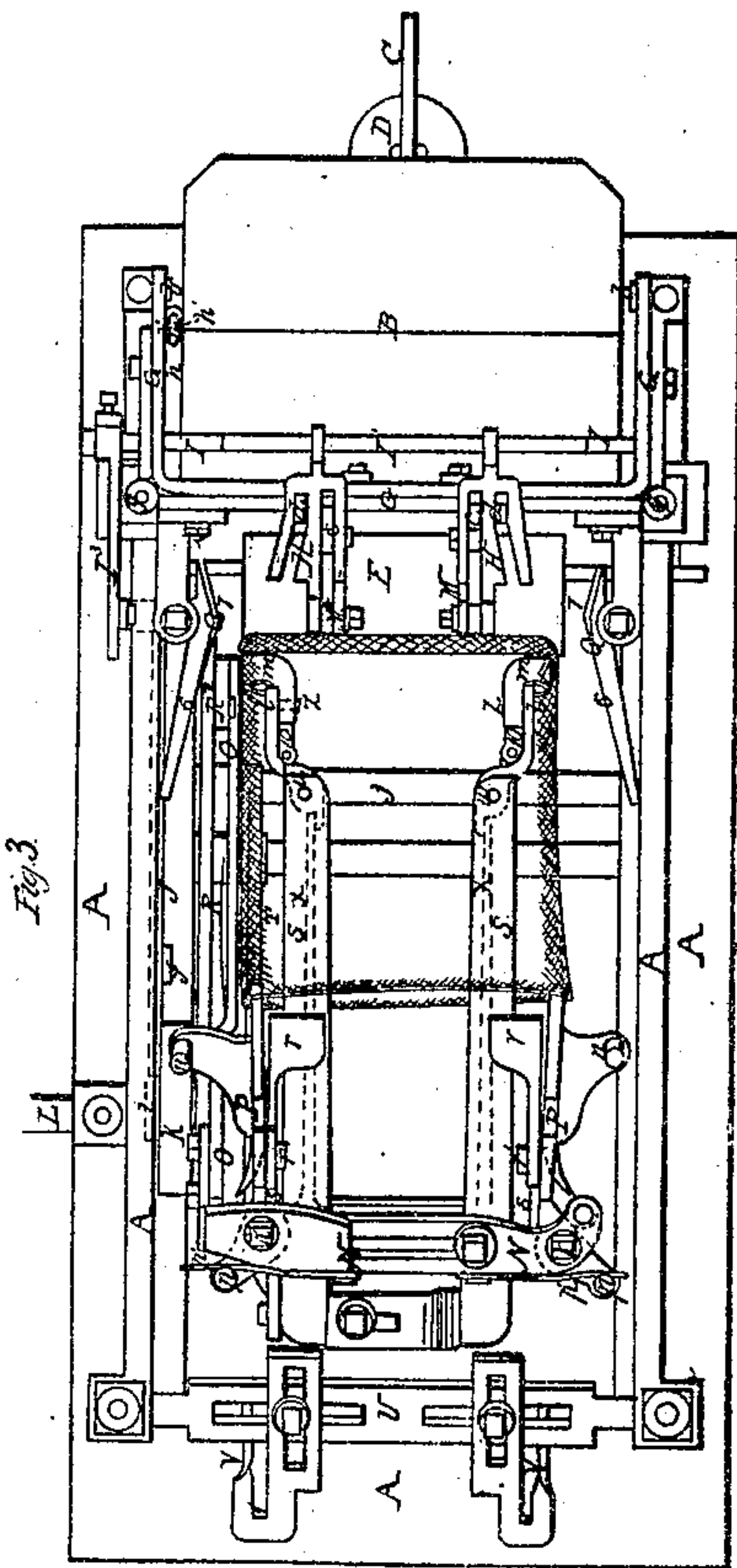
