are heat-treated and can be purchased either hard-surfaced or plain. The hard-surfaced blade has a strip of hard-facing weld on the top edge. Because the softer heel of the blade wears faster than the hard-faced topside, this blade will grow sharper with use. The hard-faced blade will dig more yardage and do it faster and cheaper than the plain, non-welded blade.



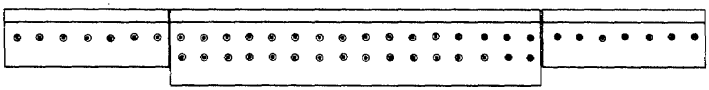


One-Piece 10" Blade — of 1" thickness in 10-foot length; of ¾" thickness in 10-foot, 8-foot 6-inch, 8-foot and 7-foot lengths.

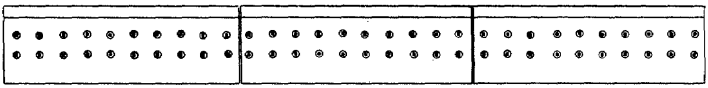
One-Piece 8" Blade — of ½" thickness in 6-foot length.



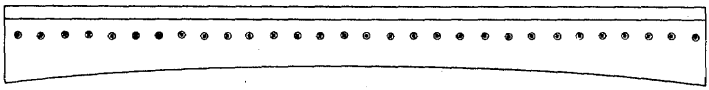
Three-Piece 10" Blade — of ¾" thickness in 10-foot length.



Three-Piece Offset Combination Blades — of ¾" thickness in 10-foot, 8-foot 6-inch, 8-foot, 7-foot and 6-foot lengths.



Three-Piece 13" Blade — of ¾" thickness in 10-foot length.



One-Piece 12" Concave Blade to neutralize scraper bottom bow — of ¾" thickness in 10-foot and 8-foot 6-inch lengths.

With a three-piece offset blade, which has the center section projecting lower than the outside section, field experience has proven that in hard dirt or shale, it is possible to load quicker and easier than with a straight three-piece or one-piece blade. This is because a shorter section of the blade pulls through the ground and the cutting resistance is thus reduced. An offset blade should not be used in rock because it is possible to get one corner of the offset section under a large rock and, while hoisting the bowl, break a portion of the blade.

For the bowed blade base on Carryalls using 8 foot 6 to 10 foot blades, there is available a blade with a concave cutting edge which has proven very satisfactory for finishing work by compensating for the bow in the Scraper bottom.

Most blades are reversible but the concave blade is not. Be sure, in installing a new one or reversing an old one, to always put the bevelled side down. If hard-faced, the hard-facing should be up. This is for self-sharpening which means easier digging. Watch the blade closely. Do not let it wear back into the blade base for that will mean a delay as well as an expensive replacement of the blade base.

For all Carryall Models with 10-foot wide bowls, we have three-piece straight blades. Each section is equal in length. With these blades, the center section wears faster than the outside sections. By shifting these sections around, you can wear out all three at the same time or you can buy a new center section after it has been worn out on both sides, replacing the end sections when they are completely worn.

For safety, when making any kind of a change on the blade, be sure to put a block between the apron arm and the top of Carryall sidesheet. Never take the chance on someone releasing Power Control Unit brake which would drop the apron on you. Also put a block under the bowl to avoid the chance of the bowl dropping and causing someone injury.

Here's the method for installing a one-piece blade, particularly in the bowed bottom Carryall: After laying the blade in place, put a round drift punch in the first hole on each end. Then start inserting the bolts, working from each end to the center. If the last two or three bolt holes in the blade do not line with the base holes, loosen the bolts which you have just put in until the blade can be shifted with a drift punch until holes are in line. After all the bolts are in, draw evenly and be sure they are tight.

Here is an example showing the advantage in dollars and cents of hard-faced blades over the non-hard-faced cutting edge. It may prove to be the case on your job.

Why pay $49.50 for a blade when you can get one for $25.00? Such a question might be answered by asking,

"Why move 8½ pay yards per trip when you can move 9?" or "Why take 125 feet to load when you can load in a 100 feet, thus reducing the round trip time and increasing the trips per hour?" Consider it from this angle — at first ½ pay yard doesn't seem like much, but on a 600-foot one-way haul, the Scraper will make about ten trips per hour. Ten trips, at ½ pay yard per trip, is equal to 5 pay yards per hour. Supposing you are wearing out a blade every 500 hours, average life. Five hundred hours at 5 yards per hour is 2500 yards. At the low figure of 10c per yard, this gives an increase in profit of $250 during the life of a single blade.

Here is the second angle — By reducing the loading distance 25 feet, on a 600-foot one-way haul, you will get about one trip more per hour. At 8½ pay yards per trip, this is 8½ more pay yards per hour. Over the same 500-hour average life of blade, this gives approximately 4,250 additional pay yards over the life of the blade. Figuring 10c per yard, the additional yardage is equal to $425 in extra profits.

All right, I think I heard some of you say, "Yes, but it's darn seldom that a blade lasts 500 hours." Under normal conditions, a blade will last that long but just for an argument, say that the blade wears out in 250 hours, one-half of what is used above. One-half of $425 saving by faster loading is $212.50. A ten-foot hard-faced blade costs about $25.00 more than the non-hard-faced blade. Then the hard-faced blade results in a net saving of $187.50 over a period of 250 hours. Now which is the cheaper blade?

Just a word as to why LeTourneau hard-faced blades give additional yardage. The hard-facing is on the top and because the base metal is softer than the hard-facing, it wears faster. The result is a sharp-cutting edge at all times, whereas with the plain blade or non-genuine LeTourneau blade, the blade becomes blunt as it wears. Even a hand shovel digs easier if its edge is always kept sharp.

The advantage of the hard-faced blades is not that they last longer, but that they . . .

1. Decrease loading time.
2. Make bigger loads possible.
3. Make more round trips possible per hour.
4. Decrease tractor effort, thereby increase tractor life.
5. Cost less per yard.

