

935,533.

T. H. MAYO.
LEATHER SPLITTING MACHINE.
APPLICATION FILED APR. 11, 1908.

Patented Sept. 28, 1909.

2 SHEETS—SHEET 1.

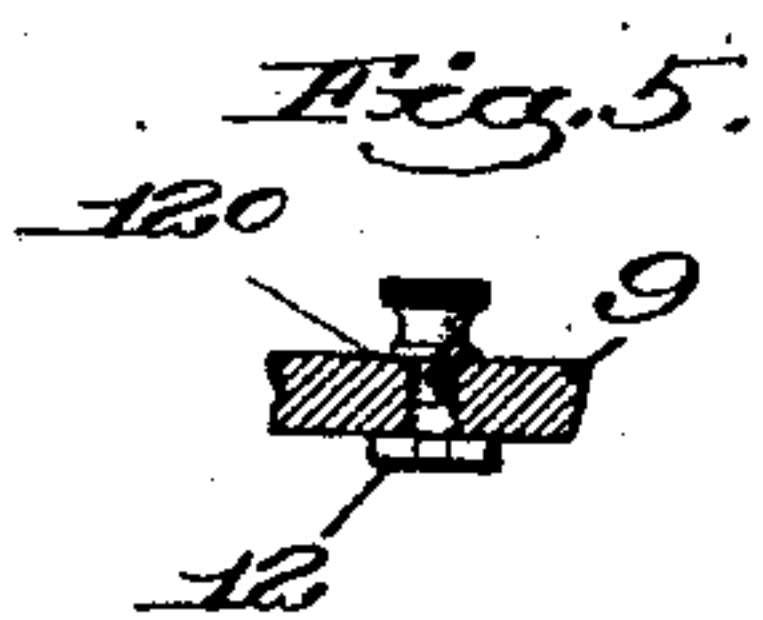
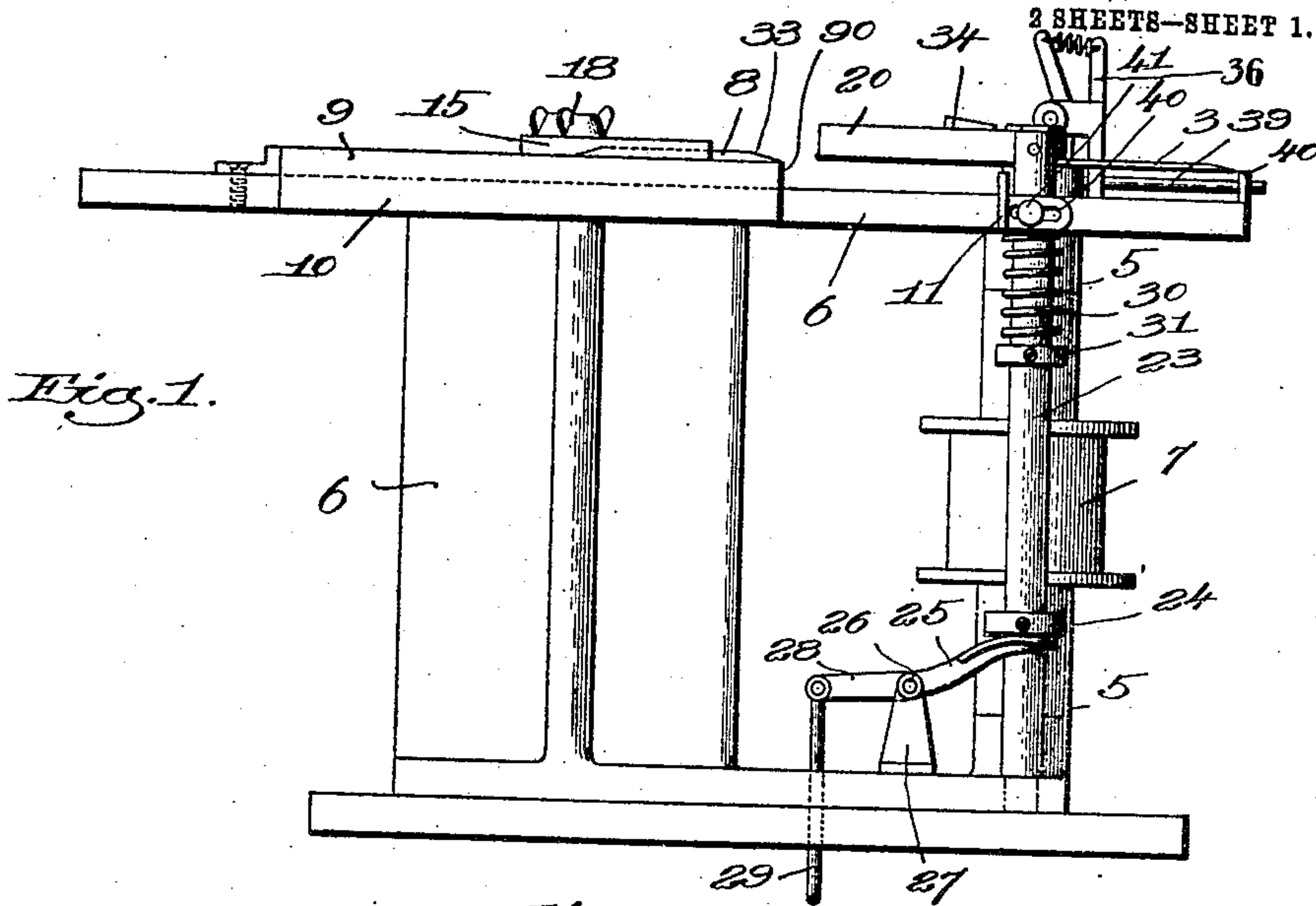
