

(No Model.)

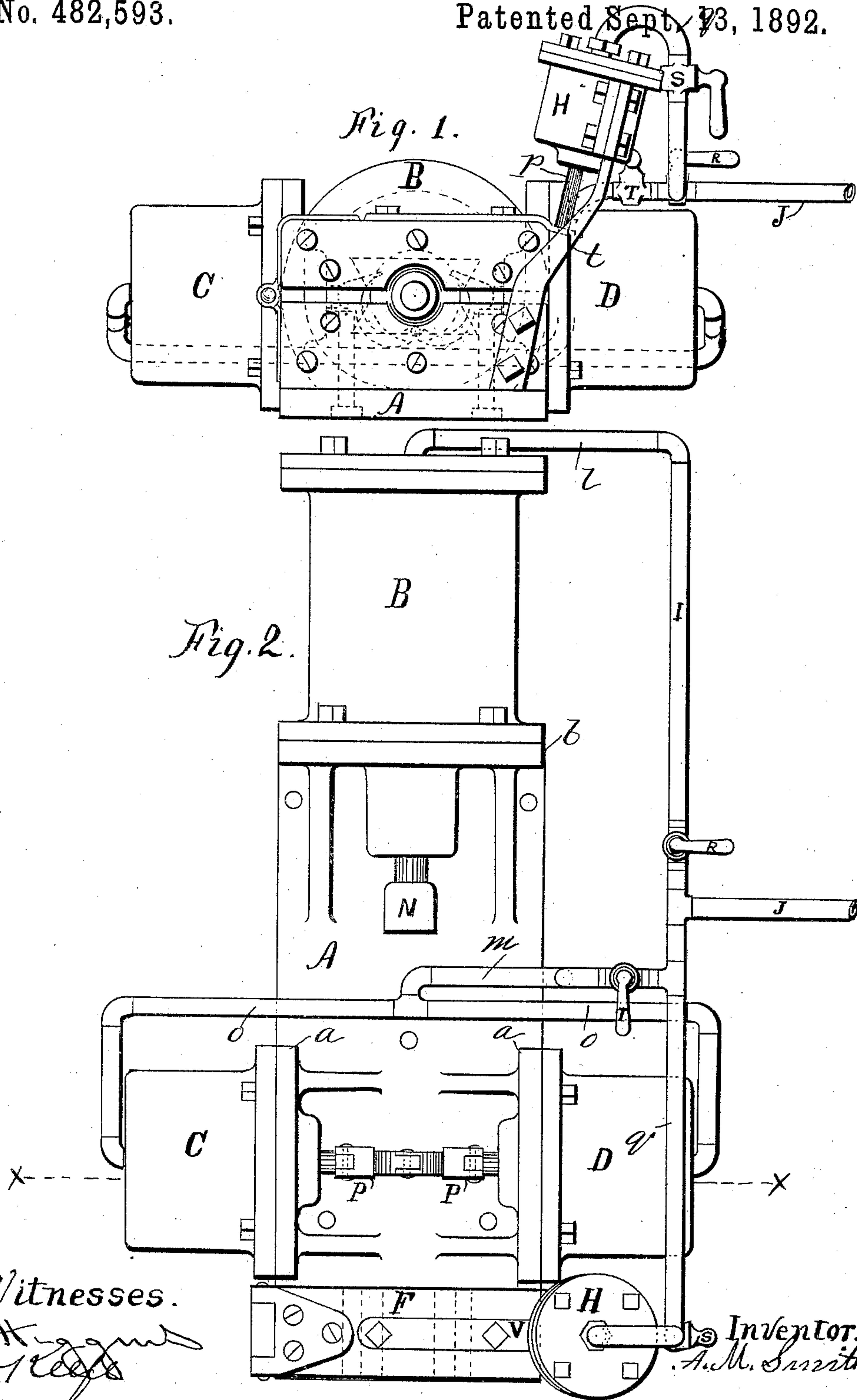
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A. M. SMITH.

MACHINE FOR APPLYING HOSE CONNECTIONS.

No. 482,593.

Patented Sept. 23, 1892.



(No Model.)

