Feb. 6, 1951

C. L. SHOBE

2,540,553

PIPE FITTING TOOL

Filed May 23, 1947

2 Sheets-Sheet 1

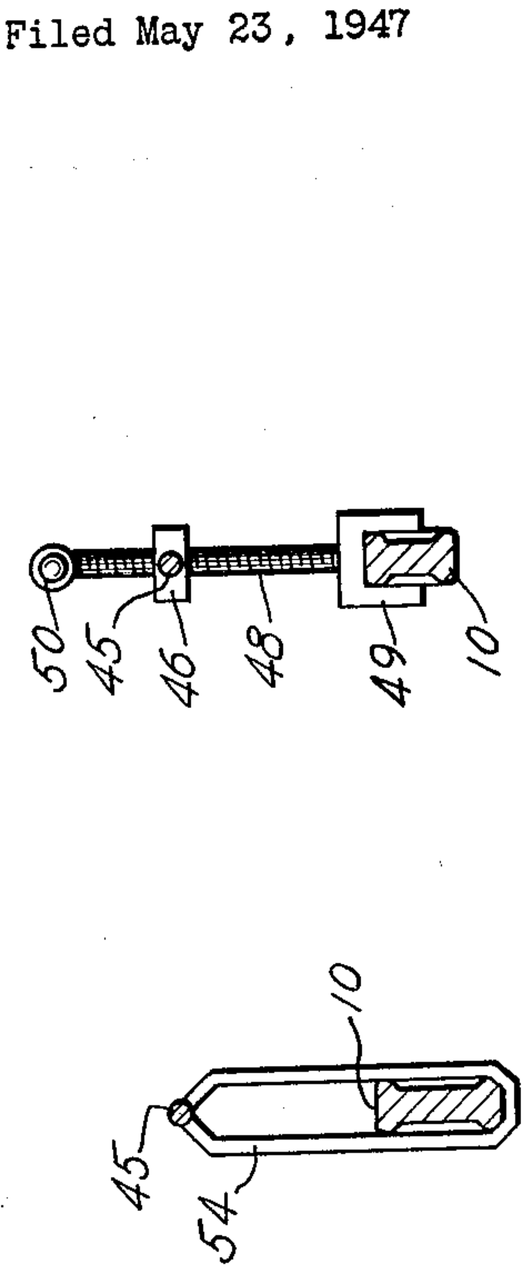

Fig. 4

Fig. 5

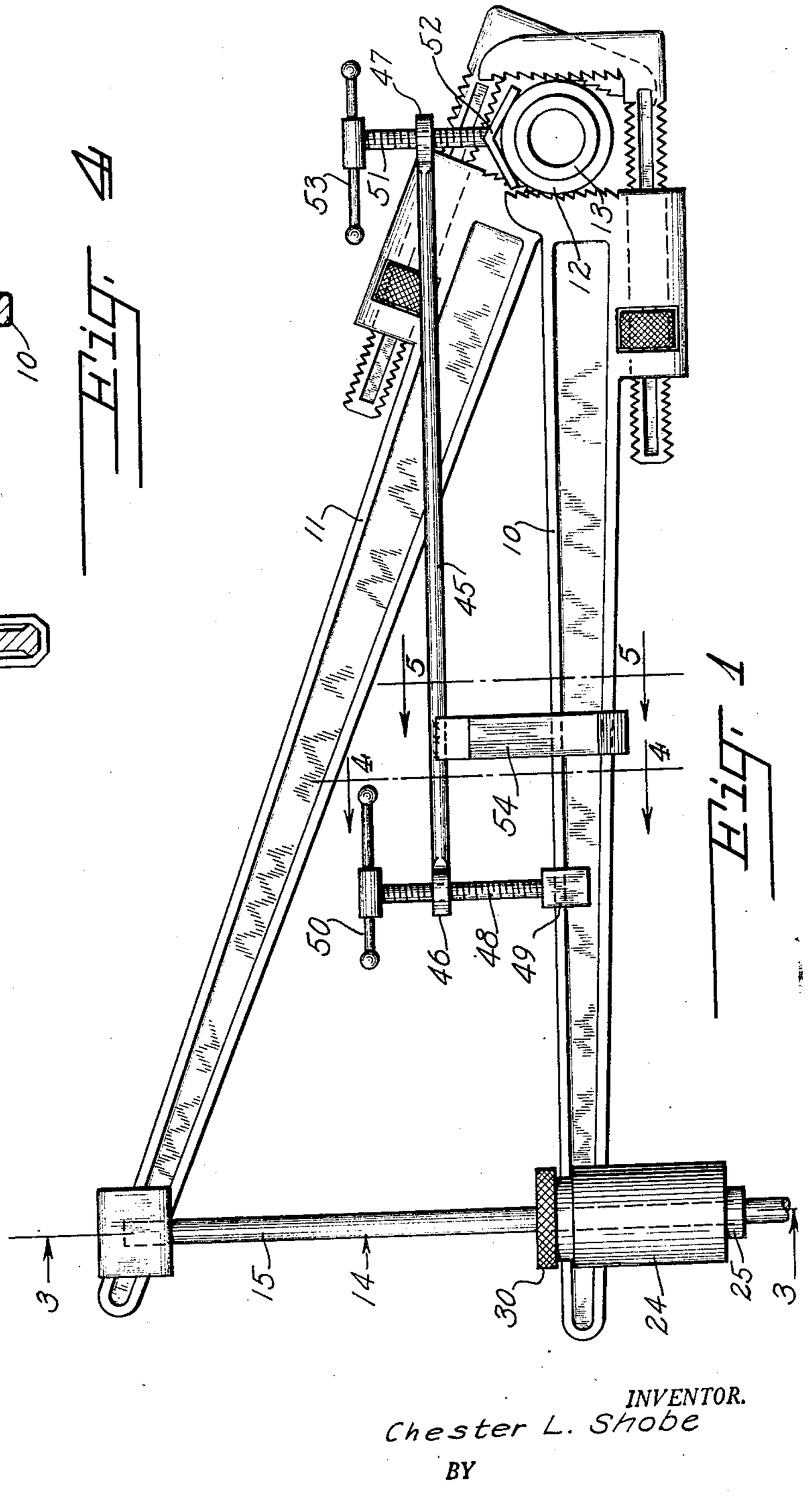

Fig. 1

INVENTOR.
Chester L. Shobe
