

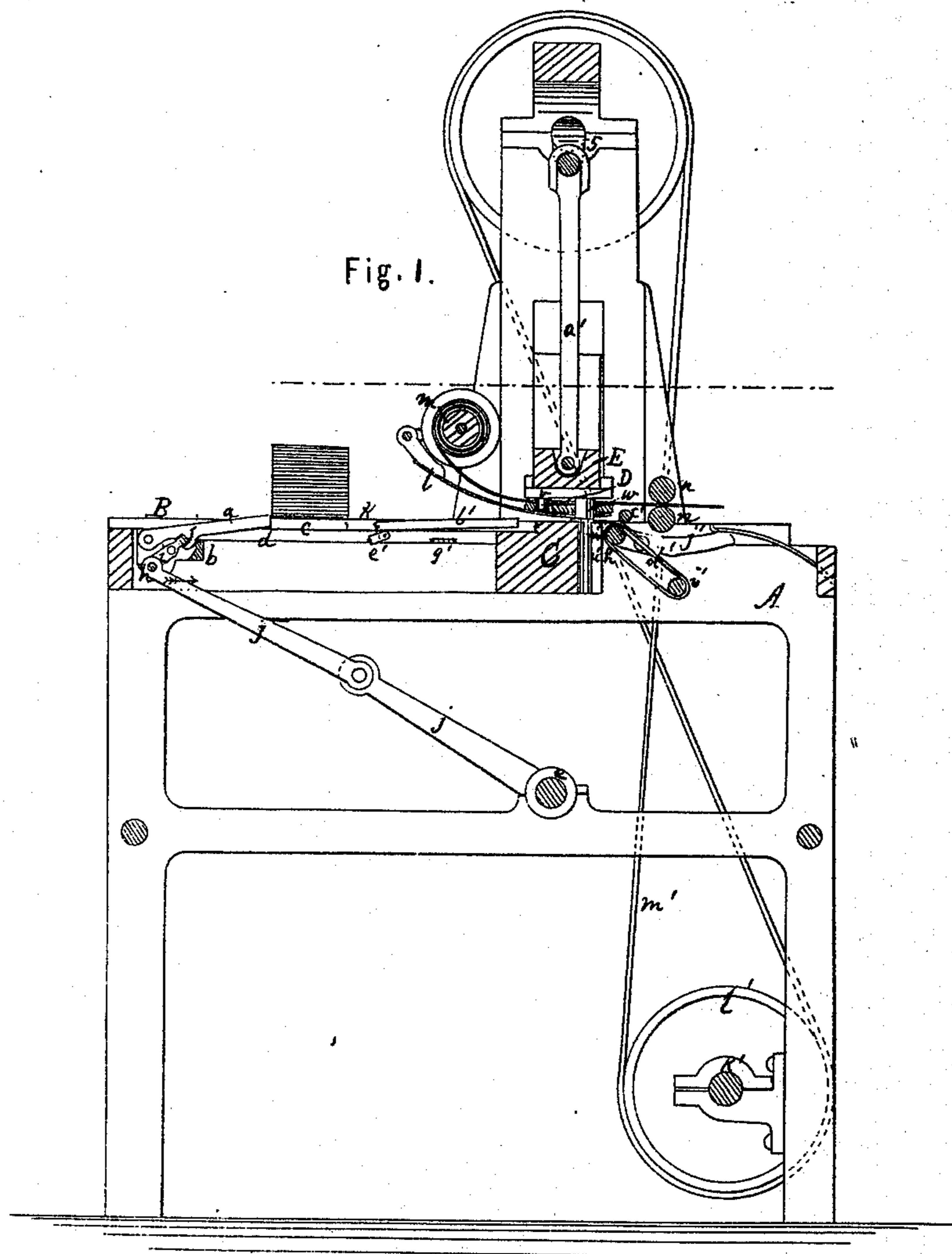
J. T. Breun & G. M. Jacobs.

3 Sheets.
Sheet 1.

Edging Button Holes.

No. 59,957.

Patented Nov. 27, 1866.



Inventor.

Witnesses.