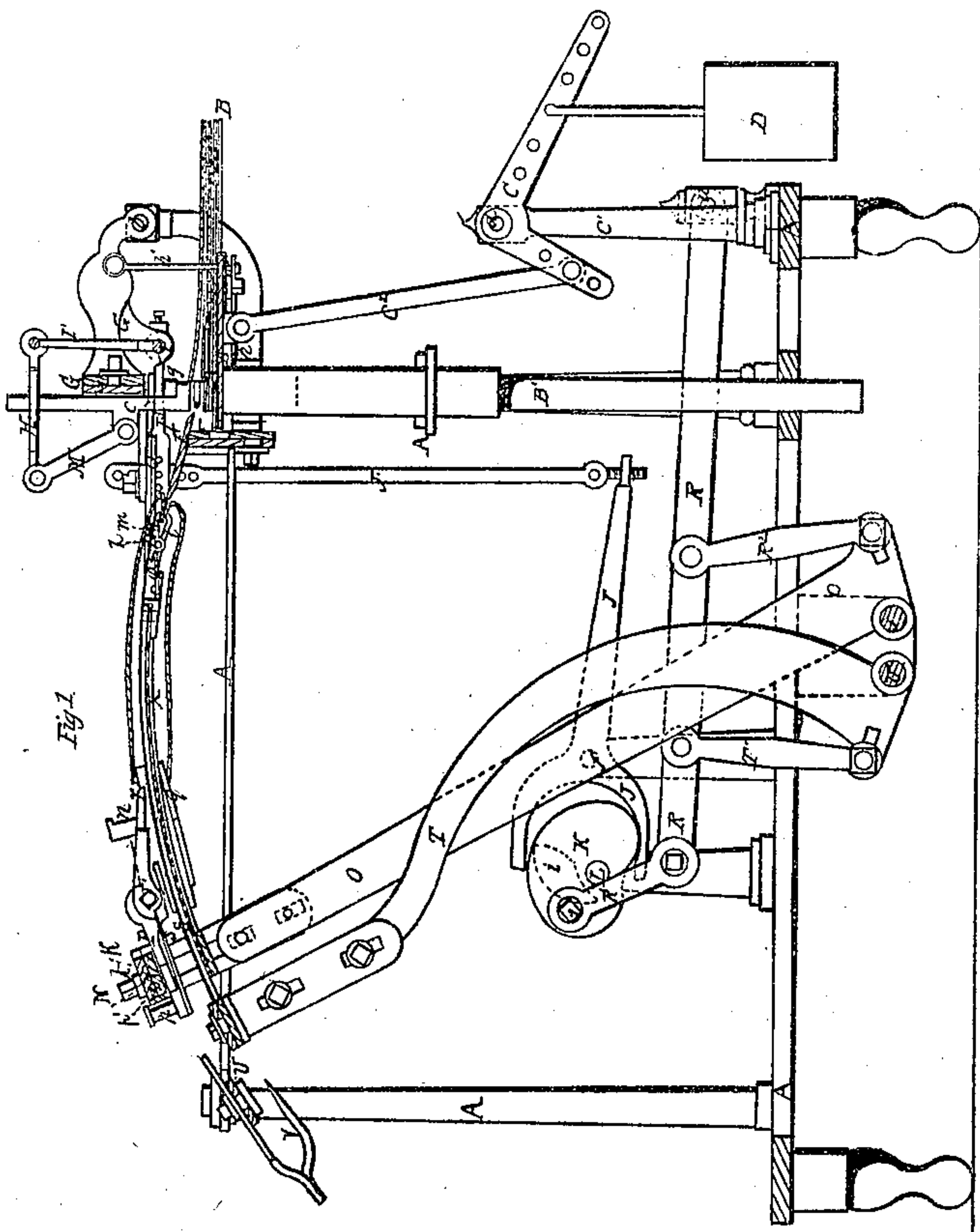
