

W. J. GORDON.
Seaming-Machine.
No. 222,691. Patented Dec. 16, 1879.

Fig. 1

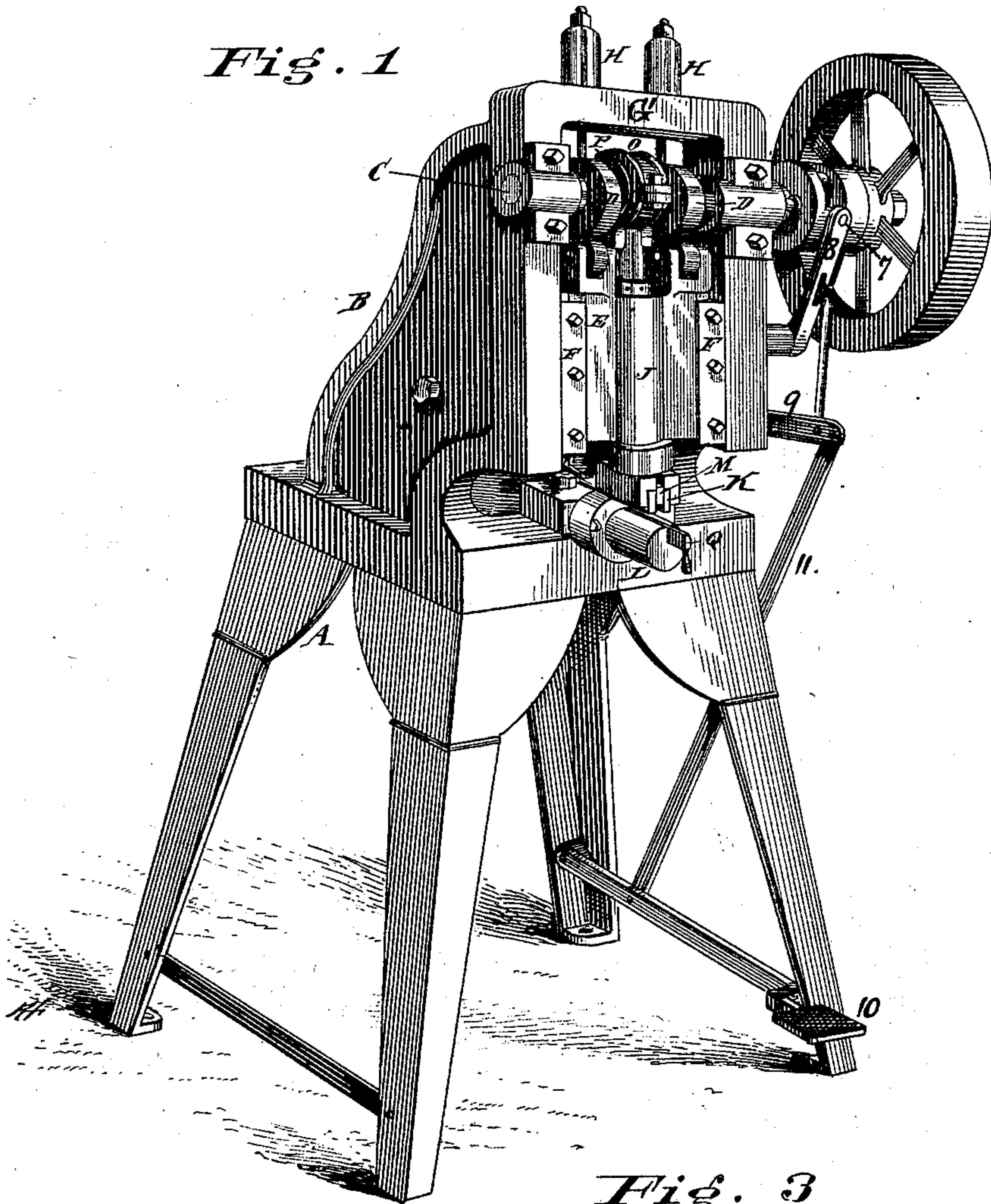
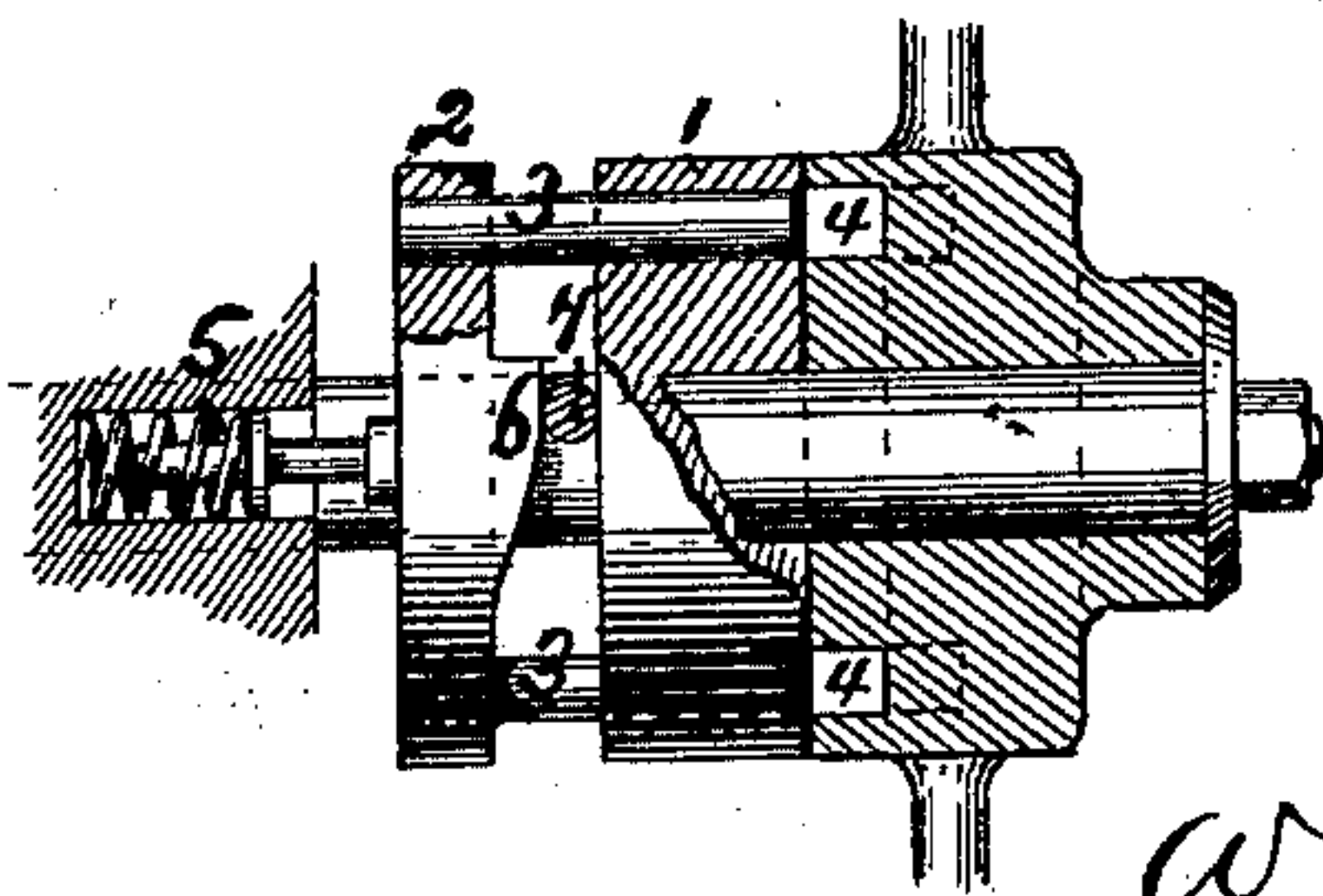