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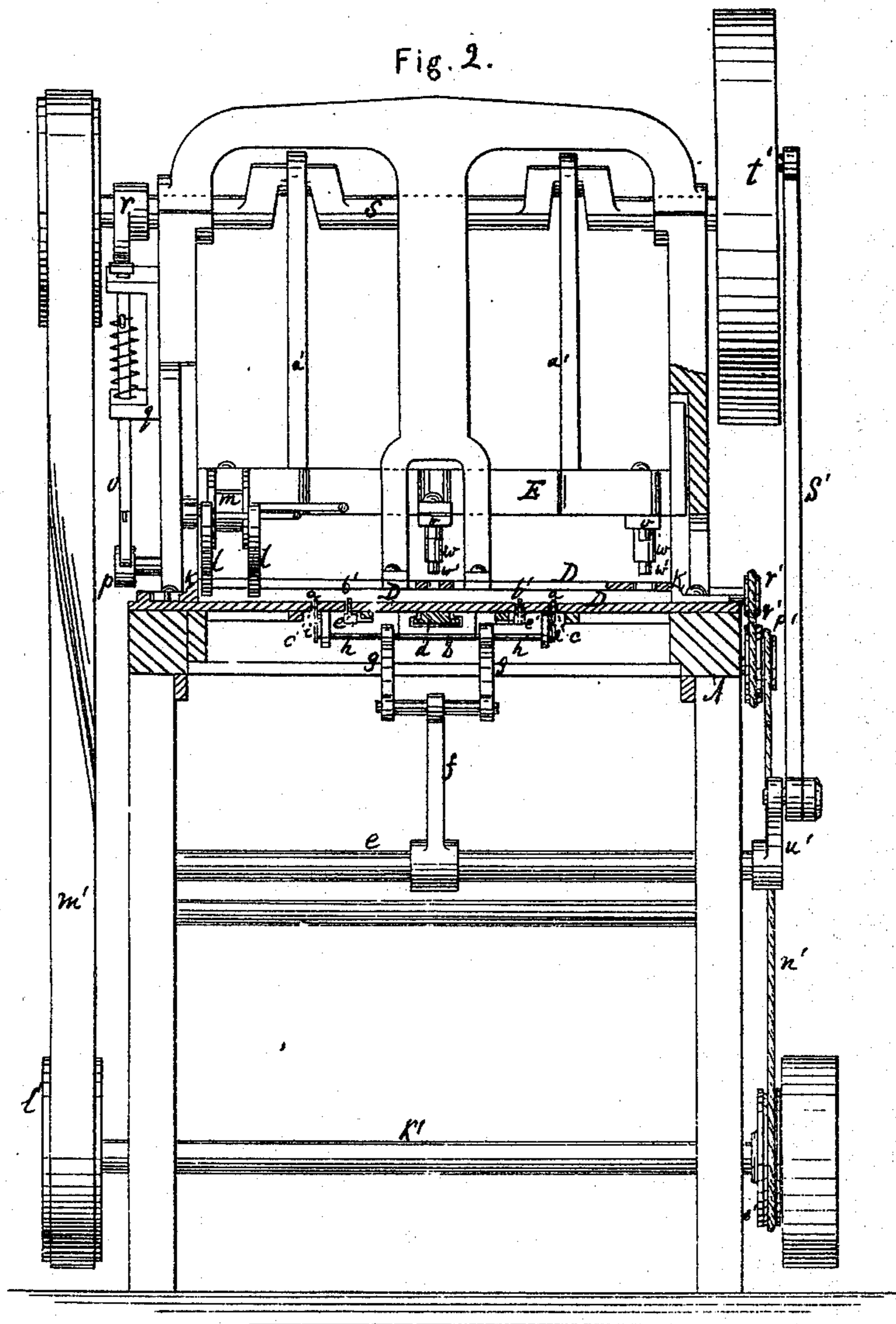
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3. Sheets.
Sheet: 2.