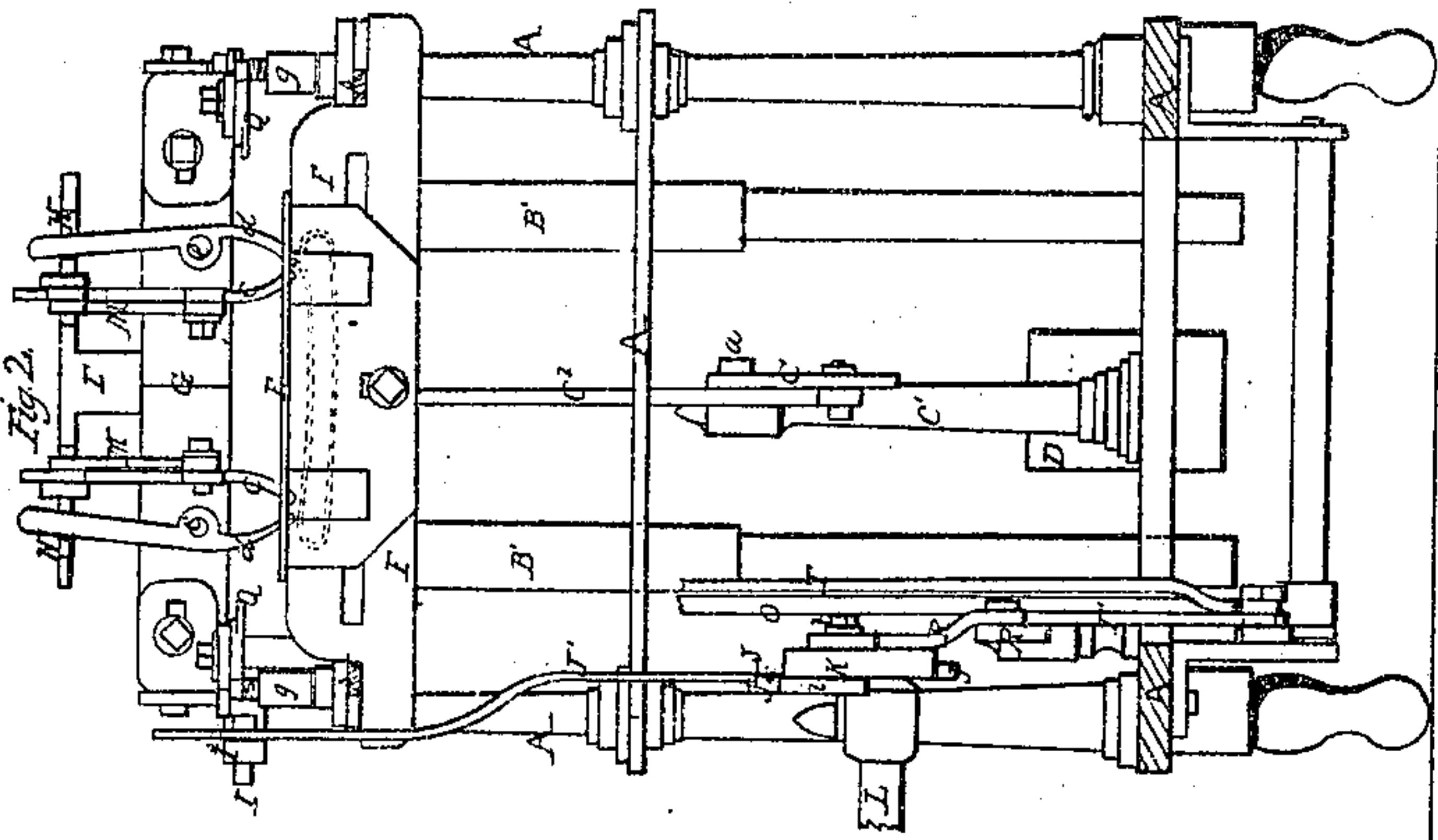


