INSTRUCTIONS FOR USING
AND REPAIRING

HYDRAULIC JACKS

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ART. DEPOSIT
1969

REVISED SEPTEMBER, 1907

WASHINGTON
GOVERNMENT PRINTING OFFICE
1920

WAR DEPARTMENT
Document No. 1025
Office of The Adjutant General

WAR DEPARTMENT,
WASHINGTON, *July 6, 1920.*

The following publication, entitled "Instructions for Using and Repairing Hydraulic Jacks," is published for the information and guidance of all concerned.

[062, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

W. M. WRIGHT,
Brigadier General, Acting Chief of Staff.

OFFICIAL:
P. C. HARRIS,
The Adjutant General.

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LATEST IMPROVED HYDRAULIC JACKS.

BASE JACKS.

INSTRUCTIONS FOR USING.

Fill the jack, when the ram is quite down, through the screw hole in the head, within half an inch of the top, with alcohol, 1 part, and water, 2 parts.

Never fill with water, kerosene, or wood alcohol. Water is dangerous on account of its liability to freeze and to rust the jack when not in use. Kerosene destroys the packings, and wood alcohol both destroys the packings and corrodes the metal surfaces.

Heavy oils and glycerin soften the packings and gum and clog the valve ports.

The screw in the head is not intended to fit tightly, as an air passage is cut in it.

Be careful that no dirt gets into the head in filling.

Occasionally clean it out and refill it, as the fluid becomes thick and the jack will not work well.

Always keep the ram quite down when not in use.

In using, place the head (or, if a ground-lifting jack, the claw or head), under the weight to be raised. Put in the lever with the projection downward. Work it until the weight is at the required height, or the number of inches the jack runs out. Sometimes it happens that another stroke of the lever will raise the weight too high; then raise the lever and push it down slowly, by which a stroke will be missed.

To lower the weight, push the lever to the bottom of the stroke, take it out, turn it with the projection upward, and, with a slight pressure of the hand, the weight will be lowered as slowly as required or stopped at any point.

Do not push the lever down quickly, but slowly, tapping it a little with the hand.

If the valve should stick on its seat (in which case the jack will not work), strike the lever a few sharp blows up and down, jarring the valve and removing the difficulty.

These jacks may be used standing or at any angle, but the head must be a little higher than the foot, so that the pump be always submerged.

These jacks are designed to raise a load of their rated capacity with but one man at the lever, and it is intended that the lever should bend or break when more than 150 pounds are applied.

They should rest fair on the bottom and top in lifting or pressing (especially those which raise more than 10 tons), and should not be lowered rapidly or suddenly checked under a load.

They should be pumped up and run down at least once a week when not in use to keep the packings in good order.

HORIZONTAL OR LOW JACK.

INSTRUCTIONS FOR USING.

Fill the jack through the screw hole in top of reservoir with whisky or alcohol and water, *not wood alcohol*, equal parts, with a tablespoonful of sperm oil, having the ram all the way down; fill the reservoir within 1 inch of the top and replace the screw, which is not intended to fit tight. Never fill them with water or kerosene. Occasionally clean them out and refill them, as the stuff gets thick and the jack will not work well. Always keep the ram quite down when not in use.

Be careful that no dirt gets into the reservoir in filling. Place the head (or, if a ground-lifting jack, the claw or head) under the weight to be raised. Put in the lever, on which there is a projection downward; work it until the weight is at the required height or the number of inches the jack runs out. Sometimes it happens that another stroke of the lever would raise the weight too high; then raise the lever a little and push it down slowly, by which a stroke will be missed. To raise the weight, screw the release valve tight on its seat with the handle provided. To lower, unscrew the same; two full turns are sufficient to lower as fast as required; it can be lowered fast or slow by unscrewing the valve from its seat any distance up to two turns, and can be checked by screwing it back to its seat.

In case of the pump valve sticking on its seat (in which case the jack will not work), strike the lever a few sharp blows up and down with a stick of wood, which will jar the valve and remove the difficulty.

These jacks may be used equally well in a horizontal or upright position.

In using them for any purpose, one man of ordinary strength can apply all the force on the lever that it is designed to stand; and it is intended that the lever should bend or break when more than 150 pounds are applied.

They should rest fair on the bottom or top in pressing, especially those which raise more than 10 tons, and should not be lowered fast or suddenly checked with a heavy weight on them.

INSTRUCTIONS FOR REPAIRING JACKS.

