

**ATTENTION PLEASE** • Your Troy-Bilt Roto Tiller-Power Composter is a basically simple machine to operate and to handle, but there are certain things that you should know before operating your tiller, and certain precautions that should be followed. For this reason, there are portions of this manual that should be read and understood before attempting to run the tiller. These portions are easily identified by the pages with section numbers in red squares.

Here's All You Need To Know About

# **EASY ASSEMBLY**

## **Of Your New**

## **TROY-BILT®**

### **HORSE MODEL**

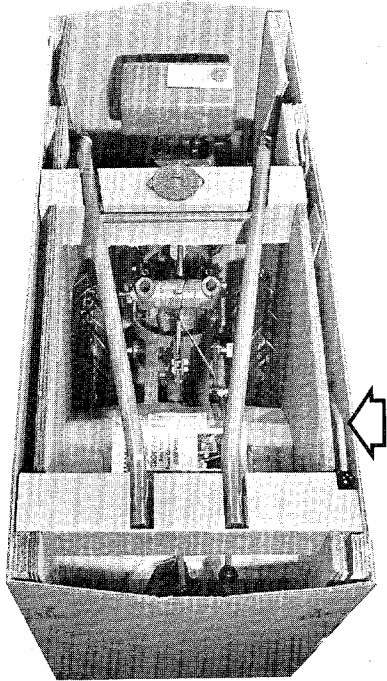
### **ROTO TILLER-POWER COMPOSTER**

**WE RECOMMEND**—That you follow this simple six step check-off list for quick, complete and easy Tiller assembly. Please note the gear oil and motor oil required are shipped to you in the tiller's container.

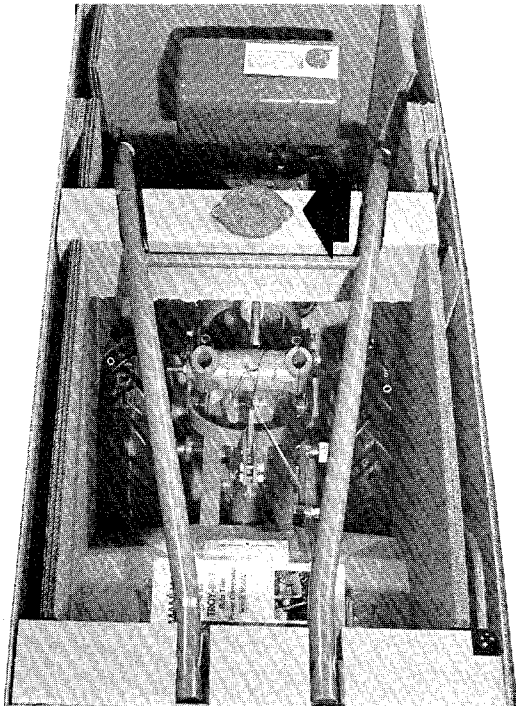
- STEP 1 ☐ Removing Tiller And Attachments  
From Shipping Container**
- STEP 2 ☐ Adding Gear Oil To Transmission**
- STEP 3 ☐ Adding Motor Oil To Engine**
- STEP 4 ☐ Attaching Forward/Reverse Lever**
- STEP 5 ☐ Attaching The Handlebars**
- STEP 6 ☐ Attaching The Throttle Cable**

## STEP 1 ☐ REMOVING FROM SHIPPING CONTAINER

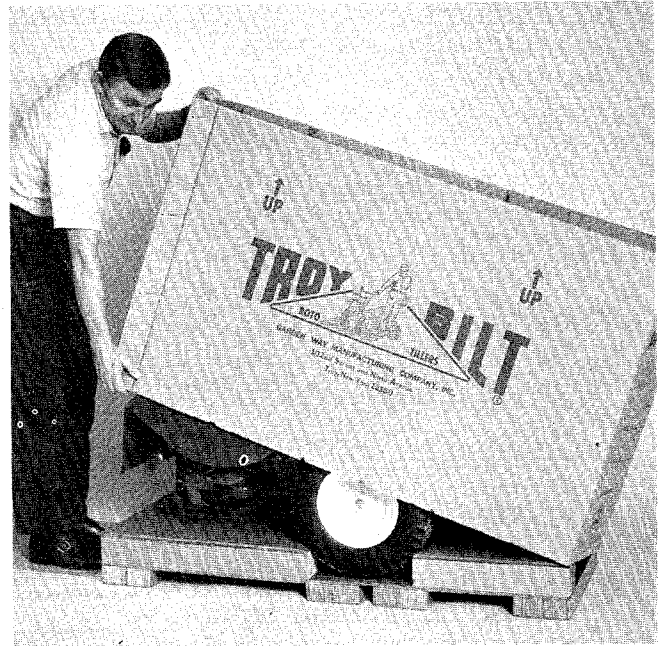
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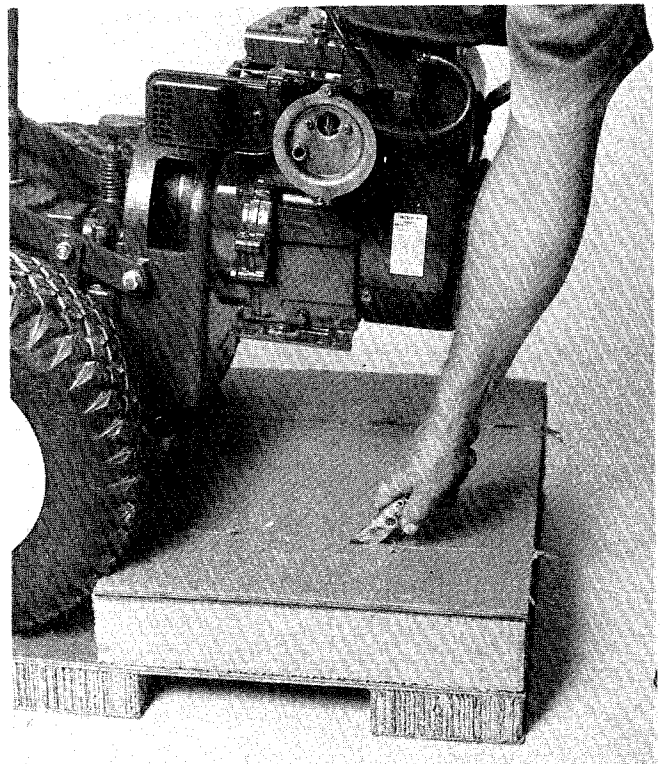
**A.** (Photo 1/1) Remove the handlebars and put them gently aside. Next, remove the Forward/Reverse Lever and its spring taped on. Lever is tucked between the walls of the container (see arrow in photo), or lever is in plain view at top.