BY

McMorrow, Berman & Davidson
Attorneys

Feb. 6, 1951

C. L. SHOBE

PIPE FITTING TOOL

2,540,553

Filed May 23, 1947

2 Sheets-Sheet 2

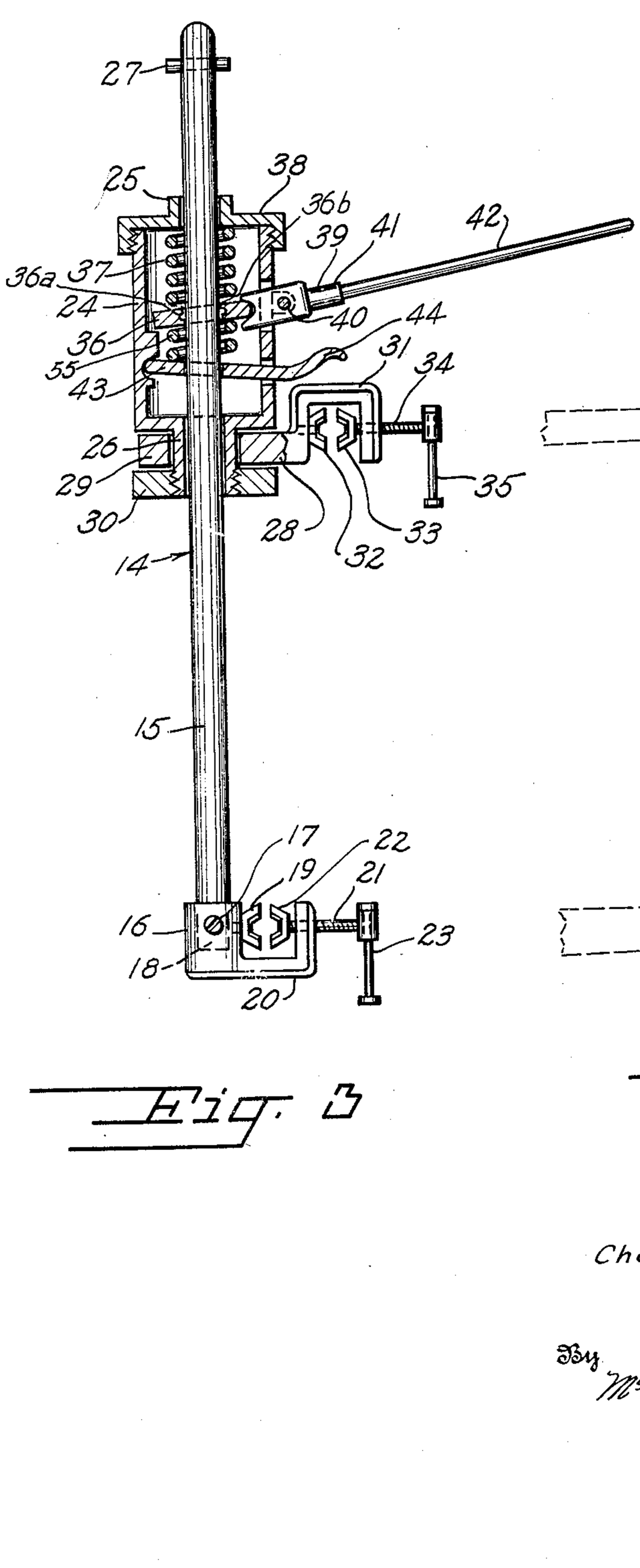

Fig. 3

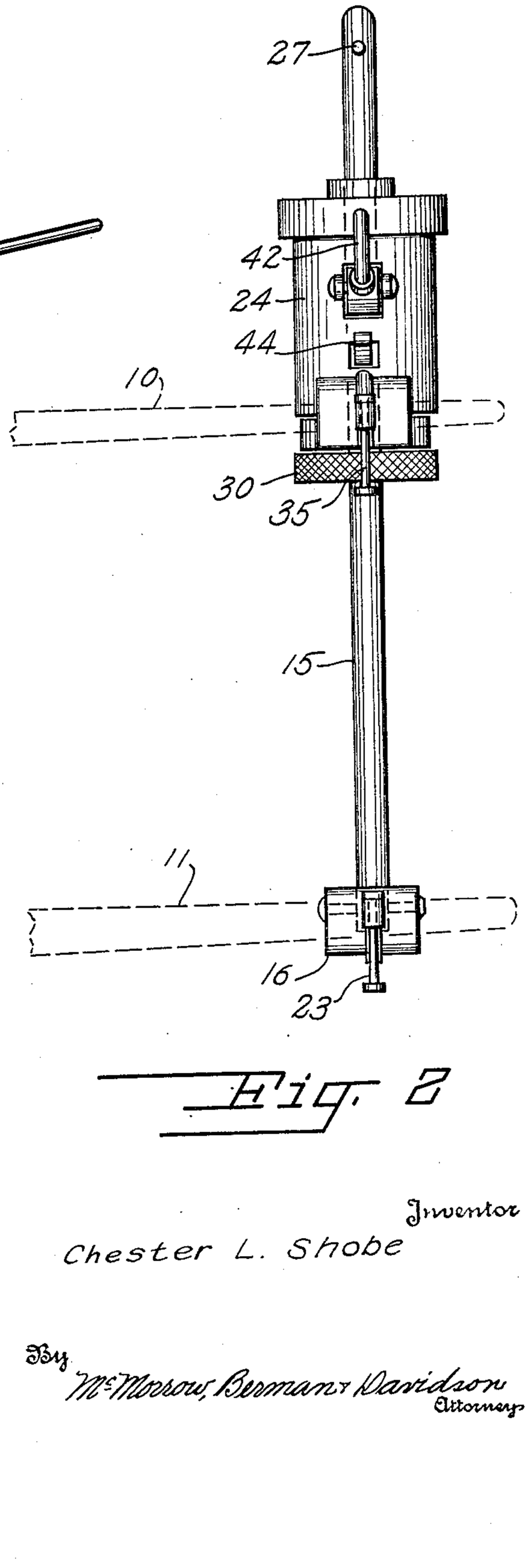

Fig. 2

Inventor

Chester L. Shobe

By McMorrow, Berman & Davidson

Attorneys

Patented Feb. 6, 1951 2,540,553

UNITED STATES PATENT OFFICE

2,540,553

PIPE FITTING TOOL

Chester L. Shobe, Great Bend, Kans.