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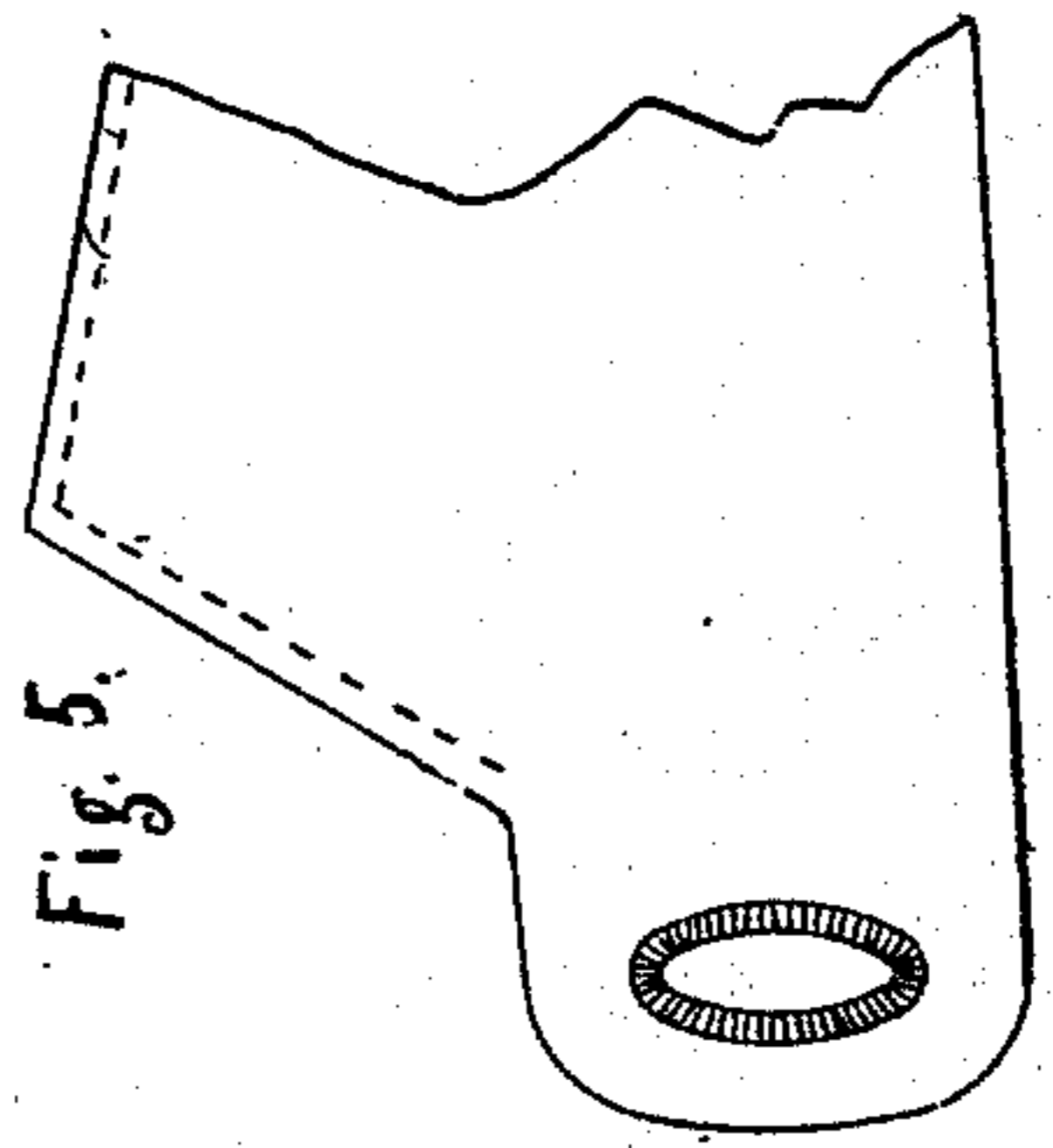