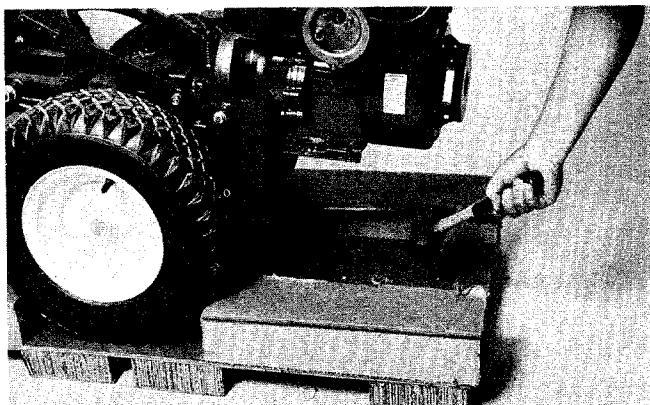
**B.** (Photo 1/2) **For 6 HP Tecumseh-Lauson Engines Only**—Locate and remove the air cleaner for your engine (see arrow in photo) which is protected during shipment by the fiberboard cross-piece. Set the air cleaner aside, for now.



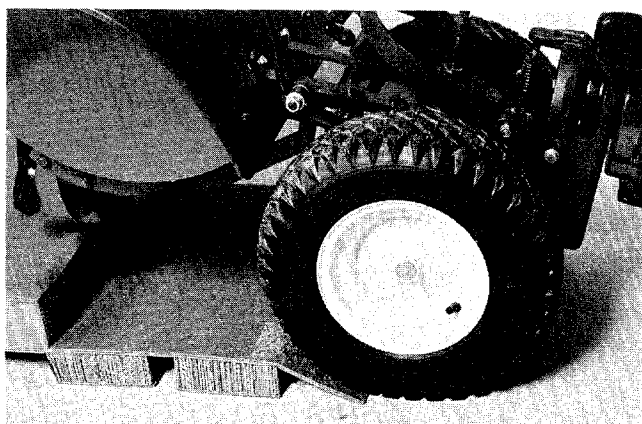
**C.** (Photo 1/3) Now, lift off the sides of the container from the base. **NOTE:** If you also purchased a furrower or a set of pick tines, they would ordinarily be included in the container. Be sure to remove the motor oil and gear oil before lifting off sides.



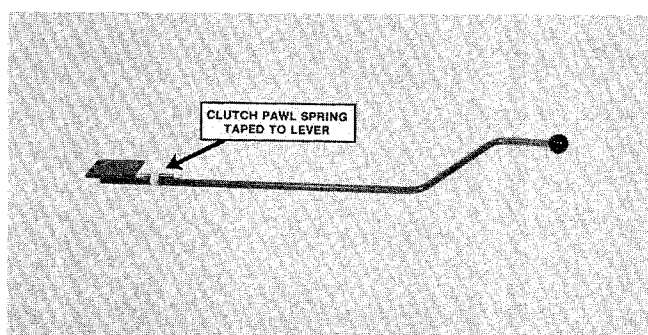
**D.** (Photo 1/3A) Using a knife or similar cutting tool, make two cuts through the carton from a point in front of the inside of each wheel to the edge of the fibreboard base, as shown.



**E.** (Photo 1/3B) Once the top fiberboard is cut and removed, you can hit the remaining portions off with a mallet, as shown.



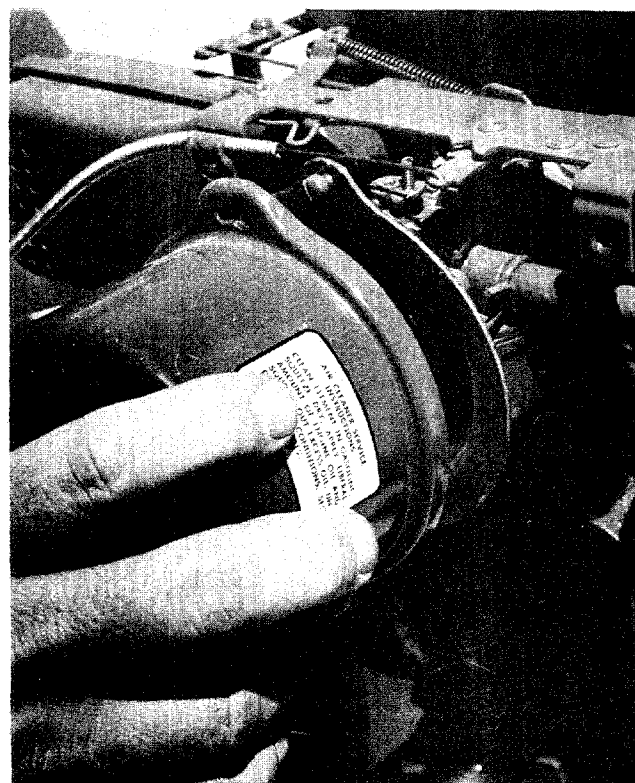
**F.** (Photo 1/3C) Grasp the Depth Regulator handle (the lowest lever in rear, center) and lift and roll the tiller off the container base. If the wheels won't turn, move the Wheel Speed Select Lever (on the right) a short distance to free the wheels.



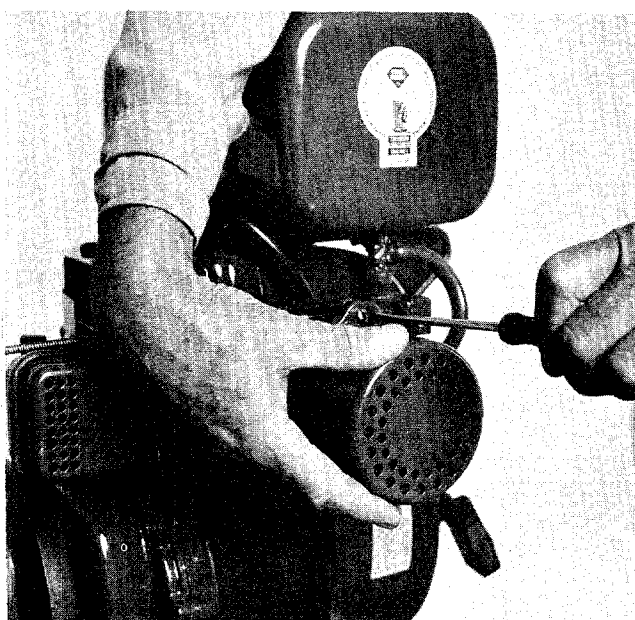
**G.** (Photo 1/4) The Forward/Reverse Lever and its clutch pawl spring are shown above removed from the shipping container. The lever may be tucked between the inner and outer walls of the container—shown by arrow in Photo 1/1.

