

L. H. FARNSWORTH & T. BARRETT.

Boot and Shoe Crimping Machines.

No. 158,789.

Patented Jan. 19, 1875.

Fig. 1

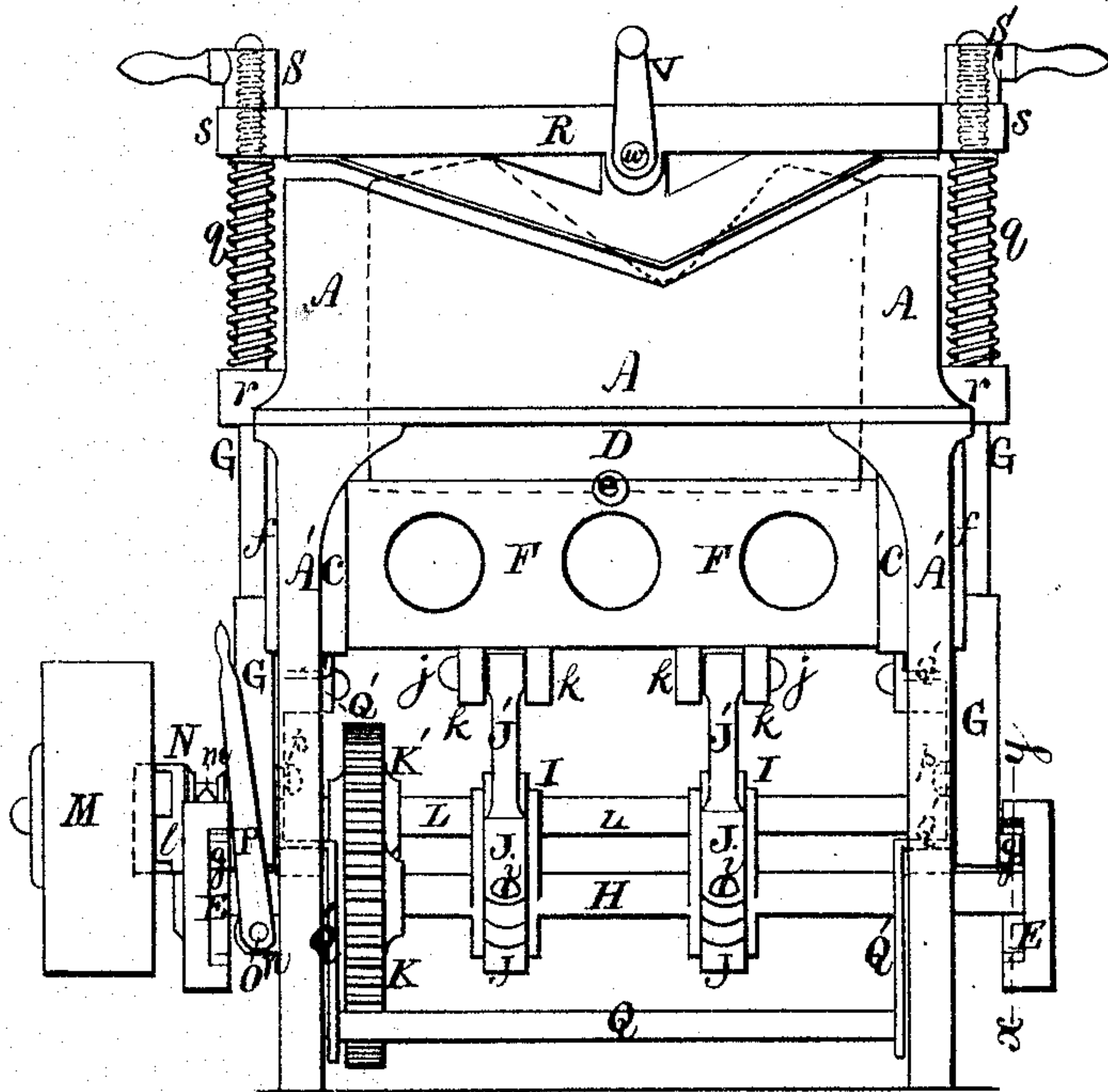


Fig. 2

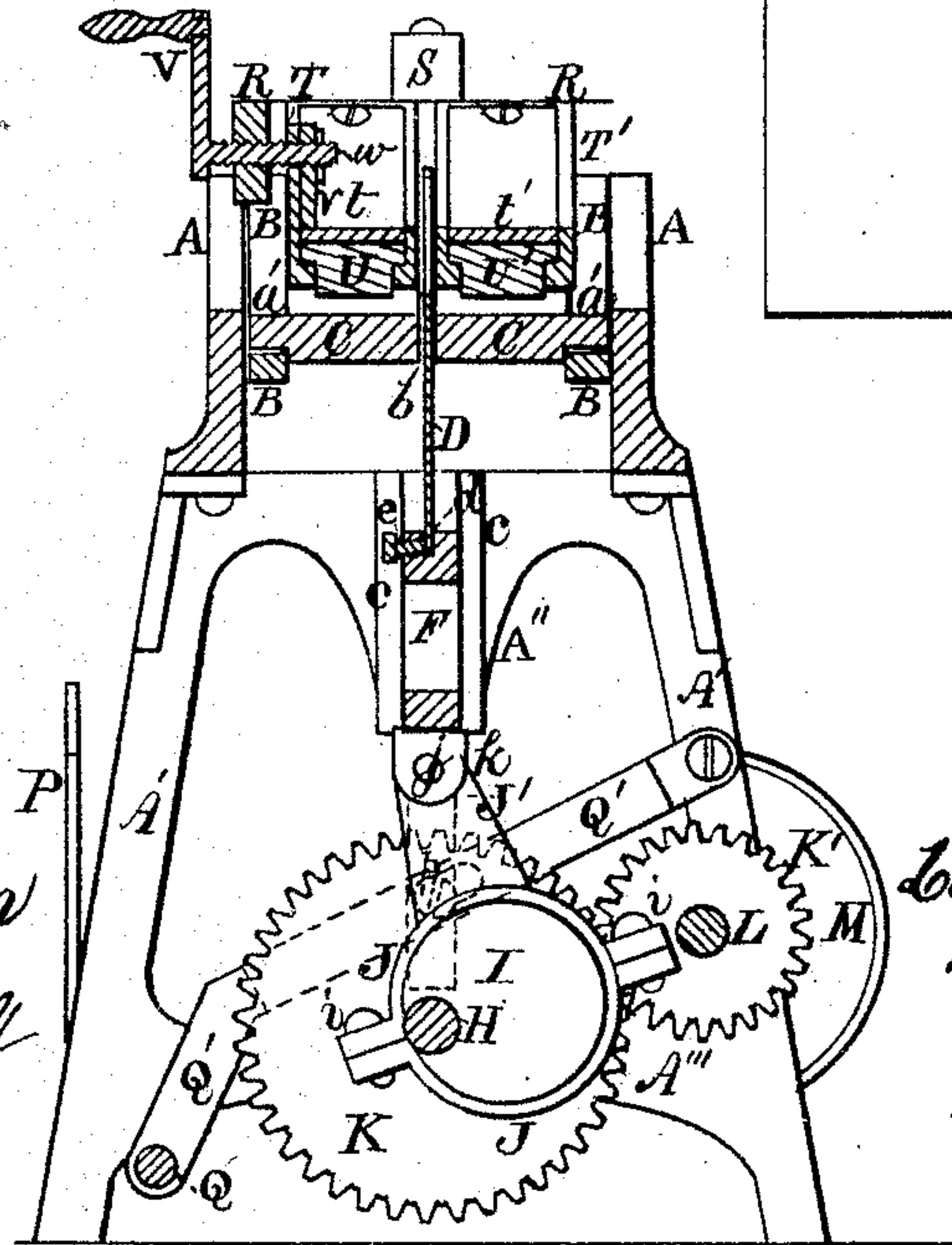


