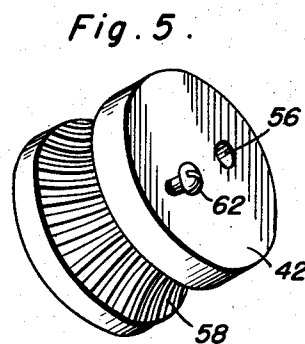
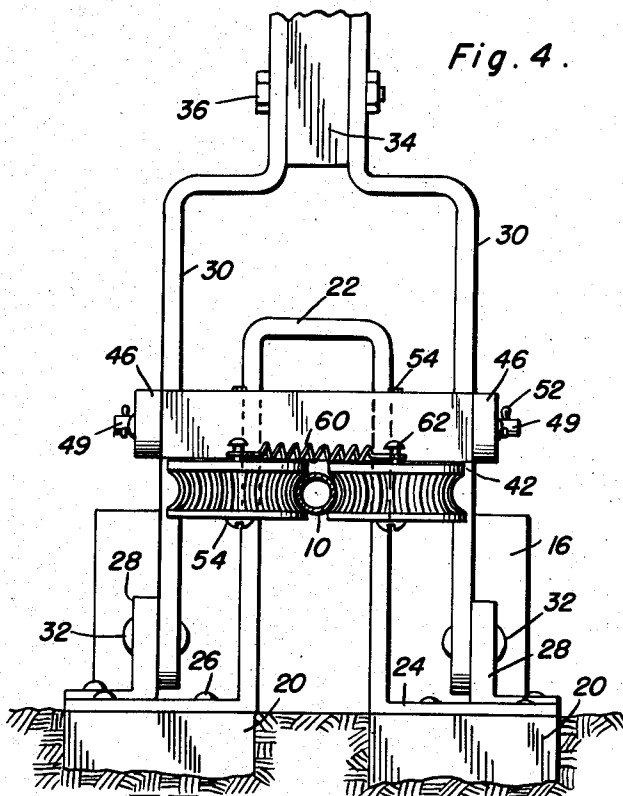
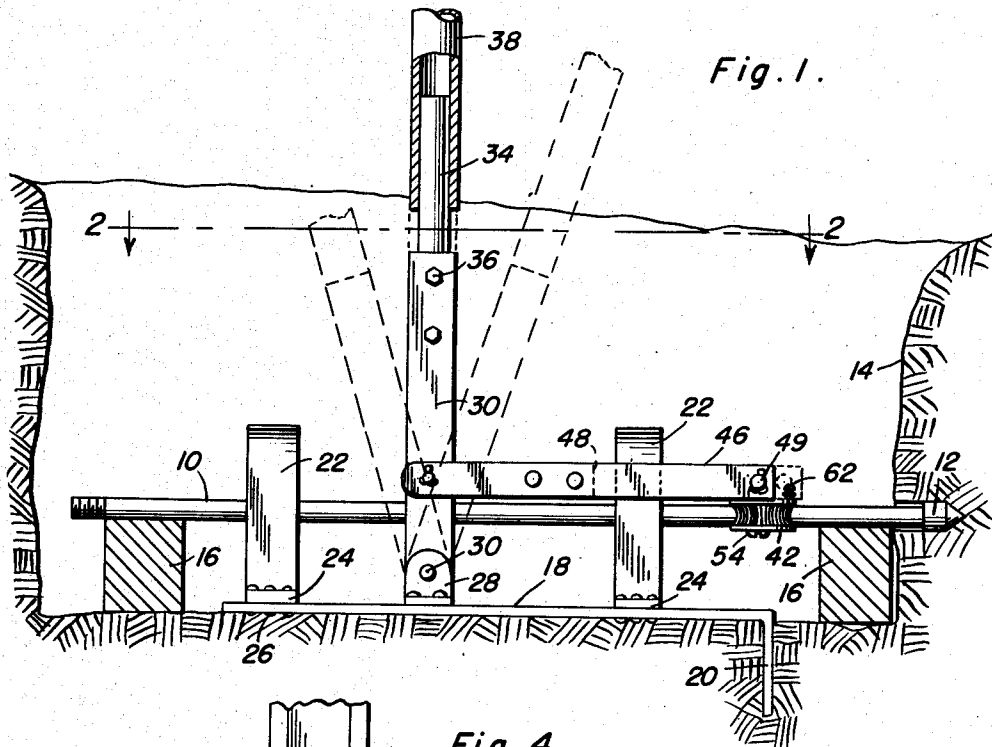