**H. For 6 HP Tecumseh Engines Only**—To install the sponge air cleaner on your engine:

- (1) loosen screws
- (2) place cover over air cleaner base (see Photo 1/5) and turn cover clockwise so that screws move into narrow slots
- (3) tighten screws to prevent air leaks between the two parts—see Photo 1/5A.

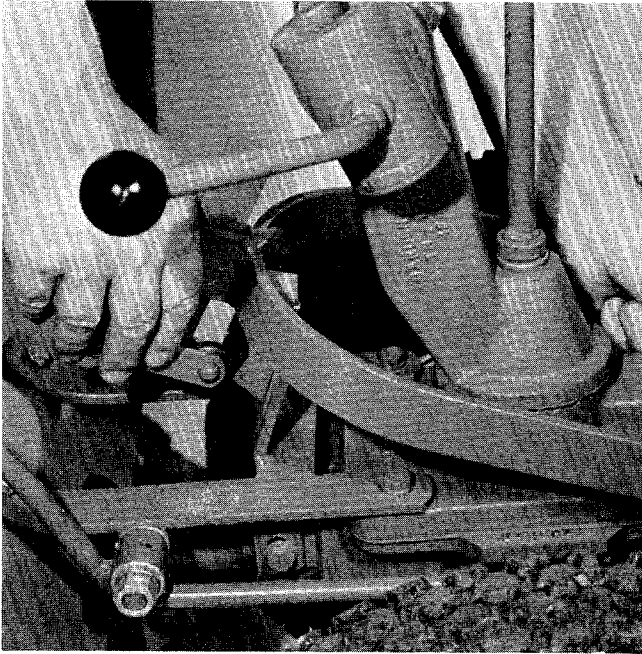


(Photo 1/5) Install air cleaner on base.

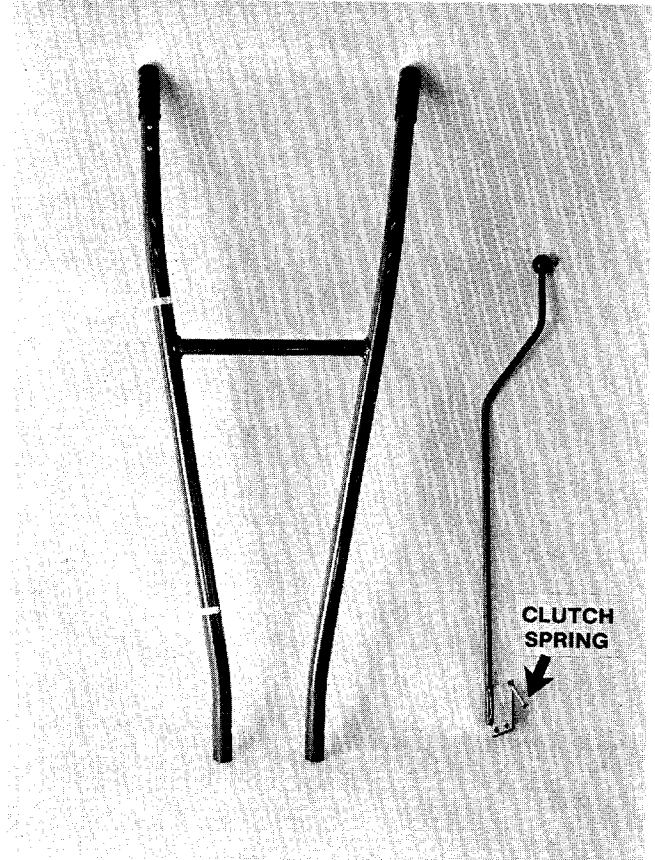


(Photo 1/5A) Tighten air cleaner screws.

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I. (Photo 1/6) Remove the wire holding the yoke. This will free up the yoke.



J. (Photo 1/6A) As the last part of Step 1, look to make sure that everything is removed from the shipping container. Have you removed the handlebars, Forward/Reverse Lever, and its clutch spring (taped to rod)?

## FREIGHT DAMAGE OR MISSING PARTS

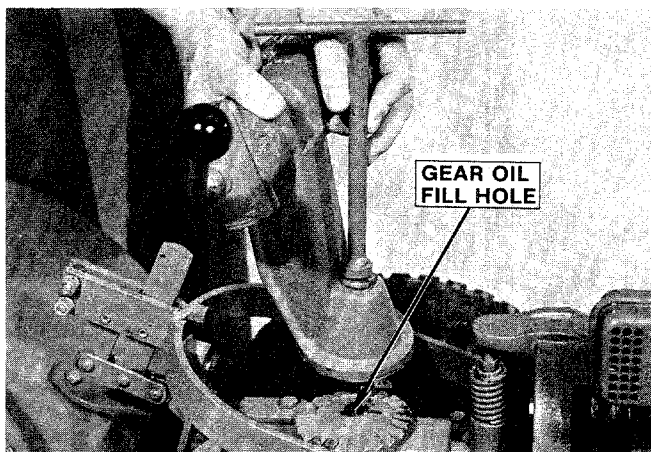
**IF YOU NOTICE ANY DAMAGE**—either at the time of delivery, or later during the assembly process: Within 15 days of delivery, or if possible much sooner, you should notify the freight company in writing of your intention to file a claim. Tell the driver or phone the terminal, but make sure you state your intention to file a claim in writing. They will advise you how to proceed from there so you'll get complete satisfaction with any claim you may have. But, if you have any problem with this procedure,

please let us know so we can lend a hand. You'll also find complete information on exactly what to do in case of damage among the information that was mailed to you earlier with the letter confirming your order.