Fig. 6

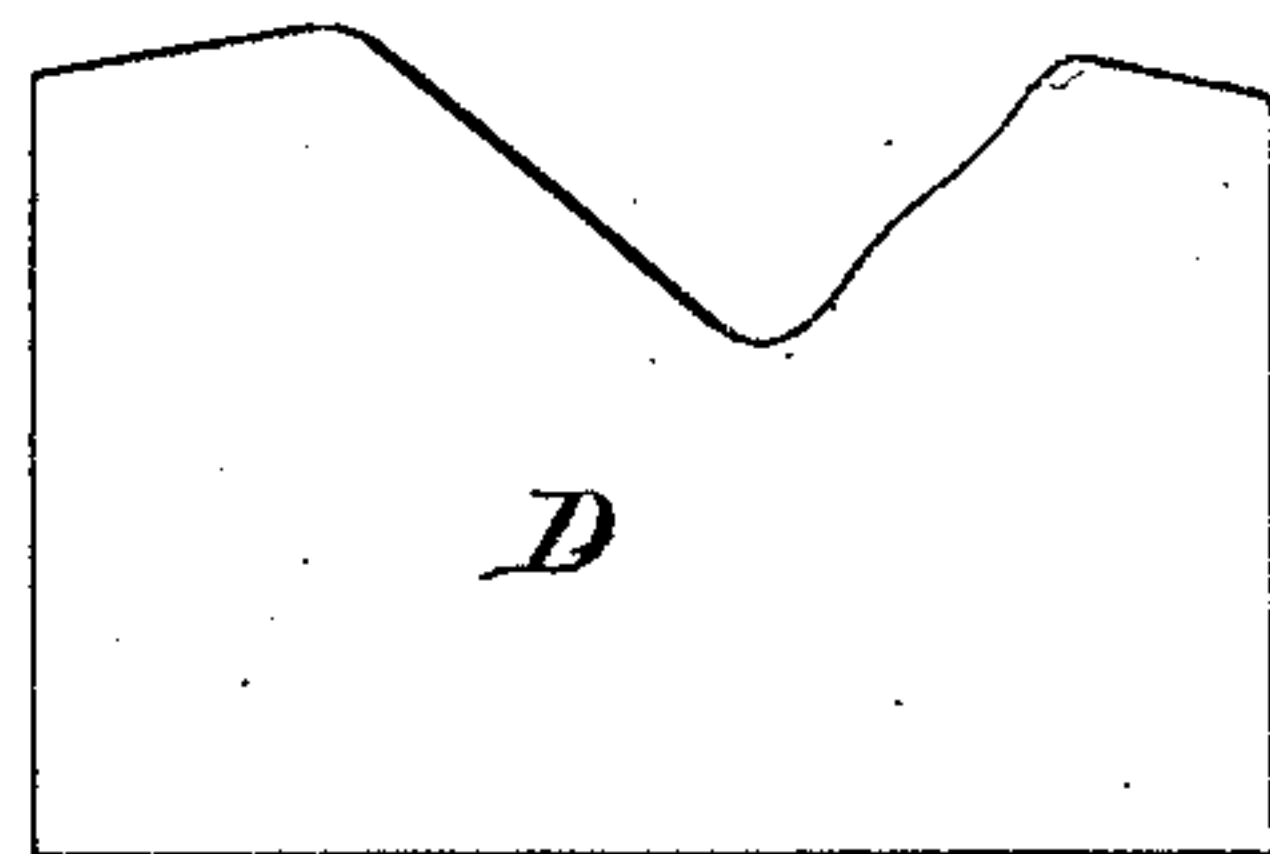
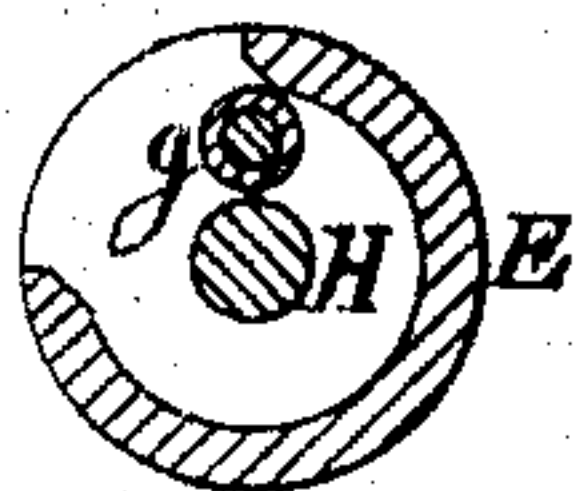