Fig. 3

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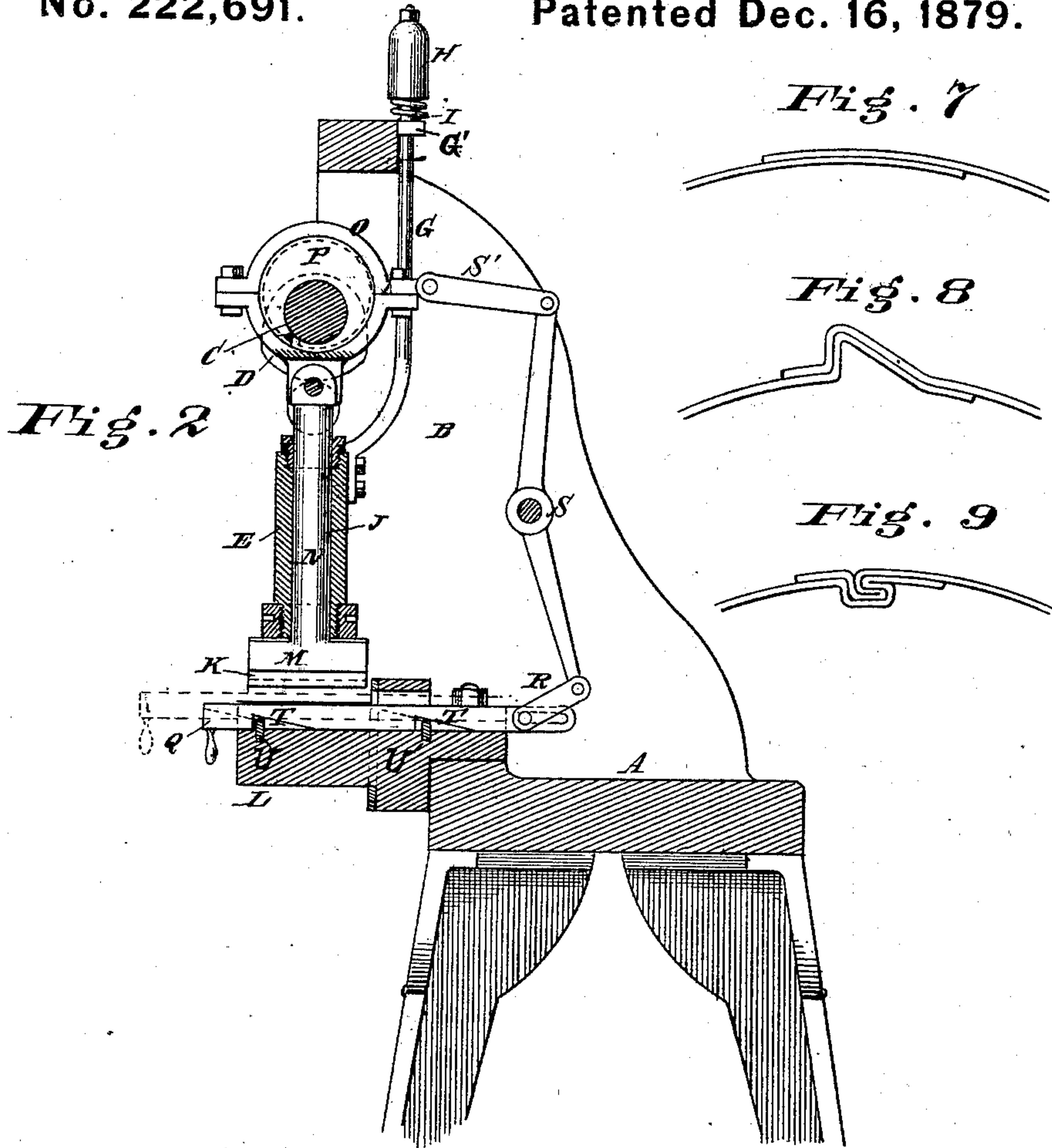


