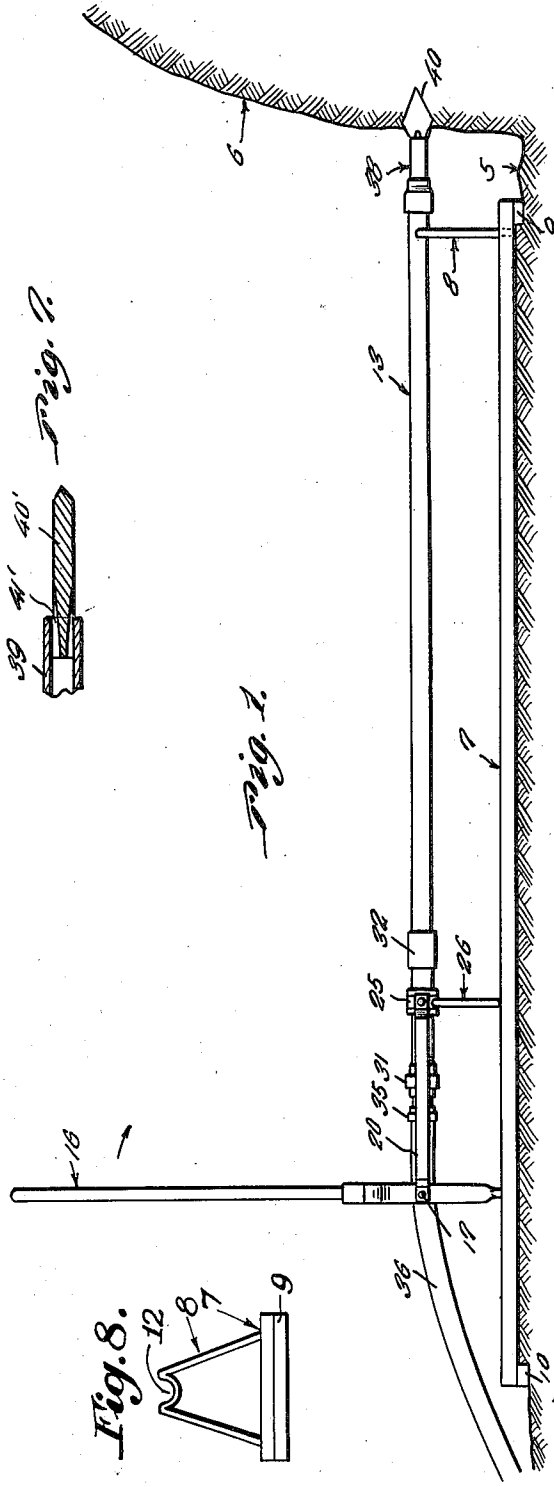
June 28, 1938. C. J. JEFFREY 2,122,099

DEVICE FOR LAYING PIPE

Filed Nov. 25, 1936 2 Sheets-Sheet 1



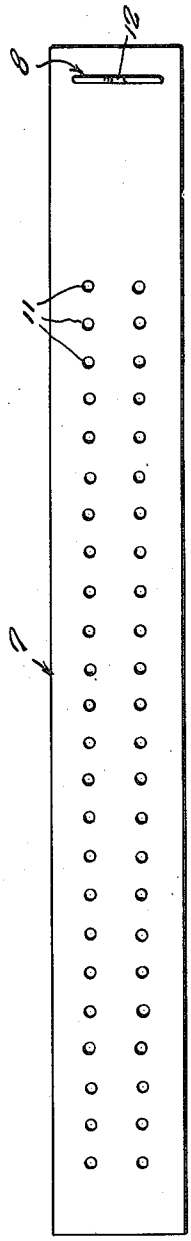


Fig. 8.

