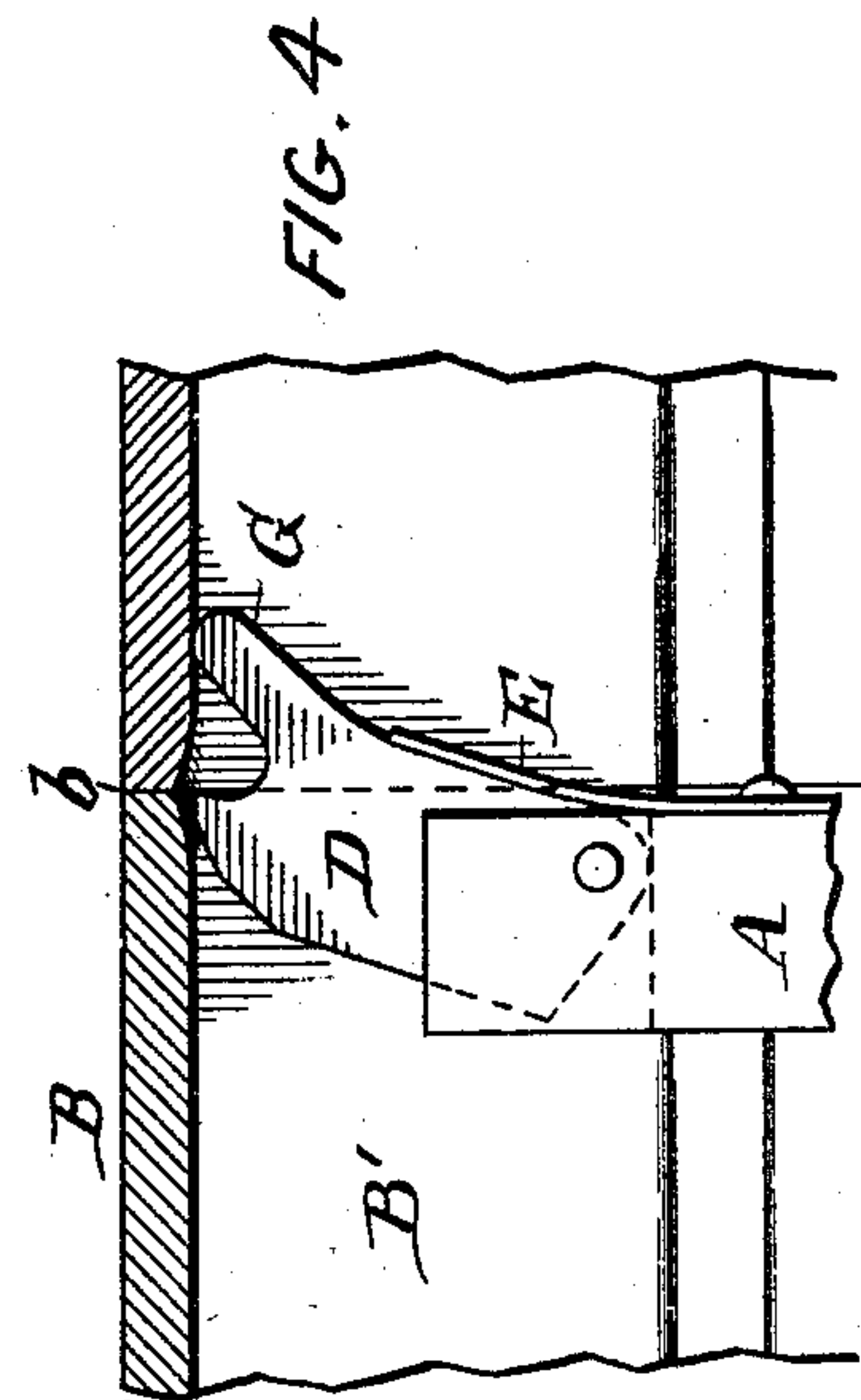