Fig. 7

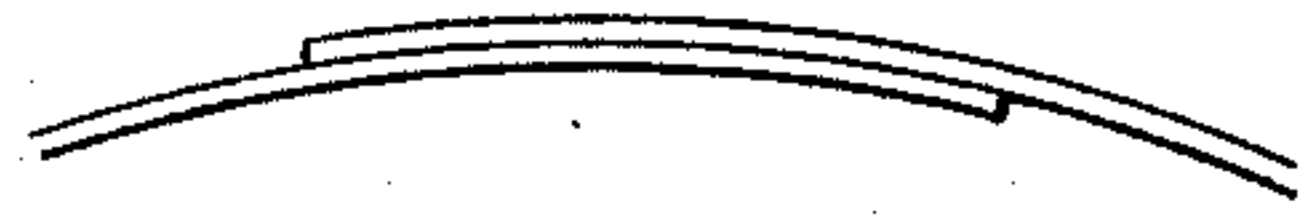


Fig. 8

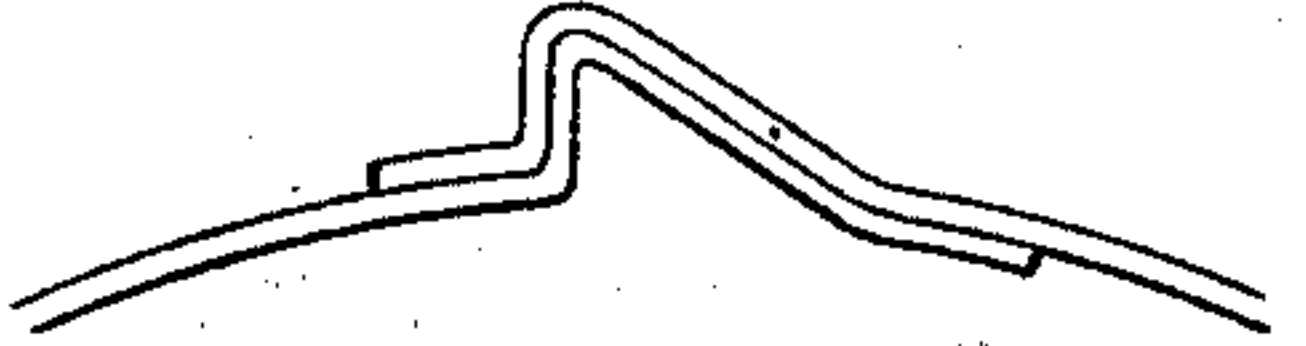


Fig. 9