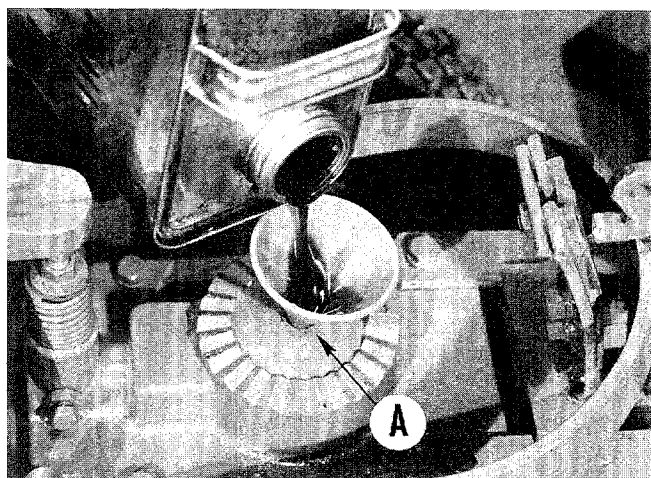
**IF YOU THINK SOMETHING IS MISSING**—notify the freight company just the same as above. But, if you have any questions about anything that we can be helpful with, please call or write to us here at the factory.

### EXPLANATION OF "RIGHT HAND" & "LEFT HAND"

Right Hand or Left Hand are determined by standing in the operator position and facing the direction of forward travel.



(Photo 1/7A) Remove T-bar to fill gear oil.



(Photo 1/7) Remove the T-bar and pour gear oil into transmission through hole at (A) handlebar base. It will take about 6½ pints (that's 3 quarts plus ½ pint). See photo. Use a funnel with a ½" tip to assist you.

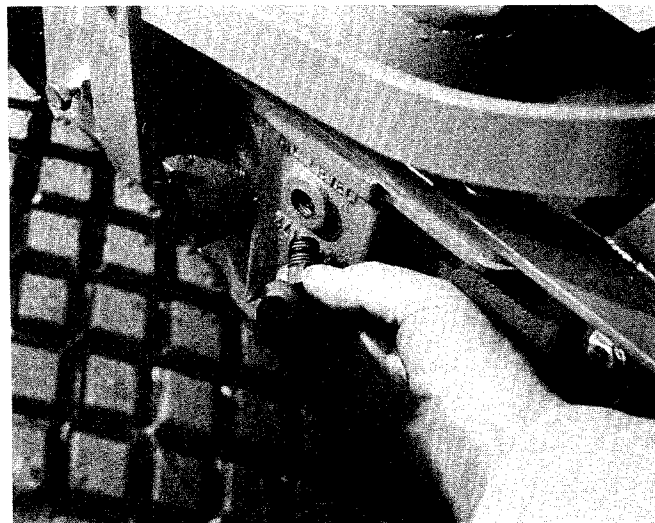
## STEP 2 □

### ADD GEAR OIL TO THE TRANSMISSION

Before using the tiller, the tiller transmission case must be filled with 6½ pints of SAE 140 weight or SAE 90 gear oil. By removing the "T" bar and adding oil through the hole on top of the handlebar base, lubrication is provided for both the wheel drive mechanism and the tiller shaft. Oil flows down the tube from the wheels to the tiller.

**GEAR OIL IS PROVIDED**—All of the gear oil you'll need, plus extra, is included in the shipping container.

If you are tilling (unless it's below freezing temperatures outside), the gear oil does not need to be changed for different air tempera-

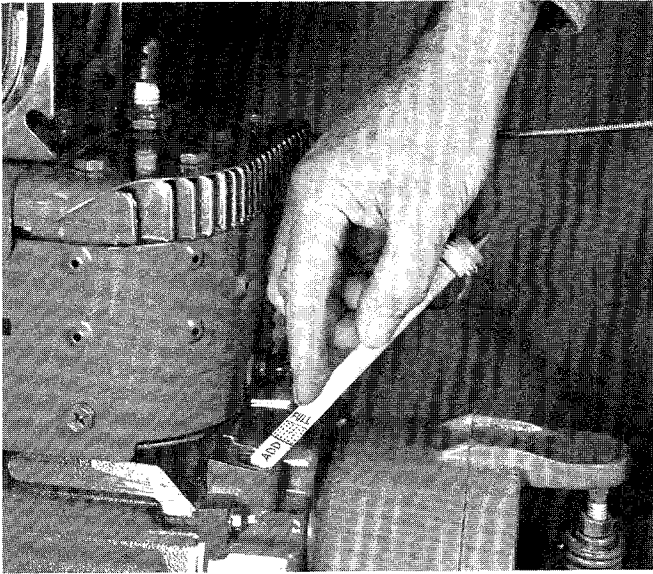


(Photo 1/8) Stop pouring gear oil when it gets to this level. (The oil plug can be found 3 inches above the left wheel.)

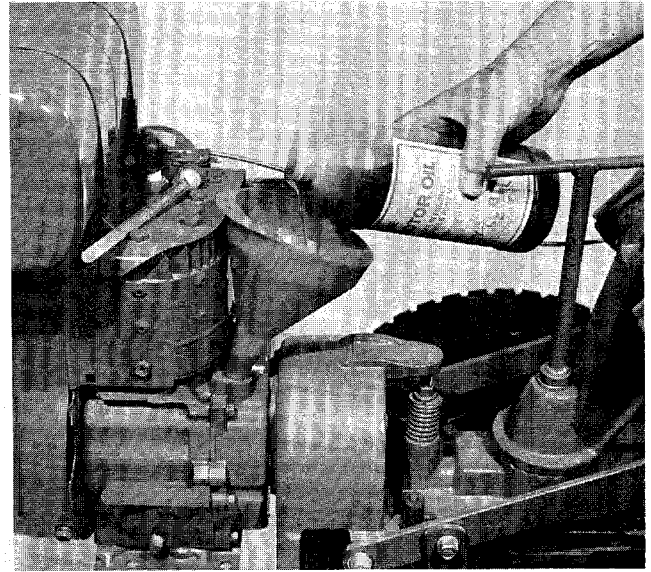
tures or climates. In fact, you don't need to change it at all, unless you note that it has picked up a lot of gritty sand or soil. However, if you use the Dozer/Snow Blade for snow removal, it is best to use the 90 weight gear oil when air temperatures get below freezing.

While putting gear oil in the transmission case, make sure that you have the depth regulator pulled up so the tines rest on the floor. This will allow oil to flow back to the tines. Remove the oil plug shown in Photo 1/8, and *fill the case until gear oil begins to flow out of the gear oil level hole. DON'T OVERFILL.* Stop when the oil flows out—even if you haven't added 6½ pints yet. Use a 3/8" wrench on oil plug.