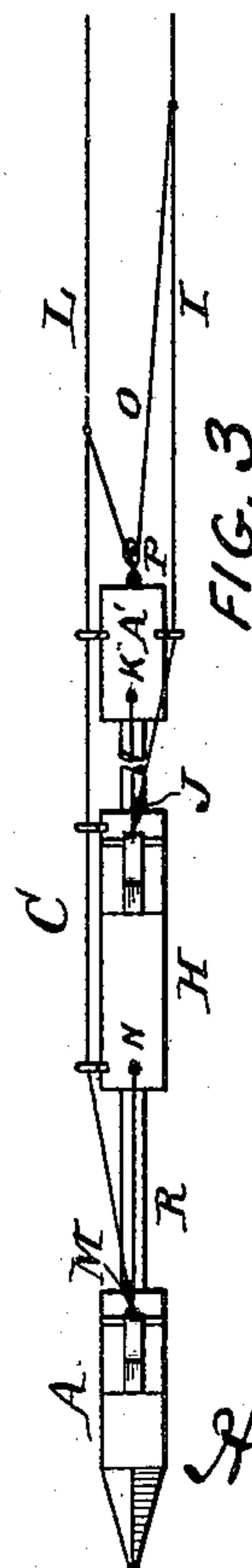
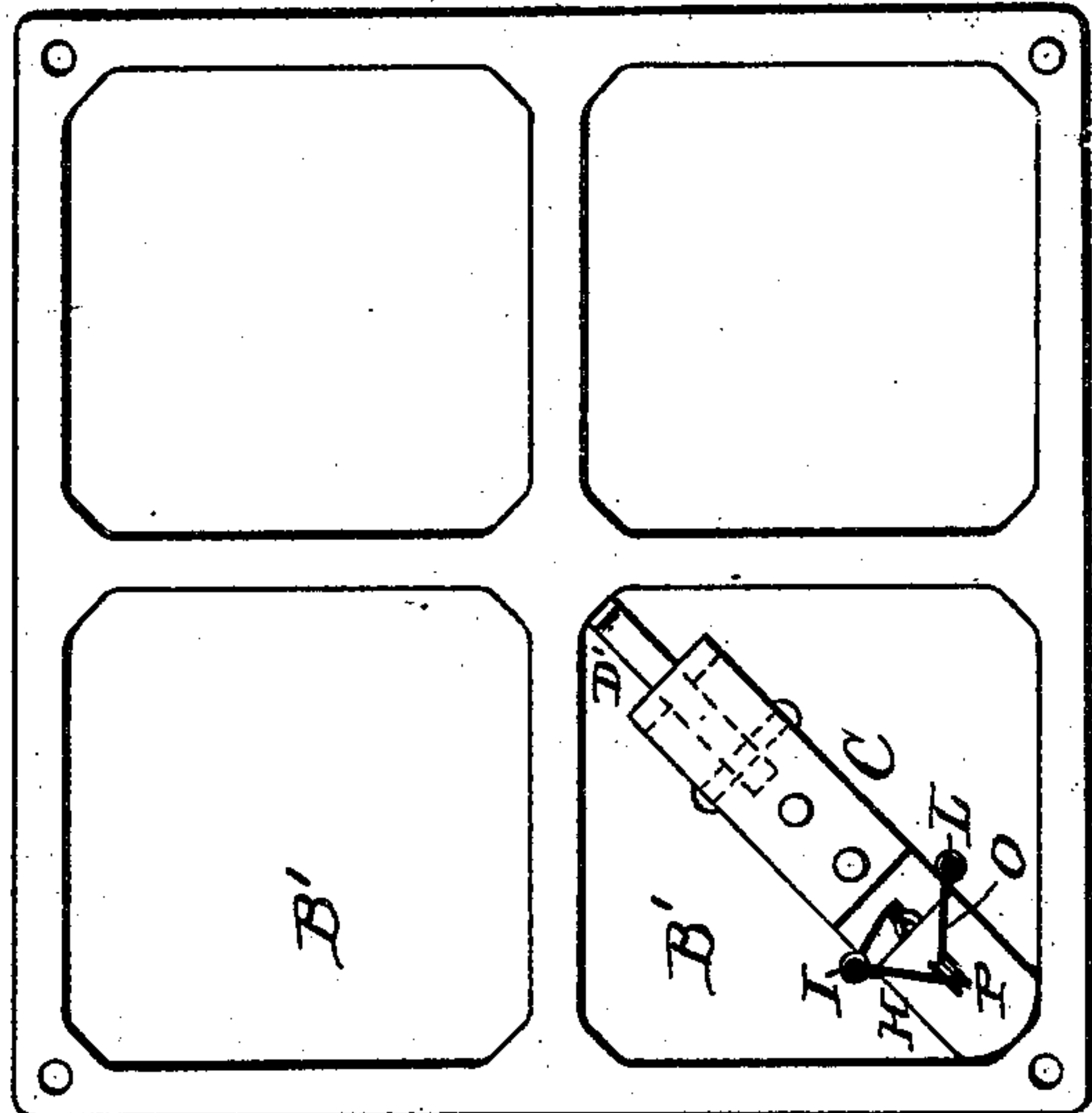