GREASE RECOMMENDATIONS

MANUFACTURER	TO LUBRICATE			
	All Sheaves with Straight Rollers	All Sheaves with Ball Bearings	Wheel Bearings, Universal Joints & P.C.U. Drum Shafts	P.C.U. Gear Case
"TEXACO" (Petroleum Products)	MARFAK No. 1	MARFAK No. 0	MARFAK No. 2	TEXACO THUBAN S.A.E. No. 90
"SOCONY-VACUUM" OIL COMPANY	GARGOYLE MOBILGREASE No. 2	GARGOYLE MOBILGREASE No. 1	GARGOYLE MOBILGREASE No. 5	GARGOYLE MOBILGREASE C.W.
"D-A" LUBRICANT CO.	D. A. No. 2	D. A. No. 1	D. A. No. 3	D. A. No. 000

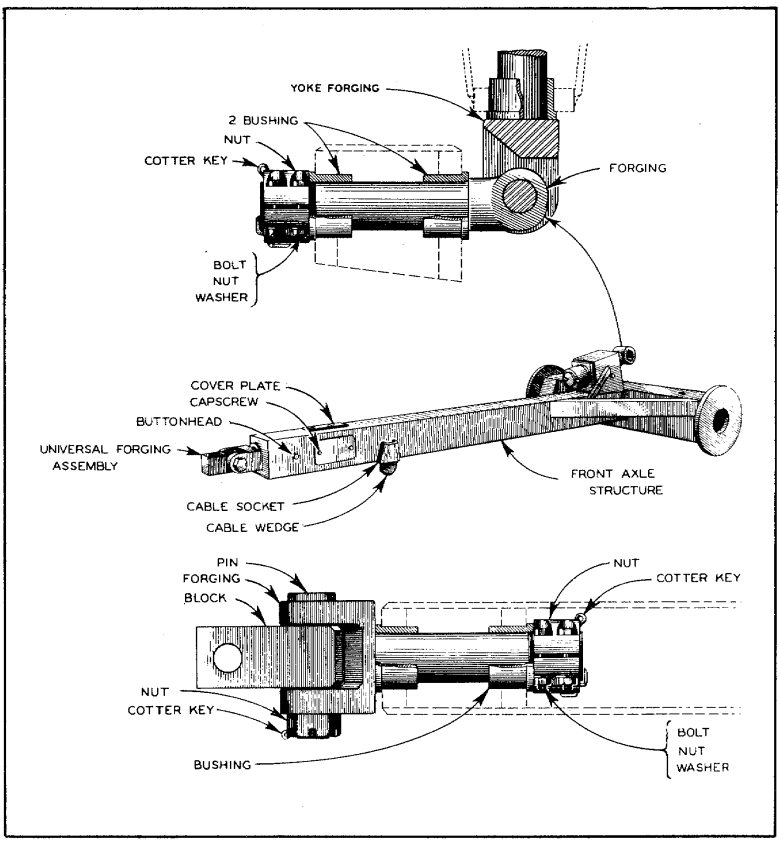
Grease recommendations are for operation in normal Summer conditions. Slightly heavier greases are recommended for operation in extreme heat, and lighter greases for operation in extreme cold.

The greases recommended above have satisfactorily passed our laboratory and field tests. Similar greases of like specifications made by other reputable manufacturers also meet our approval.

FORGING LUBRICATION

Each Carryall has three forgings — one located on the end of the tongue which connects to the tractor; one on the rear of the axle structure; and the other on the end of the yoke post connecting to the axle structure. Each forging has two steel bushings. Due to the constant movement of the forging, these parts must be well greased to eliminate unnecessary wear on the bushing. Button type fittings are used. Use the same gun as used on track roller frame.

Lubricate forgings once each day. For type of grease, see chart, page 49.



FORGING ADJUSTMENTS

Located on one end of each forging, you will find a large split nut with two bolts going through it. If bolts are kept tight, forging nut will not tighten or loosen during operation.

To adjust the forging on the end of the tongue it is necessary to remove two capscrews which hold the cover plate that conceals the forging adjustment nut.

On the side of the yoke post, you will find another cover plate which, if removed, will allow you to make adjustments on the yoke post forging.

These forging nuts should be adjusted so there will be no end play which would cause unnecessary wear and eventually pound the steel bushings out, also making it impossible to hold grease the proper length of time.

When connecting yoke post forging to the front axle structure, be sure beveled side of yoke forging is facing the tongue and also that the offset hole in the forging on the front axle structure is near to the yoke post forging, or in other words, facing upward.

We manufacture several different size forgings and blocks which go into the tractor drawbar. The reason is to accommodate the different size Carryalls with the proper size forging and block for the tractor used. You should never operate a Carryall with a small forging block which will be a loose fit in the tractor drawbar. This would make unnecessary wear in the drawbar and would also be working the block in a bind that would break the forging before many hours of operation.

Never use a drawbar pin smaller than the original tractor pin. The excessive play will cause breakage, resulting in delays that will be expensive to the owner.

When ordering new parts, always order genuine Le-Tourneau parts. They are always the best and cheapest per yard of dirt moved.

LUBRICATING RETURN SPRINGS

Tailgate return springs are located in the pipe over the Carryall bowl. Every 30 days remove plate held by two small capscrews located on the front of this pipe. Pour in one quart or more of any heavy lubricating oil so that it will work down the lower side of the pipe where springs are working back and forth.

This will give the springs a chance to work freely and also eliminate unnecessary bind, drag, and wear.

If there is a grating noise heard each time the tailgate moves forward or backward, it is advisable to remove springs from spring pipe, making sure there isn't a broken spring.

CABLE LUBRICATION

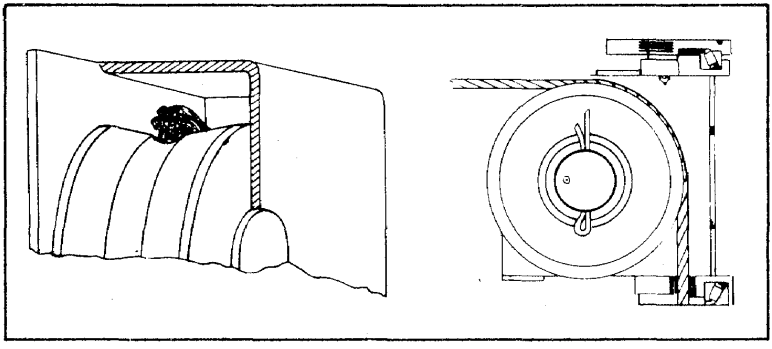
Lubricate when the outer wires show bright from the apron to the Power Control Unit. It will pay big dividends.

The cable supplied with your LeTourneau equipment is lubricated internally in process of manufacture. But no internal lubrication can long protect the outside of the cable. This can be done only by repeated field lubrication, i.e., coating the cable each time the outer wires begin to show bright with Texaco Crater Compound No. 2, Gulf WRX Compound or other similar cable dressings. Treating cable in this manner will give real returns for the effort. You wouldn't run a dry bearing — why should you run a dry cable?

WHY WE USE ONE-HALF INCH CABLE

LeTourneau equipment is designed for one-half inch wire rope and it is neither necessary nor economical to use a larger size. Each unit, before it leaves the factory, is tested with a 4000 pound load and all new equipment is designed so that a 4000 pound line pull will handle it under most job conditions. The average load, of course, is much lighter. If you put on a larger cable, the sheaves

will be too small. If you use a smaller cable, a rough operator will break it.