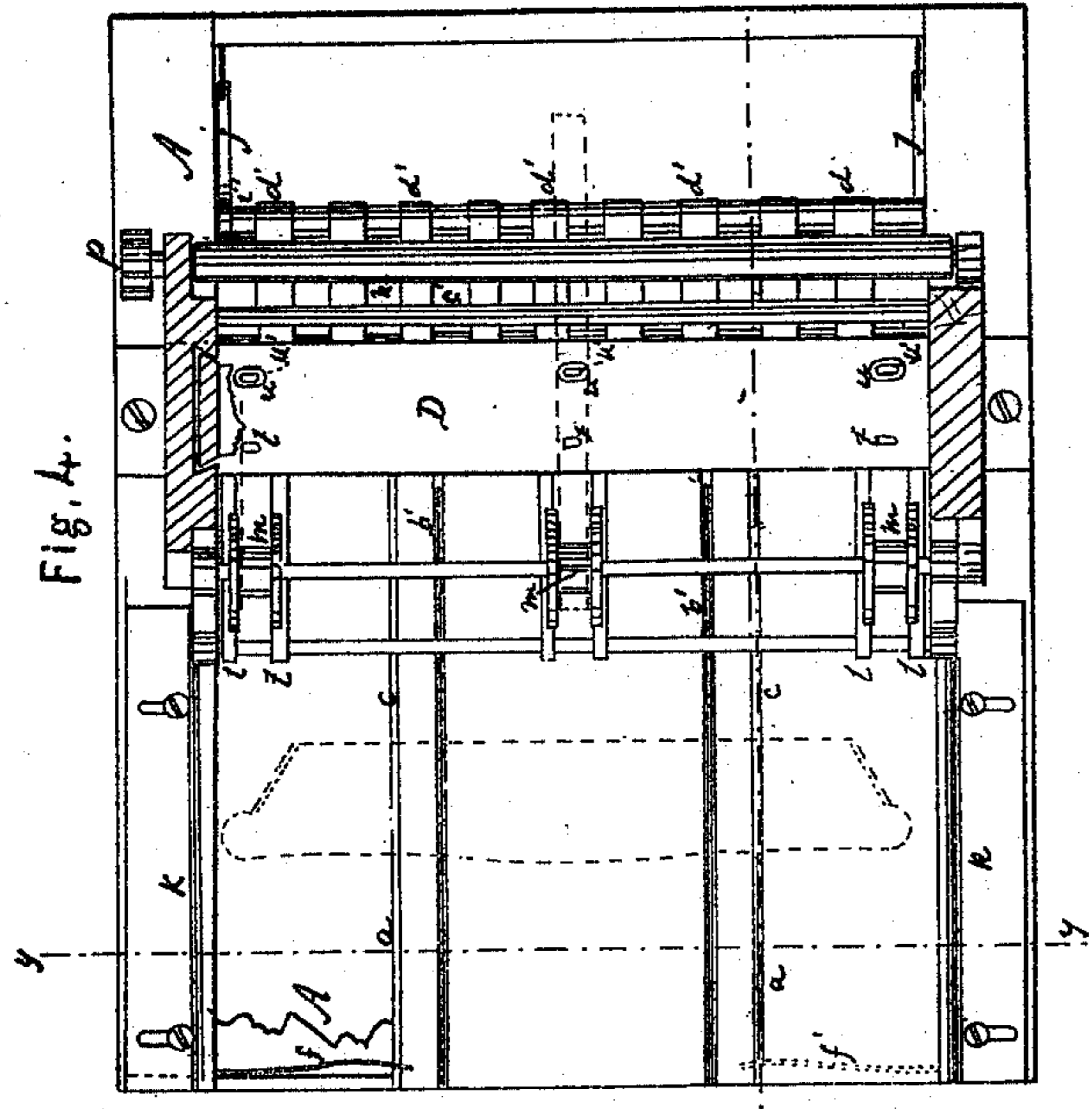
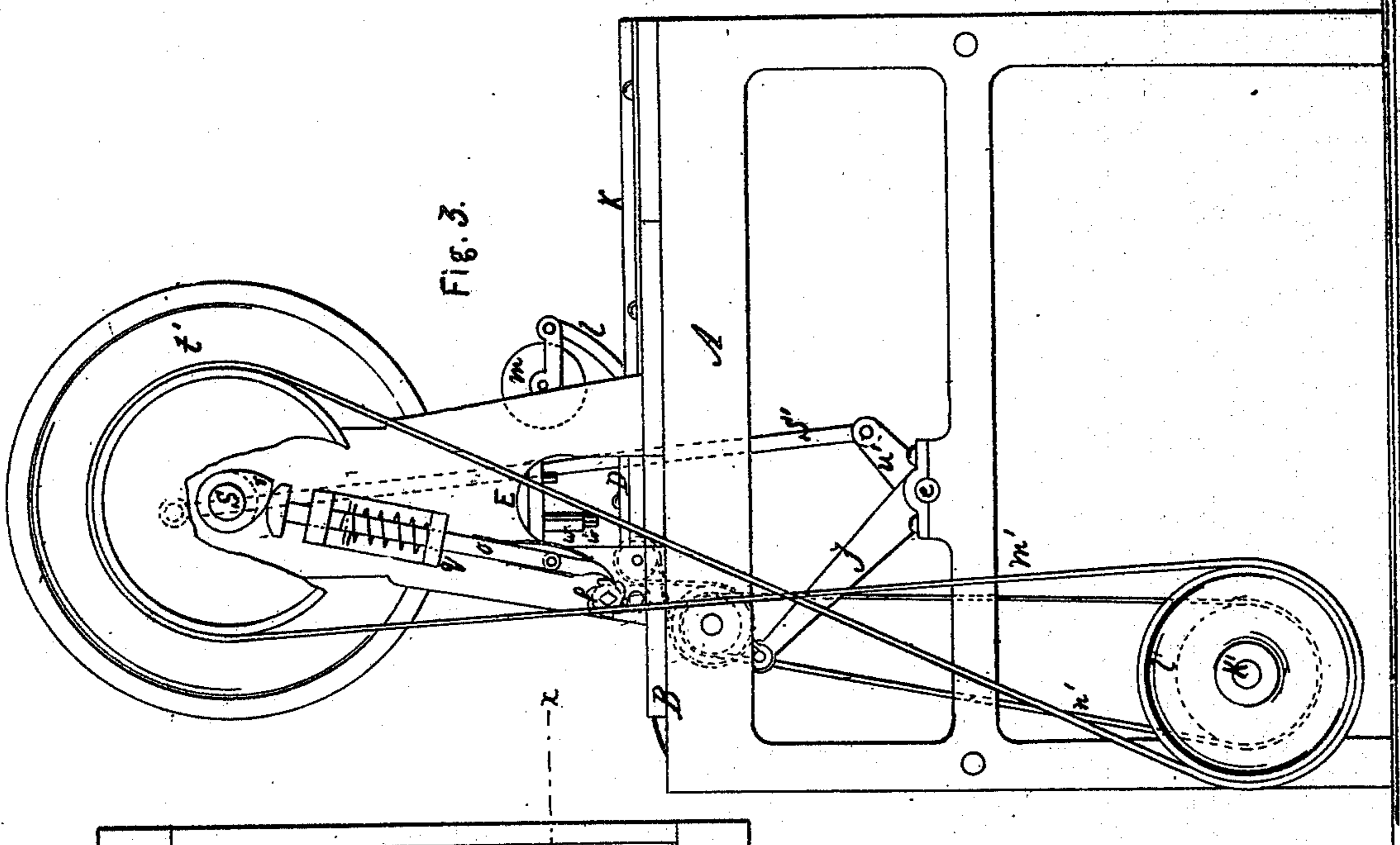
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Witnesses.