2,519,680

2 Sheets-Sheet 1



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Aug. 22, 1950

O. MACUMBER
PUSHING MACHINE

2,519,680

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2 Sheets-Sheet 2

Fig. 2.

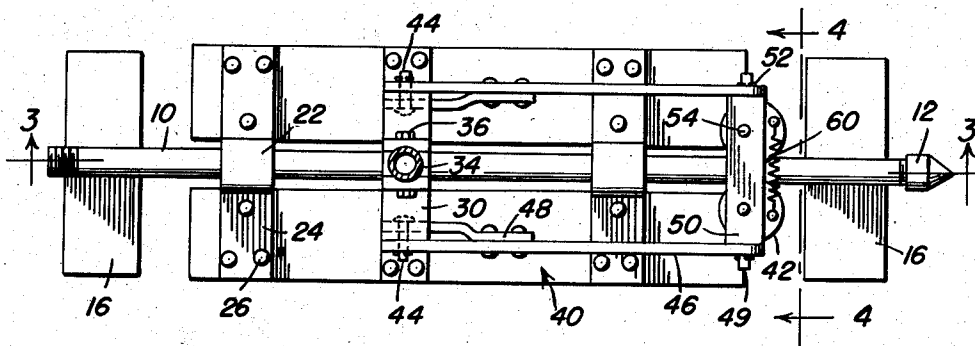
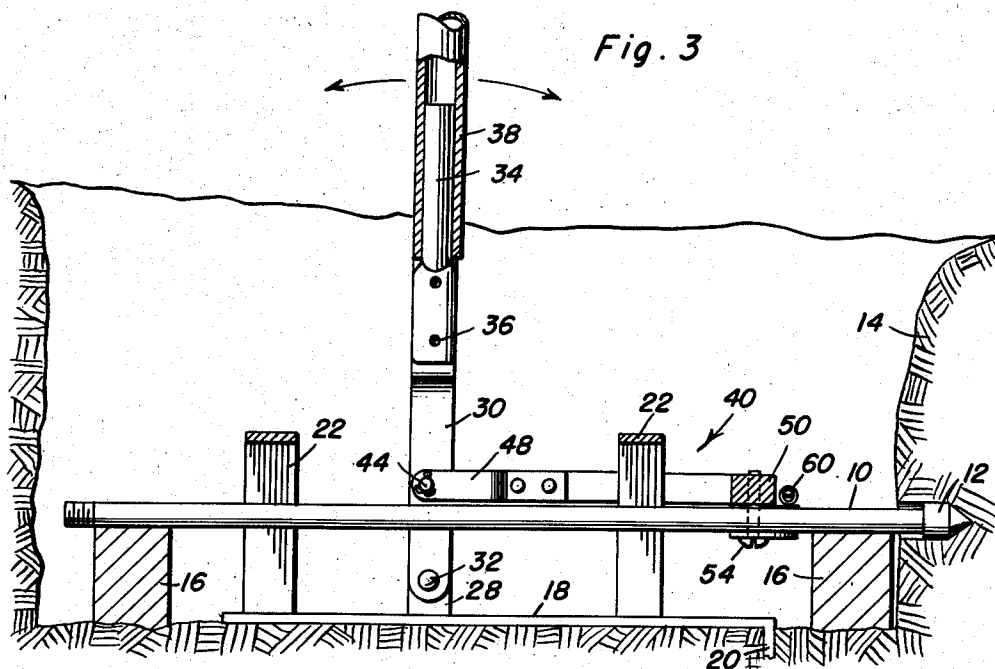


Fig. 3



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UNITED STATES PATENT OFFICE

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PUSHING MACHINE

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Application March 9, 1948, Serial No. 13,750

4 Claims. (Cl. 254—29)

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This invention relates generally to pipe jacks, and more particularly to a pipe pushing machine comprising an elongated frame having a ground anchor and lever actuated jaws adapted to engage the pipe and force the same into the ground.