Trouble with hydraulic jacks is most frequently caused by rust or by foreign substances within the jack, and good care is essential in keeping a jack in order. Without this, it is useless to expect it to give satisfaction. Rust and sand or grit will soon injure the valves, packings, and polished surfaces of the cylinder and pump, as these are the vulnerable parts of all hydraulic appliances.

The packings and the valves are very simple, and the following directions will give all the information necessary to keep them in order: If the filling flows over the top of the cylinder or through the cylinder vent, the ram packing leaks. Remove the ram from the cylinder, and, if the packing is only worn, place a strip of very thin tin under it. If it is broken or torn, unscrew the packing rings, put on a new packing, and replace the rings. If the packing is too large, or if the ram does not run down easily, take off a very little from the outside of the packing with a clean file or rasp. Be careful not to take off too much, for a new packing must be reasonably tight, as it will soon wear smooth. Fit a new packing tight enough to require the weight of two men to force down the ram, and if the packing is made too slack it will soon leak. The bottom packing seldom gives trouble and should last for years. If, however, it becomes necessary to renew it, it should be done by driving it from the upper end of the cylinder to the bottom.

If the piston packing becomes worn, unscrew the head, draw out the piston, renew the packings, and file off the edges to fit the pump.

To remove the piston of the horizontal jack, unscrew the cap, turn back the socket until the arm is disengaged, and draw out the piston.

If the valves or valve seat become worn or scratched, unscrew the valve bonnets and regrind the valves with oil and a very little flour of emery. Be careful not to grind the valves too much, and to wash the valves and seat perfectly free from emery before replacing valves.

The piston valve of the horizontal jack is reached by removing the piston, as before described, and the pump valve by unscrewing the pump-valve bonnet in the bottom of the cistern.

If the ram does not rise when pumping, examine the piston valve; if the lever rises when the hand is removed, examine the pump valve. Should the filling leak out around the socket, in the Watson-Stillman jack, tighten the gland a little. If the packing is worn out, unscrew the set screw at the back of the head about a quarter of an inch, then withdraw the socket *not over an inch*, unscrew the gland and put in a new packing of well-oiled braided lamp wick, and put the socket all the way back to the head and screw up the set screw.

Should the filling leak out around the socket in the Dudgeon jack, the socket should be withdrawn and the packing renewed.

Parts of jacks can be supplied at short notice. When ordering, always refer to parts by names given on the sectional cuts of jacks, and state size and style of jack, length of run out, and manufacturer.

Sectional views of jacks are given, showing the construction and the names of all parts.

SPARE PARTS FOR JACKS.

In ordering parts of jacks, always refer to Plates I, II, and III, and use the names given thereon, and state kind, size (10, 15, 20 ton, etc.), length of run out of jack for which the parts are intended, and manufacturer, as Dudgeon or Watson-Stillman.

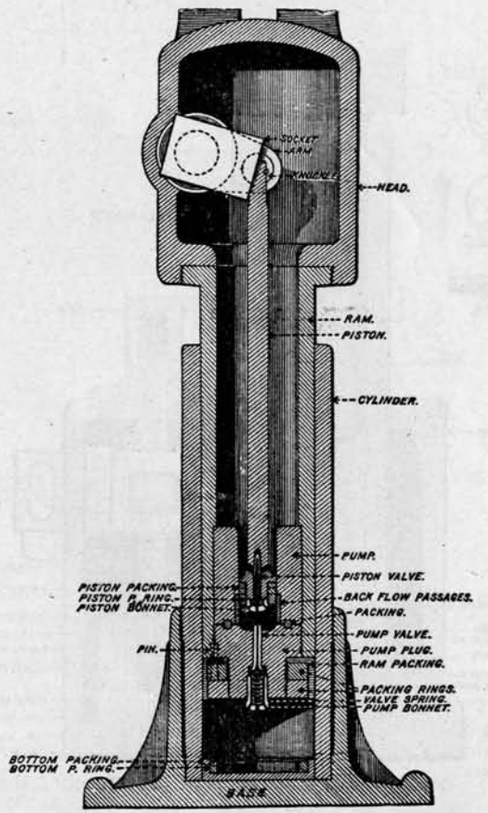


Plate I.—BASE JACK (DUDGEON).

