

(No Model.)

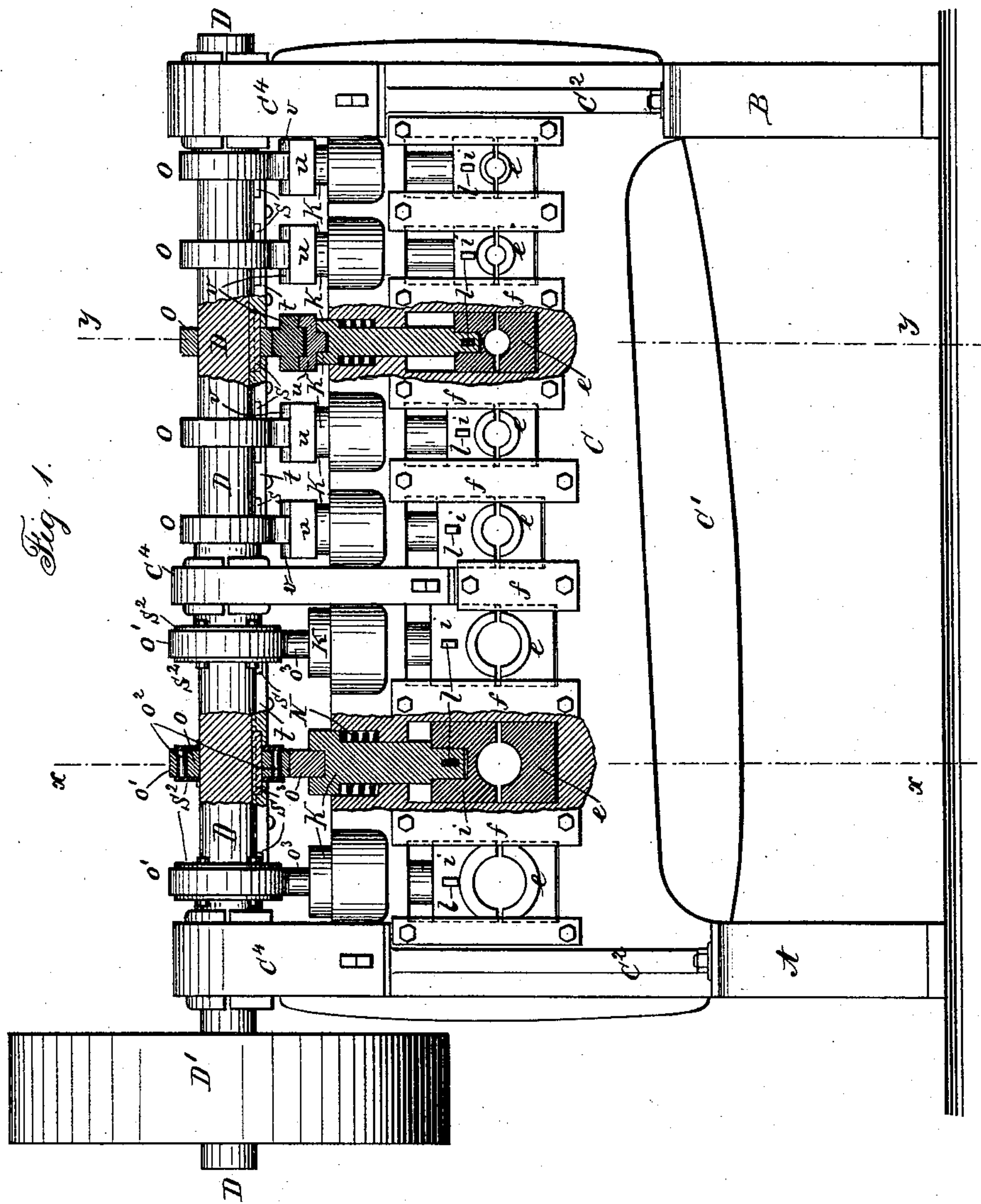
2 Sheets—Sheet 1.

W. R. WALTON.

MACHINE FOR CONTRACTING THE END OF A TUBE.

No. 324,507.

Patented Aug. 18, 1885.



Witnesses
J. Stait
Chas H. Smith

Inventor
William R. Walton
per Lemuel W. Terrell
Atty

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Fig. 3.