Application May 23, 1947, Serial No. 750,075

3 Claims. (Cl. 81—53)

1

This invention relates to improvements in pipe fitting tools, and more particularly to improved means for operating pipe wrenches to tighten pipe fittings or to loosen stuck or rusted fittings where heavy pressure on the wrenches is required.

It is among the objects of the invention to provide improved pipe wrench operating means including a simple and effective jack mechanism which can be quickly and easily attached to the handles of oppositely arranged pipe wrenches and operated with a small amount of manual effort to apply a heavy force to relatively rotate the two wrenches in opposite directions, to provide such pipe wrench operating means of simple, durable, and economical construction, and to provide improved means for holding a pipe wrench in operative position on a pipe while the wrench operating means is being connected thereto.

Other objects and advantages will become apparent from a consideration of the following description in conjunction with the accompanying drawings wherein:

Figure 1 is an elevational view of a pair of oppositely arranged pipe wrenches with a wrench-operating-jack and a wrench-retaining clamp illustrative of the invention operatively applied thereto.

Figure 2 is an elevational view of the wrench-operating jack shown in Figure 1, looking at the opposite side of the jack from that shown in Figure 1.

Figure 3 is a longitudinal sectional view of the jack on the line 3—3 of Figure 1.

Figure 4 is a transverse sectional view on the line 4—4 of Figure 1; and

Figure 5 is a transverse sectional view on the line 5—5 of Figure 1.

With continued reference to the drawings, a pair of pipe wrenches 10 and 11 are shown operatively engaged with pipe elements 12 and 13, respectively, and in order to impart relative rotation to these pipe elements for the purpose of tightening or loosening a pipe joint. Relative rotation in either direction can be imparted to the two threadedly united pipe elements by changing the relative position of the two wrenches.

As the two pipe wrenches are conventional wrenches of the Stillson type, a detailed description thereof is not considered necessary for the purposes of the present disclosure.

Where the pipe elements are of large diameter, where a particularly tight joint is required, or

2

where used pipes are being disconnected and the joints are rusted or are otherwise adhered together, very heavy pressure on the wrench handles is required to impart relative rotation to the pipe elements. It is not only extremely fatiguing for a pipe-fitter to have to exert such heavy pressure on the wrenches at frequent intervals during a day's work, but it is frequently extremely inconvenient or even impossible to manually apply the necessary pressure directly to the wrench handles, as the pipe fittings may be in a narrow or restricted space or at such an altitude that they must be reached from a ladder.

The invention provides a simple and easily-attached jack device, generally indicated at 14, for applying the necessary pressure to the wrench handles with a very small amount of manual force and effort.

The improved wrench-operating jack device comprises an elongated, preferably cylindrical, jack shaft 15, preferably formed of hard material such as a suitable alloy steel.

A wrench-handle engaging clamp 16 is secured to one end of the shaft 15 by suitable means such as a through pin or screw 17, extending through the end of the shaft and through a cylindrical sleeve portion 18, of the clamp. A fixed jaw 19 is rotatably mounted on one side of the sleeve portion 18 within an L-shaped integral bracket 20 through which is threaded a screw shaft 21 carrying a movable jaw 22 on the inner end thereof, and provided at its outer end with a cross-pin 23 for manually rotating the shaft. With the jaws sufficiently separated the clamp is positioned so that the end portion of a wrench handle or the handle of any other tool with which the jack is used, lies between the jaws 19 and 22, and the screw shaft is then turned inwardly by the cross-pin 23 to clamp the wrench handle between the jaws in an obvious manner.