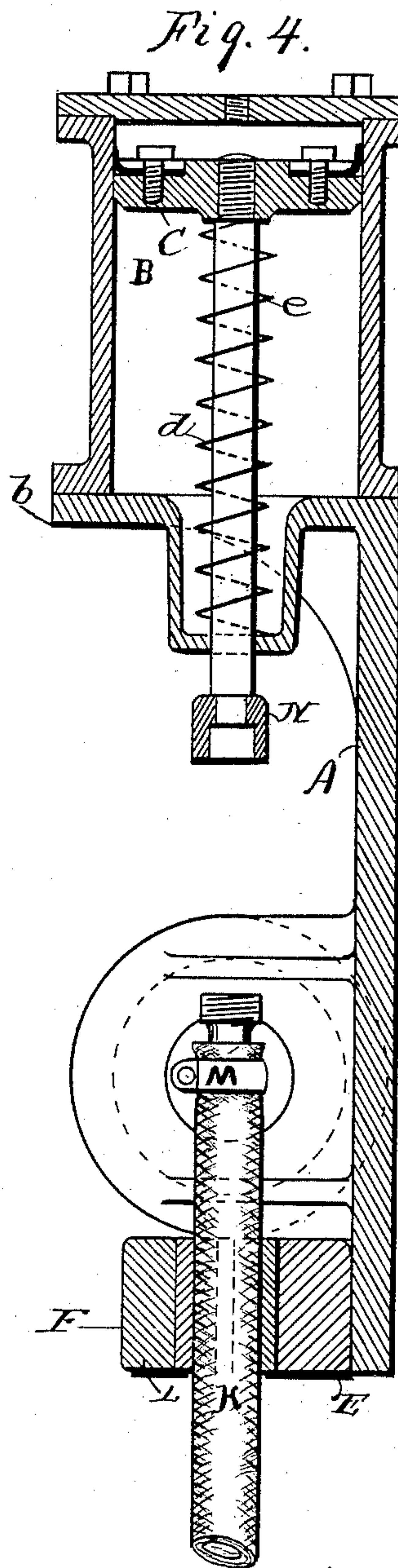
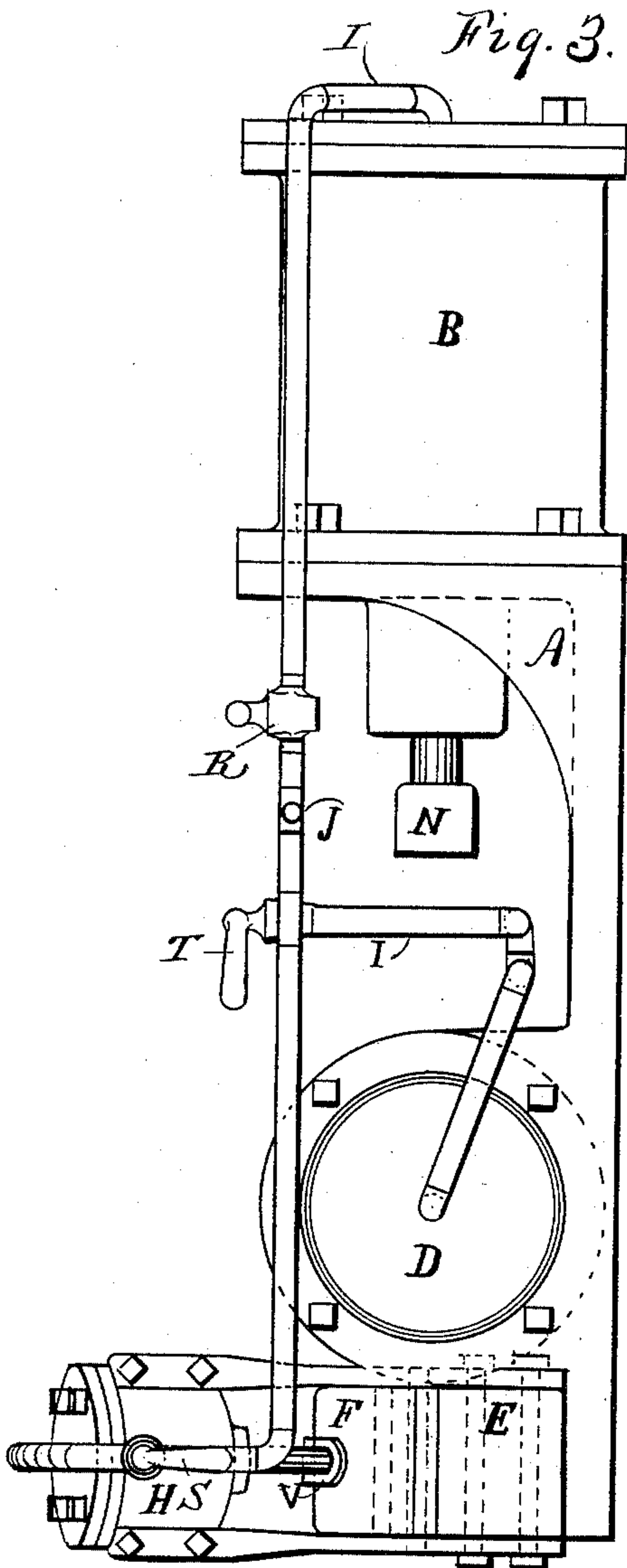
3 Sheets—Sheet 2.