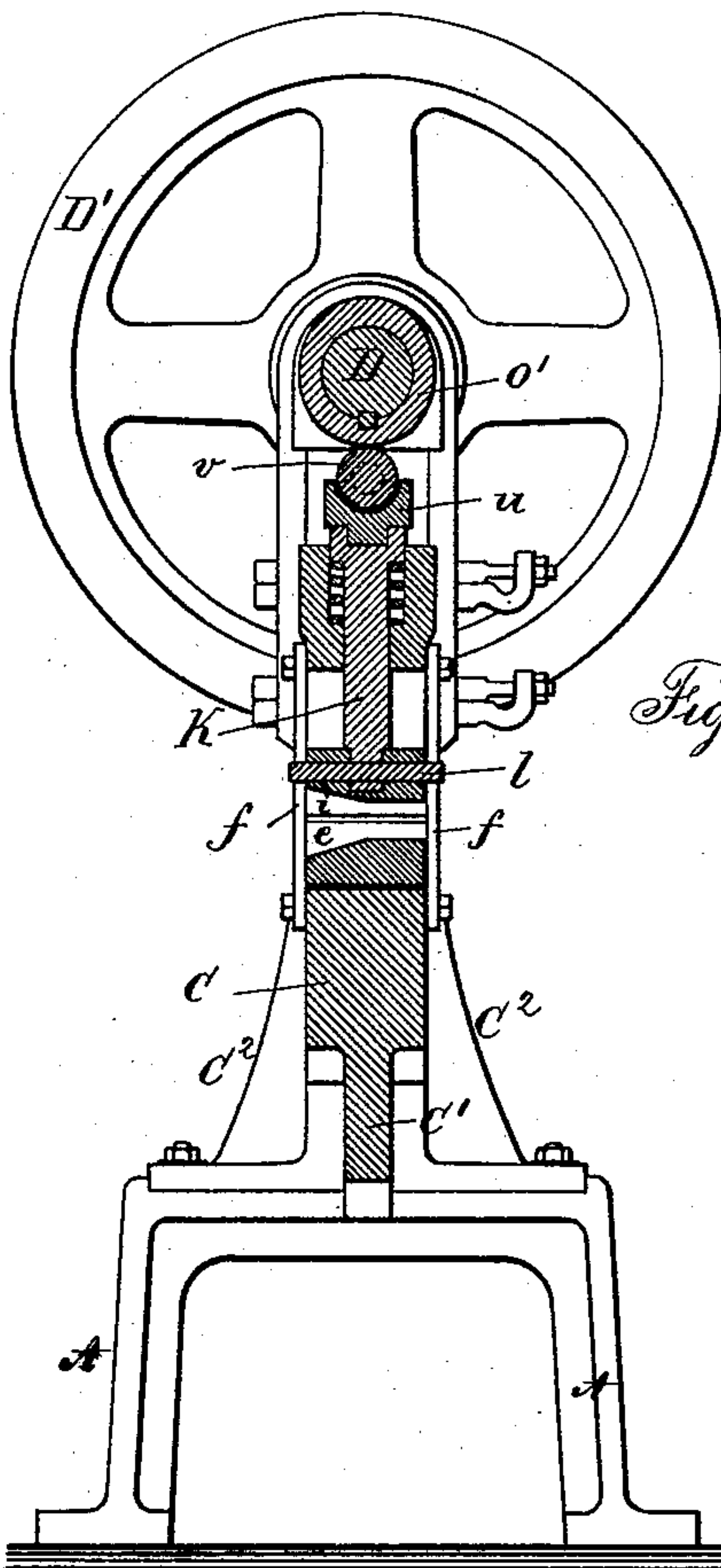
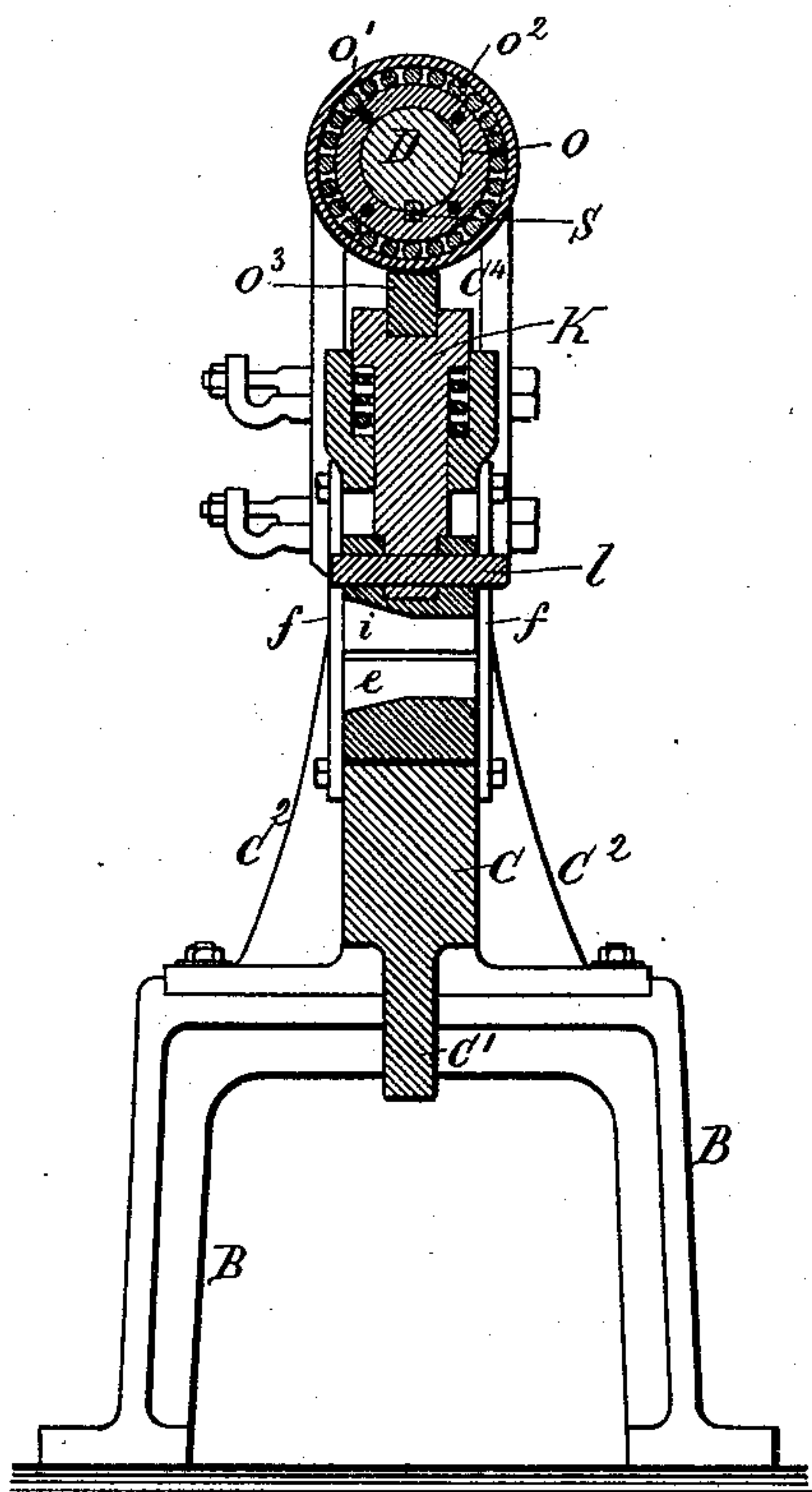