If you have difficulty finding gear oil at a well stocked automotive service station or supply store, take a clean gallon container to a farm supply store, or a tractor, truck or heavy equipment sales and service garage. You'll likely find some there in drums. They'll sell you the 6½ pints required in your glass, plastic or metal container. Just make sure that the *container is clean!* Use either 90 or 140 weight, whichever you prefer or find easiest to obtain.



(Photo 1/9) The engine on every Troy-Bilt is equipped with a calibrated dipstick.



(Photo 1/10) It's a good idea to use a funnel when pouring oil into engine.

## STEP 3 □

### ADDING MOTOR OIL TO THE ENGINE

Your tiller's engine has different lubrication requirements than the transmission, as described in the previous step. Each engine on a Horse Model Troy-Bilt has a dipstick marked with "Full" and "Add Oil" levels. Please consult the following paragraphs for specific instructions about oil for each make engine.

Use a funnel, as shown in Photo 1/10, to pour a good quality #30, SE classification motor oil into the oil filler hole of the engine—that is the hole from which the dipstick was removed.

Use #30 weight SE rated motor oil in the warm summer weather when tilling. If #30 is not available, 10W-30, or 10W-40 motor oil is acceptable, but make sure you find SE on the top of the can, or on the label. For colder temperatures, consult your engine pamphlet which you received with the tiller.

Any service station of a national petroleum company should have SE classification oil for your engine. Look for SE on the top of the can or on the label. Each engine uses different oil capacities, so please see their instructions and use the dipstick as your guide.

SE classified oil protects your engine best against high operating temperatures. SE oil does have detergents and other additives in it for protection of your engine. So, don't use non-detergent oil!

- It is important to note that the engine and the tiller transmission take different types of oil. So, please don't put the wrong kind of oil in the engine or transmission.

### 6 HP TECUMSEH-LAUSON ENGINE

If yours is a new 6 horsepower tiller, please follow the oil level measuring instructions below. Use #30, SE oil. Owners of used or older Troy-Bilt Tillers should use their dipsticks to determine the proper oil level.

**TO ADD MOTOR OIL**—Move the depth regulator bar down to engage the first notch (with the tines just off the floor), remember to have the tiller on level ground or a level floor. With the depth adjustment bar in the first notch, your 6 horse power engine will be sitting at its normal slope. In this manner, remove the oil dipstick from the engine (unscrew it). Using a funnel, pour the oil into the dipstick hole until the oil level reading reaches the "Full" mark on the dipstick with the dipstick screwed all the way into the hole. It should take about 24½ ounces of oil (SE #30).

## 7 HP KOHLER ENGINE

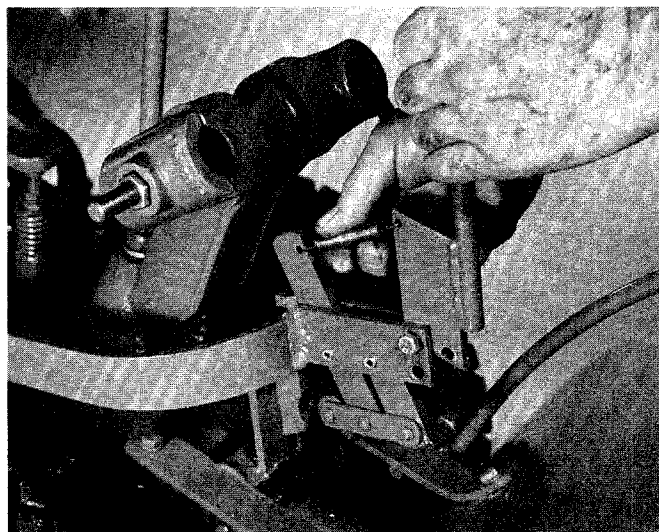
**TO ADD MOTOR OIL**—With a *new* engine, use 2½ pints of #30 weight motor oil which has a service classification of SE. With a wrench, remove the dipstick and fill the oil up to the dipstick's "Full" mark. To measure, put the dipstick in hole while engine base is level and rest threads on top of hole (do not turn threads in). See Photo 4/26. Put a small board under the tines or the tiller's drag bar to level out the engine base.

## STEP 4 □

### ATTACH FORWARD/REVERSE LEVER

The next step is to take the Forward/Reverse Lever and connect the lever to the yoke assembly.

Remove the two bolts in the end of the yoke and insert the plate on the end of the lever in between the two parallel pieces of the yoke—as shown in Photo 1/11. Loosely install one of the bolts as shown—with the plate over the lever not under the lever—and attach the spring at both ends. The spring goes in the two pin holes—one in the roller assembly linkage and one in the plate of the lever. Then, pull the lever down to align the holes and install the second bolt, lockwasher and nut.



(Photo 1/11) *Connect both ends of the clutch spring this easy way.*

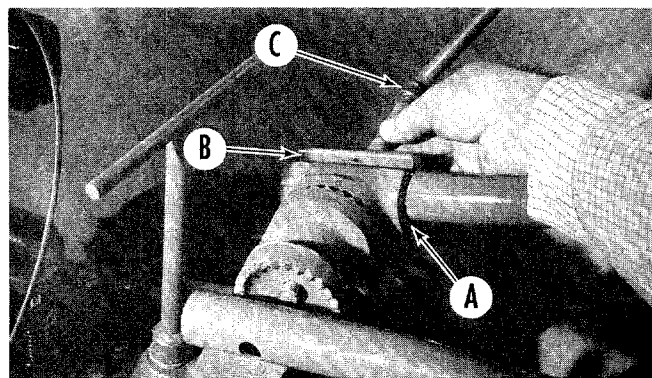
Please use two ½" wrenches to tighten the nuts enough to flatten the lock washers, and securely fasten the lever to the yoke. The lever

should be tight enough so it won't wobble to the left and right. Don't overtighten and break the washer.

## STEP 5 □

### ATTACH THE HANDLEBARS

Even your handlebars can be assembled without the use of any wrenches; the following techniques will simplify the task and avoid scratching the paint. Please refer to **C** in Photo 1/12. Remove the vertical adjustment stud (part #1150) from the handlebar base and the two ratchets (part #1020-1 and #1020-2).