A. M. SMITH.

MACHINE FOR APPLYING HOSE CONNECTIONS.

No. 482,593.

Patented Sept. 13, 1892.



Witnesses.
J. H. [Signature]
21 [Signature]

Inventor.
A. M. Smith

(No Model.)

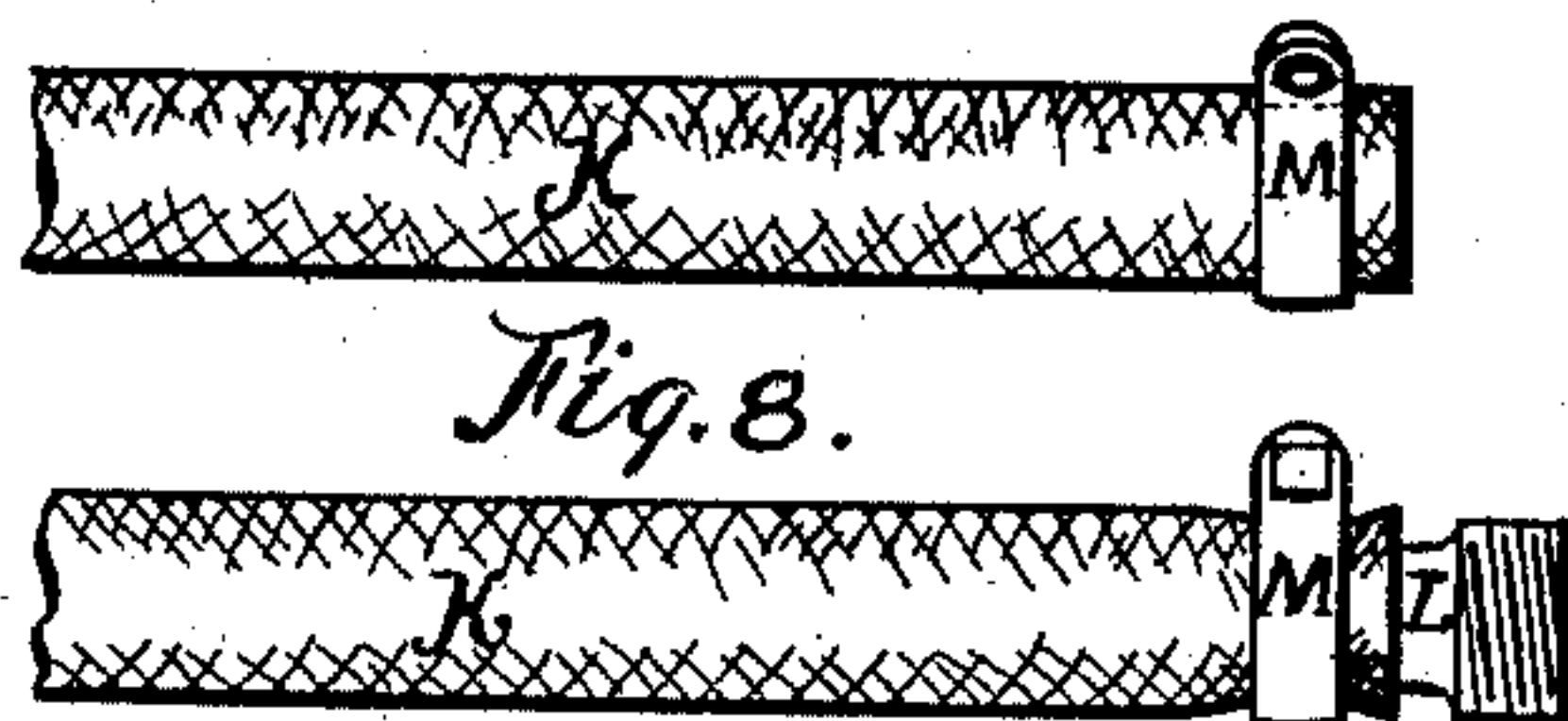