SHEAVES DESIGNED FOR ½" CABLE

The suggestion has frequently been made that the sheaves be made bigger so we can use a ⅝" or ¾" line and then make the Power Unit strong enough to stand it. Here is the answer to that: If we did that, using the same number of sheaves we have now, the operator would have power enough in his hands to tear up the Scraper or else we would have to build it too heavy to drag around. Another alternative would be to use fewer sheaves with this heavier line pull, but this would give too direct a ratio making the Scraper uncontrolable on uneven ground.

Our engineers have made numerous tests on actual construction work and are not guessing about the matter of cable. We have built these machines with heavier lines and heavier line pull. We have also built machines with a ⅜" line, a correspondingly lighter line pull and a corresponding increase in the number of sheaves to give the required lift. This is ideal insofar as ratio between tractor and Scraper is concerned, but it is not satisfactory because of the friction loss resulting from the number of sheaves.

To sum it up, a half-inch line with a maximum 4000 pound pull is a happy medium. In cases where excessive loads are being handled on some of our older machines,

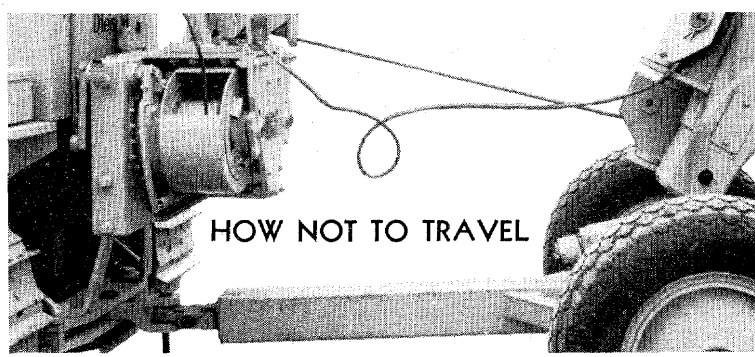
which have fewer sheaves on the pushbeam than the present models, the proper remedy is to add a couple more sheaves, thereby keeping the system in balance and obtaining the maximum cable life.

Cable is bought by the foot but paid for by the yard — the pay yard of earth moved. If developments in the industry at any time should justify the use of larger cable, the LeTourneau Company will lead in this direction as in the past.

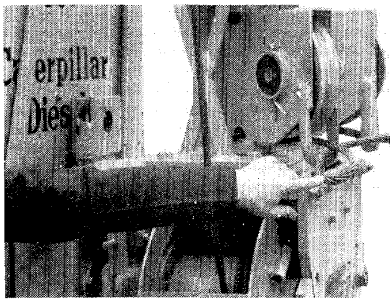
GENERAL CARE OF CABLE

Longer cable life will be insured if the following instructions are observed:

1. Follow the reeving diagrams in the parts catalog.
2. Avoid kinking cable when taking off reel or while putting it into service.
3. Keep surplus line on the dead end instead of jamming too much on the drum.
4. Watch spooling on the drum to prevent criscrossing.
5. Either reverse ends once in a while or cut off a foot or so to prevent wearing the cable continually in the same spots.
6. Keep tension equal instead of putting full power on a slack cable.
7. Watch out for loops in cable.



HOW NOT TO TRAVEL

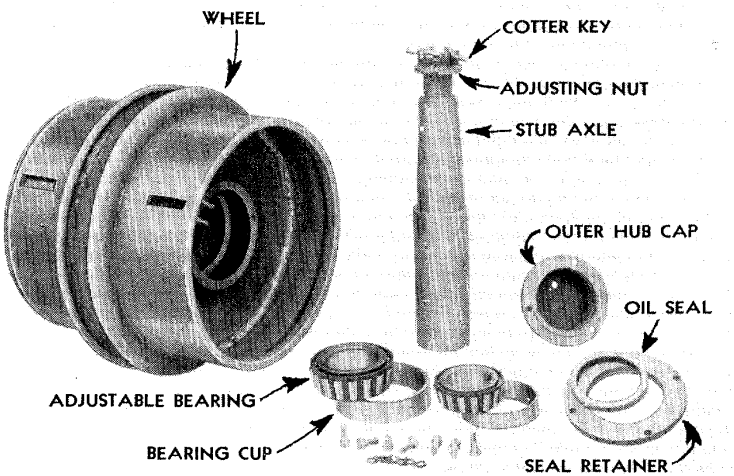


WHEELS — BEARING LUBRICATION

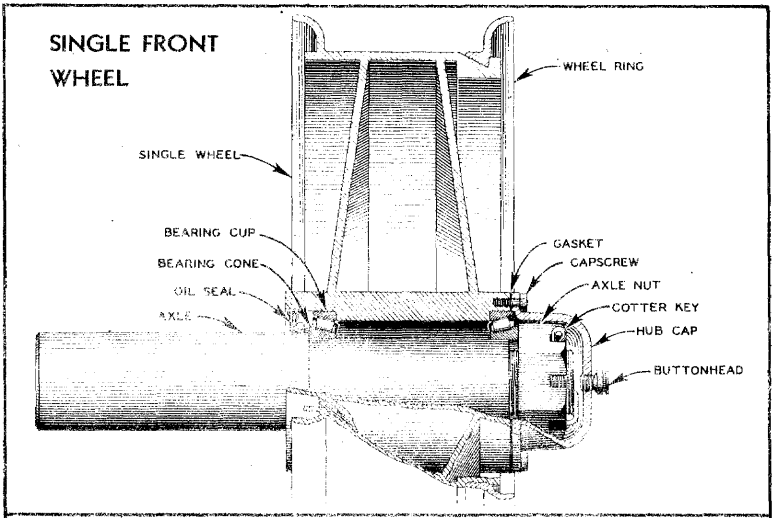
Remember:

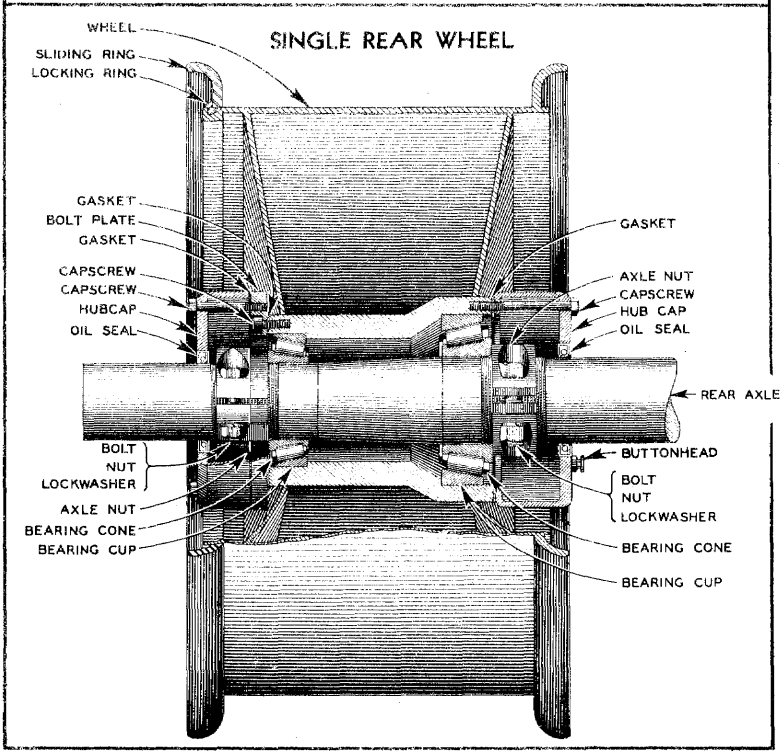
1. "Buttonhead" is type of fitting used.
2. Use same grease gun as on track roller frame.
3. Give two full squirts from gun every 36 hours.