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Bag Mach.

N<sup>o</sup> 30808.

Patented Dec. 4. 1860.



Witnesses:

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# UNITED STATES PATENT OFFICE.

W. V. GEE, OF NEW HAVEN, CONNECTICUT.

## IMPROVEMENT IN MACHINERY FOR TURNING BAGS.

Specification forming part of Letters Patent No. 30,808, dated December 4, 1860.

*To all whom it may concern:*

Be it known that I, W. V. GEE, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Machine for Turning Bags; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of the machine. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a plan of the same.

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

Bags manufactured by sewing are commonly turned inside out to bring to the inside the margins which extend beyond the seams, and thereby to give the seams a neat appearance on the outside. In the manufacture of such bags in large quantities much time is consumed in this process, one establishment now in active operation employing several persons for this purpose alone.

My invention consists in an automatic machine by which the bags are taken from a stack or pile, turned, and delivered much more quickly than can be done by hand.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

A is the framing of the machine, having at its front end a vertically-moving horizontal table B, upon which the bags are placed to be turned. This table has attached to it two vertical guide-rods B' B', which work in fixed guides provided for them in the cross-pieces of the framing, and it is connected by a rod C<sup>2</sup> with a lever C, which works on a fixed fulcrum a, secured in an upright C', and which is loaded by a weight D in such a manner as to hold up the table with the top bag of the pile which is placed upon it close under the edge of a fixed plate E, which is secured to the framing and to lift the table up to bring the next bag up to the plate E every time the top bag is removed. The plate E is secured to an upright gage-plate F, close to which the table B works, and it projects only just far enough over the said gage-plate and the table to constitute a stop to keep the uppermost bag of the pile always at the same elevation. The bags are placed on the table B with their mouths toward the gage-plate F.

G is a frame extending entirely across the machine above the table B, and arranged to swing upward and downward on journals or centers b b, supported in fixed positions in the sides of the framing A. To this frame there are secured two pairs of nippers c d c d, whose duty is to seize the upper side of the upper bag of the pile and pick it up to open its mouth, the nippers being arranged at equal distances from the center of the machine. One jaw c of each pair of nippers, which for the sake of distinction I will call the "fixed jaw," is attached rigidly to the back of the frame G, which may be termed the "nipper-frame," and the other jaw d of each pair is attached to the back of the nipper-frame by means of one of two pivots e e, which are secured in the main frame.

The nippers are opened and closed by the action of the two slotted wedges H H, which are attached at their rear ends to branches of the arm I' of a rock-shaft I, working in bearings in the sides of the nipper-frame, and at their front ends to two rockers M M, connected with the back of the nipper-frame.

The rock-shaft I has, outside of the nipper-frame, an arm I<sup>3</sup>, which is connected by a rod J' with a forked lever J, which works on a fixed fulcrum f, and whose fork receives within it a cam K on the main shaft L of the machine, which is arranged parallel with the axis of vibration of the nipper-frame in suitable bearings near the rear of the main framing. This cam serves to open and close the nippers and also to raise and lower the nipper-frame, which is prevented descending lower than just sufficient to permit the nippers to take hold of the upper side of the uppermost bag by means of stop-screws g g, one on each side of the nipper-frame. These screws screw into the nipper-frame and come into contact with suitable resting-places on the main framing A, and by screwing them up or down the nipper-frame and the nippers are permitted to fall lower or not so low. The adjustment by these screws must be very exact, as the nippers must not take up the bag entirely, but only the single thickness of cloth which constitutes one side thereof.

The extremities of the nippers are serrated or made with fine sharp but short teeth in order that they may gather up the cloth by the movement of the jaws d d toward their respective fixed jaws c c; but the said teeth



should be so beveled that they will pass freely over the cloth in the movement of the jaws  $d$  away from their respective fixed jaws.

The nipper-frame is connected by a rod  $h'$  with a spring  $h$ , that is secured to the framing A for the purpose of drawing it down under the control of the cam K to bring the ends of the nippers into contact with the bags. The nippers are closed by the action of the cam K on the lower prong of the fork of the lever J, which causes the said lever to lift the rod  $J'$  and the arm  $I^3$  of the rock-shaft I, and so to throw forward the arm  $I'$  of the rock-shaft and make it draw forward the wedges H H' and bring the jaws  $d$  up to the jaws  $c$ , thereby causing the nippers to take hold of the cloth.

Up to the time of the closing of the nippers the nipper-frame does not rise; but as soon as the nippers have closed and no further movement of the wedges is permitted the continued action of the cam upon the arm  $I^3$  causes the nipper-frame and all its appurtenances to rise, and the nippers are thus made to pick up the upper side of the bag, which they draw from under the edge of the plate E, leaving the lower side of the bag under the said plate, and consequently opening the mouth of the bag, as illustrated in Fig. 1, where, as well as in the other figures, the bags are represented in blue color. The opening of the nippers is not effected again till the cam has moved far enough to have let the nipper-frame drop down again, when a projection  $i$  on one side of the cam acts upon the upper prong of the fork of the lever J to pull the arm  $I^3$  of the rock-shaft I and throw back the arm  $I'$  and the wedges H H, which then act to open the nippers preparatory to the main body of the cam coming again into operation on the lower prong of the fork of the lever, as before described.