A hollow body 24, preferably of cylindrical shape, is slidably mounted upon the shaft 15 by means of apertured end bosses 25 and 26, the openings through which have a close sliding fit with the shaft. Movement of the body 24 outwardly of the shaft may be limited by an abutment comprising a transverse pin 27 extending through the outer end portion of the shaft.

A wrench handle clamp 28 is secured to the inner end portion of the body 24 by having an apertured lug portion 29 thereof rotatably surrounding the boss 26 and secured in operative position against the corresponding end of the hollow body by a nut 30 screw-threaded upon the end of the boss 26. A U-shaped bracket 31

extends outwardly from the lug 29 and includes a fixed jaw 32 rotatably mounted on the inner leg of the bracket and a movable jaw 33 secured on the inner end of a screw shaft 34 threaded through the outer leg portion of the bracket and provided at its other end with a cross-pin 35, by means of which the screw shaft is manually rotated.

The jaws 32 and 33 are operative to clamp a wrench handle between them in the same manner as the jaws 19 and 22 described above.

It will be noted that the jaws 32 and 33 are positioned at a greater distance from the shaft 15 than are the jaws 19 and 22 to compensate for the misalignment of the wrench handles caused by the thickness of the jaw-end portions of the wrenches when the two wrenches are positioned side-by-side.

The hollow body 24 contains a washer 36 frictionally engageable with the shaft 15, and resiliently held in a shaft-engaging position by a coil spring 37 disposed in the hollow body and bearing against the upper removable end-closure member 38. A lever 39 extends through an opening in the wall of the hollow body 24, and is pivotally connected to the body by a pivot pin 40. The inner end of this lever is notched and operatively engages a rounded edge portion of the washer 36 and is provided at its other end with a socket 41 receiving the inner end of a handle 42 by means of which the jack is manually operated. In the position of parts as illustrated in Figure 3, when the handle 42 is forced downwardly, the body 24 and the body-carried wrench-handle clamp 28 will be moved toward the clamp 16.

Washer 36 has a hole 36*a* therewith through which shaft 15 extends. This hole is internally counterbored as indicated at 36*b* so that the diameter of the intermediate portion of the hole is greater than the diameter of the ends. This retards wear of the shaft-gripping edges of the washer and prevents the side of the hole from wearing round so that the washer will slip on the shaft.

The position of the hollow body on the shaft is maintained by a manually-releasable follow-up lever 43 which is provided with an aperture through which the shaft extends and with an outwardly-extending tongue 44, by means of which the lever may be raised to release the jack when desired. This latch-lever 43 is resiliently held in operative position by the spring 55, surrounding shaft 15 between washer 36 and lever 43.

While the jack has been illustrated as applied to the handles of Stillson wrenches, it may be applied to other tools such as open-end wrenches, chain tongs, lazy tongs, etc.

It has been found quite difficult to hold a heavy bottom wrench in proper operative position on a pipe element while the wrench-operating jack 14 is being applied to the wrench handle and while the handle is being moved and the jack adjusted to make another pull on the wrench handle to further loosen or tighten the pipe joint and this difficulty has been overcome by the improved clamp device illustrated in Figures 1, 4, and 5.

This device comprises an elongated bar 45 of resilient material, such as spring steel, having at each end thereof an internally screw-threaded eye, as indicated at 46 and 47. A screw shaft 48 is threaded through the eye 46, and positioned substantially perpendicular to the bar 45. A wrench-handle-engaging abutment 49 is rotatably secured to one end of the screw shaft, and

the upper end of the screw shaft is provided with a cross-pin 50 by means of which the shaft may be manually rotated.

A screw shaft 51 is threaded through the eye 47 and is provided at its end corresponding to the end of the screw shaft 48, to which the abutment 49 is attached, with an angular pressure plate 52 adapted to bear upon a pipe element between the jaws of a pipe wrench engaging the element. A cross-pin 53 is provided at the upper end of screw shaft 51 for manually imparting rotation to the screw shaft.

A wrench-handle-receiving loop 54 is secured to the rod or bar 45 intermediate its length and is positioned between the abutment 49 and the pressure plate 52 in position to receive the handle of the wrench to which the device is applied.