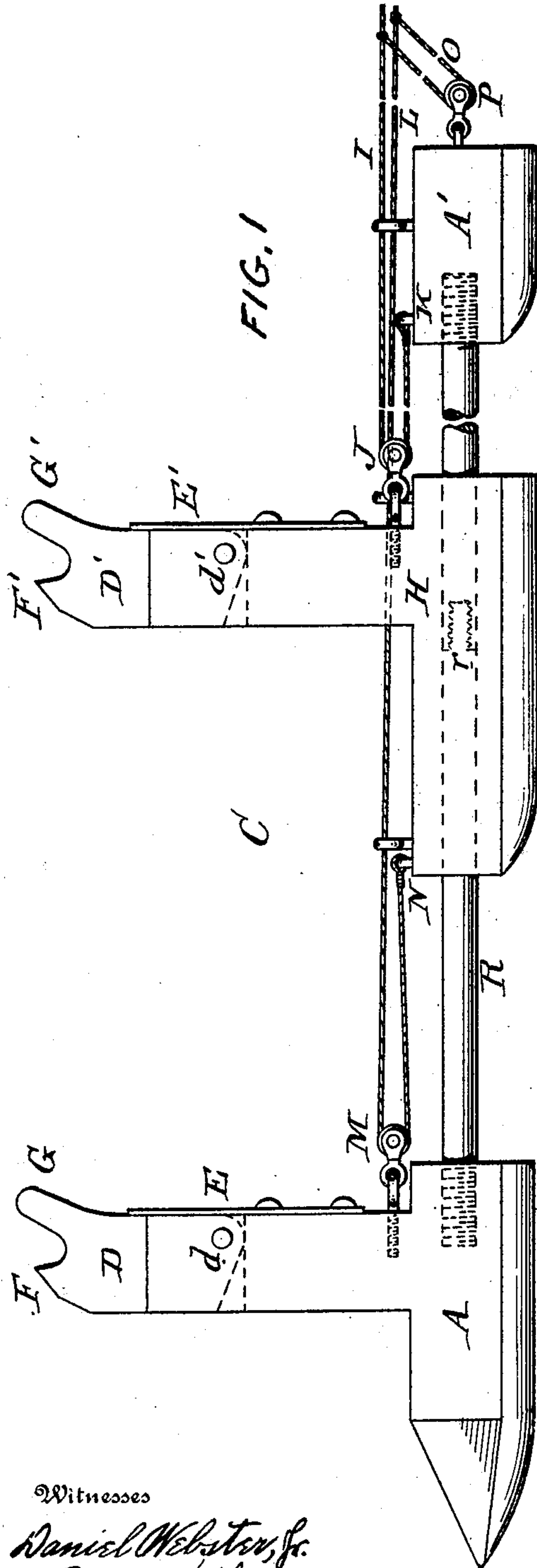