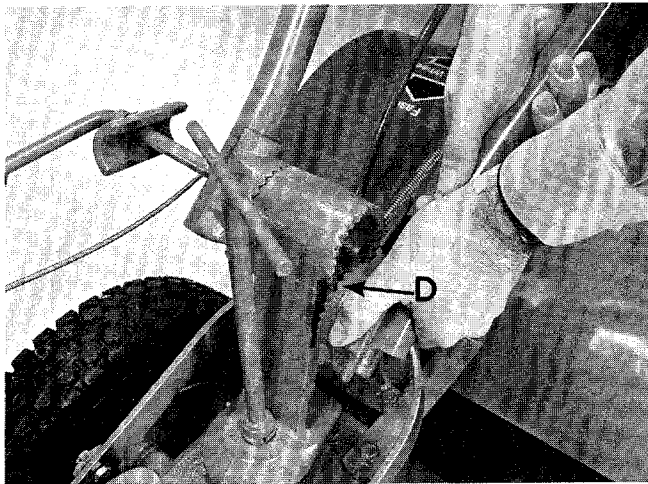


(Photo 1/12) *Start with right side ratchet A, clamp B, and stud C, like this.*

Lay the handlebars on top of the tiller so that the crossbar rests on the Forward/Reverse Lever that you just installed. Next, put the clamp B on the adjustment stud C. Pass the stud through the right handlebar and also put the right hand ratchet A on the stud (between the handlebar and the cast iron mounting base). Then, push the stud through the base as shown in Photos 1/12 and 1/13.

The next step is to get the left inside ratchet in between the other handlebar and the handlebar base. After that, all that remains is to push the handlebar adjustment stud all the way through, then wind it up against the nut on the left outside clamp, as in Photo 1/14. Set your handlebars at a comfortable operating height. Please remember, they will be 3 to 4 inches lower during tilling than now—while the tiller is setting on a solid surface.

When tilling, if you can't find a handlebar height position that is "just right" for you, height adjustments "in between" your present adjustments can be obtained by switching the left and right inside ratchets (right ratchet is shown as **A** in Photo 1/12).



(Photo 1/13) Now force the handlebars apart and install the left inside ratchet, **D**.

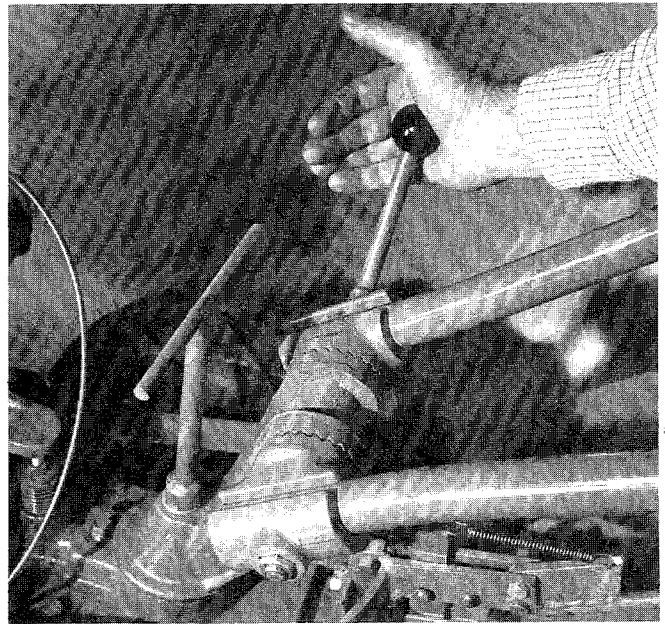
## STEP 6 □

### ATTACH THE THROTTLE CABLE

At the factory, throttle cables have been attached to the engine and checked for proper carburetor controls operation. The cables are wrapped around the engine and merely have to be uncoiled and attached to the top of the handlebar with the two screws—as shown in Photo 1/15. All engines used on Troy-Bilt Tillers come with cables attached in this manner.

Please be careful not to kink the wire when you uncoil it or are attaching it to the tiller handlebar with the two clips already in place on the right handlebar. Pry one clip off the handlebar, lay the throttle cable underneath the small raised portion of the clip and push the clip back into place on the handlebar, as shown in Photo 1/16. Repeat the process with the next clip.

Some people prefer to take a screwdriver and turn the screw (shown as **A** in Photo 1/17) three-quarters of a turn into the threaded hole. This action will bend the copper clad wire, forming a small loop. Just take the end of the screwdriver and push the end inward out of the way of fingers and hands so you won't get scratched by it. This procedure will give you added assurance that the throttle wire won't come out of the set screw—although, if properly



(Photo 1/14) Set handlebars and wind adjustment stud in tight.

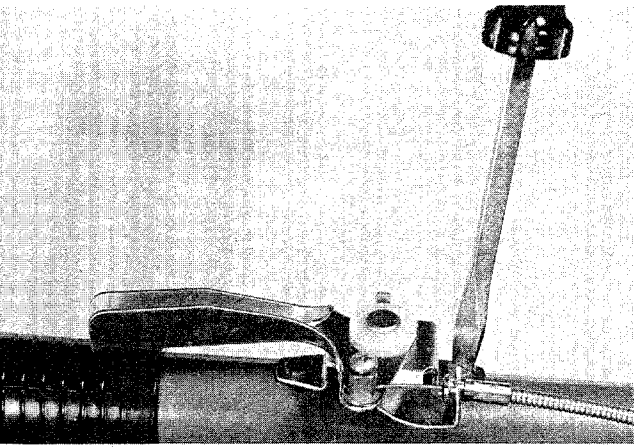
secured, it should hold the wire. If an adjustment is needed to get full choke or engine shut-off, refer to page 108, Photo 7/42.

**With 6 HP recoil start engine,** run the cable down the handlebar and over to the engine (Photo 1/18).

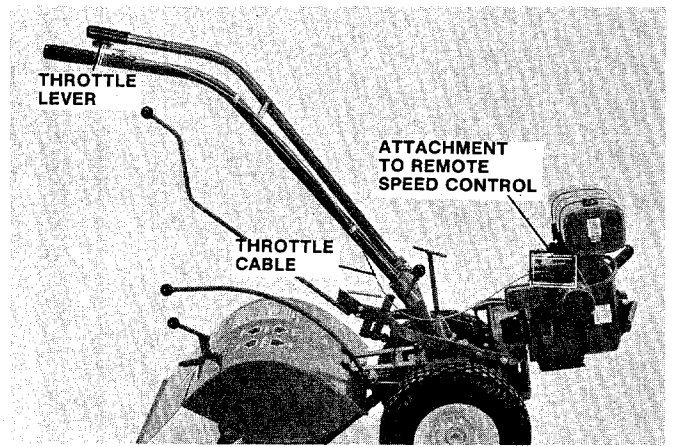
**On 6 HP electric start tillers,** make sure that the throttle cable does not touch any part of the battery or its mount. **DO NOT RUN** throttle cable across top of battery. It could short out battery, causing it damage, and melt the throttle cable. See Photo 1/19.