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DEVICE FOR LAYING PIPE

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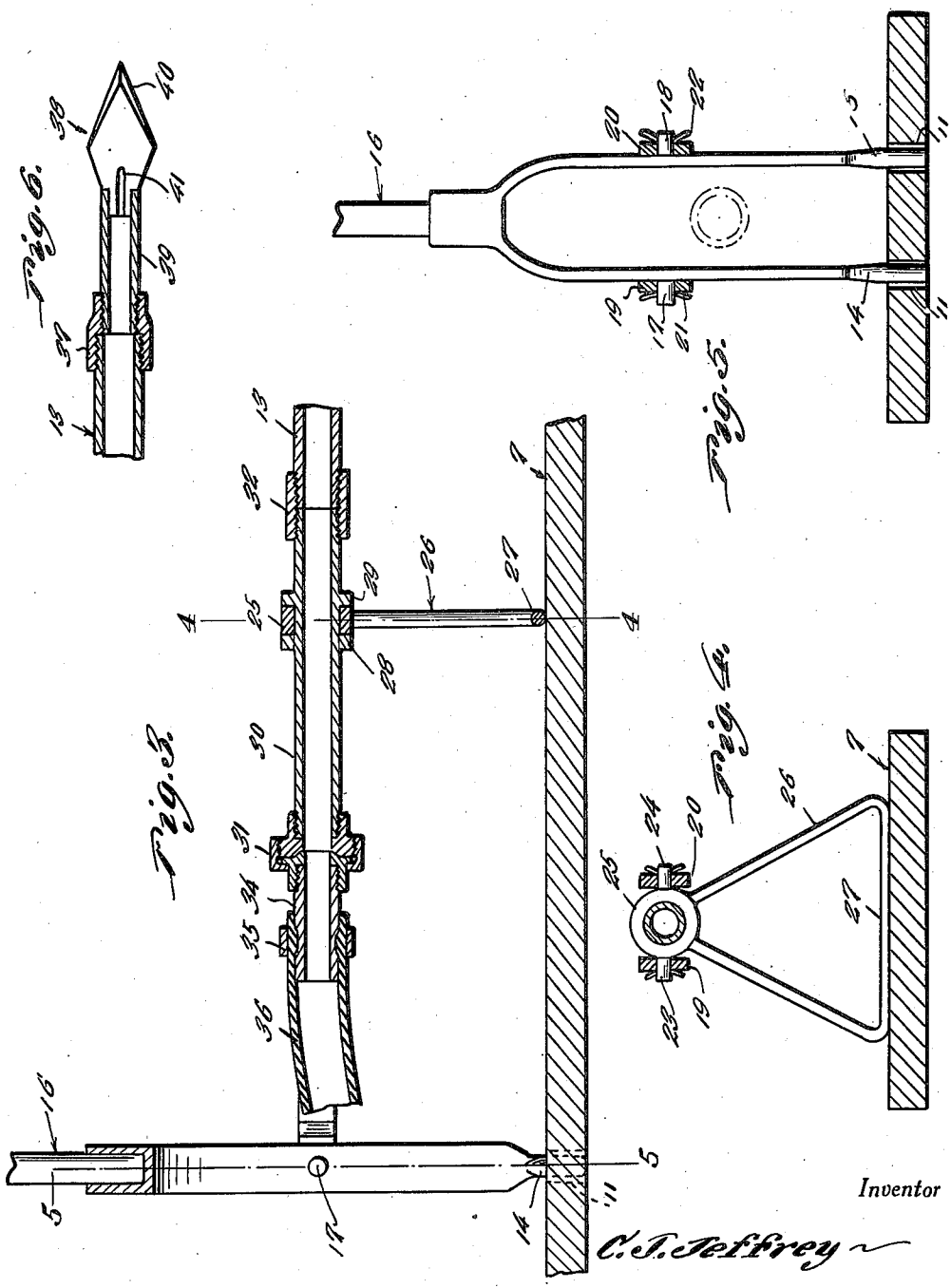


Fig. 3.

Fig. 4.