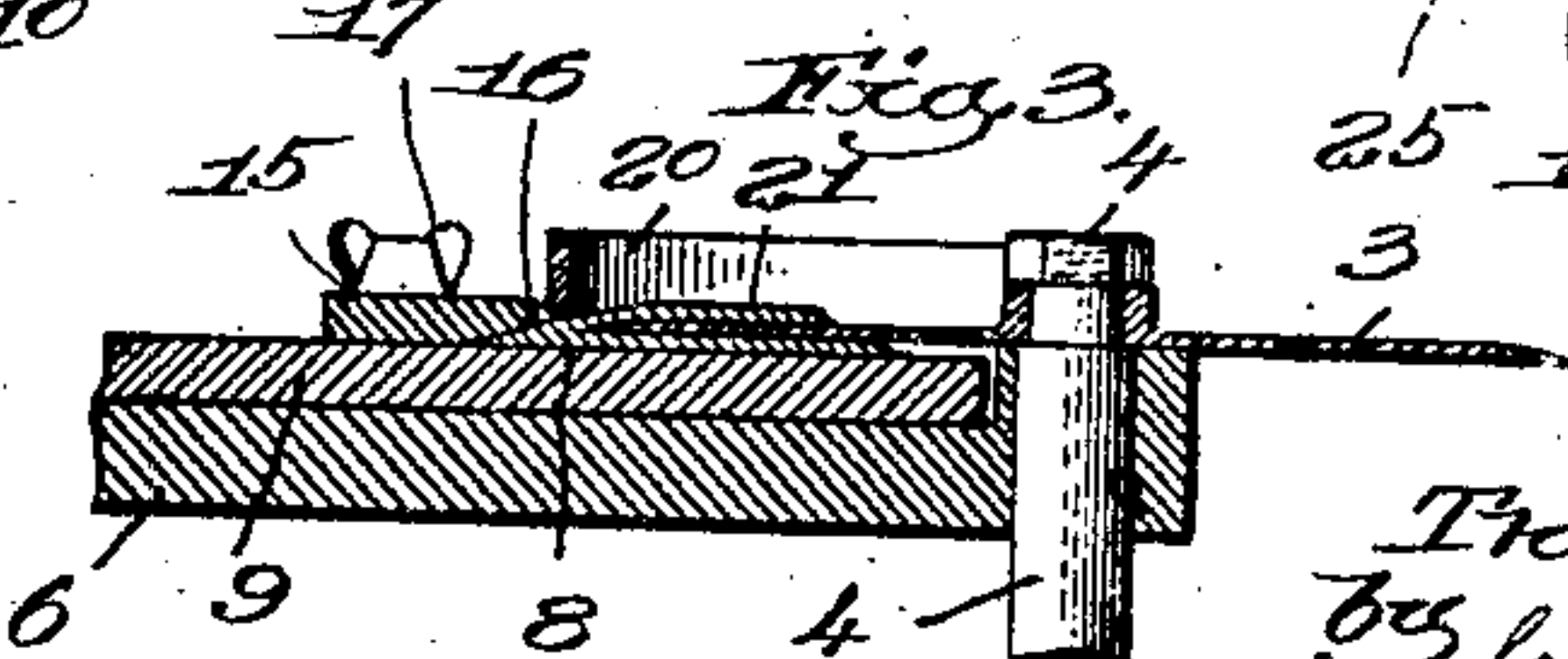
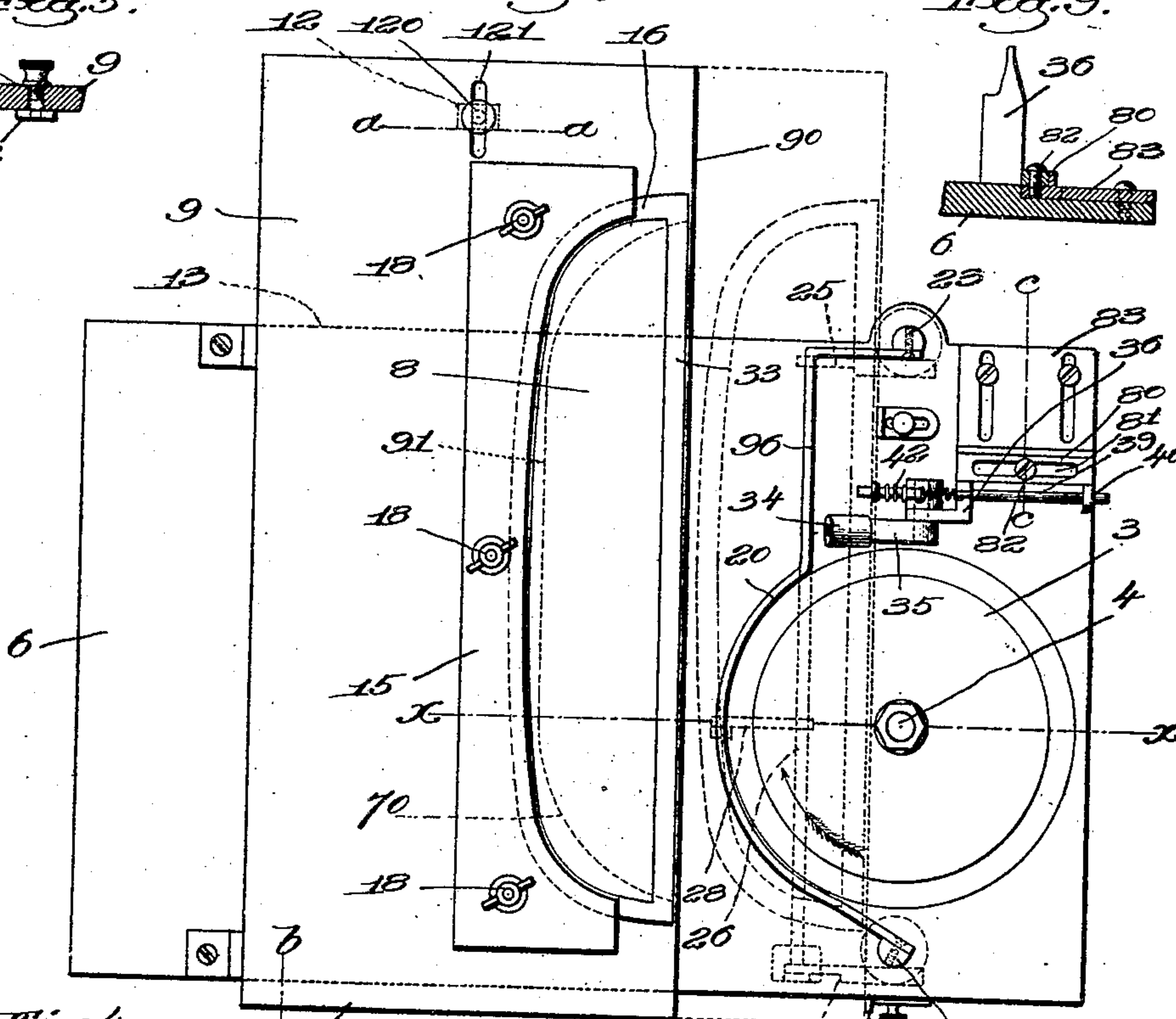


