

(No Model.)

T. J. COPE.

APPARATUS FOR THREADING CONDUITS OR PIPES.

No. 563,360.

Patented July 7, 1896.

Fig. 1.

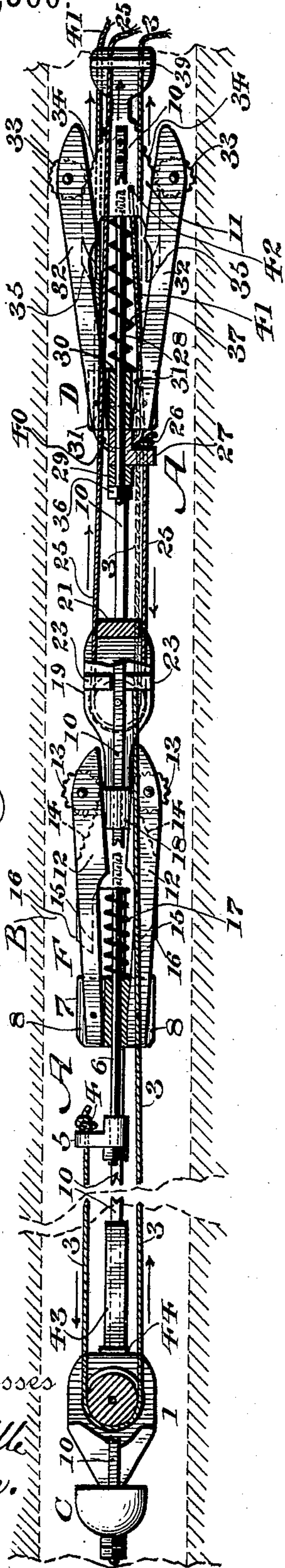


Fig. 2.

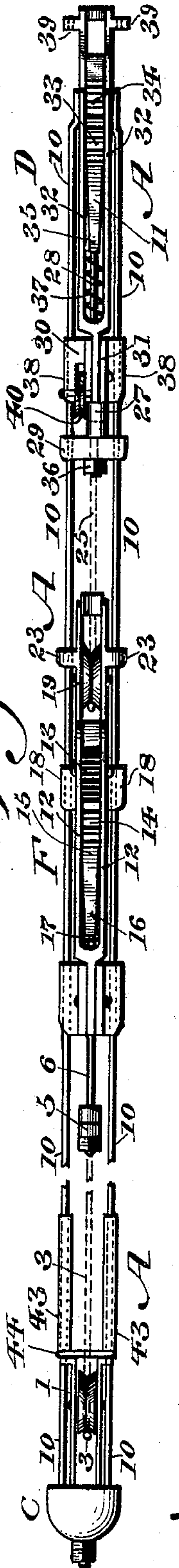
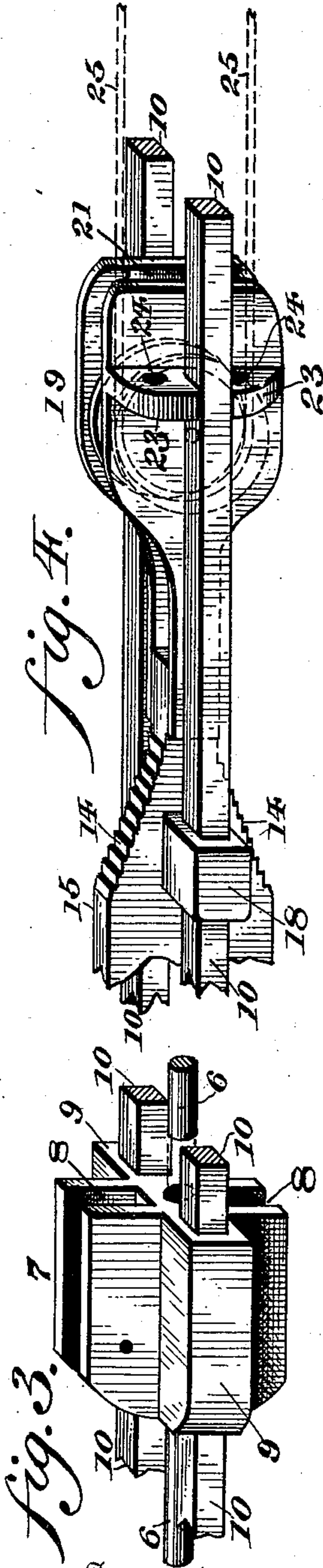


Fig. 3.



Inventor  
Thomas J. Cope  
By  
John J. Fiedersheim  
Attorney

Witnesses  
L. Douville  
O. F. Nagle.



# UNITED STATES PATENT OFFICE.

THOMAS JEFFERSON COPE, OF PHILADELPHIA, PENNSYLVANIA.

## APPARATUS FOR THREADING CONDUITS OR PIPES.

SPECIFICATION forming part of Letters Patent No. 563,360, dated July 7, 1896.