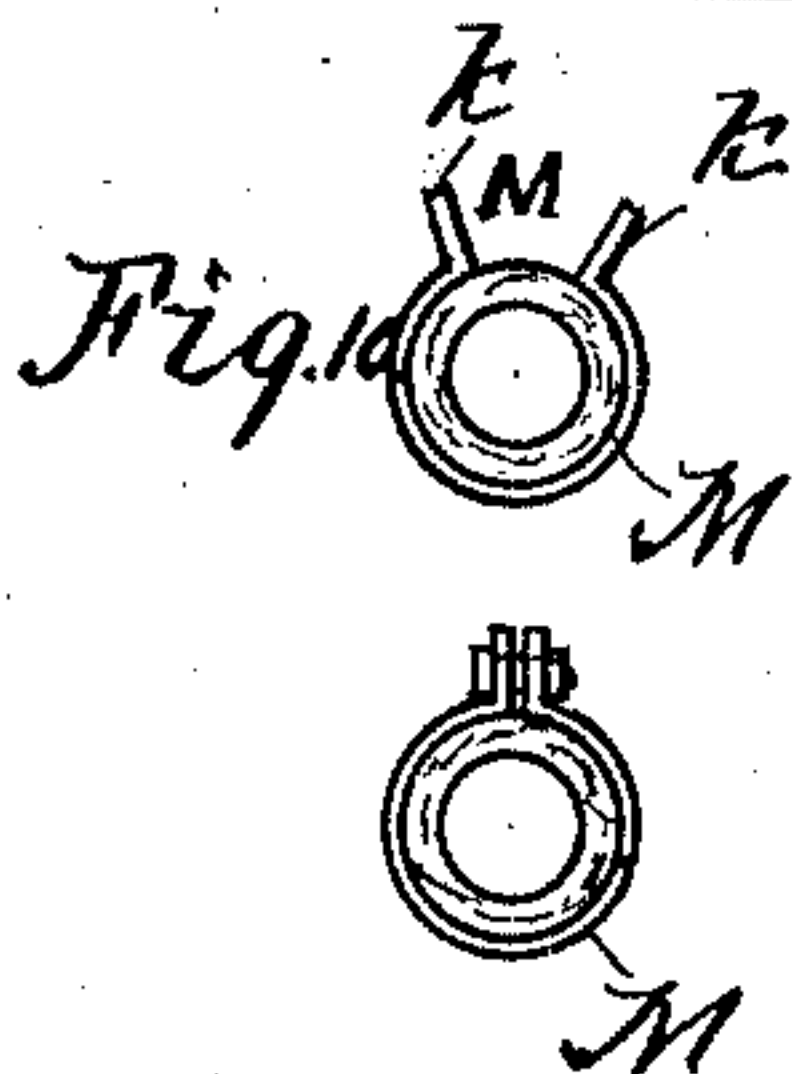
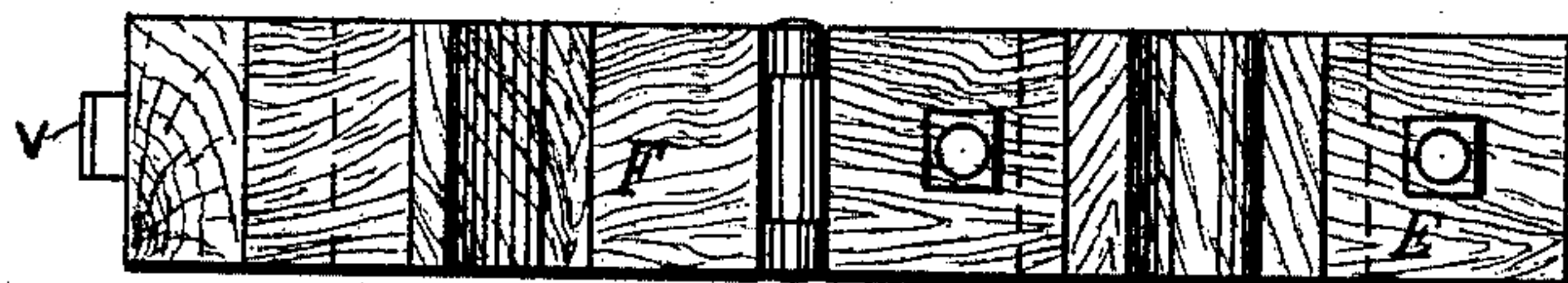