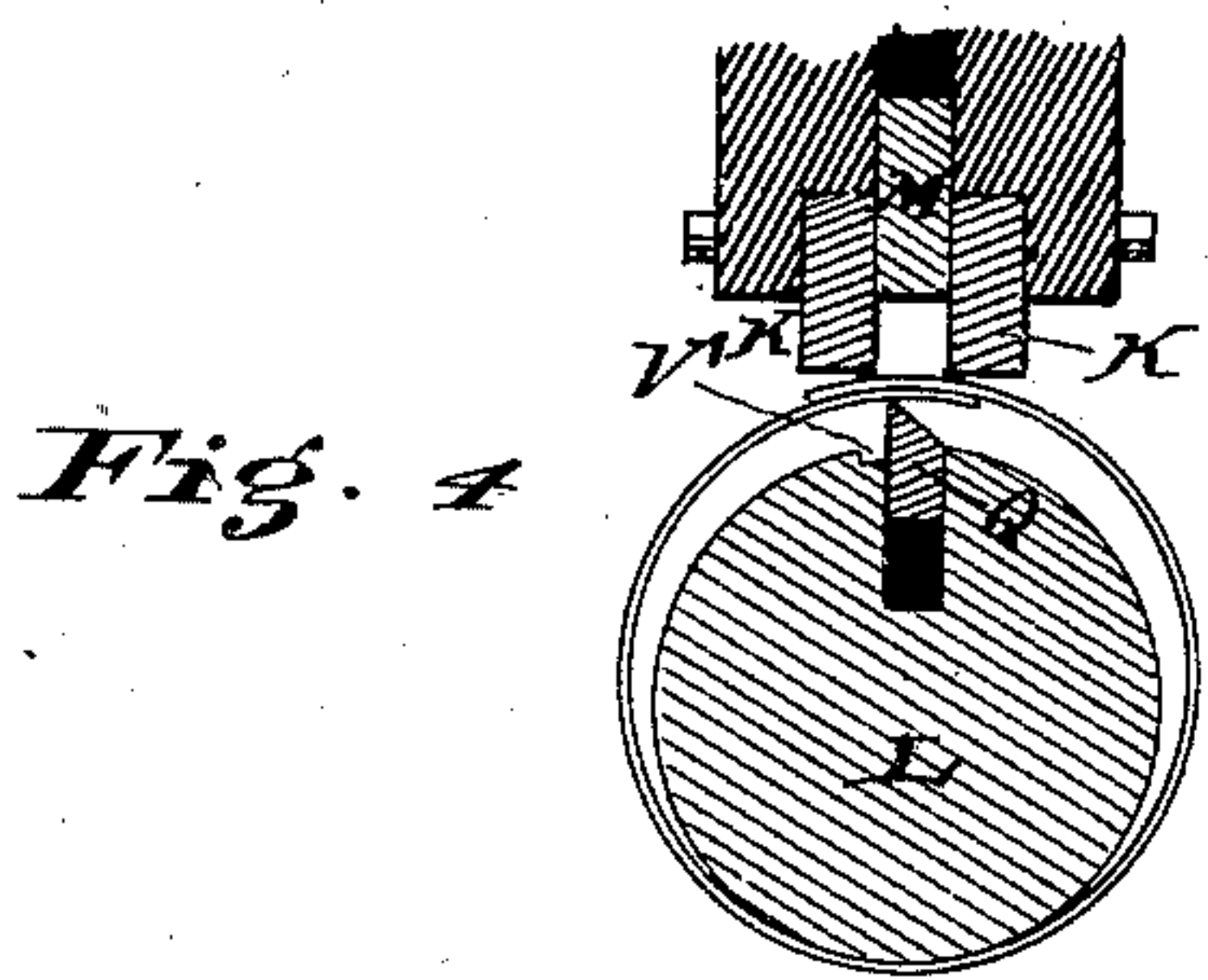


Fig. 4

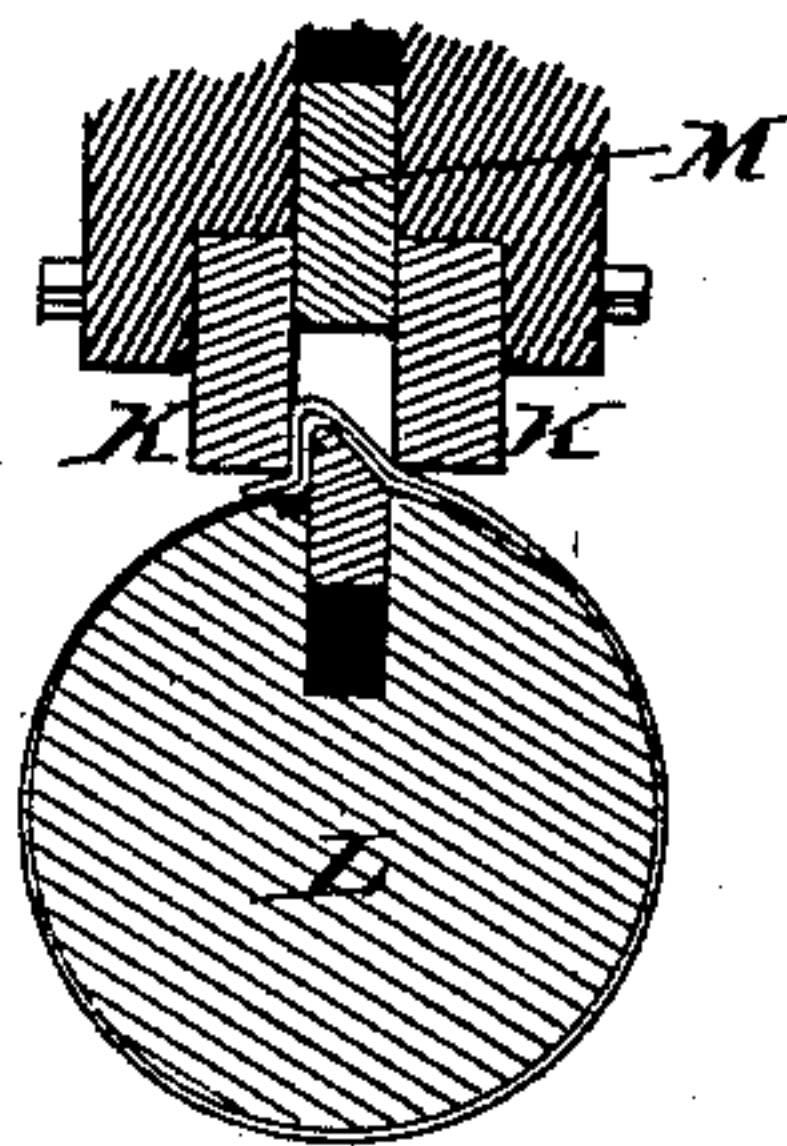
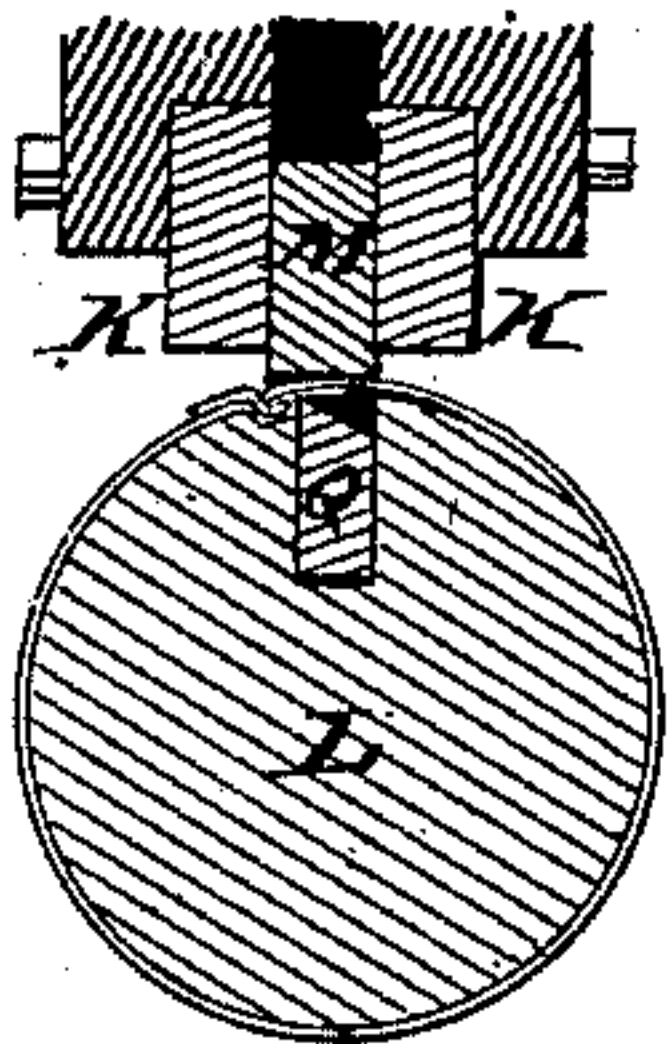


Fig. 5

Fig. 6



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UNITED STATES PATENT OFFICE.