Fig. 7



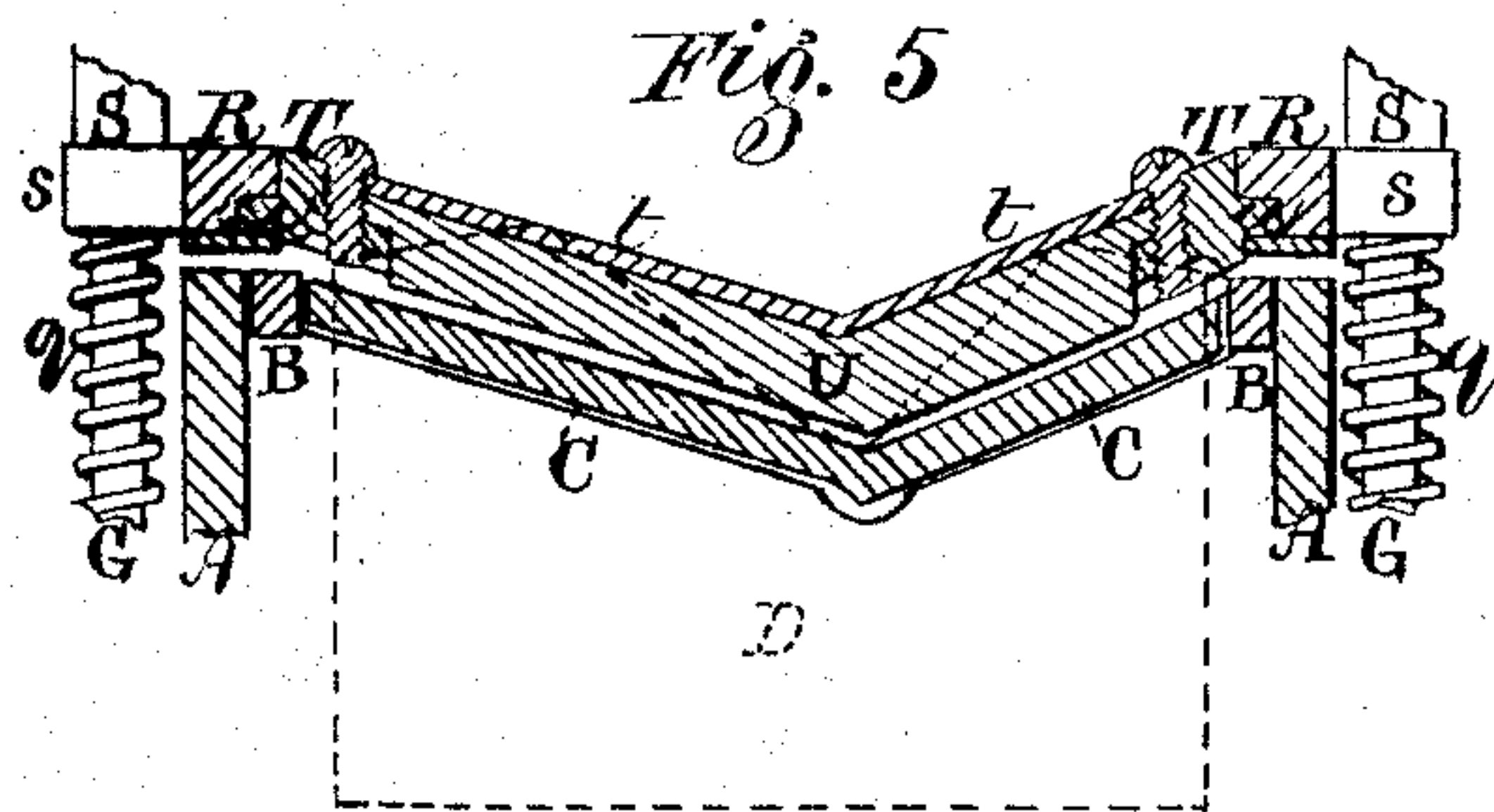
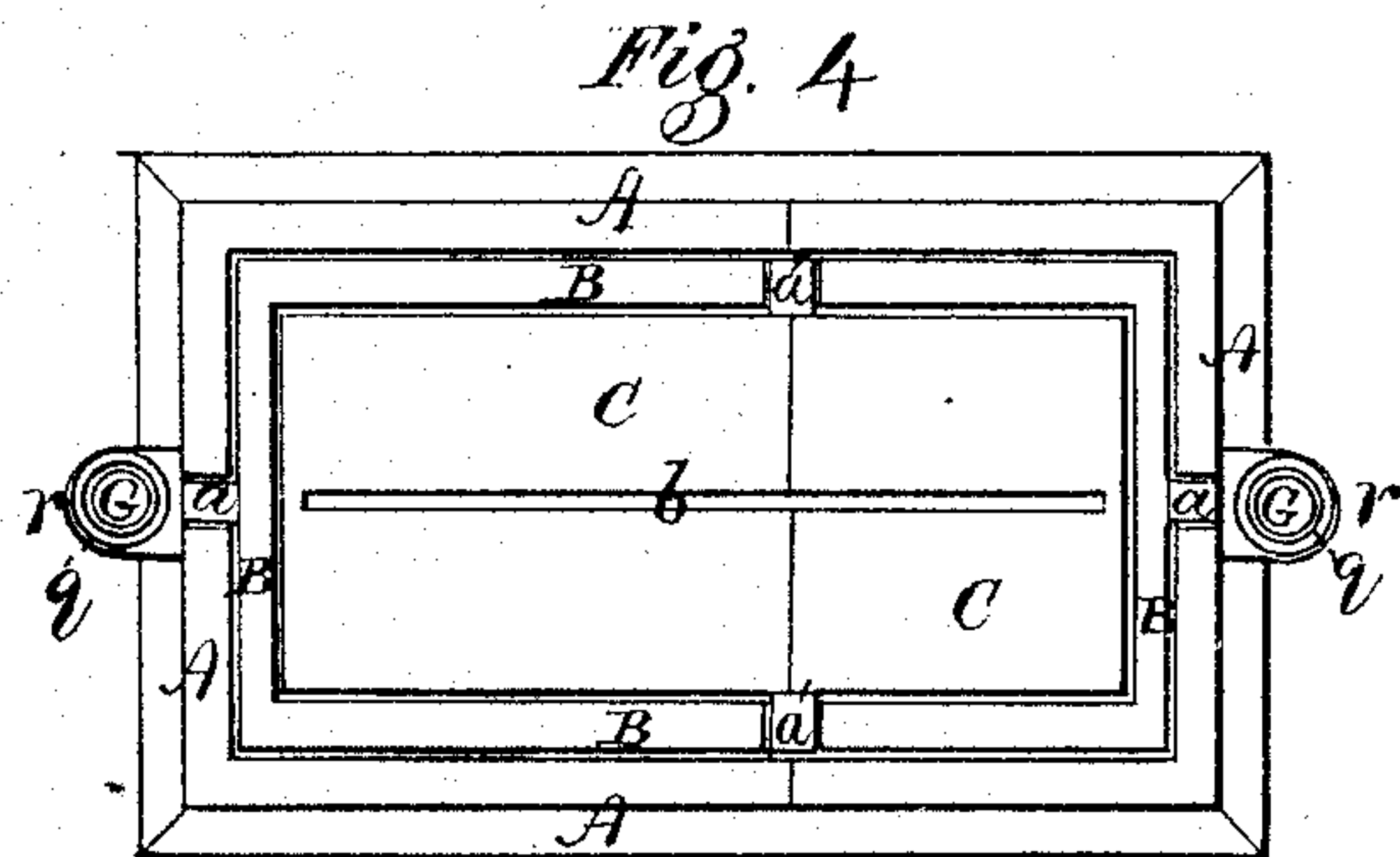