It is advisable to loosen capscrews on opposite side of the wheel from grease fittings once a month. These capscrews hold the oil seal retainer plate. Pump grease into the fitting until it comes out between the wheel hub and the loosened retainer plate. In this way you will be sure the hub is full of grease. At the same time



FRONT DUAL WHEEL ASSEMBLY

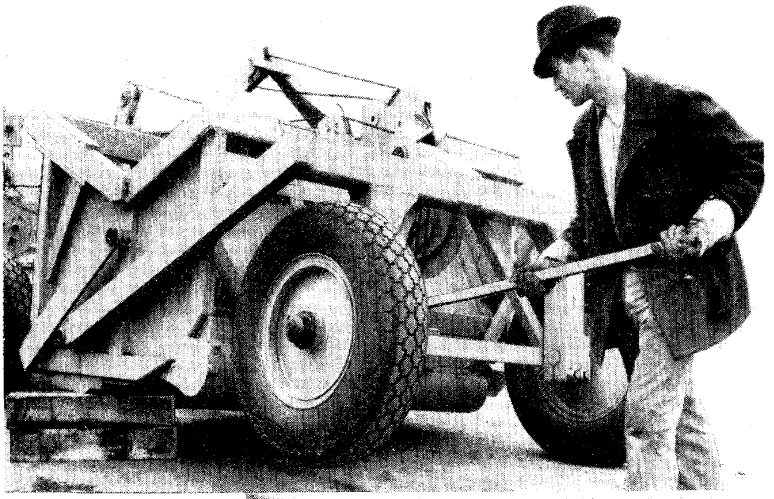

SINGLE FRONT WHEEL
WHEEL RING
SINGLE WHEEL
BEARING CUP
BEARING CONE
OIL SEAL
AXLE
GASKET
CAPSCREW
AXLE NUT
COTTER KEY
HUB CAP
BUTTONHEAD

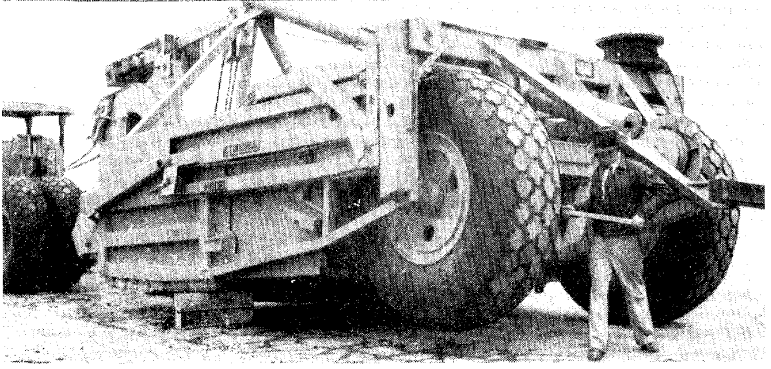

SINGLE REAR WHEEL
WHEEL
SLIDING RING
LOCKING RING
GASKET
BOLT PLATE
GASKET
CAPSCREW
CAPSCREW
HUBCAP
OIL SEAL
BOLT
NUT
LOCKWASHER
AXLE NUT
BEARING CONE
BEARING CUP
GASKET
AXLE NUT
CAPSCREW
HUB CAP
OIL SEAL
REAR AXLE
BUTTONHEAD
BOLT
NUT
LOCKWASHER
BEARING CONE
BEARING CUP

you are eliminating any chances of the grease pushing the oil seal leather inside out, which will happen if retainer plate is not loosened. Do not forget to tighten capscrews on retainer plate again. Check lubricating chart for proper grease; see page 49.

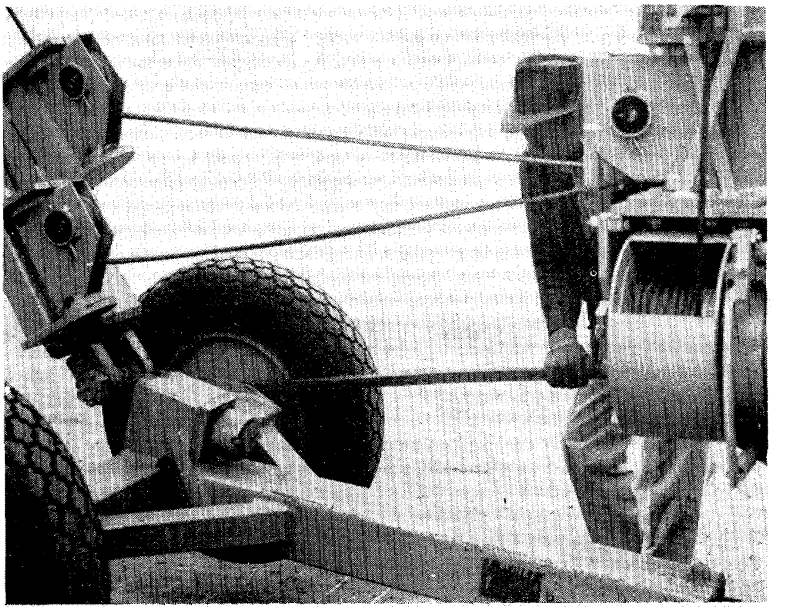
ADJUSTING WHEEL BEARINGS

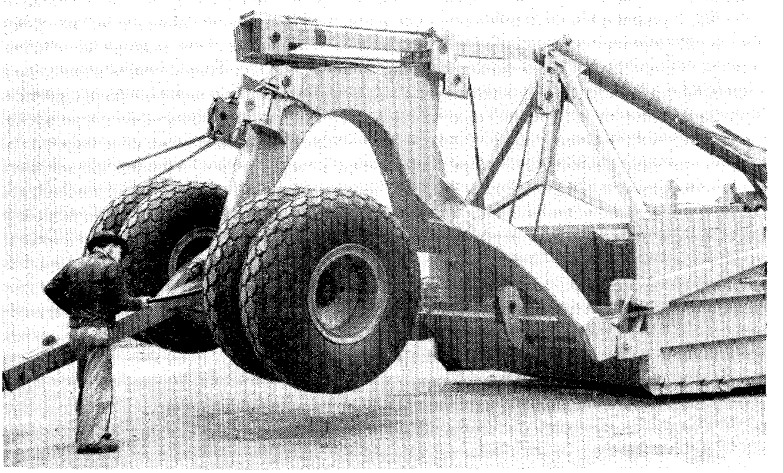
Check wheel bearings once a week for proper clearance. To do this properly, it is necessary to first raise each wheel off the ground. This can be done easily and without use of a jack.