A primary object of this invention is to provide a pipe pushing machine which is very light in weight and therefore easily transported from place to place.

Another object of this invention is to provide a machine of this character which is automatically adjustable for use with different sized pipes.

Another object of this invention is to provide a pipe pushing machine having a divided frame allowing the machine to be inserted onto and removed from pipes in situ or partially inserted into the ground, this feature allowing the machine to be lifted from the pipe and reversed and immediately employed for withdrawing the pipe, as when withdrawing old pipes for replacement and when withdrawing pipes which have encountered an obstruction in the ground and cannot be driven further.

And a last object to be mentioned specifically is to provide a device of the character mentioned above which is relatively inexpensive and practicable to manufacture, which is extremely simple and convenient as well as safe to use, and which will give generally efficient and durable service.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangement of elements and portions as will be hereinafter described in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings which form a material part of this application, and in which:

Figure 1 is a side elevational view of this machine operatively installed in a hole in the ground and with a section of pipe connected therein and supported by blocks used in conjunction with this machine and which may be considered an essential part thereof, the lever handle being fragmentarily shown in four positions and having a portion thereof broken away and the underlying structure illustrated in elevation and in vertical section;

Figure 2 is a view largely in top plan but showing a portion of the lever in horizontal section, the view being taken from the line 2—2 in Figure 1;

Figure 3 is a central longitudinal vertical sec-

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tional view of the structure illustrated in Figure 1;

Figure 4 is a transverse vertical sectional view, taken on the line 4—4 in Figure 2, the greater portion of the Figure being in end elevation; and

Figure 5 is a three dimensional enlarged view of one of the disc-like jaws.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the several views of the drawings.

Referring now to the drawings in detail, this invention is adapted to be used with an environment including sections of pipes one of which is illustrated at 10 and which will be provided with a nose cap 12 on the forward end of the pipe. It will be understood that this machine is ordinarily installed in a recess or hole in the ground adjacent to the bank 14 into which the pipe 10 is to be forced by the operation of this machine.

This invention comprehends and includes a plurality of blocks 16 which are supported on the ground and are adapted positionally and otherwise to support the pipe 10 at the correct height and disposed in the proper direction, these blocks being ordinarily placed at each end of the frame of the machine.

The frame includes two parallel spaced elongated members 18 terminating at the front end of the machine in depending flanges 20 which comprise ground anchors, being adapted to be driven vertically into the ground to hold the frame in rigid position. A pair of longitudinally spaced pipe guide members 22 are each of inverted U-shape and provided with attachment lugs 24 which are bolted or riveted as at 26 to the frame members 18; these pipe guide members being disposed transversely of the frame.

Intermediate the ends of the frame members 18 and preferably between the pipe guide members 22 there are provided a pair of angle brackets 28 whereto the lower ends of the lever attaching forks 30 are pivoted, as at 32. The lever 34 is illustrated as secured to the upper ends of the forks 30 by any suitable means including bolts 36 and a tubular lever handle extension 38 is fragmentarily illustrated in Figures 1 and 3.