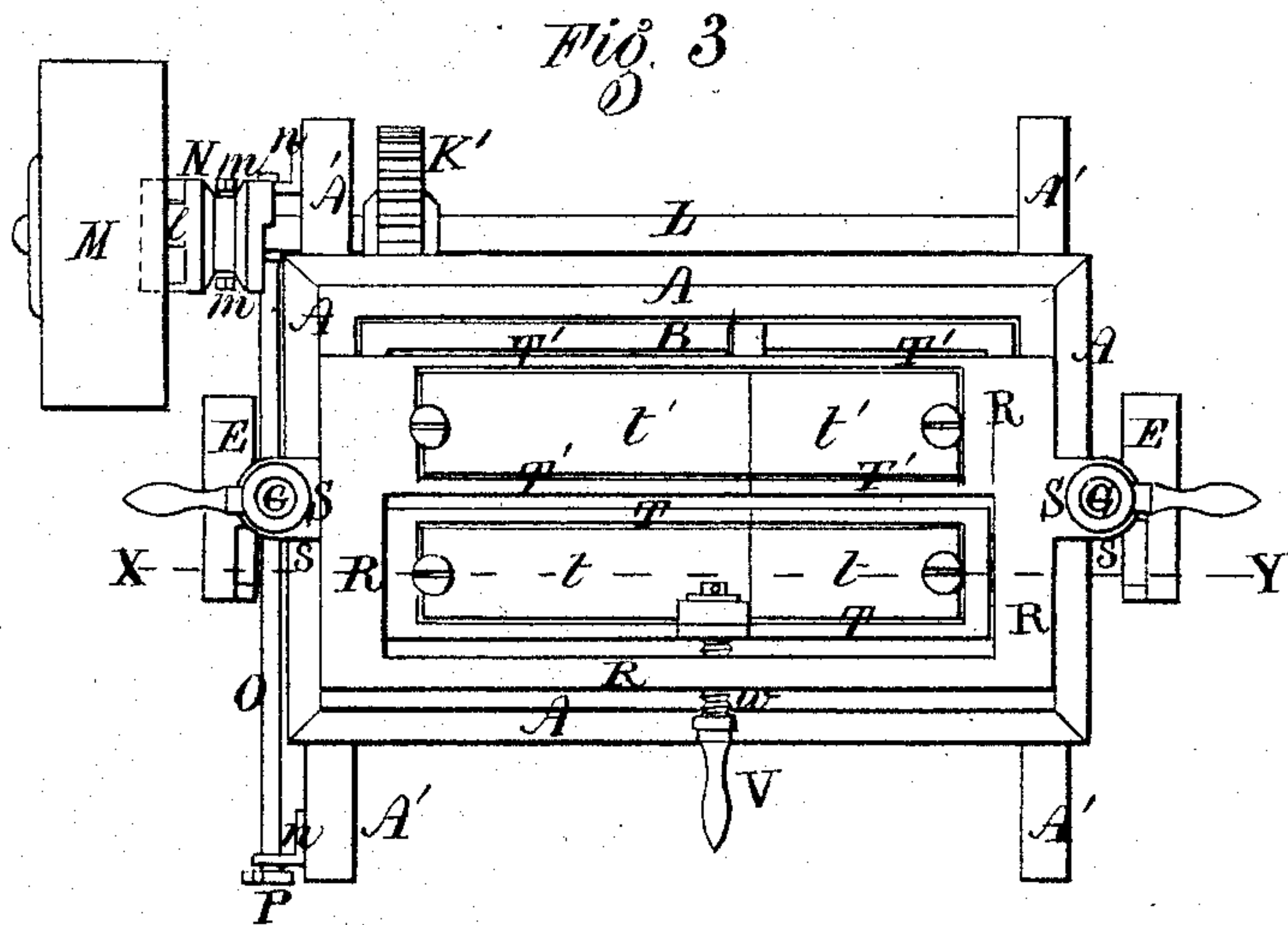
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UNITED STATES PATENT OFFICE.