To raise either wheel, place block under bowl just back of balance point, which is easily located, so that Scraper will tip forward as well as sideways when you let it down, raising the desired wheel.





To raise front wheels, load Scraper and then stop and lower the bowl to the ground. Release hoist brake and slowly back watching front wheels which will be lifted from the ground. When they are at the desired height, lock the brake on tractor.

To check rear wheel bearings, insert crowbar between the rear body structure and the wheel. To check the front wheel bearings, insert crowbar between axle boxing and wheel. If looseness is detected, remove capscrews from hub cap and tighten bearing until wheel will not turn freely. Then loosen nut one-half turn, or until wheel turns freely.

SHEAVES AND SHEAVE BEARINGS

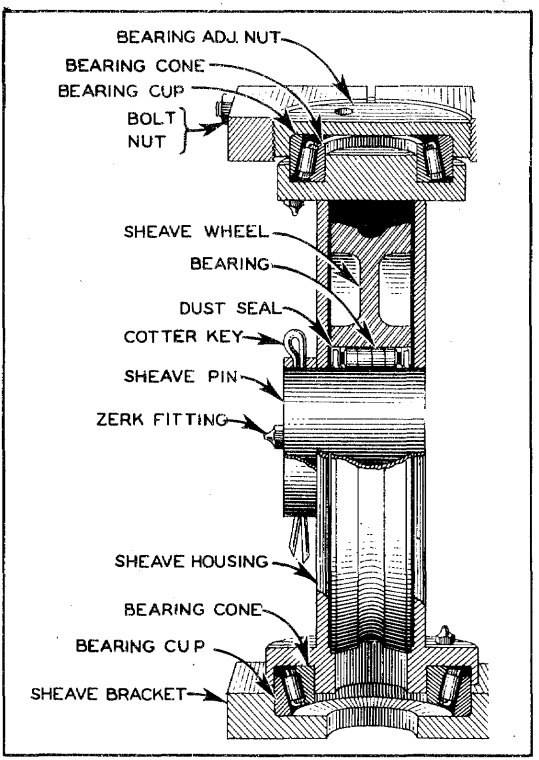
LUBRICATION: All sheaves have either roller or ball bearings. Both have the Zerk type grease fittings. The sheaves with the roller bearings are 2 inches wide, whereas the sheaves with the ball bearings are only 7/8-inch wide. The sheaves with roller bearings use a heavier grease than those with the ball bearings. Check lubrication chart for proper grease. See page 49.

During the past few months all Carryall sheaves have had the words stencilled on each ball bearing sheave housing, "Important—Use only light ball bearing grease." However, there were a number of units shipped which were not stencilled. For this reason, it is advisable to look at each sheave on the unit, determining the size and type, to be sure of using the proper lubricant.

All sheaves should be greased every eight hours. If your Carryall has sheaves on the apron and you are operating in dry, dusty, or sandy material, it is advisable to grease those sheaves oftener. In other words, don't give dirt a chance to work in. Insure longer sheave life by forcing old grease out of the bearing and new grease in.

On former Models J and Y, the sheaves in the tailgate spring box are located either in the tailgate or in a box located over the rear wheels. They should be greased every eight hours.

ADJUSTMENT OF SWIVEL SHEAVES

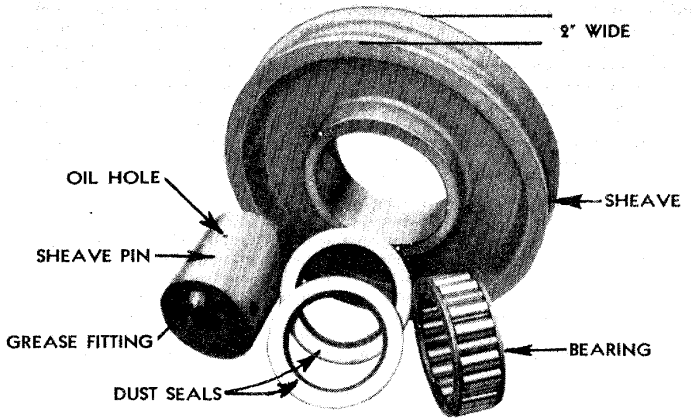


FAIR-LEAD SHEAVE

Yoke fair-lead sheaves: There are two swinging sheaves on each Carryall yoke which lead the cable to the Power Control Unit. On each end of the sheave housing there is an adjustable roller bearing. The bracket is split on top,with a clamp bolt to hold bearing adjustment nut tight. These bearings should be kept snug at all times.

You should not be able to lift the swinging sheave housing up or down at any time. If left loose, it will not swing freely under loads, causing poor alignment and also causing possible brinelling of the bearing cups; or, in other words, it will indent the cup by application of extreme pressure on rollers.

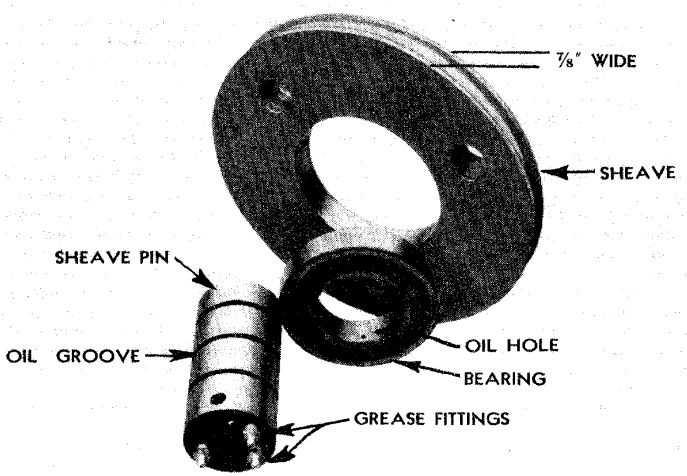
The above also applies to the double decker sheaves on the Power Control Unit.