**With 7 HP engines,** continue the throttle cable down the right handlebar and across over to the throttle bracket on the engine's governor control disc. See Photo 1/20 and note that the throttle cable must dip down between the wheel and outside of the yoke.

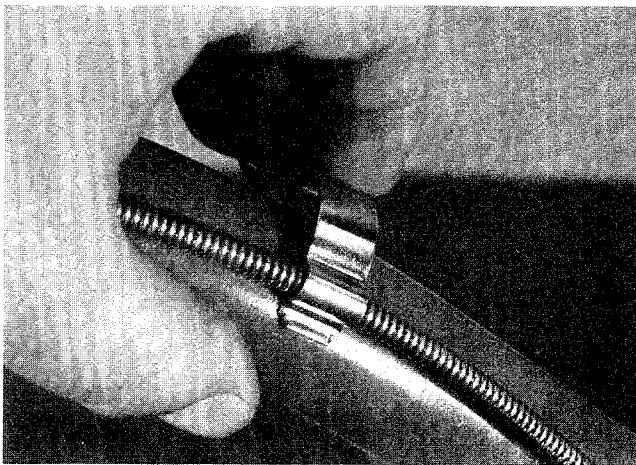
- **On all throttle cable hookups, no matter which engine, there should be a little slack at the bottom of the handlebar** to allow for turning the handlebars to either side without putting stress on the throttle cable at the engine connection.



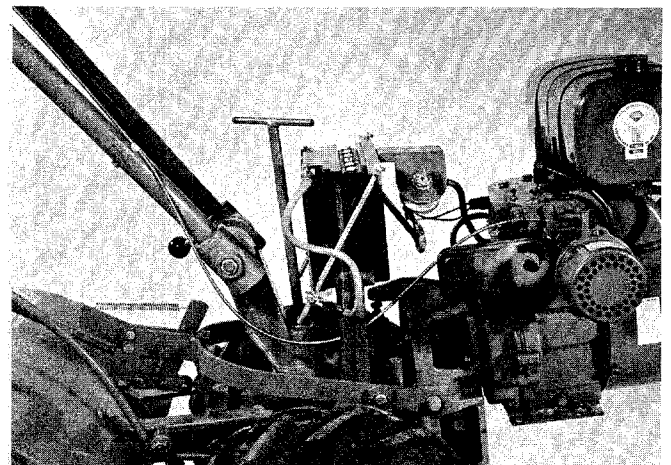
(Photo 1/15) Attaching the throttle control lever.



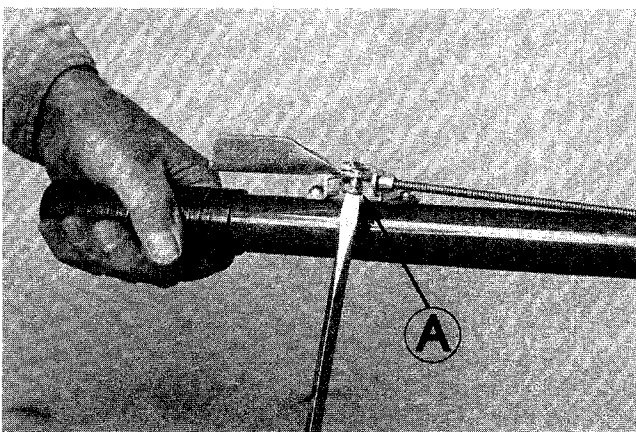
(Photo 1/18) Throttle cable for 6 HP engine runs down the handlebar and crosses over to the engine.



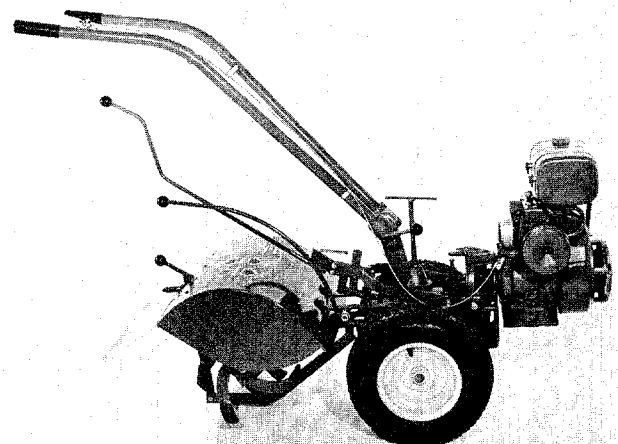
(Photo 1/16) Throttle cable is held in place with two spring clips.



(Photo 1/19) Keep the throttle cable away from battery and behind the right leg of the battery bracket.



(Photo 1/17) Turning screw loops wire



(Photo 1/20) 7 HP engine with throttle cable running outside of the yoke.

# PREPARATION & OPERATION OF THE 6 HP TECUMSEH ELECTRIC START ENGINE

After completing the steps of Easy Assembly you are ready to prepare the electric start system for operation. But first, please read through all of these instructions. Before preparing the battery, be sure to read the safety precautions about battery acid on page 38, Section 3.

**WARNING**—Don't smoke, bring flame, or cause electrical sparks near the battery. It contains explosive gases.

Please do not put water in your battery during these preparation steps. You must add battery grade acid to the battery to make it function. The warning about acid below, (and on your battery) is required to warn people about the battery's use after you have added the acid to it.

## POISON/DANGER CAUSES SEVERE BURNS

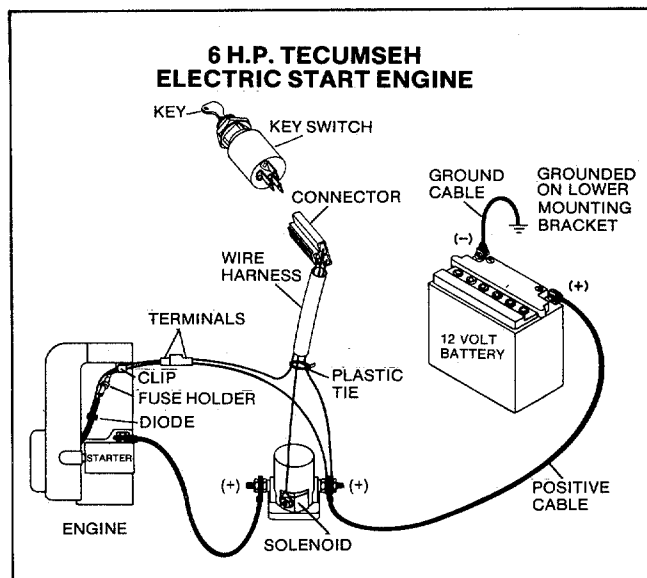
**Your battery contains sulfuric acid—avoid contact with skin, eyes or clothing. Antidote: EXTERNAL** Flush immediately with lots of water. **INTERNAL**—Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately. **Eyes**—Flush with water for 15 minutes and get prompt medical attention.