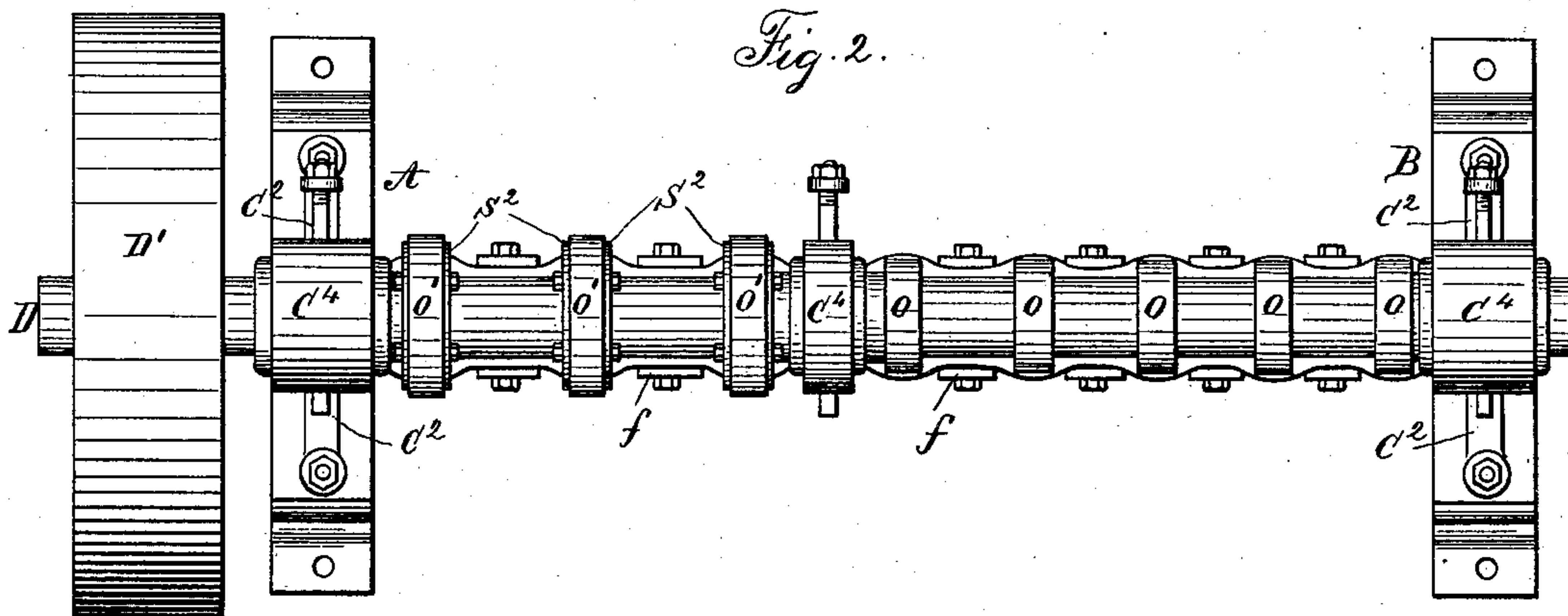


