

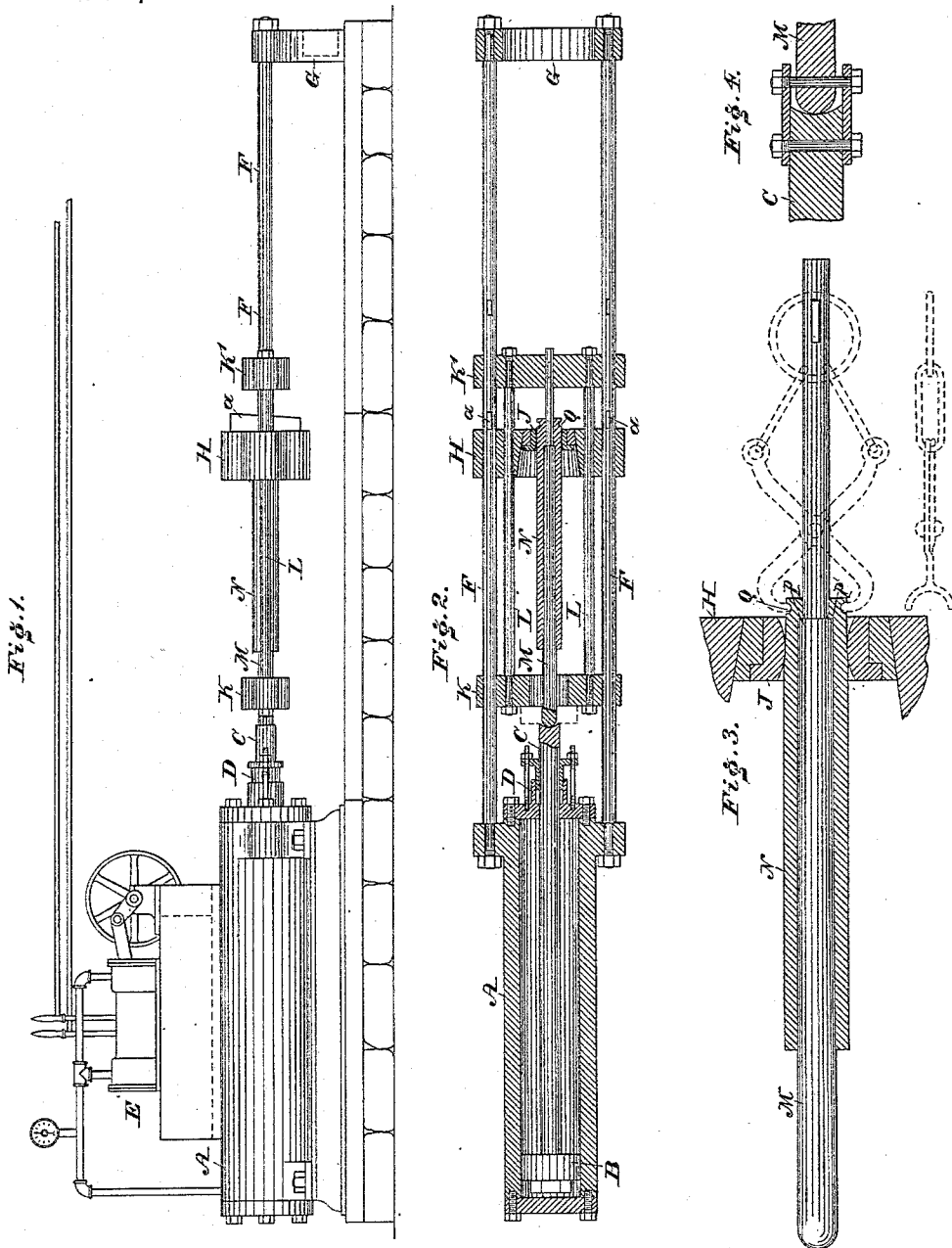
(No Model.)

L. F. SMITH.

MACHINE FOR DRAWING METAL TUBES.

No. 359,898.

Patented Mar. 22, 1887.



WITNESSES:

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MACHINE FOR DRAWING METAL TUBES.

SPECIFICATION forming part of Letters Patent No. 359,898, dated March 22, 1887.

Application filed April 15, 1886. Serial No. 198,902. (No model.)

To all whom it may concern:

Be it known that I, LEVI F. SMITH, 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 Machines for Drawing Metal Tubes, Shells, &c., which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 represents a side elevation of a machine for drawing metal tubes, shells, &c., embodying my invention. Fig. 2 represents a horizontal section thereof. Fig. 3 represents a longitudinal section of a detached portion thereof on an enlarged scale. Fig. 4 represents a longitudinal section of a portion of a modification.

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

My invention relates to improvements in machines for drawing tubes, shells, &c., in which such articles may be forced through reducing-dies; and it consists in the details of construction and arrangement of parts, as hereinafter set forth, whereby, while the machine is simple in the number of its parts and easily managed, the operation is accurate and the work efficiently performed.