Application filed March 4, 1895. Serial No. 540,410. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS JEFFERSON COPE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Threading Conduits or Pipes, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of an improved construction of apparatus for threading conduits or pipes, the novel features of which will be hereinafter set forth, and specifically pointed out in the claims.

Figure 1 represents a side elevation, partly in section, of an apparatus for threading conduits or pipes embodying my invention. Fig. 2 represents a plan view of the same. Fig. 3 represents, on an enlarged scale, a perspective view of the head of the carrier-section. Fig. 4 represents a perspective view of a forked wedge and pulley employed.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a device which is adapted to be inserted at one end of a conduit or duct B, and by the movements of certain of its parts to be advanced through said conduit to the opening at the other end thereof, said device consisting of the head-piece C, tail part D, the carrier F, and suitable connecting and guiding rods. The said head C has attached thereto in any suitable manner a pulley 1, around which passes the rope or other connection 3, which has one extremity 4, suitably attached to a sleeve 5, secured to the rod 6, which passes freely through the head 7, (best seen in Fig. 3,) said head having the grooves 8 therein arranged oppositely to each other, while from either side of said head project the lugs 9, through which pass freely the rods 10, one on each side of the head, one end of said rods, which may or may not be square, being attached to each side of the forked wedge 11 of the tailpiece D, while the other end of said rods is suitably attached to the head-piece C.

12 designates rearwardly-extending arms, which have one of their ends pivoted in the groove of the head 7, the other ends of said arms being slotted or forked and having ro-

tatably mounted therein the notched or roughened blocking-rollers 13, which latter contact with the notched sides 14 of the forked wedge 15, the latter having the prongs 16, whose ends abut against the head at intervals, and having also an end of the rod 6 secured thereto, in the present instance between said prongs, a spring 17 being interposed between said fork and the head 7, through which latter said rod 6 freely passes, whereupon it will be seen that the tendency of said spring 17 will always be to keep the head 7 moved away from the forked wedge 15, excepting when moved forwardly by the operating-ropes, so that the rollers 13 will normally tend to be in contact with substantially the widest part of said forked wedge 15 and so forced into contact with the walls of the conduit when the rope is slackened, the rolls 13 being shown in Fig. 1 as being in contact with the narrowest portion of the wedge 15, the latter having the lugs 18 attached to its sides, through which the rods 10 freely pass.

19 designates a pulley which is attached to the end of the forked wedge 15, and is provided with the cross-piece 21, which serves as a stop, as will be explained. 23 designates lugs which are attached to said pulley and are provided with slots through which the rods 10 pass, as will be understood from Fig. 4, said lugs also having eyes 24 therein, through which the rope 3 passes, as will be hereinafter explained. 25 designates a rope or other connection, which passes around said pulley 19, and has its end 26 attached to a sleeve 27, which is movable on the rod 28 and is held in position between the cross-piece 29 and the head 30, which latter moves freely on said rod 28, and has the grooves 31, in which are pivoted the arms 32, whose free ends are forked and have journaled therein the notched blocking-rollers 33, which contact with the notched or roughened sides of the forked wedge 11, which latter has the prongs 35, whose ends abut against the head 30 at intervals, between which prongs is secured an end of said rod 28, the other end of the latter passing freely through said head 30, sleeve 27, and cross-piece 29, all of which are held in position by the nut or similar device 36. 37 designates a spring which contacts with said fork 11 and the head 30,



whereby the rollers 33 are normally held in contact with the widest portion of the forked wedge 34, as has been already described with reference to the carrier-section F.

38 designates recessed lugs on the sides of the head 30, through which the rods 10 freely pass, the extremities of the latter being attached to the forked wedge 11, as has already been stated. The extreme end of said forked wedge 11 has the lugs 39 attached thereto, which are provided with eyes for the passage of the ropes or connections before referred to. 40 designates a pulley in said head 30, around which passes the rope or cord 41, which has one end 42 attached to said fork 11, the function of which cord will be hereinafter referred to.

43 designates stops located at the forward ends of the rods 10, the same consisting in the present instance of sleeves inclosing said rods and abutting against the cross-piece 44, the object of said stops being to limit the forward movement of the head 7, so as to enable the operator to advance the forked wedge 15 from between the blocking-rollers, so that the parts will assume the position seen in Fig. 1.