Fig. 4.

Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM R. WALTON, OF ANSONIA, CONNECTICUT, ASSIGNOR TO THE
ANSONIA BRASS AND COPPER COMPANY, OF SAME PLACE.

MACHINE FOR CONTRACTING THE END OF A TUBE.

SPECIFICATION forming part of Letters Patent No. 324,507, dated August 18, 1885.

Application filed June 4, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. WALTON, of Ansonia, in the county of New Haven and State of Connecticut, have invented an Improvement in Swaging-Machines, of which the following is a specification.

In the manufacture of seamless tubes of copper, brass, and other metals it is necessary to compress one end of the tube sufficiently to allow of the insertion of the same through the die of the draw-bench.

My present machine is adapted to perform this operation, and by its peculiar construction I am enabled to change the dies with facility and rapidity, and to use a number of dies upon one machine, so as to be adapted to the different sizes of pipe that are being manufactured.

In the drawings, Figure 1 is an elevation with portions of the dies and followers in section. Fig. 2 is a plan view. Fig. 3 is a section at the line *x x*, and Fig. 4 is a section at the line *y y*.

The legs or bed-plates A B are adapted to support the machine, and across between the same is a casting in the form of a vertical plate or frame, C, ribbed at the bottom, as at C', and also having near the ends the buttress-ribs C² to support the plate C rigidly. In this plate C is a range of openings for the reception of the swaging-dies, hereinafter described, and upon the top edge thereof there is a range of cylindrical openings for the reception of helical springs and plungers, hereinafter described; and said frame C extends upwardly at its ends to form the pillow-blocks C⁴, that receive the main shaft D, upon which is a driving-pulley, D', for rotating said shaft. There may be any desired number of swaging-dies in the range. I have, however, shown eight. These dies may vary in size, and the openings in the frame or plate C for the reception of such dies also vary in size. Except in the matter of size, one swaging-die is the counterpart of the other. I will therefore describe the construction and mode of operation of one swaging-die and the parts which actuate the same. The lower half, *e*, of the swaging-die is received into the opening provided for it in the frame or plate C, and it remains stationary therein. The upper