Fig. 2.

Fig. 9.



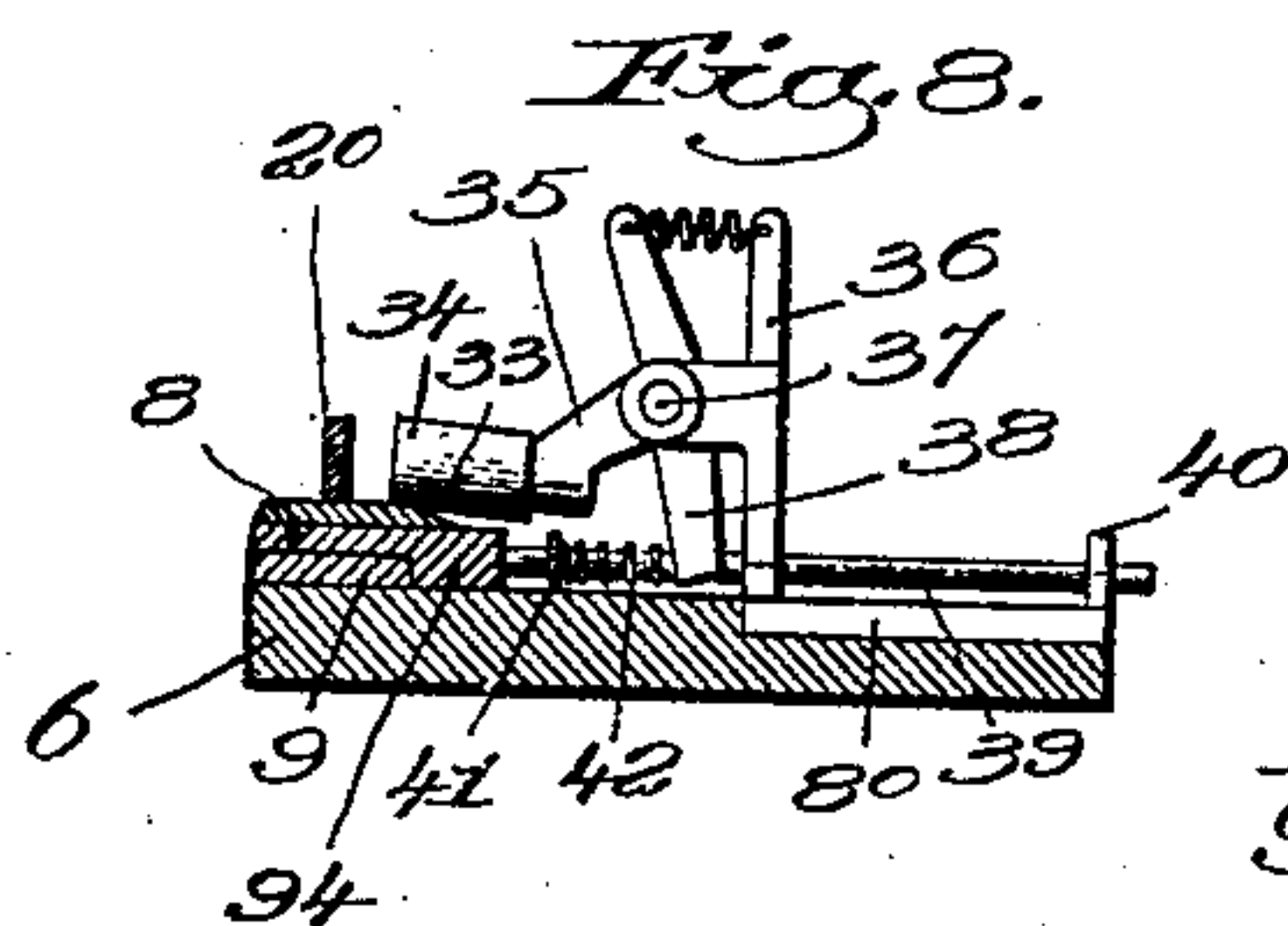
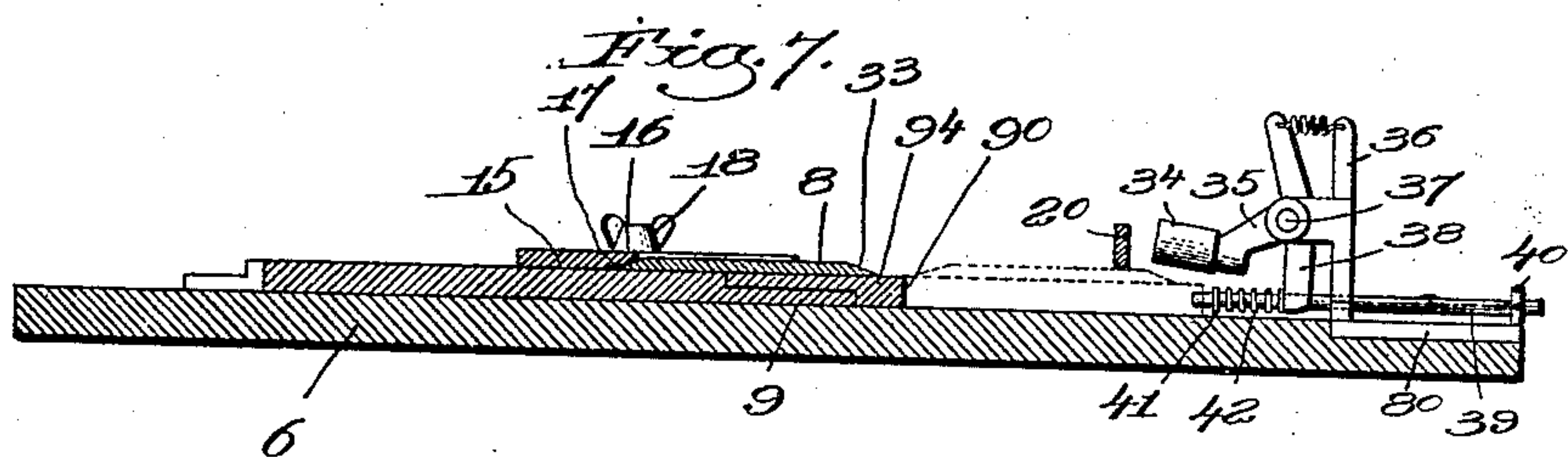