WILLIAM J. GORDON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN SEAMING-MACHINES.

Specification forming part of Letters Patent No. **222,691**, dated December 16, 1879; application filed October 18, 1879.

To all whom it may concern:

Be it known that I, WILLIAM J. GORDON, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Seaming-Machines, of which I hereby declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part hereof.

My invention relates to that class of metal-working machinery which is employed in the manufacture of sheet-metal cans and other vessels used for the hermetical inclosing of paints, powder, edibles, and the like, and has especial reference to a mechanism for forming the seam of the side body of a metallic can without the aid of solder.

Of the drawings, Figure 1 represents, in perspective, a machine embodying my invention. Fig. 2 is a central sectional elevation of the same looking from the side, the movement of the knife-former being indicated by dotted lines. Fig. 3 is a partial sectional detail of the clutch upon the driving-shaft which connects or disconnects said driving-pulley and the shaft. Fig. 4 is a central sectional elevation of the clamping-jaws, plunger, knife-former, and can-holder die as said parts appear in facing the machine when the overlapped metal blank which forms the side body of the can has been placed in position and is ready for the action which forms the seam; Fig. 5, a similar view of the same parts, the jaws having descended and the first crimp having been formed; Fig. 6, a similar view of the same parts, the plunger having descended and completed the formation of the seam, the jaws having ascended and released their gripe, and the knife-former having dropped. Figs. 7 and 8 are enlarged partial end views of the lap of the side body as it appears, respectively, before action of the machine and after the action represented in Fig. 5; and Fig. 9, a similar view of the seam completely formed as it is produced by my improved machine.

Similar letters of reference indicate corresponding parts wherever used.

Referring to the drawings, A represents the frame-work of my machine, being a table-stand supporting two parallel standards, B B, which serve to support the mechanism. C is

the driving-shaft, upon which are mounted the eccentric which operates the plunger and the knife-former and the cams which operate to depress the clamping-jaws and their frame. D D are cams operating to depress the reciprocating frame E, which slides in the bearings F F, affixed to the standards B B. G G are return-bars, passing through the cross-bar G' of the standards, connected below with the reciprocating frame, and terminating above in caps H, inclosing and compressing against the cross-bar spiral springs I, which, by their expansion, raise the reciprocating frame after the cams have depressed it.

Centrally the reciprocating frame enlarges to form a hollow vertical sleeve, J, Fig. 1, and centrally at its base it is expanded transversely to form the two clamping-jaws K K.

L is the can-holder die, the same being a bed-die of any desired form, projecting horizontally from the table of the stand in line beneath the clamping-jaws, and in the drawings represented of cylindrical form, adapted for use with cylindrical cans, although it may be shaped to hold any other form of can.

M is the plunger, the striking-face of which is of the same transverse length as the jaws, and which is caused to reciprocate between the jaws by the action of a stem to which it is secured. N is the stem above named, which plays through the sleeve of the die-frame, extending above such sleeve, and there terminating in an eccentric-collar, O, encircling an eccentric, P, upon the driving-shaft. Q is the knife-former, the upper face of which is beveled off on one side, so as to be of the form represented in section in Figs. 4, 5, and 6. The knife-former rests in a slot longitudinally channeled through the can-holder die, and projects to the rear of the same, where it is connected by a slotted link-connection, R, playing through a slot in the knife, with a rocker-shaft, S, connected by a link, S', with the rear of the eccentric-collar O.