A link structure, generally indicated by the numeral 40 carries a pair of similar disc-like jaws 42 on its forward end and is pivoted by pivot pins 44 to the fork portions 30 of the lever assembly. The link structure 40 includes a pair of similar elongated inflexible members 46 and a pair of

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offset attachment members 48, each associated with the said pivot pins 44, while the front ends of the members 46 are apertured to receive longitudinally extending integral pins 49 on each end of the transverse member 50 which is thus mounted pivotally on the forward ends of these members 46, the integral pins 49 being bored to receive cotter pins 52 or the like to retain these parts in proper assembled relationship. The transverse member 50 carries the disc-like jaws 42 on the under side of the transverse member, and journals for the disc-like jaws may comprise simple headed studs 54 inserted through eccentric bores 56 in the jaws 42 and threaded into the transverse member 50.

Each of the jaws 42 is formed with a serrated annular groove 58 adapted to receive the pipe 10 in gripping relation, it being understood that the jaws are spaced apart sufficiently to allow the pipe 10 to be inserted therebetween, and a spring 60 is secured under tension between a pair of studs 62 which are also eccentrically positioned on the disc-like jaws 42.

The operation of this invention will be clearly understood from the foregoing description of the mechanical details thereof, taken in connection with the above recitation of the objects sought to be achieved by this invention. In recapitulation, it may be added that the machine is supported on the ground, ordinarily within a hole provided therefor, while the pipe 10 is supported on suitable block means 16. Reciprocation of the handle will cause the link mechanism 40 to move the disc-like jaws 42 forwardly and rearwardly on the pipe 10, and the spring 60 will urge the jaws to rotate on the eccentrically mounted journal members 54 so that these jaws will grip the pipe when the handle is being moved in one direction, as to the right in Figure 1, thus forcing the pipe into the bank 14. When it is desired to reverse the action of this machine in order to withdraw a pipe, the divided frame structure described above allows the machine to be lifted above the pipe 10, rotated through 180 degrees, and again installed operatively on the pipe with the jaws 42 contacting the same but gripping the pipe when the handle is moved as to the left in Figure 1. It will be seen that this invention amply achieves all the objects recited above, and further description would seem to be unnecessary.

Many minor variations may be made in the exact construction and proportionment of the various elements of this invention, all without departure from the spirit and scope thereof, and the scope of this invention should be limited only as determined by a proper interpretation of the terms used in the subjoined claims.

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

1. A pipe pushing machine comprising an elongated frame including a pair of parallel spaced

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elongated members to lie flat on the ground, each member having a depending flange comprising a ground anchor, inverted U-shaped pipe guides secured to and between said members, a hand lever having a pair of offset attaching forks pivoted on said frame, and means carried by said lever and having jaws for gripping a pipe when moved in one direction, said parallel members and U-shaped pipe guides and forks being arranged to provide access of a pipe into the machine from the underside thereof.

2. A pipe pushing machine comprising an elongated frame including a pair of parallel spaced elongated members to lie flat on the ground, each member having a depending flange comprising a ground anchor, inverted U-shaped pipe guides secured to and between said members, a hand lever having a pair of offset attaching forks pivoted on said frame, and means carried by said lever and having jaws for gripping a pipe when moved in one direction, said parallel members and U-shaped pipe guides and forks being arranged to provide access of a pipe into the machine from the underside thereof, said forks having similar links pivoted thereto, said links carrying a transverse member, said jaws being pivoted on said transverse member and being oppositely arranged toothed discs spring biased for engagement with a pipe.

3. A pipe pushing machine comprising an elongated frame having a ground anchor, pipe guides on said frame, a hand lever pivoted on said frame, and means carried by said lever and having jaws for gripping a pipe when moved in one direction, said frame being longitudinally divided to allow the insertion of the machine onto and removal from pipe in situ, thereby facilitating reversal of the machine for withdrawing pipe from the ground.

4. A pipe pushing machine comprising an elongated frame having a ground anchor, pipe guides on said frame, a hand lever pivoted on said frame, and means carried by said lever and having jaws for gripping a pipe when moved in one direction, said frame having a longitudinal opening extending from one side of the machine to the said jaws to allow the insertion of the machine onto and removal from the pipe in situ, thereby facilitating reversal of the machine for withdrawing pipe from the ground.

OTTO MACUMBER.

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