July 15, 1941. L. L. FOX 2,249,078

HYDRAULIC BOOMER

Filed Feb. 7, 1941 2 Sheets-Sheet 1

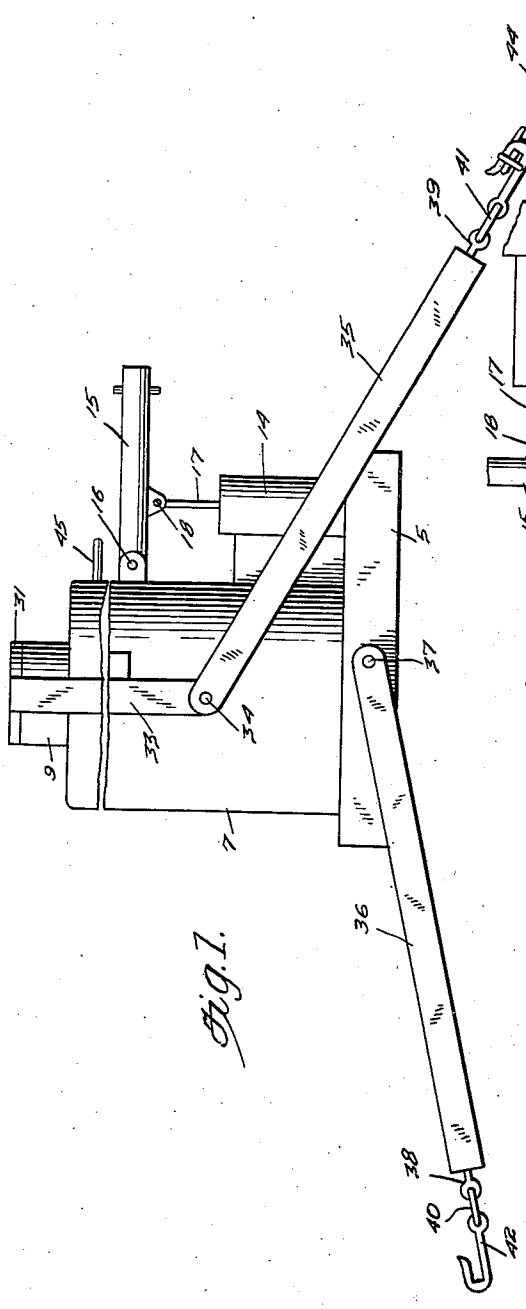


Fig. 1.

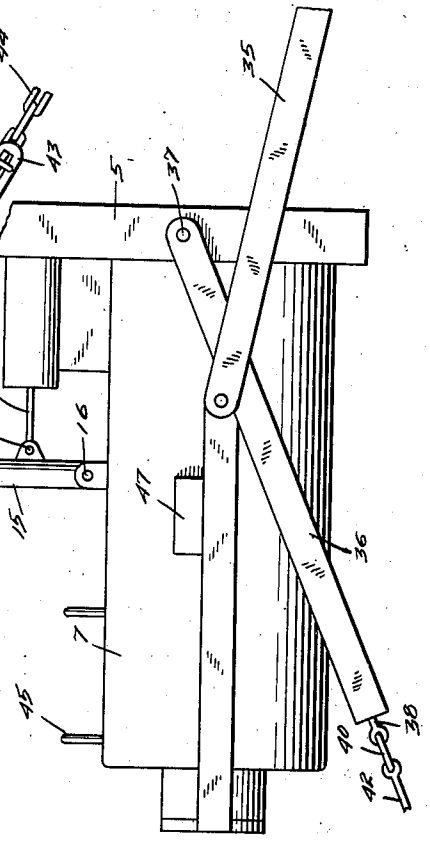


Fig. 2.