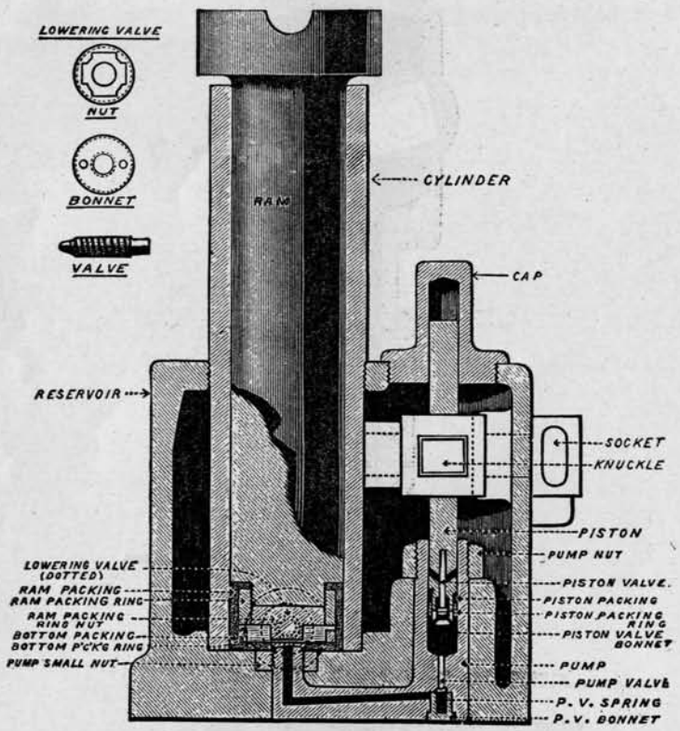
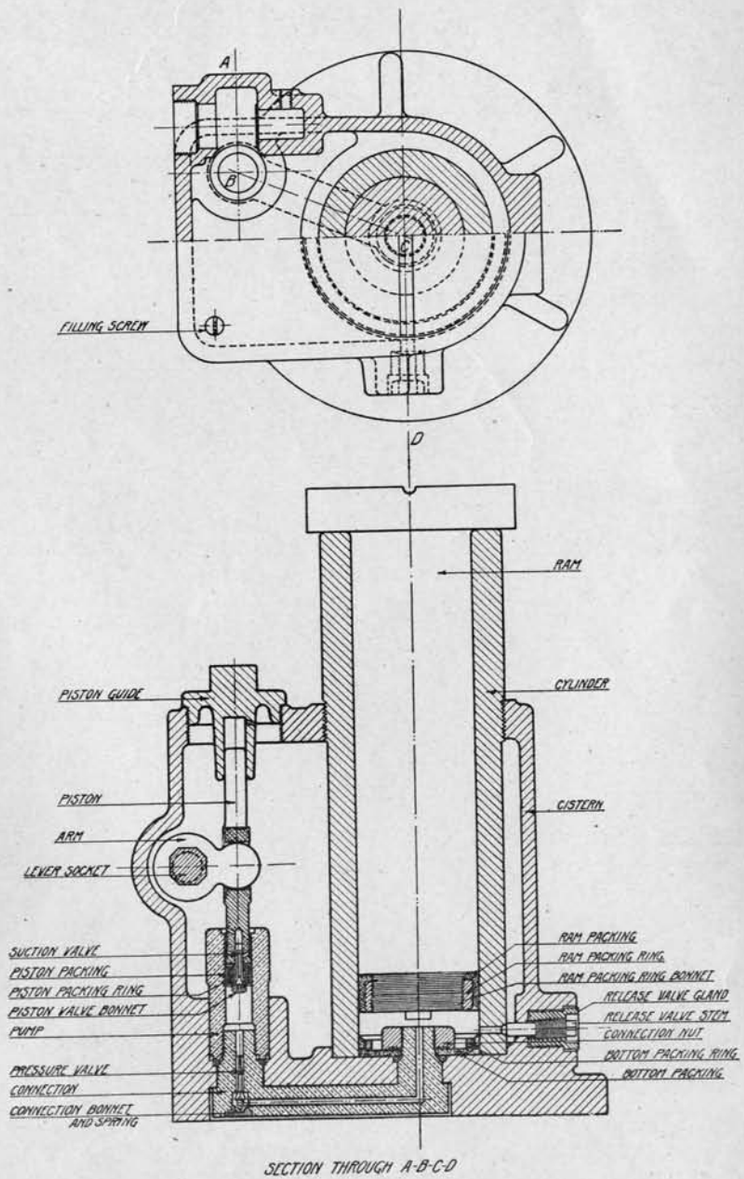


Plate II.—HORIZONTAL JACK (DUDGEON).



SECTION THROUGH A-B-C-D

WATSON-STILLMAN LOW HYDRAULIC JACK

PLATE III.