Fig. 5.

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DEVICE FOR LAYING PIPE

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Application November 25, 1936, Serial No. 112,798

4 Claims. (Cl. 255—20)

My invention relates generally to means for laying underground pipe and particularly to an arrangement for driving pipe through the ground to lay the pipe for carrying water from water mains and other sources, or gases or other fluids, to form conduits under pavements, streets, and other places, without removing or disturbing the pavement or the surface of the street or ground in the place where the pipe is laid, and an important object of my invention is to provide a simple and efficient arrangement of the character indicated.

Another important object of my invention is to provide an arrangement of the character indicated above which contains few and simple parts, and is easily operable by a person not especially trained for the work.

Other important objects of my invention will be apparent from a reading of the following description taken in connection with the drawings, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawings:—

Figure 1 is a general side elevational view showing the device in an operative position relative to a bank of earth under which the pipe is to be laid.

Figure 2 is a top plan view of the base.

Figure 3 is an enlarged longitudinal sectional view taken through Figure 1 and showing the connection of the coupling.

Figure 4 is a transverse vertical sectional view taken through Figure 3 approximately on the line 4—4.

Figure 5 is a transverse vertical sectional view taken through Figure 3 approximately on the line 5—5.

Figure 6 is a longitudinal sectional view taken through the drill point end of the device.

Figure 7 is a longitudinal sectional view taken through an alternative form of drill bit.

Figure 8 is a front or rear elevational view of the rest showing it mounted on the base.

Referring in detail to the drawings, the numeral 5 generally designates the floor of an excavation or other place depressed with respect to a bank 6 of earth through which the pipe is to be laid, and the numeral 7 generally designates the elongated rectangular base which is laid on the floor of the excavation and pointed in the direction in which the pipe is to be forced into the bank 6. The base 7 is provided at its front end with a rest 8 which is anchored as indicated in the top of the front end of the base just back of the front cleat 9 which is utilized to gain a purchase on the floor of the excavation 5. A rear cleat 10 is attached to the bottom of the base 7 as is the front cleat 9. The base 7 is provided to the rear of the rest 8 with pluralities of pairs of holes 11 for receiving the legs of the operating lever to be described as the pipe is pushed forward into the bank 6.

The rest 8 is preferably formed of rod bent to provide a semi-circular depression 12 in its top for the pipe length 13 to slidably rest in, the opening 12 being aligned with the central longitudinal axis of the base 7.

Adjacent the rear end of the base 7 and in a pair of the first of the holes 11 are disposed loosely, as shown in Figure 5, the lower ends 14, 15, of the operating lever which is generally designated 16. The legs 14 and 15 are part of a U-shaped portion on the lower end of the lever, and to which legs is secured a pivot 17, 18, respectively, on which are pivoted the rear ends of the operating links 19, 20, respectively, which are held in place by respective cotter pins 21, 22 as indicated in Figure 5.

The front ends of the operating links 19, 20 are similarly pivoted by pins 23, 24 projecting from opposite sides of the annulus 25 as indicated in Figure 4, and from the annulus 25 depends a triangular rest 26 whose base portion 27 is disposed restably and slidably on the top of the base 7 so as to slide along the top of the base in company with the forward movement of the pipe 13, as the lever 16 is operated in the direction of the arrow in Figure 1 to push the pipe 13 forwardly into the earth 6. The lever 16 is reversible in direction for withdrawing pipe or the like from a position in the earth when desired.

The annulus 25 is held in place by flanges 28 and 29 which are formed on the coupling pipe section 30 as shown in Figure 3.

The rear end of the pipe section 30 is threaded into one side of the swivel joint or union 31, and the front end of the pipe section 30 is threaded into a pipe coupling 32 whose remaining side is coupled as indicated to the pipe length 13 which is being driven at the time.

Swivel joint 31 has connected thereto a short length 34 to which is coupled as indicated by the numeral 35 in a suitable manner, the water pressure hose 36 which leads from a suitable source of water pressure (not shown).