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IMPROVEMENT IN MACHINE FOR CUTTING AND RE-ENFORCING BUTTON-HOLES.

JOHN T. BRUEN AND G. M. JACOBS, OF NEW YORK, ASSIGNORS TO
G. M. JACOBS.

Letters Patent No. 59,957, dated November 27, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOHN T. BRUEN and G. M. Jacobs, of the city and county and State of New York, have invented a new and improved Machine for Edging Button Holes; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *z z*, fig. 4, indicating the plan of section.

Figure 2 is a transverse vertical section of the same taken in the plane indicated by the line *yy*, fig. 4.

Figure 3 is a side elevation of the same.

Figure 4 is a horizontal section of the same, the plane of section being indicated by the line *z z*, fig. 1.

Figure 5 is a plan of a button-hole when finished.

Similar letters of reference indicate like parts.

This invention relates to a machine which is intended to cut out and apply automatically an annular disk of muslin or other textile fabric to the edge of the button-holes in paper collars, cuffs, and other articles of a similar nature, so as to make said button-holes strong and durable, and render them capable of resisting the strain to which they are exposed. The paper collars or other articles are fed by suitable toes to the punching mechanism, which consists of two die-plates, one being suspended at a certain distance above the other. The muslin or other textile fabric, which is previously cut into strips of the proper width, is fed to the punching mechanism from suitable rollers or drums over the suspended die-plate, which is provided with two sets of holes, one set to correspond to the inner and the other set to correspond to the outer periphery of the annular disks. While the strips of muslin pass over the suspended die-plate, the holes forming the inner space of the annular disks are cut out first, and then the disks themselves are cut out and forced through the suspended die-plate on the surface of the collar or other article; while at the same time, the button-holes are punched into said article in such a manner that the annular disk will strengthen the edge of the button-holes, suitable cement being applied to the strips of muslin, which enables the annular disks, when exposed to heat and pressure, to adhere permanently to the paper collar or other article, and to strengthen the button-holes in the desired manner, besides ornamenting them.

A represents a frame made of cast iron or any other suitable material, and provided with a platform or table, B, which supports the blanks to be acted upon by the machine. One of the blanks after the other is fed on the die-plate C by the action of toes *a*, which are pivoted to the ends of a cross-head, *b*, and work in slots, *c*, in the table B. The cross-head *b* moves back and forth on a suitable guide, *d*, secured to the under surface of the table B, motion being imparted to it by means of a rock-shaft, *e*, from which extends an arm, *f*, that connects with the cross-head by pitman-rods, *g*. The connection between said pitman-rods and the cross-head is effected by a rod, *h*, which is secured in the tail ends of two dogs, *i*, that are pivoted to the ends of the cross-head, as shown in figs. 1 and 2 of the drawing. The front ends or points of the dogs *i* project into notches, *j*, cut into the lower edges of the toes *a* in such a manner that if the strain exerted by the pitman-rods *g* is in the direction of the arrow marked thereon in fig. 1, the dogs will turn up and cause the points of the toes *a* to project above the surface of the table B, just enough to take off the lowest blank from the pile, (which is indicated in red outlines in fig. 1,) and as soon as the motion of the rock-shaft *e* is reversed, and consequently the strain exerted by the pitman-rods *g* is in the direction opposite the arrow marked thereon in fig. 1, the dogs *i* turn down and the points of the toes *a* are thrown below the surface of the table, allowing them to return under the pile of blanks without taking effect thereon. While the blank is thus fed to the main die-plate, C, it is guided by gauges, *k*, which are screwed down to the table, and by curved spring-arms, *l*, which serve to hold said blanks down upon the table; and, at the same time three (more or less) strips of muslin or other textile material are fed over the secondary die-plate D, which is suspended at a short distance above the main die-plate, as clearly shown in figs. 1 and 2 of the drawing. These strips of muslin are cut just wide enough to produce the annular disks, which serve to strengthen the edges of the button-holes, and they are taken from drums, *m*, and drawn along over the suspended die-plate by the action of feed-rollers, *n*, to which an