H. W. BODDY.  
CONDUIT THREADING MACHINE.  
APPLICATION FILED DEC. 8, 1907.

916,985.

Patented Apr. 6, 1909.



Witnesses  
Daniel Webster, Jr.  
O. M. Kelly.

Inventor  
Herbert W. Boddy  
By *[Signature]*  
Attorney



# UNITED STATES PATENT OFFICE.

HERBERT W. BODDY, OF WOODBURY, NEW JERSEY.

## CONDUIT-THREADING MACHINE.

No. 916,985.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed December 9, 1907. Serial No. 405,665.

*To all whom it may concern:*

Be it known that I, HERBERT W. BODDY, a citizen of the United States, and resident of the city of Woodbury, county of Gloucester, and State of New Jersey, have invented an Improvement in Conduit-Threading Machines, of which the following is a specification.

My invention has reference to conduit threading machines, and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide means for threading a rope or cable through an underground conduit and by which a strong cable may be pulled through and be the means subsequently of drawing into the conduit the heavy electric cable.

More particularly, my object is to provide a device which may by its internal construction propel itself through a long section of conduit—from man-hole to man-hole, usually separated by the length of a block—by manipulation of hand operated cables and by the immediate means of dragging through the preliminary rope.

My invention consists of two frames having a sliding connection with each other and each provided with means for gripping or taking hold of the interior wall of the conduit, combined with two hand operated cables respectively having one of their ends connected with one of the frames and guided about guides upon the other of the frames whereby the alternate pulling upon the two hand operated cables will alternately pull forward one or the other of the two frames.

My invention also comprehends details of construction which, together with the features above specified, will be better understood by reference to the drawings, in which:

Figure 1 is a side elevation of my improved cable threading device; Fig. 2 is a cross section of the conduit with the threading device in position therein; Fig. 3 is a plan view of the threading device; and Fig. 4 is a sectional view showing the gripping device.

B is the conduit and has one or more conduit apertures B' usually square in cross section. The conduit is made up of sections, usually about four feet long and butted end to end as indicated at b. At these places, the interior wall is slightly flaring to the juncture so that at said juncture the cross

section of the aperture is somewhat larger. The threading device C is required to propel itself through the conduit apertures and in doing so operates upon diagonally opposite corners as shown in Fig. 2.

The threading device C is fully shown in Figs. 1 and 3, and to which I will now refer. A A' are two parts or shoes which are connected into a frame by a rod or bar R which may be jointed at r if so desired to enable it to be taken through the man-holes and erected in the conduit. At least one of the parts A A' is provided with a hinged gripper D hinged at d and having its free end provided with a gripping point or edge F and guide G. Spring E is employed to normally move the gripper into gripping position.

Sliding upon the bar R intermediate of the parts A A' is a second frame H, which is similarly provided with a pivoted gripper D' hinged at d' and furnished with gripping point F' and guide G'. A spring E' holds the gripper D' normally in gripping position.

I and L are the operating cables and are alternately pulled by the hands of an operator standing in the man-hole at the beginning or entrance of the conduit. The cable I extends around a guide pulley J on the frame H and backward to point K where it is secured to the rear part A' of the other frame. The cable L extends around the pulley M on the forward part A of the last-mentioned frame and backward to point N where it is secured to the first-mentioned frame H. O is an equalizing cable which is guided about a pulley P on the rear part A' and has its ends connected respectively with the two cables I and L.

The operation will now be understood, and is as follows: The device is inserted in the conduit aperture, with the result that the grippers D D' are thrown backward against the action of the springs E E' respectively, so as to enable the gripping points F F' to take hold of the interior of the conduit aperture. If, now, the cables L and I are pulled alternately, the frame H will first be advanced and then the frame A R A', and so on alternately. The grippers D D' prevent the frames to which they are pivoted from working backward through the conduit aperture, and consequently the said frames alternately act as abutments toward which the other frame is pulled by its respective cable. When cable I is pulled the cable L is paid out and vice versa, and to prevent excessive



strain being put upon the pulleys J M and working parts of the frames, the equalizing cable O is provided. When cable I is pulled, the equalizing cable O pulls the cable L forward through and into the conduit opening and vice versa.