The above operation is performed once during each revolution of the main shaft L.

N is a bar, which I call the "extender-bar," of sufficient length to reach all across the machine and attached to a long lever O, which is arranged to swing in a direction parallel with the planes of vibration of the nipper-frame G toward and from the back of the table B, the fulcrum of said lever being a rock-shaft  $j$  arranged in bearings near the bottom of the machine. To this bar N there are attached by fulcrum-pins  $k$  two levers P P, which I call "extenders," whose duty it is to enter the mouths of the bag while it is held open by the nippers  $c$   $d$ , extend the mouths, take the bags from the table, and act in combination with the turning-grippers  $l$   $m$ , hereinafter described, for the purpose of turning the bags. These extenders, which work nearly horizontally on, their fulcrums have their front ends—that is to say, the ends toward the table B—deep enough in a vertical direction to keep the bag open wide enough for the entry thereinto of the turning-grippers. Each extender has secured to one side of it, near

its front end, an upright stud  $n$ , and each has secured at its rear end an upright stud  $p$ . The studs  $p$   $p$  are acted upon by two springs  $p'$   $p'$ , secured to the bar N for the purpose of forcing apart the front ends of the extenders and extending the bags; but stops are provided on the bar N to prevent the extenders being extended too far at any time when not in a bag. The studs  $n$   $n$  are for the purpose of running against two double inclined guide-pieces Q Q, secured rigidly to the nipper-frame G, to cause the approach of the extenders sufficiently near each other to enter the mouths of the bags.

To the inner face of each extender there is attached a pair of what I call "smootheners"  $q$   $r$ , whose duty it is to smooth or take the wrinkles out of the bags as they are drawn inside out. Each pair of smootheners consists of a lower jaw  $q$  attached rigidly to its respective extender and an upper jaw  $r$ , pivoted by a pin  $r'$  to its respective extender. These jaws are flat faced and have their faces parallel and nearly horizontal, and the upper ones have springs  $s$   $s$  applied to them in such a manner as to press them not too forcibly down toward the jaws  $q$   $q$ .

The operation of the extenders is effected by means of a crank-pin  $t$ , secured to the cam K, or otherwise carried by the shaft L, said crank-pin being connected by a rod  $R'$  with a long lever R, which works on a fixed fulcrum  $u$  (see Fig. 1) near the front of the machine, and which is connected by a rod  $R^2$  with the lever O. The movement of the lever O effected by this crank and system of connections causes the extender-bar and extenders to move forward toward and retire from the table once during every revolution of the main shaft, and as they advance the studs  $n$   $n$  of the extenders are caused to pass between the rearward inclinations 6 6 (see Fig. 3) of the edges of the guide-pieces Q Q, and so caused to be drawn together; but as soon as the said studs pass the most prominent points 7 7 of the said guide-pieces, which is just as the front ends of the extenders are entering the mouth of the bag which has been opened by the nippers  $c$   $d$  the extenders begin to move apart, and after the extenders have entered far enough into the bag the studs  $n$   $n$  pass the forward ends of the guide-pieces Q Q and allow the springs  $p'$   $p'$  to throw the extenders apart. The extenders, as they thus fly apart, draw hard enough on the upper part of the bag to draw it out of the nippers, and after this has been effected they continue their advance far enough to draw the lower edge of the mouth from under the edge of the plate E, after which they retire with the bag. In moving backward their studs  $n$   $n$  escape the guide-pieces Q Q, owing to the latter having been raised above them with the nipper-frame G, the latter not being dropped again till the bag has been drawn completely clear of the table.