intermittent motion is imparted by a spring-pawl, *o*, and ratchet-wheel, *p*, mounted on the end of the axle of one of said feed-rollers, as shown in figs. 2, 3, and 4. The lower roller is adjustable by an eccentric shaft. The pawl *o* is guided in a bracket, *g*, secured to the side of the frame A, and the required motion is imparted to it by a cam, *r*, which is mounted on the crank-shaft *s*, and with which it is held in contact by its spring. The suspended die-plate D is provided with two sets of holes, *t*, *u*, (see fig. 4,) and into these holes fit the punches *v* *w*, which are secured in a cross-head, E, which is fitted in suitable guide-slots in the frame A, and connects by two pitman-rods, *a'*, with the cranks of the crank-shaft *s*, so that, by imparting to said crank-shaft a revolving motion, a rising and falling motion is imparted to the head, E, which carries the punches. By the action of the punches *v* and dies *t*, holes are punched into the strips of muslin or other textile fabric to correspond to the inner peripheries of the annular disks, and as the strips advance the punches *w* take effect. These punches are provided with concentric projections, *w*, which fit into the holes punched out by the punches *v*, so that the width of the annular disks will be uniform all round; and as the punches *w* pass down through the dies *u*, the projections *w'* enter the dies *u'* in the main die-plate, and suitable holes are punched in the blanks, fed on said die-plate by the action of the dogs *i*. After the button-holes have thus been punched in the blanks at the proper places, the annular disks cut out by the combined action of the punches *v* and *w* are carried down and depressed on the surface of the blanks; and, if a suitable cement is attached to the under surface of the strips of muslin, the annular disks will be made to adhere to the edges of the button-holes in the blanks, being depressed by the action of the shoulders between the punches *w'* and *w*. In practice, a cement will be selected which is hard when cold, and which can be made to adhere only by the combined action of heat and pressure. By applying a jet of steam or hot air at the time the punches *w* are passing through the suspended die-plate, the annular disks of muslin or other textile fabric are made to adhere to the edges of the button-holes in the blanks, and said button-holes are strengthened and ornamented in the required manner. After the annular disks have thus been made to adhere to the blanks, the punches recede and the pusher-bars *b'* take action, and force said blank from under the suspended die-plate between the roller *c'* and the endless apron *d'*. Said pusher-bars are fitted in suitable slots in the table B, and the desired motion is imparted to them by the action of the cross-head *b*, on dogs *e'*, which are hinged to the under side of the pusher-rods and by springs *f'*, which have a tendency to carry the pusher-bars back to their original position. As the cross-head *b* advances, it carries the pusher-bars forward until the dogs *e'* come in contact with the stops *g'*. By the action of these stops the dogs are disengaged from the cross-head, and the pusher-bars are allowed to follow the action of the springs *f'* and to fly back to their original position. The endless apron *d'* is stretched over two rollers, *h'* *i'*, and said apron is composed either of a series of rubber bands or of a single sheet of canvas or other textile fabric, and the roller *h'* is mounted in spring arms *j'*, so that it is capable of adjusting itself to the thickness of the blanks passing through between it and the roller *c'*. The motion of the various parts of our machine is effected by the driving shaft *k'*, which is mounted in the lower part of the frame A. On this shaft is mounted a pulley, C, and a belt, *m*, transmits the motion from the same to the crank-shaft *s*; and another belt, *n*, stretched over a pulley, *o'*, on the driving shaft, and over another pulley, *p'*, on the end of the roller *i'*, produces the desired motion of the apron *d'*. From the pulley *p'* extends another belt, *q'*, over the pulley *q'*, on the end of the roller *c'*. The motion of the rock-shaft *e* is produced by a pitman-rod, *s'*, which extends from an eccentric wrist-pin in a disk, *t'*, which is mounted on the crank-shaft *s*, to a crank, *u'*, on said rock-shaft.

By these means the operation of punching out button-holes in the blanks of paper collars, cuffs, or other similar articles, and attaching to said button-holes annular disks of muslin or other textile fabric, is carried on automatically, and it can be effected very expeditiously and with little loss of time or attention. If desired, the dies, punches, and plungers may be made adjustable, so that they can be used for articles of several different sizes.

What we claim as new, and desire to secure by Letters Patent, is—

1. The suspended die-plate D, in combination with the punches *v* *w* and main die-plate B, constructed and operating substantially as and for the purpose described.
2. The feeding toes *a*, in combination with the die-plates D B and punches *v* *w*, constructed and operating substantially as and for the purpose set forth.
3. The hinged dogs *i*, arm *f*, and pitman-rods *g*, in combination with the feeding toes *a* and die-plates B D, constructed and operating substantially as and for the purpose set forth.
4. The pusher-bars *b'*, in combination with the die-plates B D, constructed and operating substantially as and for the purpose described.
5. The hinged dogs *e'* and stops *g'*, in combination with the pusher-bars *b'*, cross-head *b*, and die-plates B D, constructed and operating substantially as and for the purpose set forth.
6. The roller *c'* and apron *d'*, in combination with the die-plates B D, constructed and operating substantially as and for the purpose described.

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Witnesses:

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