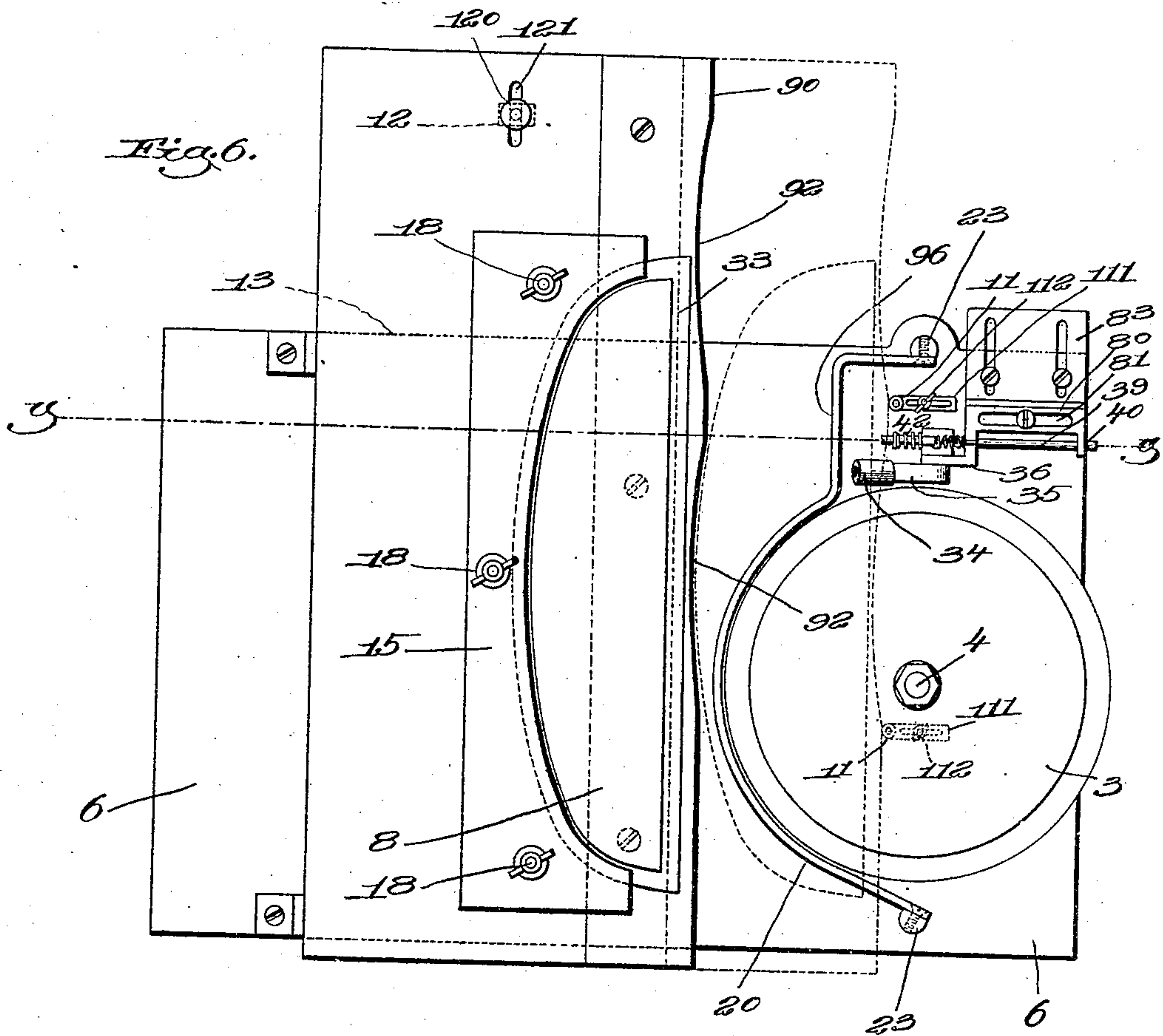
Witnesses:
Fried. S. Gumbach.
Joseph M. Ward.