The operation is as follows: The apparatus first being placed in the conduit, with the head end C forward, the operator now pulls on the rope 3 in the direction of the arrow, thus advancing the sleeve 5, rod 6, head 7, fork 15, arms 12, and the pulley 19, &c., as is evident, the tail end of the apparatus being held immovable by the contact of the rollers 33 with the walls of the conduit. The parts are now in substantially the position seen in Fig. 1, and by slackening the rope 3 and pulling on the rope 25 the operator will force the wedge 11 backwardly, and the blocking-rollers 13 will be thereby moved outwardly as they ride up the inclined sides of the forked wedge 15 until they contact with the walls of the conduit, this movement being assisted by the spring 17, and said head 7, arms 12, rollers 13, fork 15, pulley 19, &c., will be held stationary. The operator now continues to pull on the rope 25 in the direction of the arrow, whereupon it will be seen that by the connection of said rope to the sleeve 27 at the point 26 the forked wedge 11 and the whole of the tail portion D will be advanced until the nut 36 strikes the cross-piece 21, the head portion being thus advanced this distance by reason of its connection to the tail portion by the rods 10, and by repeating the above operation the entire apparatus can be readily advanced through the conduit, the operator being only required to pull on the ropes 3 and 25, as above explained.

When it is desired to back the apparatus for any reason, the operator pulls on the rope 41 in the direction of the arrow, thereby withdrawing the head 30 into contact with the wedge, by reason of the connection of said rope with said tailpiece at 42, thus removing the blocking-rollers 33 from contact with the

sides of the duct, whereby the entire apparatus can be backed out and readily withdrawn, as is evident.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described, a head, a tailpiece, a carrier, rods common to said head and tailpiece, a forked wedge having reactive means supported between its prongs, and slotted lugs attached to its sides, said lugs serving as guides, and stops 43 serving to limit the extent of movement of said carrier, substantially as described.

2. In an apparatus of the character described, a head, arms pivoted thereto, and extending rearwardly therefrom, a forked wedge suitably supported, and having notched sides, serrated rollers journaled in said arms, and adapted to contact with the notched sides of said forked wedge, and connections common to said head and wedge, the prongs of the latter serving as stops having reactive means located therebetween, substantially as described.

3. In an apparatus of the character described, a backing-out device for the tailpiece, whereby the rollers in the free ends of the pivoted arms of said tailpiece are caused to approach each other when desired, the same consisting of a head, a pulley journaled therein, a wedge having roughened edges, arms extending rearwardly from said head, rollers journaled in said arms, and a rope or other connection having an end attached to said wedge and passing around said pulley, substantially as described.

4. In an apparatus of the character described, a head, a tailpiece, a carrier, rods common to said head and tailpiece, and sleeves 43 mounted on said rods and adapted to serve as stops for said carrier, substantially as described.

5. In an apparatus of the character described, a head a tailpiece, rods common to both, a carrier supported on said rods, said carrier and tailpiece each having heads, arms pivoted to said heads and extending rearwardly, and blocking-rollers journaled in said arms, in combination with forked wedges suitably supported, and having reactive means located between their prongs, and serrated sides adapted to contact with said rollers, substantially as described.

6. In an apparatus of the character described, a head and tailpiece, rods common to both, a carrier supported on said rods, said carrier and tailpiece each having heads, arms pivoted to the latter, and extending rearwardly therefrom, blocking-rollers journaled in said arms, forked wedges for operating said arms, said wedges having reactive means located between their prongs and means for actuating said wedges, substantially as described.

7. In an apparatus of the character described, a forked wedge having its tapering



portion notched or roughened, a pulley attached to said wedge, and slotted lugs attached to said wedge and pulley, the extremities of the prongs of said wedge being adapted to act as stops, in combination with reactive means located between said prongs substantially as described.

8. In an apparatus of the character described, a head-piece, a tailpiece, a carrier-section, arms pivoted to the head of said carrier-section, and extending rearwardly, blocking-rollers journaled in said arms, a forked wedge adapted to actuate said blocking-rollers, a rod passing through the head of said carrier-section and secured to said wedge, a spring intermediate of said head and wedge, and a pulley attached to the latter, substantially as described.

9. A head and tail piece, rods common to both, a pulley attached to said head-piece, stops on rods adjacent said pulley, a rope or cord passing around the latter, and having one end attached to a carrier, said rope passing through suitable guides or eyes on said carrier-section and tail-section, substantially as described.

10. The tailpiece D, consisting of the head 30, the rearwardly-extending arms pivoted thereto, the rollers journaled in said arms,

the forked wedge 11 having the apertured lugs 39 therein, through which a rope or cord is adapted to pass, the rod 28 attached to said wedge and passing through said head, a spring interposed between the latter and said wedge, and means for actuating the latter, substantially as described.

11. A tailpiece consisting of a head, arms pivotally attached thereto, rollers journaled in said arms, a forked wedge, a spring intermediate said wedge and head, a roller journaled in the latter, a cord passing around said roller, and having an end attached to said wedge, and means for supporting and guiding said tailpiece, substantially as described.

12. In an apparatus of the character described, a head, arms pivoted thereto, and extended rearwardly therefrom, said arms having notched rollers journaled therein, a forked wedge having its sides notched, a rod attached to said wedge, and passing through said head, a spring intermediate the latter and the wedge, and means for actuating said rod and wedge, substantially as described.

THOMAS JEFFERSON COPE.

Witnesses:

JOHN A. WIEDERSHEIM,  
E. H. FAIRBANKS.