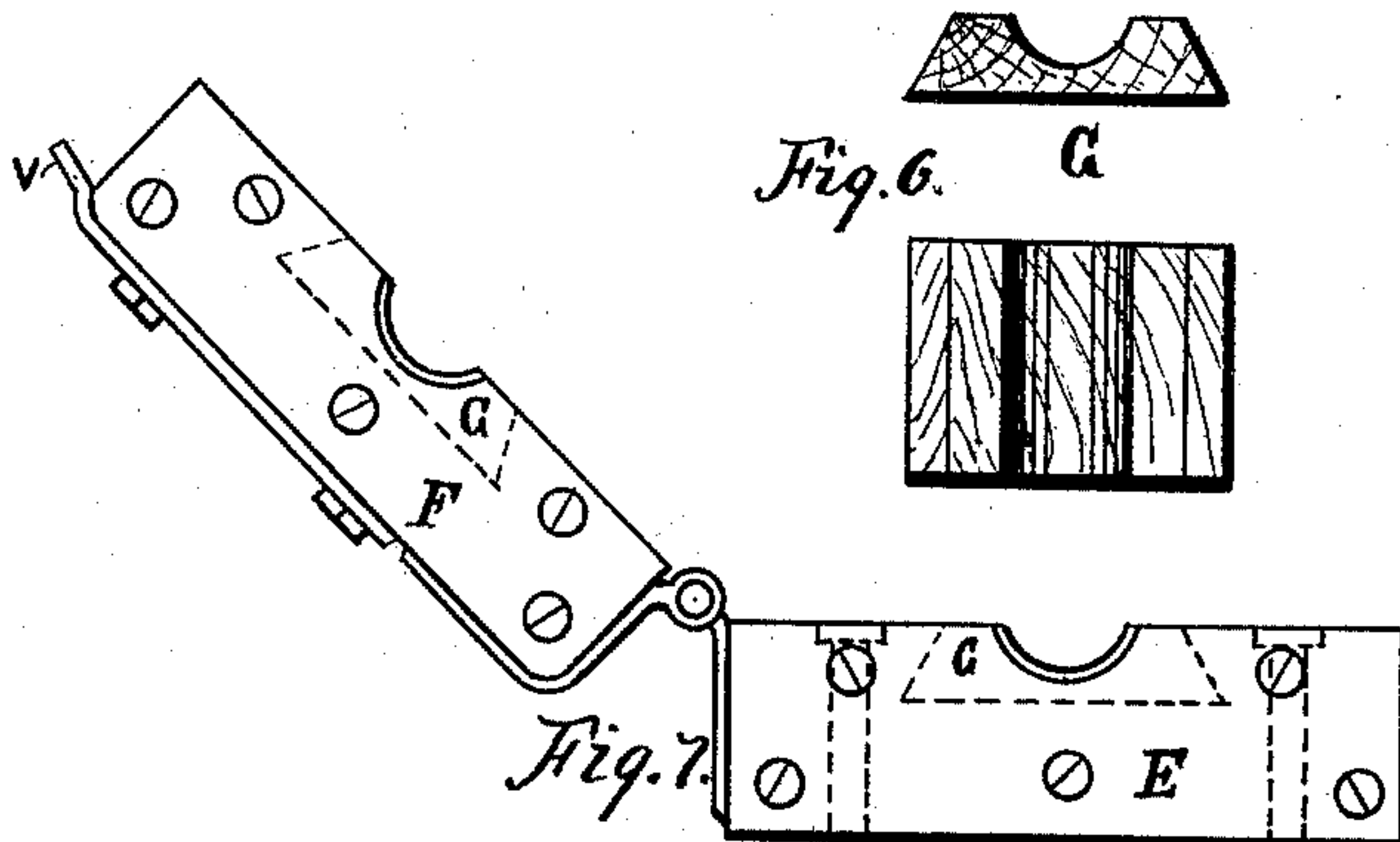
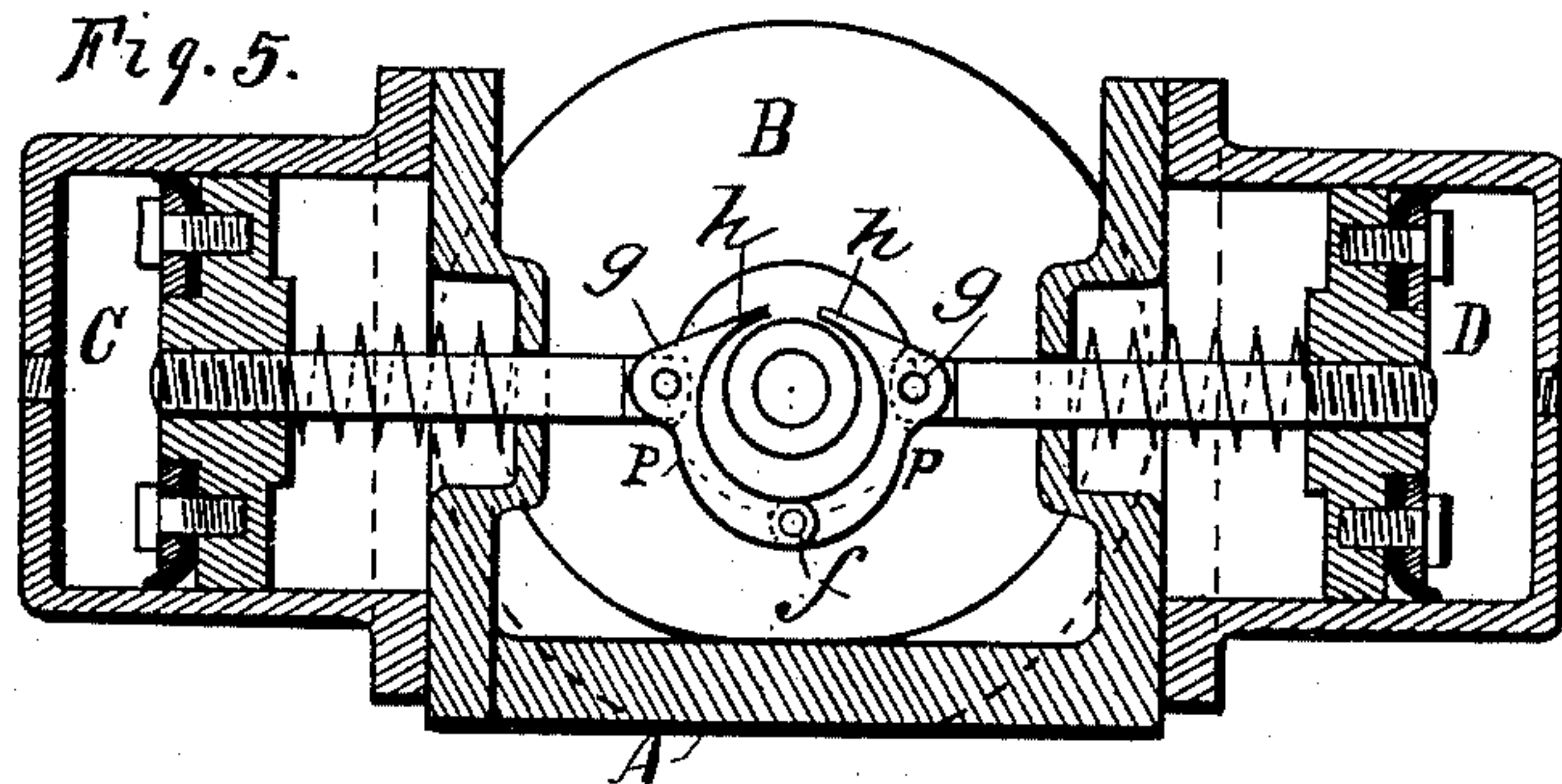
3 Sheets—Sheet 3.