The turning-grippers  $l$   $m$   $l$   $m$ , before men-



tioned, are carried by two bars S S, which are rigidly attached to a lever T, which is secured to a rock-shaft *v*, arranged in bearings near to and parallel with the rock-shaft *j*, and the said lever T is connected by a rod T' with the lever R, before mentioned, the arrangement of such connection being such that the lever T, in the swinging movement it derives from the lever R, will always move in the opposite direction to the lever O, so that the turning-grippers will always move forward toward the table B as the extenders move backward from it, and vice versa. The bars S S are curved in the form of arcs concentric with the rock-shaft *v*, as shown in Fig. 1. The lower jaws *l l* of the turning-grippers are pivoted to the bars S S by pivots *w w*, (see Fig. 3,) on which they are capable of a movement toward and from each other; but springs *xx* are applied to them in such a manner as to tend to throw them outward as far as permitted by stops at the extremities of the bars S S, which is not so far as to prevent them both entering the bag together. The movement that is permitted on the pivots *w w* is to permit the grippers to pass freely between the extenders. The upper jaws *m m* are pivoted to their respective lower jaws *l l* by the pins *z z*, on which they make their opening-and-closing movement, and springs 10 10 are applied to close them. The rear margin of the stationary plate E, whose front end projects over the table B, is beveled off to a thin edge, but not sharp enough to cut cloth, and it is so situated as to enter between the jaws *l m* of the turning-grippers as the latter complete their forward movement, and so to force open the said jaws.

At the upper part of the extreme rear of the machine there is secured to the framing a transverse bar U, to which there are firmly attached two wedges V V, which are so adjusted that their points will enter between the jaws *l m* of the turning-grippers as the latter complete their backward movement, and so force apart and open the said jaws. The grippers, moving forward into the bag as it is carried back by the extenders in an open condition, meet the bottom of the bag just as they arrive at the rear edge of the stationary plate E, and as they are opened by the entrance between them of the said plate the latter turns the bottom inward between them. As they return and slip off the said plate, they draw off the bag therefrom with the so-turned portion between them, and are closed tightly upon it, as shown in Fig. 1, by their springs 10 10. In the act of turning in the bottom of the bag between the grippers the bag is drawn back a little way on the extenders, but not far enough to prevent the latter holding its mouth as they advance simultaneously with the retreat of the grippers, such retreat drawing the bottom of the bag right through the interior of the bag and between the smootheners *q r*, and so turning it completely in-

side out. Just before the turning of the bag is completed, the studs *n n* of the extenders come in contact with the inclined edges 6 6 of the fixed guides Q Q, and are so forced toward each other to liberate the mouth of the bag, the turning of which is completed, by its being drawn through the smootheners *q r*. After the turning has been completed the grippers are opened by coming onto the wedges V V, and the bag being liberated, drops from the machine onto the floor or on a suitable receptacle. The smootheners are opened by the forward passage of the turning-grippers through them and are kept open by the bars S S and the grippers until the latter have passed out of them in their retreat, when they (the smootheners) close upon the turned portion of the bag. The movement of the extenders toward each other, by which they are made to liberate the one bag, brings them to a condition to enter the bag to be next turned, whose mouth is held open in readiness to receive them by the nippers *c d c d*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A machine for turning bags, composed of or containing the following three principal elements, viz: first, a device for opening the mouth of the bag; second, a device for extending and keeping extended the mouth of the bag; third, a device for entering and seizing the bottom while the mouth is extended and drawing the bottom through the entire length of the bag, the whole operating in combination with each other, substantially as herein described.
2. The use of smootheners, applied and operating substantially as herein described, in combination with the devices for extending the mouth and the device for drawing the bottom through the interior of the bag for the purpose of taking the wrinkles out of the bag as it is turned.
3. The arrangement of the nipper-frame G and nippers *c d c d*, in combination with the rising table B and the plate F, substantially as herein described.
4. The arrangement of the extender-bar N and extenders P P, to operate in combination with the nipper-frame G and nippers *c d c d*, substantially as herein specified.
5. The arrangement of the turning-grippers *l m l m*, to operate in combination with the extender-bar N and extenders P P, substantially as herein set forth.
6. The plate E, applied in combination with the turning-grippers, substantially as and for the purpose herein specified.
7. The wedges V V, applied in combination with the turning-grippers, substantially as and for the purpose herein set forth.

W. V. GEE.

Witnesses:

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