ROLLER BEARING SHEAVE GROUP

INSTALLING BALL BEARINGS IN SHEAVES

Ball bearings are used only in 7/8-inch wide sheaves. To insure proper lubrication, it is necessary to enter



BALL BEARING SHEAVE GROUP

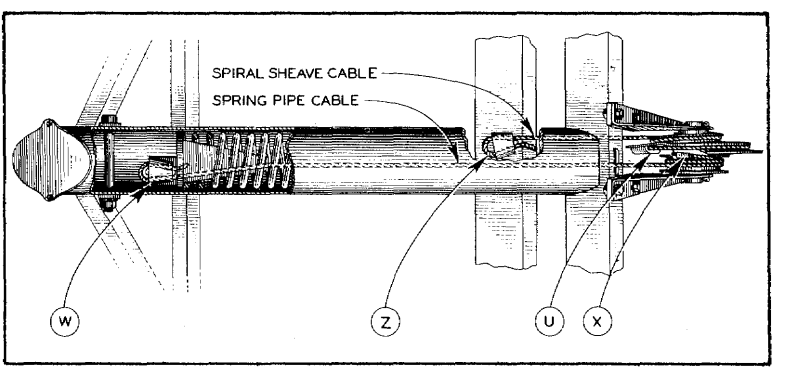
sheave pin into bearing so that the oil hole, located off center in the inner bearing race, is nearer to the end of the pin which has the grease fitting. This puts bearing oil hole in a corresponding position with oil groove on pin.

The sheave pin is a snug fit in the inner bearing race. For this reason, when driving pin into place it is necessary to improvise and insert a temporary spacer at top and bottom between the backside of the sheave and the sheave housing plate. After pin is in place, remove the spacer. This should leave the sheave in the center of the housing, thus allowing the sheave to turn freely.

SPIRAL SHEAVES — ALL SCRAPERS EXCEPT CURVED BOWL

REPLACING SPRING PIPE CABLE

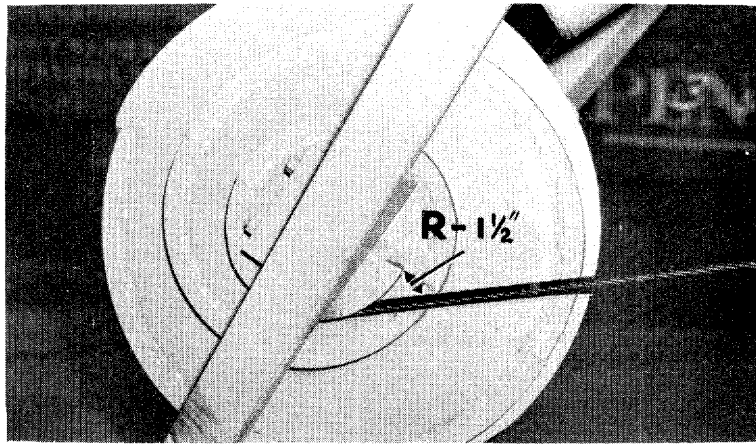
Using a bar, pry the tailgate to the extreme rear. Then remove the inspection plate located at the top of the springpipe. The spring plunger plate will be against the two safety bolts. Remove the cable wedge, W, from the plunger plate. Bend one end of the new cable, thus avoiding any chances that it will be fouled while sliding down the pipe. Fasten the end of the cable with wedge, W. Now anchor the cable at the drum with wedge, X. Pull the tailgate ahead with tractor power. Remove one of the safety bolts and insert a block of wood 14 inches



long between the other safety bolt and the plunger plate. Pry the tailgate back to its rear position. Remove wedge, X, and wrap the cable one and one-half times around the drum. Then anchor the cable again with wedge, X. If spiral sheave to tailgate cable is to be replaced, leave the block of wood in place.

INSTALLING SPIRAL SHEAVE TO TAILGATE CABLE

With the 14-inch block in place and the tailgate at the extreme rear, anchor the new cable with wedge, U. Reeve the cable around the spiral sheave with the wheel located so that the cable will be in the groove at all times. Insert wedge, Z, holding the spiral sheave so that there is no slack in the cable. There should be one and one-half inches between the end of the spiral groove and the cable at R.

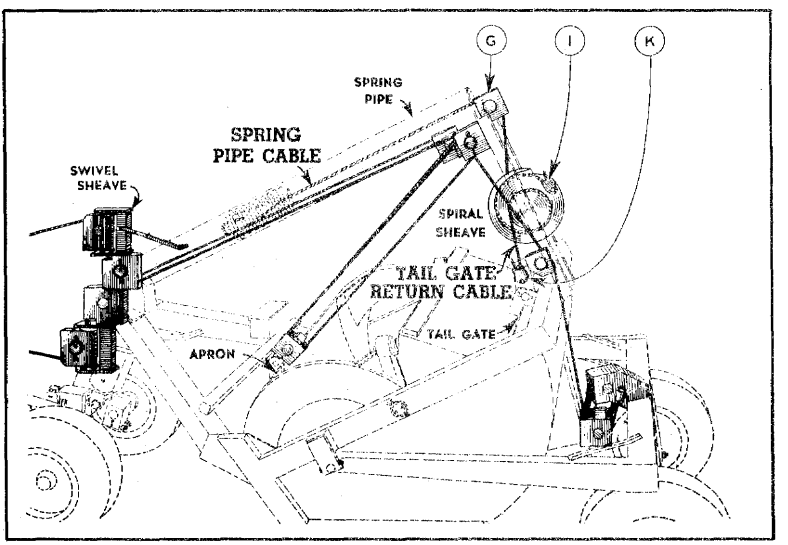


Pull the tailgate ahead a few inches. Remove the block of wood and replace the safety bolt and inspection plate. With the tailgate at the extreme rear, there will be six to twelve inches between the plunger plate and the safety bolt. In the field, the tailgate can be shoved by loading rather than by using a bar.

Refer to the parts book for cable threading diagram for length and size of cable.

MODEL G — REPLACING SPRINGPIPE CABLE

Replacing springpipe cable with the apron closed, the tailgate will be all the way up. Remove pin and sheave, G, located on the upper end of the springpipe. Bend one end of the new cable, to avoid any chances of it fouling on the springs while it is being shoved through. After pulling the cable out of the upper end of the pipe, replace pin and sheave, G. Place the wedge in the plunger plate at the lower end of the pipe. Then attach cable at the spiral sheave drum.



Engage the left Power Control Unit clutch, bringing the tailgate to its forward position. Remove one of the safety bolts, insert a block of wood twelve inches long between the safety bolts and the spring plunger plate. Remove the wedge located on the spiral sheave drum, wrap the cable one and one-half times around the drum and anchor the cable again with the wedge.

MODEL G — SPIRAL SHEAVE TO TAILGATE CABLE

It is necessary to have the twelve-inch block between the spring plunger plate and safety bolt when inserting

a new tailgate return cable. With the tailgate up, attach one end of the cable at wedge, I. Wrap the cable around the spiral sheave groove and anchor at wedge, K.