When the loop 54 is placed over the handle of a wrench and one or both of the screw shafts 48 and 51 are screwed down, the wrench will be firmly held in operative position on the pipe element as is clearly illustrated in Figure 1.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. A pipe wrench operating device for relatively moving the handles of a pair of oppositely arranged pipe wrenches, comprising a shaft arranged transversely of and between the pair of said handles inwardly of and spaced from the free ends thereof, embracing means projecting transversely of said shaft adjacent one end thereof for receiving one of said handles, a hollow closed cylindrical body arranged longitudinally of and surrounding said shaft adjacent the other end of the latter and mounted on said shaft for rotation therearound and for sliding movement toward and away from said one end of said shaft, a second embracing means positioned exteriorly of and adjacent to one end of said body and rotatably carried by said body for receiving the other of said handles, a washer positioned within said body loosely circumposed about said shaft and normally frictionally engageable with said shaft, spring means operatively connected to said washer for holding said washer in frictional engagement with said shaft, and hand actuable means exteriorly of and connected to said body for rocking up and down movement about an axis transverse of said body and having one end engageable with said washer for effecting the sliding movement of said body toward said one end of said shaft.

2. A pipe wrench operating device for relatively moving the handles of a pair of oppositely arranged pipe wrenches, comprising a shaft arranged transversely of and between the pair of said handles inwardly of and spaced from the free ends thereof, embracing means projecting transversely of said shaft adjacent one end thereof for receiving one of said handles, a hollow closed cylindrical body arranged longitudinally of and surrounding said shaft adjacent the other end of the latter and mounted on said shaft for rotation therearound and for sliding movement

toward and away from said one end of said shaft, a second embracing means positioned exteriorly of and adjacent to one end of said body and rotatably carried by said body for receiving the other of said handles, a washer positioned within said body loosely circumposed about said shaft and normally frictionally engageable with said shaft, spring means operatively connected to said washer for holding said washer in frictional engagement with said shaft, hand actuable means exteriorly of and connected to said body for rocking up and down movement about an axis transverse of said body and having one end engageable with said washer for effecting the sliding movement of said body toward said one end of said shaft, and a latch lever circumposed about said shaft and spaced from said washer and frictionally engageable with said shaft and said body for holding said body in any select position of movement toward said one end of said shaft.

3. A pipe wrench operating device for relatively moving the handles of a pair of oppositely arranged pipe wrenches, comprising a shaft arranged transversely of and between the pair of said handles inwardly of and spaced from the free ends thereof, embracing means projecting transversely of said shaft adjacent one end thereof for receiving one of said handles, a hollow closed cylindrical body arranged longitudinally of and surrounding said shaft adjacent the other end of the latter and mounted on said shaft for rotation therearound and for sliding movement toward and away from said one end of said shaft, a second embracing means positioned exteriorly of and adjacent to one end of said body and rotatably carried by said body for receiving the other of said handles, a washer positioned within

said body loosely circumposed about said shaft and normally frictionally engageable with said shaft, spring means operatively connected to said washer for holding said washer in frictional engagement with said shaft, hand actuable means exteriorly of and connected to said body for rocking up and down movement about an axis transverse of said body and having one end engageable with said washer for effecting the sliding movement of said body toward said one end of said shaft, a latch lever circumposed about said shaft and spaced from said washer and frictionally engageable with said shaft and said body for holding said body in any select position of movement toward said one end of said shaft, and a second spring means operatively connected to said latch lever for urging same into frictional engagement with said shaft.

CHESTER L. SHOBE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
378,299	Finch	Feb. 21, 1888
443,312	Bode	Dec. 23, 1890
452,237	Robinson	May 12, 1891
794,945	Miller	July 18, 1905
821,565	Wilson	May 22, 1906
868,431	Groth	Oct. 15, 1907
1,254,572	Brown	Jan. 22, 1918
1,634,602	Wilson	July 5, 1927
1,739,488	Thayer	Dec. 10, 1929
2,174,489	Groves	Sept. 26, 1939
2,262,429	Lucker	Nov. 11, 1941