LUTHER H. FARNSWORTH, OF HUDSON, AND THOMAS BARRETT, OF BOSTON,
ASSIGNORS TO JOHN S. FOLSOM, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN BOOT AND SHOE CRIMPING MACHINES.

Specification forming part of Letters Patent No. **158,789**, dated January 19, 1875; application filed August 22, 1874.

To all whom it may concern:

Be it known that we, LUTHER H. FARNSWORTH, of Hudson, in the county of Middlesex and State of Massachusetts, and THOMAS BARRETT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for Crimping Leather for Boots and Shoes, of which the following is a specification:

Figure 1 of the accompanying drawings is a front view, Fig. 2 is a central transverse vertical section, and Fig. 3 is a top view, of our improved boot and shoe crimping machine. Fig. 4 is a top view of the bed-plate and frame of the same. Fig. 5 is a longitudinal vertical section of a portion of our machine, taken in line X Y, Fig. 3. Fig. 6 is a front view of the former. Fig. 7 is a vertical section of a cam, taken in line *x y*, Fig. 1.

The present invention relates to certain new and useful improvements in machines for crimping boots and shoes, more particularly applicable, in the present instance, to crimping the front of boots, its principal objects being to provide an effective and expeditious means of crimping leather in the desired form of the required portion of the boot or shoe without injury to the leather, and to economize time, labor, and expense in the manufacture of boots and shoes; and to effect these ends our invention consists in a machine for the above purpose of a series of mechanical devices, whose construction, arrangement, combination, and functions we will now proceed to describe, and explicitly define in our claims.

In the drawings, A represents the upper or body portion of the machine-frame, of metal or other suitable material, open at top and bottom, and supported at each end on a metallic or other open frame, A'. The top of the frame A, on either side, is inclined downward from either end to an angle at one side of the center, making the incline on one side of the angle of greater length than that on the other side, or otherwise formed as may be required to accommodate different work. The ends of the frame A, at the center of the top, are formed to receive trunnions *a*, Fig. 4, on either end of an open bed-frame, B, to allow a transverse rocking or tilting movement to the lat-

ter, which is inclined on the top of either sides similarly to the frame A, and is formed to receive lateral trunnions *a'* of a bed-plate, C, to allow a longitudinal rocking or tilting movement to the bed-plate C, which is formed with a central longitudinal slot, *b*, of sufficient width to receive, and allow the vertical passage of, a "former," D, shaped on the top as shown in Fig. 6, to form the leg and upper of a boot, or otherwise shaped to conform to any other desired portion of a boot or shoe, or shaped to form leather or other material in the desired crimped form. The frame A' is formed on either end with central pendants, A'', formed on the inside with vertical ways *c*, between which is located a sliding frame, F, on whose top the former D rests; or the frame F may be formed with a central longitudinal top groove, *d*, to receive a former held in position by a thumb-screw, *e*, operating through one side of the groove. By this arrangement formers of different lengths may be used to allow the crimping of leather for various sizes of boots or shoes, as the former may be moved toward either end of the frame F to bring it in the required position in reference to the bed-plate, at which position it is held by the thumb-screw. The pendants A'' are formed on the exterior with vertical ways *f*, which receive bars or rods G, provided at the bottom with exterior friction-rollers *g*, over which are arranged to revolve segmental face cams E, Fig. 7, each formed by a notched-out rim of a wheel, and beveled at the ends, or otherwise shaped to allow the ready engagement and disengagement of the cams with the rollers at the proper times. The cams E are attached to the ends of a longitudinal central shaft, H, turning in boxes on end bars, A''', of the frame A', and carrying on either side of the center eccentrics I, grooved on the rims, or otherwise formed to hold semi-annular bands J, formed with screw-ears, held or released by screws *i*, or otherwise arranged to be held on, or released from, the eccentrics. The upper semi-annular bands, J, are formed with connecting arms or rods J', that turn on fulcrums *j*, supported in lugs *k*, depending from the bottom of the frame F; or the frame F may be otherwise provided with any suitable