Inventor

Leo L. Fox

By Clarence A. O'Brien

Attorney

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HYDRAULIC BOOMER

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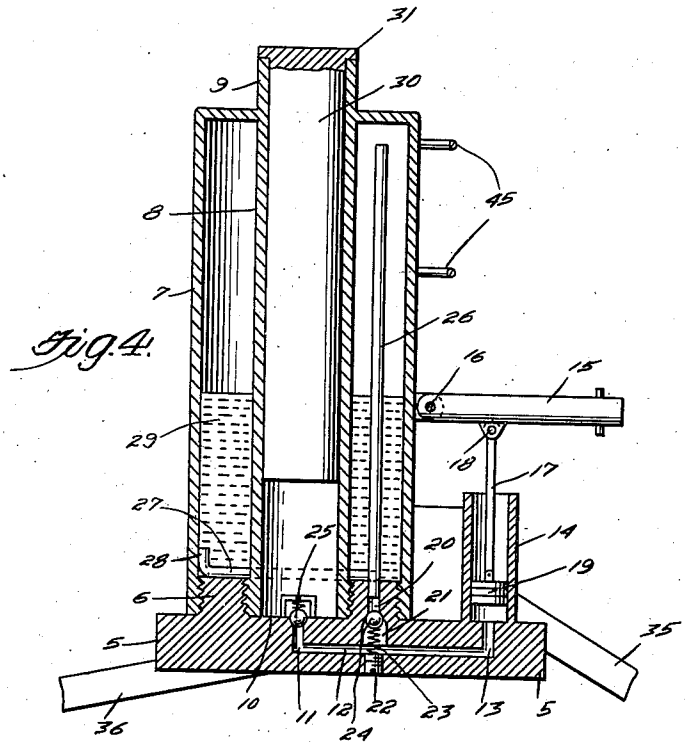


Fig. 4.

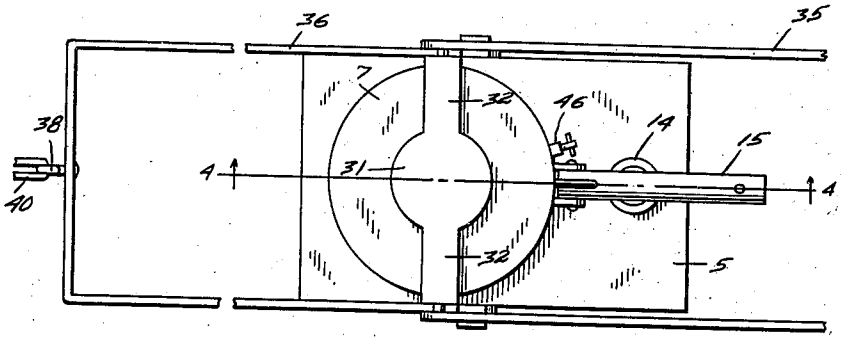


Fig. 3.

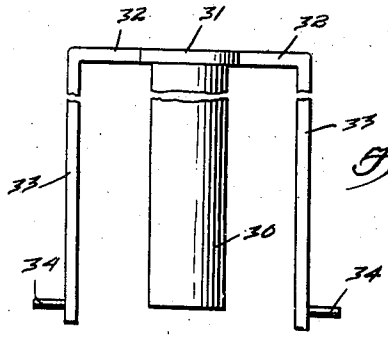


Fig. 5.

Inventor

Leo L. Fox

By Clarence A. O'Brien

Attorney

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UNITED STATES PATENT OFFICE

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HYDRAULIC BOOMER

Leo L. Fox, Houston, Tex., assignor of one-half to Seth L. Harris, Orange, Tex.

Application February 7, 1941, Serial No. 377,939

1 Claim. (Cl. 254—51)

This invention relates to new and useful improvements in boomers and more particularly to a hydraulic device for tightening lines used in various capacities.

The principal object of the present invention is to provide a tightening device of the character stated which will be positive acting and substantially fool-proof in operation.

Another important object of the invention is to provide a tightening device of the character stated wherein the parts are durably constructed and not susceptible to the ready development of defects.

These and other objects and advantages of the invention will become apparent to the reader of the following description.

In the drawings—

Figure 1 represents a side elevational view of the machine, shown in fragment and in preparatory position.