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MACHINE FOR APPLYING HOSE CONNECTIONS.

No. 482,593.

Patented Sept. 13, 1892.



Witnesses.
S. Huggins
D. C. Lee

Inventor.
A. M. Smith

UNITED STATES PATENT OFFICE.

ALBERT MONTIVILLE SMITH, OF MEADVILLE, PENNSYLVANIA.

MACHINE FOR APPLYING HOSE CONNECTIONS.

SPECIFICATION forming part of Letters Patent No. 482,593, dated September 13, 1892.

Application filed January 29, 1892. Serial No. 419,652. (No model.)

To all whom it may concern:

Be it known that I, ALBERT MONTIVILLE SMITH, a citizen of the United States of America, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Applying Hose Connections, of which the following is a specification.

My invention relates to the application of connections to hose, being especially designed for that class of hose used in the steam-heating and air-brake pipes of railway-trains, though not necessarily limited to such pipes.

Great difficulty has heretofore been experienced in applying the couplings and coupling-bands to hose of this kind and to make them sufficiently secure to withstand the strain to which they are subjected when in use. The ordinary method in use is to grip the hose in a vise and then drive the coupling into the end of the hose; but this mode often requires the previous boiling of the end of the hose in order to soften it. The operation is mainly manual, requires much time, and does not insure a certain and durable connection.

The object of the present invention is to do its work by power and in a much better and cheaper manner than has been done heretofore.

The invention consists of a machine having gripping and pressure-applying mechanism organized as hereinafter described, whereby the operations are performed in proper succession and more speedily and effectually by power.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows an end elevation; Fig. 2, a top view; Fig. 3, a side elevation; Fig. 4, a longitudinal vertical section; Fig. 5, a transverse section on line *xx* of Fig. 1. Figs. 6, 7, 8, 9, and 10 show details, all as hereinafter explained.

In the drawings, A represents the frame, which may be of cast-iron, provided with elevated sides *a* and an elevated end piece *b*, which may be cast in one piece with the bed, this, with the bed, forming the frame. Upon the end *b* is attached a cylinder B, in which is fitted a piston *c*. This piston has a rod *d* extending inwardly and having its support in a

socket cast in the end piece *b*. The end of the rod is fitted to receive the socket or connection which is to be applied to the pipe. It is also provided with a spring *e*, which tends to return the piston to its normal position after it has been subjected to the action of the motor in applying a coupling to a pipe. The side pieces *a a* have similar cylinders. (Shown more clearly in sectional view, Fig. 5.) These cylinders are arranged directly opposite each other in a line at right angles to the cylinder *b* and at the opposite end of the machine. Cylinders C D have pistons provided with rods and springs, as described in connection with the cylinder B; but the inner ends of the rods in the cylinders C and D are provided with clamps P P. These are alike and are connected by a hinged joint at *f* and with a similar joint at *g g* to the rods. The upper ends of the clamps have fingers *h h*, which are arranged to curve over the outer surface of the pipe. They are so proportioned and adjusted that when the pistons C D are back in the position in which they are pressed by the springs the ends of the fingers *h h* will lie just outside the spurs or outwardly-turned ends *k* of the clamping-band M before the band is compressed. (See Fig. 10.) When the pistons are forced inward, the fingers bear against the spurs *k* and force them together, thus drawing up the band. The fingers are arranged to bear upon the spurs below the holes through which the bolt is placed, and while the fingers hold the band in the compressed position the bolt may be inserted and the band secured in place. This is a convenient form of mechanism for closing up the band; but other devices may be used with the same effect. The cylinders are supplied with compressed air or other motive agent through a main pipe J, leading to any suitable source. A branch pipe *l* leads into the cylinder B back of this piston and a branch pipe *m* from the main pipe I leads to two branch pipes *o*, which enter the cylinders C and D, respectively, behind their pistons. A cock R controls the supply to the cylinder B and the cock T controls the supply to the cylinders C D.