There should be, with cable tight, one and one-half inches between the cable and the end of the spiral sheave groove. Cable should be in the groove at all times. Engage the clutch, pulling the tailgate ahead a few inches, then remove the block of wood. With the tailgate all the way up, there should be from seven to nine inches between the plunger plate and the safety bolts.

SPIRAL SHEAVE CABLE THREADING ON MODELS Z AND X

The same method is used for threading the spiral sheave cables on Models Z and X as on the Model G. With the tailgate at the extreme rear, there should be four and one-half to six inches between the plunger plate and the safety bolt.

REPLACING SPRINGPIPE TO TAILGATE CABLE ON MODELS G, Z AND X THAT DO NOT HAVE A SPIRAL SHEAVE

For Z and X Carryalls that have no spiral sheave, use the twelve-inch long block of wood as used for other models. After new cable has been installed, and block removed, there should be from 10 to 12 inches between the plunger plate and the safety bolts.

DRAWBAR UNIVERSAL ASSEMBLIES

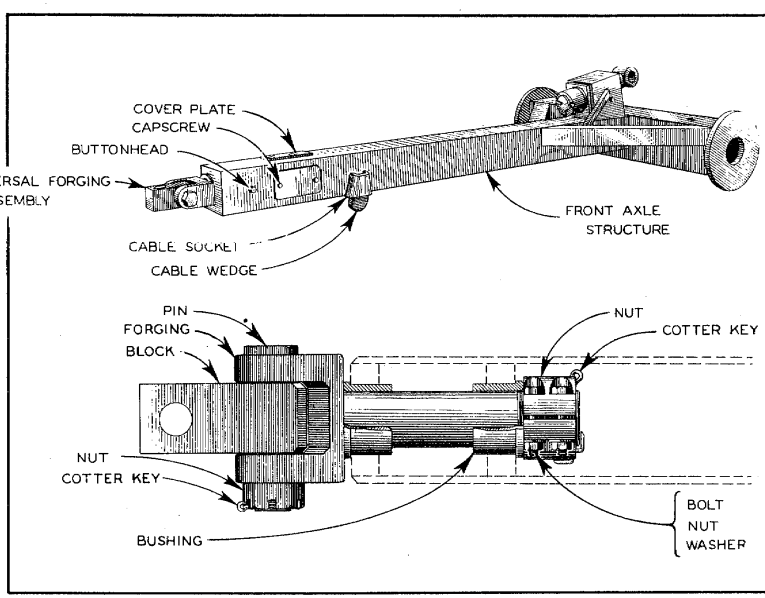
All drawbar universal assemblies are now manufactured not only with a detachable block and pin, but also with a castellated nut for the pin. Formerly the block was held by a pin welded to the forging. The present ones are a great improvement over the welded type because they are built heavier.

If the block should break, it is only necessary to remove the pin to replace the block. No welding is necessary. Blocks are designed to closely fit the tractor drawbar and drawbar pin and thus eliminate unnecessary wear.

Separate blocks are now available for the D4 and the D6 where formerly one size block was used for both. Care should be taken to order the correct block for the corresponding tractor. Existing equipment can be converted to the new type by ordering the universal assembly complete, since individual parts are not interchangeable with the old type.

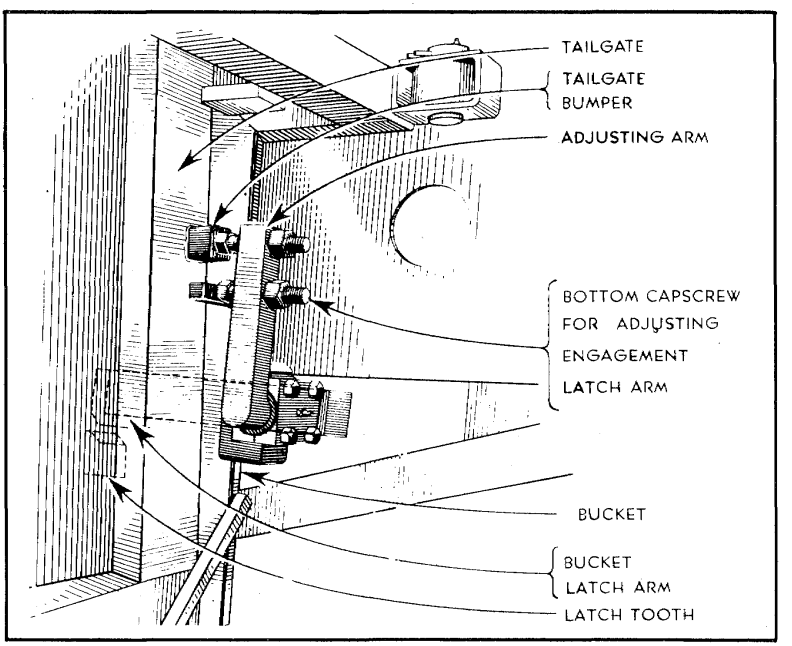
The forging used for the D4 and the D6 assemblies is now the same as used for the D7 assembly.

With the new setup, a D7 drawbar assembly can be converted to a D6 by only changing the hitch block. When converting from a D6 to a D4, it is necessary to merely change the block, pin, and nut. This method does away with the necessity of removing the entire assembly when making a change, to fit other tractor drawbar sizes.



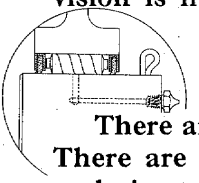
BUCKET LATCH ADJUSTMENTS ON SOME FORMER MODELS

Bucket latches, one on each side of double bucket Carryalls, if adjusted properly, will not unlatch until the latch arm bumpers on the tailgate come in contact with the latch arm release levers. Thus released, the unlatched rear bucket will be drawn back from its telescoped position.



The two latch disengaging bumpers are located one on each side of the rear of the tailgate. They work against the latch arm release lever. Notice the two capscrews with adjusting nuts on these levers. The bottom screw governs the amount of engagement of the latch with the stationary tooth on the outside of the stationary bucket. The two latches are tripped independently of each other by the tailgate bumper. This tripping action can be synchronized by adjusting the top capscrew. On later models, the latches are keyed to the same shaft

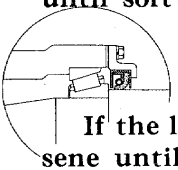
and thereby trip simultaneously; consequently, no provision is necessary for adjustment.



DUST SEALS

There are two dust seals in each roller bearing sheave. There are also two in each roller. The leather on these seals is straight on one side and bevelled on the other. The bevel should be installed so that it faces the side of the sheave entered by the sheave pin. Avoid pushing the pin against the straight side of the leather during installation, because such action will probably injure the leather, thereafter preventing it from doing a good job of keeping out dust.

Any dust seal or oil seal on which the leather has become dry and hard should be soaked in oil or kerosene until soft before installing.