Referring to the drawings, A represents a cylinder containing a piston-head, B, and a piston-rod, C.

E represents a pump, engine, or other device, whereby water or other fluid may be directed into the cylinder A, and power exerted on the piston-head B for forcibly advancing the same, said piston-head having firmly attached a piston-rod, C, which passes through a tightly-fitting stuffing-box, D, at the forward end of the cylinder A.

F F represent guiding-rods, which extend parallel with the piston-rod C, and are supported at the forward end on the standards G G, and at the back end are firmly attached to the cylinder A, said rods F F having slotted apertures for stops a for the fixed or adjustable cross-head H, with an aperture through the same of a convenient shape for holding the reducing-die J.

Supported on the rods F is a cradle or movable frame consisting of cross-heads K K', which have apertures near each end, which per-

mit the said heads to move easily on the rods F; also, the cross-head H has two apertures, through which pass the rods L, that connect the cross-heads K K' of the cradle together, forming a strong structure for supporting a mandrel, M, one end of which is secured to the cross-head K', while the opposite end passes freely through the cross-head K, and is adapted to be engaged by the piston C, it being noticed that the mandrel M is passed through the shell N and has a shoulder or contraction, P, which abuts against a shoulder or contraction, P', on the bore of the shell N at one end thereof, said end having also on its exterior a groove, Q, whereby the shell N may be grasped or grappled by tongs (shown in dotted lines, Fig. 3) or other device, the same being suitably connected with the mandrel or the cross-head K' for drawing the shell, &c., through the die when so required. (See dotted lines, Fig. 3.)

It will be seen that when the parts are in proper position and power is applied to the piston-head B the cradle is advanced, whereby the shoulder or enlargement on the mandrel and shoulder or contraction in the bore of the shell N is pushed or pulled through the reducing-die J, thus causing the drawing or reduction of the same. The power then may be reversed, which will force the rod C and cradle back to their normal or starting position, ready to force the same or another shell, &c., through the reducing-die, and so on indefinitely, as many and as long as may be desired.

If desired, the rod C may be made to abut against the cross-head K of the frame, whereby the cradle is advanced and the cross-head K' pulls the shell, &c., through the die. The action of pulling the shell, &c., through the die may also be accomplished by the use of the tongs, grip, or other device, which may be attached to the cross-head K' and grasp the shell, &c., said tongs or other grasping device being moved by the forward motion of the cradle. Again, if desired, the shell, &c., may be both pushed and pulled through the die, or the rod C may engage with the shouldered mandrel M and force the tube, shell, &c., through the reducing-die J and head H; but in either case the drawing or reducing of the shells, &c., is accomplished in an expeditious and reliable manner.

In Fig. 4 the rod C and mandrel M are shown connected for the purpose of drawing back the mandrel M or cradle, or both, the pump or engine having reversing mechanism for returning the piston. The said reversing mechanism may be of any suitable and well-known construction, and as the same is not claimed specifically herein it is not shown in the drawings.

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

1. In a machine for drawing metal tubing, shells, &c., the rod C and means, substantially as described, for imparting motion thereto; a 15 movable frame, the mandrel M, carried by said frame and operated by said rod C, the guide-rods F F, and the cross-head H, with a reducing-die, said parts being combined and 20 operating substantially as stated.

2. In a machine for drawing metal tubing, shells, &c., the rod C and means, substantially as described, for imparting reciprocating motion thereto, a sliding frame formed of the 25 cross-heads K K', connected by the rods L L, the mandrel M, carried by said frame and operated by said rod C, guide-rods for said frame, and the head H, having reducing-die J, the several parts being combined and operating sub- 30 stantially as set forth.

3. In a machine for drawing metal tubing, a rod, C, and means, substantially as described,

for imparting reciprocating motion thereto, a movable frame consisting of cross-heads K K', with connecting-rods L L, the guide-rods F F, 35 the adjustable head H, having reducing-die J, and mandrel M, said parts being combined and operated substantially as and for the purpose set forth.

4. In a machine for drawing metal tubing, shells, &c., a rod and means, substantially as described, for imparting reciprocating motion thereto, guiding-rods having adjustable stops, a movable frame mounted on said guiding-rods, 40 and carrying a reducing-die and a mandrel, all of said parts being combined and operating substantially as and for the purpose set forth.

5. In a machine for drawing metal tubing, shells, &c., the rod C and means, substantially as described, for reciprocating the same, the 50 guiding-rods F F, having adjustable stops, a movable frame formed of the cross-heads K K', connected by the rods L L, and carrying mandrel M, having shoulder P, said frame being mounted on said guide-rods, and the head 55 H, mounted on said guide-rods between said cross-heads K K', and carrying reducing-die J, all of said parts being combined and operating substantially as and for the purpose set forth.

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