In order that the pipe which is to be operated upon may be firmly held during the operation, I provide a clamping device upon the end of the machine adapted to hold the pipe

in line with the mechanism for compressing the clamping-band M. This clamp consists of a lower part E, fixed in place, and an upper part F, hinged thereon. In this clamp are removable jaws G, in which are the semicylindrical seats for the hose. These are made removable, so that they may be taken out and exchanged for others, fitted to different sizes of hose, put in their place. On the free end of the upper part F is a spur *v*, which extends into range of the pressure-applying device, adapted to hold the jaw down. This pressure-applying device consists of a cylinder H, having a piston provided with a spring and rod, the same as shown in B, and it is arranged to bear with its ends directly upon the spur *v* when the jaw is down. The cylinder H is supplied with air or other motive agent through the branch pipe *q* from the main pipe I. This branch pipe is provided with a cock S. By means of these branch pipes and their cocks leading, as heretofore described, to their respective cylinders pressure may be applied in proper order by simply turning the cocks in proper time and succession.

In operating the device the pipe is laid in the jaw of the lower clamp part E, with the forward end projecting through and just underneath the fingers *h h* far enough so that the clamping-band M placed thereon, as shown in the upper part of Fig. 8, will come just opposite the fingers. The upper part F, being brought down to place, and the cock S, being turned, the hose is clamped firmly. The coupling L, having been put in place in the socket N in the end of the piston-rod and the small end of the coupling directed into the end of the pipe, the cock R is turned, which forces inward the piston in the cylinder B, and thus drives the shank of the coupling into the pipe. Then the cock T is turned, which causes the pistons in cylinders C and D simultaneously to advance and compress the clamping-band. The bolt is then inserted in the clamping-band and the operation is completed. Cocks R, S, and T, known as "side vents" or "frost-cocks," furnish their own release by turning handle to opposite position to that occupied while furnishing power. The cylinder H is supported upon standards *t*, the lower ends of which are bolted to the sides of the clamping-piece E, and they serve as guides, also, for the clamping-piece F, and their upper ends are bolted to and support the cylinder H.

I do not confine myself to the particular form of mechanism shown for applying power nor to the particular mechanism shown for compressing the clamping-band. My invention includes the general organization of the

machine, in which are the following elements, stated in general terms, which elements I have hereinbefore particularly described a mechanism for holding the hose, a mechanism for forcing the coupling or connection into the hose, and a mechanism for compressing the clamping-band, with connections from said mechanism to source of power, and intermediate controlling devices whereby the various mechanisms may be put into operation in proper sequence.

I claim as my invention—

1. A machine for applying couplings to hose, consisting of a holder for the pipe, a device for forcing the coupling into the pipe, arranged in line with the end of the said pipe, and laterally-arranged compressing means for forcing the band in place about the pipe end and coupling, substantially as described.

2. In combination with a holder for the pipe, a device for forcing the coupling into the same, arranged in line therewith, laterally-arranged compressing devices for the band, a source of power, and connections therefrom to the forcing and compressing devices for operating the same, substantially as described.

3. In combination with a holder for the pipe, the cylinder B, a piston-rod therein in line with the pipe end and adapted to force the coupling into the same, the cylinders C D, arranged laterally of the position of the coupling, carrying compressing means for operating upon the band M of the coupling, a source of power, a main pipe, and branch pipes extending therefrom to the cylinders and provided with suitable cocks, substantially as described.

4. In combination with a holder for the pipe, the cylinders B, C, and D, and the operating devices carried thereby, arranged, respectively, to insert the coupling and clamp the band upon the same, the cylinder H, the piston carried thereby and adapted to secure the upper part F of the pipe-holder in place, and connections from a source of power to the said cylinders B, C, D, and H, substantially as described.

5. In combination with the pipe-holder, the cylinders C D, the pistons therein, and the fingers *h h*, pivoted thereto and adapted to operate on the projecting ends of the clamping-band M, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT MONTIVILLE SMITH.

Witnesses:

S. HIGGINS,
D. KEEFE.