part, *i*, of the swaging-die is also received into the same opening in the frame C, and the adjacent surfaces of these dies are recessed semi-circularly and taper, or are flaring toward one end, so as to be adapted to the reception of the tube and the compressing of the same to a smaller size by a reciprocating motion communicated to the die *i*. The plunger K passes vertically down through the hole in the frame C, before mentioned, and its lower end is reduced to form a shoulder resting upon the top of the die *i*; the plunger itself entering a hole in the die *i* and being secured by a cross pin or key, *l*. Within the holes or recesses in the upper surface of the frame C are the helical springs N, that act against the under sides of the heads of the plungers K to lift them and the dies *i*, to which they are connected. Each pair of swaging-dies *e i*, the follower, and the helical spring are the same, except as to size, throughout the range of swaging-dies introduced into the machine, and no further description of the separate sets of dies and plungers is necessary. Each plunger is acted upon by an eccentric or cam, O, upon the shaft D, there being as many cams or eccentrics as there are pairs of dies in the swaging-machine, and these cams or eccentrics are preferably placed upon the shaft so as to act in succession.

In the shaft D a longitudinal key-seat is planed for the reception of the separate keys *s*, and in the eccentrics O there are corresponding key-seats, and between these keys *s* there are filling-pieces *t*, the bases of which pass into the longitudinal groove in the shaft D, and these filling-pieces *t* are held by screws passing through them into the shaft D, and these filling-pieces *t* extend along over the keys, so that their ends come against the sides of the eccentrics. By this construction the keys *s* and the eccentrics O are held in their proper position upon the shaft D; but if any one or more pairs of swaging-dies are out of use, they can be allowed to remain stationary by simply removing two or more of the filling-pieces *t* and taking out one or more of the keys *s*, thus allowing the swaging-dies so disconnected to remain stationary for either repairs or to avoid unnecessary wear, the shaft D actuating the other swaging-dies.

With the swaging-dies that are adapted to the smaller sizes of tubes it is preferable to apply upon the upper ends of the plungers K cradle-pieces *u*, that receive rollers *v*, against which the eccentrics O operate, and with the larger swaging-dies it is preferable to surround the eccentric O with a ring O', between which and the eccentric are anti-friction cylindrical rollers O². This ring O' rests against the bearing-block O³ at the top of the plunger K, and the eccentric and its anti-friction rollers revolve around within such ring O'. The anti-friction rollers are kept in place by end plates or rings, *s*², bolted to the eccentric.

In either form of construction the eccentrics or cams communicate to the plunger K and dies *i* a downward movement, and the springs N raise the plunger and dies and cause the plunger to remain in contact with the eccentrics or cams during their revolution, and the attendant introduces the end of the tube between a pair of dies, *e i*, adapted to act upon the same, and he revolves the said tube during the swaging operation until the proper length of tube has been reduced to a size that will pass through the die in the draw-bench.

I make use of the auxiliary central frame and support, C^t, with a journal-box to sustain the shaft D near the middle of its length.

To retain the dies *e i* in place, I provide the movable guide-plates *f*, bolted at top and bot-

tom to the frame C, and lapping at their edges sufficiently over such swaging-dies *e i* to retain them firmly in place, but to allow the die *i* to slide up and down. By removing two of these plates the corresponding dies *e i* can be removed for repairs or otherwise without disturbing any other part of the machine.

I claim as my invention—

1. The combination, with a range of swaging-dies, *e i*, and the plungers K for actuating the same, of the frame C, having openings to receive the dies and plungers, the driving-shaft D, the eccentrics or cams O, and the springs for raising the plungers and upper dies, substantially as set forth.

2. The combination, with the range of swaging-dies, the plungers, springs, cams or eccentrics, and main shaft for actuating the same, of the frame C, having openings to receive the swaging-dies, plungers, and springs, and the plates *f*, bolted to the surface of the frame C, and adapted to be removed for giving access to the swaging-dies, substantially as set forth.

Signed by me this 29th day of May, A. D. 1885.

WILLIAM R. WALTON.

Witnesses:

L. H. HOLMES,
A. S. TERRY.