**Batteries produce explosive gases. Keep sparks, flame, cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries. KEEP OUT OF REACH OF CHILDREN.**

## HOW TO REMOVE A BATTERY

To Take It to a Service Station for Battery Acid, please read the following instructions before proceeding with work:

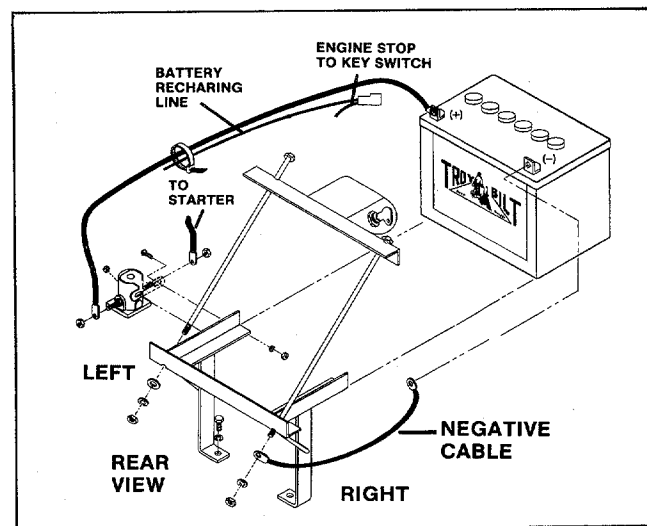
1. Disconnect the positive battery cable at the positive battery post on top of the battery (as shown next to the (+) sign in Sketch 1/21).
2. Disconnect the negative battery cable from the lower end of the 9 inch long battery hold-down bolt. Leave negative cable attached to battery post. The negative cable is the ground cable on the right side of battery. Remove bolt and replace washer and nut on the bolt in sequence for safe keeping. (See Sketches 1/21 & 1/22.)



(Sketch 1/21) Small current recharges battery.

3. Loosen other hold-down bolt enough to move battery clamp (bar) away so that battery can be removed easily.
4. Remove the battery and place it on the floor.
5. Take the battery to a service station and have it filled with battery acid with a specific gravity of 1.265 (sulfuric acid).

- If you are going to fill your own battery at home with battery acid (1¾ quarts required), you might wish to remove your battery from the tiller to avoid spilling acid on the tiller.



(Sketch 1/22) Battery, bracket, cables & solenoid.

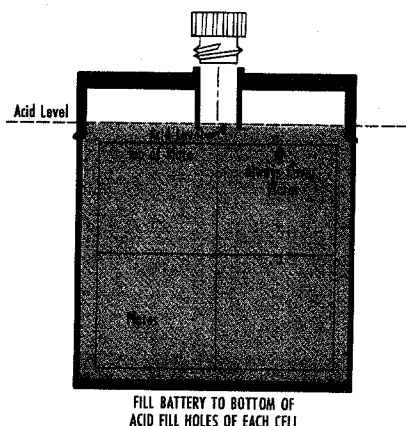
Fill all 6 cells on your 12 volt battery with fresh battery grade acid—sulfuric acid with a specific gravity of 1.265. Fill each cell with battery acid up to the bottom of the acid fill tubes—see Sketch 1/23. Always keep plates covered with acid. Note that the depth regulator of your tiller should be in “travel” position, with the tines off the floor. Wait 20 minutes, recheck the level and add more acid where needed to bring each cell up to the proper level. It will take slightly less than 1¾ quarts (56 ounces).

Don't dilute the acid with distilled water during initial preparation period. **YOU MAY ADD WATER (DISTILLED) LATER ON TO REPLACE WATER THAT HAS “BOILED OFF.”** If acid level is too low or acid is diluted, you won't get full starting power or receive a satisfactory battery recharge. Never add acid to battery after initial filling. It can do more harm than good.

**NOTE:** Almost any large service station or battery supply store has the battery acid needed, and will charge the battery—if it is necessary.

### CAUTION

- If battery is charged or installed in reverse, damage can result to the battery, diode and electrical system.
- Accidental grounding of wires and terminals is the first thing to look for, if you have difficulty. Keep the battery charged at all times. During inactive periods, use your electric start and run the engine for 30 minutes to charge your battery.



(Sketch 1/23) Always keep plates covered with acid. Fill to bottom of acid filler tube.

### HOW TO REPLACE BATTERY

1. Place the battery on the bracket and replace the battery hold-down bolts as described below.

Please make sure that the positive wire goes to the positive battery terminal.

That's why we suggested leaving the positive wire unattached at the top of the battery, and the negative one unattached at the bottom of the battery. If you have done this, you can't make a mistake in reconnecting them.

First, connect the positive cable to the positive battery terminal (marked with a (+) sign on the top). Connect the negative cable last, to avoid short circuits that will damage the battery.

The long bolt on the left uses a plain washer, a lockwasher and nut to secure the clamp. The long bolt on the right uses only a lockwasher and a nut. The right cable connection must be assured proper grounding of the cable through the bracket to the transmission case. Tighten the nuts on both 9 inch bolts until the clamp holds the battery securely in place. **Do not over-tighten these clamps. Avoid distorting or cracking the battery case.**

2. When the positive terminal is re-attached to your battery and the negative terminal is attached to the bracket at the bottom of the battery, you're ready to test your battery electric start system.

### TESTING OPERATION OF YOUR BATTERY ELECTRIC START SYSTEM

- After you've added battery acid and checked the levels of all cells, make sure that:

- ☐ you have read the pages in Section 2, 3, & 4 of this manual identified in red squares.
- ☐ there is motor oil in the engine and gear oil in the tiller transmission.
- ☐ the tiller Forward/Reverse Lever is in the Neutral position.
- ☐ the tiller Wheel Speed Shift Lever is in low gear.
- ☐ the throttle lever on the handlebar is put into the engine shutoff position (for safety).

- Now, you're ready to test the electric start system to see if it will work properly later (when you have put gasoline in the fuel tank). You won't need gasoline for this test.