ble arrangement of mechanical devices to connect it with, so as to be raised and lowered by the operation of the shaft H, as preferred. Located on one end of the shaft H within the frame A' is a cog-wheel, K, that meshes with, and is turned by, a cog-wheel, K', located on a rear longitudinal shaft, L, turning in boxes connected with the rear legs or end of frame A'. On the outer end of the shaft L is located to turn a driving or belt wheel, M, whose inner nave is notched out to receive and operate against projections *l* of an adjustable clutch, N, located on the shaft L, and operated to or from the wheel by a yoke, *m*, straddling the clutch on either side, and projecting upward from a rod or shaft, O, supported to turn in suitable brackets *n*, attached to the lower portion at front and rear of one end of the frame A', and at the front end the rod O is provided with an upright operating-handle, P; or any other device or arrangement of devices that may be preferred may be provided for operating a belt-wheel loosely on, or to hold it so as to turn, the shaft L, as desired.

Pivoted to the interior of the ends, at the rear of the frame A', are treadle-arms Q', bent outward and slotted to receive and travel on studs *p*, that connect the arms Q' with the lower portion of the bars or rods G, and are bent inward and inclined downward on the front, and connected by a treadle rod or bar, Q, which operates the arms Q' to bring down the bars or rods G, whose upper portions are formed to receive coiled springs *g*, which have a seat on lugs *r*, projecting outward from the ends at the bottom of the body or frame A, and through which lugs *r* the upper portions of the rods G extend. The tops of said springs have a bearing against the bottoms of lugs *s*, projecting outward from the ends of a frame, R, and receiving the tops of the rods G, which are formed with screw-threads, and above the lugs *s* receive hand screw-nuts S, operated to bear on the tops of the lugs to raise and lower the frame R, which, at the rear of its longitudinal center, is formed with a permanent angular frame or combined clamp and jaw, T', rabbeted or otherwise suitably formed on the interior to receive a rubber or other elastic or yielding binder, U', held by a top plate, *t*, screwed or otherwise secured to the clamp and jaw frame to allow the ready insertion or removal of the binder U', which, together with the clamp and jaw T', is inclined downward to a bottom angle, or shaped similarly to, so as to fit in, the top of the bed-plate C. The front portion of the frame R is formed by a longitudinal bar of even level with its ends, leaving a space between the rear of the bar and the front of the clamp and jaw T', within which space is arranged an adjustable combined clamp and jaw, T, rabbeted or otherwise formed at the ends, to be held and allowed a lateral movement in ways *u*, formed on the interior of the ends of the frame R. This adjustable combined clamp and jaw T is formed to contain a rubber or other elastic or

yielding binder, U, held or released by an adjustable top plate, *t*, or otherwise, all of which are inclined from the ends downward to an angle, or similarly to the other combined clamp, jaw, and binder, and to fit in the top of the bed-plate C. Projecting upward from the front of the adjustable clamp and jaw T is a standard, *v*, formed with a screw-aperture to receive a screw-stem, *w*, operating through the front of the frame R, and provided on the outside with a crank, V, or other device for operating the adjustable clamp and jaw T to or from the stationary clamp or jaw T', to accommodate leather of different thickness between the clamps, or to increase or diminish the pressure against the leather as it is carried by the former up between the clamps, or to allow the ready withdrawal of the former.

The operation of our invention is as follows: The leather or other material to be crimped, cut as desired, is placed on the bed-plate C, and the former is inserted in the slot *b*, and rests on the sliding frame F. The frame R is adjusted on the bars or rods G, by means of the nuts S, to the required distance to exert the desired pressure of the binders U U' when lowered on the leather by the pressure of the operator's foot on the treadle Q, whose arms Q' engage with and bear down the bars or rods G, and bring the rollers *g* in position to receive the cams E, when brought in contact with them by the rotation of the shaft H, induced by the wheels K K', operated by shaft L, to which shaft motion is imparted by the wheel M, when the chuck N is thrown in contact with the said wheel by the operation of the handle P, which actuates the rod O and yoke *m*. The treadle is held until the cams E engage with the rollers *g*. The operator's foot is then released, the cams holding down the bars G and revolving on the rollers *g* by the operation of the shaft H, which shaft, at the same time, carries the eccentrics I and arms J', so as to raise the sliding frame F and former until they reach the desired height and perform their required functions, when the continued revolution of the cams lowers the frame F and former until the cams, reaching their beveled ends, slip the friction-rollers *g* and the frame R, by means of the springs *g*, is carried up automatically to allow the withdrawal of the crimped leather and former, and the insertion of another former and piece of leather, and the chuck N is thrown, by actuating the handle P, out of connection with the wheel M, which is thus allowed to run loosely on the shaft L until the frame R is brought down for the repetition of the operation for the crimping of another piece of leather or other material. When the former is carried up, by the operation above described, or by any other mechanism that may be preferred, its top, being of different shape than the top of the bed-plate C, so as to project above the latter near its ends, takes a first hold on the leather near the ends and stretches it longitudinally, while