OIL SEALS

If the leather in an oil seal becomes dry, soak in kerosene until soft. Before entering pin or shaft into seal, rub the seal leather with some smooth round surface such as a hammer handle. This will beat the leather seal in place and round off the sharp edge, making possible quick and easy installation of the pin or shaft without danger of injury to the leather.

The visible end of the leather should be facing the compartment in which grease or oil should be held. Seal should be fastened in place with uniform pressure all around to avoid distorting and breaking the back of the seal cage.

CHANGING TIRES ON ALL MODELS EXCEPT CURVED BOWL MODELS

You will encounter comparatively little difficulty changing tires on any Carryall. After raising front wheels as described on page 59, let all the air out, insert a bar in

the groove which is located in the small locking ring. Then, while prying up on the locking ring, use a sledge hammer to drive in the sliding ring which will release locking ring.

After removing both rings, push valve stem into the tire. It is advisable to have round-headed cap on the stem. Then insert bar between tire and inside wheel ring. Pry the tire off the wheel.

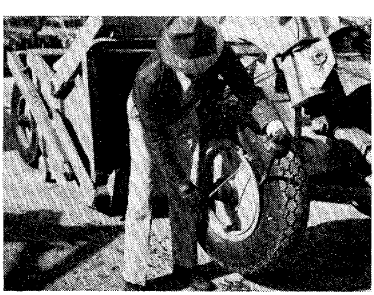
When installing the tire again, be sure not to pinch the tube with the bar. Put only enough air in the tube to hold it in place. Be sure valve stem is in the center of the hole in the wheel before installing sliding and locking rings.

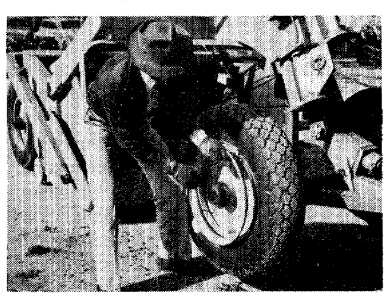
To take the rear tire off, remove lower axle block and then use the same method as shown on page 57 to lift rear wheels. This will lift the rear body structure off the axles, thus allowing the wheels to be rolled away from the Carryall. The removal of the tire from the rear wheel is similar to that of a front tire.

When attaching axle to Scraper again, be sure that bolts which hold the axle block are tight.

CHANGING TIRES — CURVED BOWL MODELS

To remove a tire from the curved bowl Carryall, it is necessary to use either two bars or one bar and a large screwdriver. First, pry the tire four to six inches from the notch in the combination locking and sliding ring. Then insert the bar in the notch prying the ring up and





out. Pry around the locking with either the bar or screwdriver until the ring is free from the wheel. The tire fits loose on the wheel and can easily be removed.

When installing the tire again, before putting the locking ring into place be sure the valve stem is in the center of the hole provided in the wheel. Be very careful in changing the tire that you do not pinch the tube with the bar.

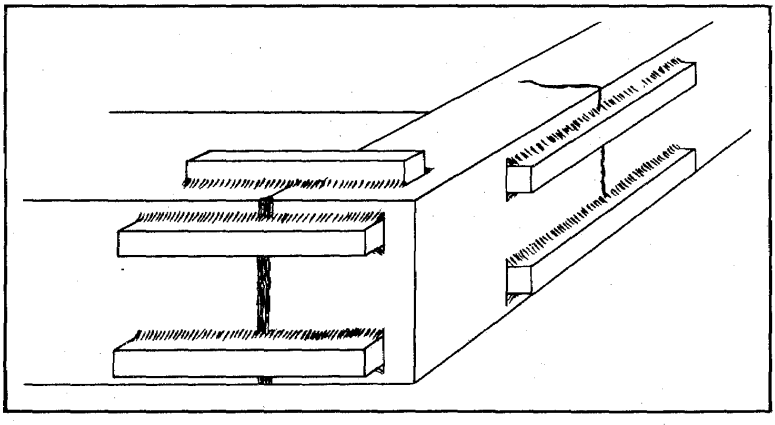
The tire change shown in the two photographs, including dropping bowl and backing tractor to raise the front wheels, requires an average 3 minutes total time.

TIRE PRESSURE RECOMMENDATIONS

TRACTOR DRAWN CARRYALL SCRAPERS – CURRENT MODELS

	FRONT TIRES				REAR TIRES			
Model	No.	Size	Ply	Inflation Lbs.	No.	Size	Ply	Inflation Lbs.
NU	2	24x32	34	55	2	30x40	34	45
RU (1)	2	24x32	24	35	2	24x32	34	65
(2)	4	18x24	20	30	2	24x32	34	65
(3)	4	18x24	20	30	4	18x24	20	50
FU (1)	2	24x32	24	25	2	24x32	24	45
(2)	4	18x24	16	25	2	24x32	24	45
(3)	4	18x24	16	25	4	18x24	16	40
(4)	2	18x24	20	50	4	18x24	16	40
LU (1)	2	18x24	16	40	2	24x32	24	35
(2)	2	18x24	16	40	2	18x24	20	50
(3)	2	14x20	20	65	4	14x20	16	55
N (1)	2	24x32	24	35	2	24x32	34	65
(2)	4	18x24	20	30	2	24x32	34	65
(3)	4	18x24	20	30	4	18x24	20	50
W (1)	2	24x32	24	25	2	24x32	24	45
(2)	4	18x24	16	25	2	24x32	24	45
(3)	4	18x24	16	25	4	18x24	16	40
FP (1)	2	18x24	16	40	4	18x24	16	30
(2)	2	18x24	16	40	2	18x24	20	50
(3)	2	14x20	20	65	4	14x20	16	55
LP (1)	2	18x24	12	30	2	18x24	16	40
(2)	2	18x24	16	30	2	18x24	16	40
(3)	2	14x20	16	55	2	14x20	16	50
LS (1)	2	16x20	16	30	2	16x20	16	45
(2)	2	14x20	16	50	4	14x20	16	30
(3)	2	14x20	12	40	4	14x20	12	30
(4)	2	10x20	12	55	4	10x20	12	55
M	2	10x20	12	55	4	10x20	12	40
G	4	7.50x20	8	35	4	7.50x20	8	50
X (1)	2	8.25x20	10	40	2	8.25x20	10	55
(2)	2	8.25x20	8	40	2	8.25x20	8	45
Z	2	8.25x20	6	35	2	8.25x20	6	35
D (1)	2	8.25x20	10	40	2	8.25x20	10	55
(2)	2	8.25x20	8	40	2	8.25x20	8	45

REINFORCING AND WELDING BREAKS



To properly repair a break in the weld or a crack appearing on a beam, the following method should be used: "V" out the old weld or crack so that it can be rewelded flush with the beam. Then place the reinforcing braces so that they will lie flat against the broken part. Then weld the bars as shown in the illustration leaving both ends of the bar unwelded.

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