The knife-former has one, two, or more inclined planes, T, cut into its base, while transversely across the slot in the holder-die are one, two, or more lifting-studs, U U, spanned by the cut-away or inclined-plane portions of the base of the knife-former, the arrangement being such that as the rocker-shaft throws the

knife-former forward the latter rises, by means of its inclined planes, over the studs into the position represented in dotted lines in Fig. 2.

V' is a longitudinal countersink in the can-holder on the side of the slot thereof which lies nearest to the knife-edge of the knife-former.

In Fig. 3 I have represented a convenient form of clutch for throwing the driving-pulley into or out of gear with the shaft. In the clutch represented two disks, 1 and 2, are mounted on the shaft where it projects beyond the standards. 1 is keyed to the shaft. 2 is free both to rotate and to slide laterally upon said shaft. Two pins, 3 3, secured to the disk 2, project laterally through holes in disk 1 and into sockets 4 4 in the hub of the pulley when the disks lie together, so as to bind the pulley to the shaft. A spring, 5, keeps the two disks together in such position. The disk 2 has a cam, 6, upon its face next to disk 1.

A pin, 7, upon a pivot-arm, 8, is ordinarily kept by a counter-spring and lever, 9, (spring not shown in drawings,) between the disks in such manner as to wedge them apart, compress the spring, and retract the pins from out the pulley, leaving the latter free to play on its shaft. A treadle, 10, and treadle-bar 11, however, act when depressed to draw the pin from between the disks, and thus permit the clutching of the pulley to the shaft to set the mechanism in action.

Such being the construction of my invention, it is operated as follows: The knife-former being drawn out by a handle into the position shown in dotted lines in Fig. 2, which the slotted link-connection permits, the overlapped blank is placed on the holder-die over the knife-former, as represented in Fig. 4, and the treadle is held depressed, so as to set the machine in action. By the rotation of the shaft the frame E is depressed, and the jaws consequently brought down upon the overlapped blank, so as to crimp its double thickness down against the holder into the form shown in Figs. 5 and 8, the return-rods being brought down and their spiral springs compressed. The eccentric is so set and timed relatively to the cams that, while the jaws still clamp the metal into the form shown in Fig. 5, it acts upon the rock-shaft so as to cause the pin in link R to strike the end of the slot in the knife-former and draw it back into the position shown in black lines in Fig. 2—in other words, below the level of the can-holder die, which action the ar-

rangement of the inclined planes and studs permits. The further rotation of the shaft and eccentric brings the plunger down upon the unsupported crimp of metal, (the rotation of the cams and the recoil of the springs having meanwhile permitted the release and ascent of the clamping-jaws,) so as to double the crimp over into the seam represented in Fig. 9, which the countersunk slot in the can-holder die permits, whereupon the plunger rises, and, by the release of the treadle and consequent action of the clutch, the further rotation of the driving-shaft is ended until removal of the seamed can-body and the application of a new overlapped blank.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In an organized machine for forming a seam in metal without the use of solder, the following instrumentalities in combination, viz: a can-holder die to hold and support the overlapped blank of metal, a knife-former to aid in making the first crimp, clamping-jaws for similar purpose, and a plunger to compress the crimped metal into the seam, substantially as described.

2. In combination with the can-holder die L, the knife-former Q, adapted by suitable mechanism to be elevated above the face of said die or to be dropped flush with the same, substantially as and for the purposes described.

3. In combination with the knife-former Q, the eccentric P, rocker-shaft S, and link-connection R to operate the knife-former, substantially as described.

4. In combination with the knife-former Q, provided with the inclines T, the lifting-studs U, as and for the purpose specified.

5. In combination with the can-holder die L and the knife-former Q, the clamping-jaws K, adapted to descend while the knife-former is elevated and to ascend when the knife-former drops, substantially as and for the purpose specified.

6. The combination, substantially as described, with the plunger M and with the knife-former Q, of the eccentric P, rocker-shaft S, and its connections, to effect alternate action of said plunger and said knife-former, substantially as shown and described.

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Witnesses:

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