the binders U U' are brought to bear upon the leather, so as to hold and stretch it laterally; thus stretching the leather in both directions as it is carried up by the former between the clamps and jaws T T', between which it is pressed, and is removed from the machine, together with the former, in its crimped form, and left to dry on the former.

By the above description, reference being had to the drawings, it will be readily seen, without further explanation, that by our invention the work is completed with the saving of time, trouble, and expense heretofore required by the ordinary methods of breaking the leather over a form, and removing it to dry on another wooden form, on which it was rubbed, or by pressing the leather between suitable dies by a former, from which the leather was removed and attached to a wooden form, on which it was rubbed down and left to dry, either of which methods required the use of a separate wooden form, and necessitated the expenditure of time and labor in removing the leather from one form to another and rubbing it down; whereas, by our invention, one former, easily and cheaply cast, alone is used for the whole operation, and a number of formers may be applied to the machine one after another, and set away with the leather completely crimped on them during the drying operation, thus expediting the crimping of boots or shoes.

By means of the lateral and longitudinal or universal tilting or rocking movement allowed to the bed-plate C an equal pressure on the face of the leather is secured, so that when the leather is of an unequal thickness, as is often the case, all parts shall be subjected to a like pressure, instead of only the thickest portion receiving the pressure, as ordinarily, the elastic or yielding binders serving to bind the leather without injuring it, while the exact amount of pressure desired may be readily secured by the adjustment of the frame R by means of the nuts S.

In place of the mechanism herein employed for raising and lowering the slide F or the frame R, any other suitable arrangement of mechanism that may be preferred for operating them, as desired to perform their required functions, may be substituted; and, if desired, the frame R may be hinged to the rear portion of the machine-frame, the hinges rising on a spring, and the ends of the frame being connected with jointed vertical rods; or the frame R may be otherwise arranged, as preferred, to allow its tipping up or rising for the insertion of the leather, and the withdrawal of the former and crimped leather.

Having thus described our improvements, what we claim as our invention, and desire to have secured to us by Letters Patent, is—

1. In a crimping-machine, an adjustable bed-plate and frame, the former having a central longitudinal slot, and both inclined from the ends downward to an angle, and having together a lateral and longitudinal or universal rocking or tilting movement, substantially as specified.

2. In a crimping-machine, an adjustable frame having a permanent clamp and jaw, T', and formed to receive and allow the lateral adjustment of a clamp and jaw, T, both the clamps and jaws being inclined from the ends downward to an angle, and formed to hold adjustable rubber or other elastic or yielding binders, substantially as described.

3. The bars or rods G, provided with springs g and nuts S, and supported as shown, so as to be raised and lowered at the ends of a crimping-machine frame, in combination with an adjustable frame, R, having clamps and jaws T T', all constructed and operating substantially as and for the purposes herein set forth.

4. The frame F, provided with an adjustable former, in combination with slotted bed-plate C, clamps and jaws T T', and adjustable frame R, all substantially as and for the purposes described.

5. In combination with a vertical sliding frame, F, adjustable connecting arms or rods J', eccentrics I, and shaft H, all arranged and operating substantially as specified.

6. In a crimping-machine, the segmental face cams E on shaft H, in combination with friction-rollers g, rods or bars G, and frame R, all constructed and operating substantially as and for the purposes described.

7. In combination with the movable frame R, having clamps and jaws T T', the rods G and foot-treadle Q, all substantially as and for the purpose set forth.

8. In combination, the sliding frame F, connecting arms or rods J', eccentrics I, shaft H, cog-wheels K K', shaft L, wheel M, chuck N, yoke m, rod O, and handle P, all arranged and operating substantially as and for the purposes specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

LUTHER H. FARNSWORTH.
THOMAS BARRETT.

Witnesses:

GEO. H. LONG,
SAML. M. BARTON.