Should one of the grippers D or D' come to rest where two sections of the conduit are joined as at *b*, they are prevented taking hold because of the action of the guides G or G' as the case may be, and upon pulling upon the other cable, said gripper is drawn back so as to just clear the junction place *b* before taking hold. This is important as care must be exercised that the interior surface of the conduit must not be cracked or mutilated as would likely occur should the grippers be permitted to grip in the joint *b*.

The forward part of the shoe A is preferably rounded to enable it to travel forward easily. The forward under edges of the other parts A' and H are likewise rounded, for similar reasons.

While I have shown my invention in the preferred form for commercial use, I do not confine myself to the details as these may be modified without departing from the spirit of the invention.

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

1. A conduit having a longitudinal passage formed with angular corners, combined with a threading machine consisting of a frame having a smooth guiding surface adapted to fit one of the angular corners of the conduit passage and provided with an oppositely directed hinged gripping jaw arranged to grip the opposite angular corner of the conduit passage, a second frame guided upon the first mentioned frame and similarly provided with a hinged gripping jaw also arranged to grip the angular corner gripped by the gripping jaw of the first mentioned frame, and hand operated cables attached to said frames for moving either frame relatively to the other, the threading device as a whole being supported by the conduit passage upon top and bottom only.

2. A conduit having a longitudinal passage formed with angular corners, combined with a threading machine consisting of a frame having a smooth guiding surface adapted to fit one of the angular corners of the conduit passage and provided with an oppositely directed spring actuated hinged gripping jaw arranged to grip the opposite angular corner of the conduit passage and having a guard to limit the extent of its penetrating action, a second frame guided upon the first mentioned frame and similarly provided with a spring actuated hinged gripping jaw also arranged to grip the angular

corner gripped by the gripping jaw of the first mentioned frame and likewise provided with a guard to limit the extent of its penetrating action, and hand operated cables attached to said frames for moving either frame relatively to the other, the threading device as a whole being supported by the conduit passage upon top and bottom only.

3. In a conduit threading machine, the combination of two frames having a sliding connection one with the other and each having a clamping jaw, with hand-operative devices consisting of two cables each respectively connected with one of the frames and looped about a connection with the other of the frames for moving either frame relatively to the other, and means forming a connection between the two cables for causing one of said cables to alternately pull the other forward.

4. In a conduit threading machine, the combination of two frames having a sliding connection one with the other and each having a clamping jaw, with hand-operative devices consisting of two cables each respectively connected with one of the frames and looped about a connection with the other of the frames for moving either frame relatively to the other, and an equalizing cable having its ends connected to the two hand-operated cables and looped about a part secured to one of the frames.

5. In a conduit threading machine, the combination of a frame having a longitudinal guide and a pivoted gripping jaw provided with a rear guard to limit the possible bite of the gripping jaw, with a second frame guided upon the guide and having a pivoted gripping jaw also provided with a rear guard, and hand operated means for alternately advancing one frame on the other.

6. In a cable threading machine, the combination of a frame having a smooth guide surface and a laterally projecting spring actuated gripping jaw, directed away from said smooth guide surface, with a second frame having a sliding connection upon the first mentioned frame and also having a laterally projecting spring actuated gripping jaw, extending in the same direction as the gripping jaw of the first mentioned frame, and means for alternately advancing one frame upon the other, the whole being constructed to be supported on the bottom by a smooth sliding connection with the conduit and to form a gripping connection therewith only upon the top.

In testimony of which invention, I have hereunto set my hand.

HERBERT W. BODDY.

Witnesses:

R. M. HUNTER,  
R. M. KELLY.