Figure 2 is a fragmentary side elevational view of the device in useful position.

Figure 3 is a fragmentary top plan view of the device in the position shown in Figure 1.

Figure 4 is a fragmentary vertical sectional view taken substantially on the line 4—4 of Figure 3.

Figure 5 is a fragmentary side elevational view of the plunger and connecting frame.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the hydraulic device consists of a base 5 having an externally and internally threaded upstanding annular formation 6 on the top thereof. Over this formation 6 is disposed a shell 7, closed at its upper end and internally threaded at its lower end to screw over the annular formation 6.

A cylinder 8 extends longitudinally in the shell 7 and through the top thereof as at 9 and this cylinder 8 at its lower end is externally threaded to screw into the internal threads of the formation 6.

The annular formation 6 defines a pocket 10 through the bottom of which opens the outwardly extending end portion 11 of a duct 12 which has its upper end extending upwardly as at 13 to open into the lower end of a small cylinder 14 mounted on the base 5 adjacent the large shell 7.

A lever 15 is pivotally secured as at 16 to the shell 7 and has a plunger rod 17 pivotally secured as at 18 to its intermediate portion. This plunger rod extends downwardly into the small cylinder 14 and pivotally connects to a plunger 19 therein.

A duct 20 extends downwardly from the top of the annular formation 6 and communicates with a pocket 21 which, in turn, opens into the duct 12, just oppositely from a plug 22. The plug 22 serves to regulate a compression spring 23 which presses against a ball 24 to the position shown in Figure 4. At the upper end of the end portion 11 of the duct 12 is a check valve 25 which opens in an upward direction in response to pressure.

A tube 26 extends from the short duct 20 and opens and terminates adjacent the upper end of the shell 7 as shown in Figure 4, while a branch tube 27 extends laterally from the tube 26 adjacent the annular formation 6 and extends half around the interior of the shell 7, terminating in a laterally disposed end portion 28. The tubes 26 and 27 are intended to collect liquid 29 from the shell 7 regardless of the position in which the apparatus is mounted.

A plunger 30 is slidably disposed in the cylinder 9 and has a head portion 31 provided with laterally disposed arms 32, 32 from which depend legs 33, 33, each having a trunnion 34 at its lower end portion.

Numeral 35 denotes a clevis of substantially U-shape and this has its leg portions apertured to receive the trunnions 34, 34.

A second clevis 36 of substantially U-shape has its leg portions apertured to receive pins 37 extending laterally from the base 5 and as is shown in Figure 1, these clevises have swivels 38 and 39 connected by links 40 and 41 to hooks 42 and 43, respectively. These hooks 42 and 43, of course, connect to lines or chains 44 that are to be tightened.

In the operation of the device, the plunger 30 can be pumped up to a certain extent and then the entire apparatus is tilted to substantially the position shown in Figure 2 with respect to the clevises. An extension hand bar is attached to the lever 15 and pumping action is now performed. When the plunger 19 is moved inwardly, fluid in the duct 12 is forced past the check valve 25 into the cylinder 8 to act against the plunger 30 while the check valve 24 closes to prevent pressure from entering the shell 7. On the outward stroke of the plunger 19, the valve 25 closes, while the valve 24 opens and admits fluid to refill the duct 12. Suitable hand bails 45 are provided on the side of the shell 7 and a release valve 46 is provided for releasing the fluid 29 from the cylinder 8 back to the shell 7.

A block 47 is provided on its side portion of the shell 7 to act as an abutment and guide for the legs 33, 33.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

A tightening apparatus of the character described comprising a hydraulic device including a projectible plunger, a clevis, connecting means between the clevis and the outer end of the plunger, said device including a body structure and a second clevis pivotally connected to the body structure, said connection between the first-mentioned clevis and the plunger consisting in the provision of laterally disposed arms on the outer end portion of the plunger and leg portions extending from the arms and pivotally connected to the first-mentioned clevis.

LEO L. FOX.