Mounted on the front end of the leading pipe section 13 is a suitable coupling 37 which mounts thereto the drill head or bit 38 which includes the hollow shank 39 and the diamond shaped tip 40 as shown in Figure 6, with water discharge

openings 41 provided therein so that water may discharge in a forward direction and facilitate and make possible the forward progress of the diamond shaped tip 40 in boring through the earth and making a path for the pipe length 13, and the pipe lengths which follow the same and are connected thereto, as one pipe length after another is laid behind the first pipe length 13.

In operating the device of the invention, the water under pressure is passed through the hose 36, through the coupling connections and through the pipe length and through the drill head so as to soften and displace the earth in front the drill head, and then the lever 16 is pushed forwardly so as to push the pipe section forwardly through the earth. When the first or initial pipe length has been placed by this means for its full length in the earth, a second pipe length is attached to the rear end of the first-mentioned pipe length, and pushed into place. These operations are continued until the desired piping has been laid. In withdrawing pipe or the like the direction of operation of the lever 16 is reversed.

Figure 7 shows an alternative form of drill bit which includes the hollow section 39' and the tip or bit 40' surrounded by water passages 41', the head 40' being reduced and elongated in comparison with the diamond shaped head 40 of the first described embodiment.

Although I have shown and described herein preferred embodiments of my invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in the materials, and in the structure and arrangement of the parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. A pipe laying and driving device of the character described comprising a base, a pipe length to be laid and driven, a pipe length slide rest at the front end of the base, sliding means sliding on the base for supporting the rear end of the pipe length, a source of water pressure for said pipe length, lever means operatively connected with said pipe length for pushing the same in a forward direction relative to the base, a drill head on the forward end of the pipe length and having openings fed by water under pressure from said source, said base being provided with opening means adapted to selectively receive portions of said lever means for positioning said lever means longitudinally with respect to the base, as the laying and driving of the pipe length proceeds.

2. A pipe laying and driving device of the character described comprising a base, a pipe length to be laid and driven, a pipe length slide rest mounted on the front end of the base, sliding means freely slidable on the base for supporting the rear end of the pipe length, a source of water pressure for said pipe length, lever means pivoted on said base and operatively connected with said pipe length for pushing the same in a forward direction relative to the base, a drill head on the forward end of the pipe length and having openings fed by water under pressure from said source, said base being provided with opening means adapted to selectively receive portions of said lever means for positioning the lever longitudinally with respect to the base, as the laying and driving of the pipe length proceeds.

3. A pipe laying and driving device comprising a base formed in its top with a plurality of longitudinally spaced depressions, a stationary pipe rest on one end of the base, a movable pipe rest initially positioned adjacent the opposite end of the base and freely slidable along the top of the base, a first pipe slidably resting on said stationary rest, a second pipe, a coupling connecting said second pipe with the end of said first pipe, said movable pipe rest being connected to said second pipe, an operating lever having a freely fitting lug on its lower end for entering a selected one of said depressions and permitting said lever to be swung in forward and backward directions, and means operatively connecting said operating lever with said second pipe.

4. A pipe laying and driving device comprising a base formed in its top with a plurality of longitudinally spaced depressions, a stationary pipe rest on one end of the base, a movable pipe rest initially positioned adjacent the opposite end of the base and freely slidable along the top of the base, a first pipe slidably resting on said stationary rest, a second pipe, a coupling connecting said second pipe with the end of said first pipe, said movable pipe rest being connected to said second pipe, an operating lever having a freely fitting lug on its lower end for entering a selected one of said depressions and permitting said lever to be swung in forward and backward directions, and means operatively connecting said operating lever with said second pipe, a ground piercing head on the front end of said first pipe, said head being formed with water passing openings, and a water pressure conduit connected to the rear end of said second pipe.

CARL J. JEFFREY.