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Thomas H. Mayo,
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

THOMAS H. MAYO, OF MELROSE, MASSACHUSETTS, ASSIGNOR TO EASTERN COUNTER COMPANY, A CORPORATION OF MASSACHUSETTS.

LEATHER-SPLITTING MACHINE.

935,533.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed April 11, 1908. Serial No. 426,549.

To all whom it may concern:

Be it known that I, THOMAS H. MAYO, a citizen of the United States, residing at Melrose, county of Middlesex, and State of Massachusetts, have invented an Improvement in Leather-Splitting Machines, of which the following description, in connection with the accompanying drawing, is a specification, like numerals on the drawing representing like parts.

This invention relates to leather-splitting machines and has for its object to provide a novel machine adapted for splitting blanks for counters for boots or shoes to form a pocket therein for receiving a stiffening material.

In my co-pending application Se. No. 398,794, filed October 23, 1907, I have illustrated and described a counter for a boot or shoe which is formed from a blank that is split from near the lower edge of the counter nearly to the top thereof and nearly to each end thereof, thereby to form a pocket in which a stiffening material is placed. In the counter shown in said application, the blank is not split clear through from one end to the other, but instead the splitting terminates inside of the ends of the blank. The object of this is to provide a counter without split ends. The machine herein illustrated has been especially designed for splitting the blanks for counters in this manner, although it will be obvious that it may be used for splitting other pieces of leather, and the invention is not confined to a device for splitting counter blanks.

My improved machine comprises a splitting knife of any usual construction, but preferably a rotary knife, and a table on which the blank to be split is supported. Said table and knife are movable relative to each other thereby to carry the blank against the knife to accomplish the splitting thereof as usual in leather-splitting machines. In my invention, however, I have provided a special construction whereby the relative movement of the table and knife is limited so that it will be impossible to split the blank through at the ends or to split the blank through from the bottom to the top.

In my improved machine I have also provided a novel means for holding the blank in place on the table while it is being acted upon by the knife.

I will first describe some embodiments of

my invention which I have selected for the purpose of illustrating the principle thereof and will then point out the novel features thereof in the appended claims.

In the drawings, Figure 1 is a side view of a machine embodying my invention; Fig. 2 is a top plan view thereof; Fig. 3 is a section through the knife on the line $x-x$, Fig. 2, said section showing the work-supporting table moved forward into its operative position; Fig. 4 is a section on the line $b-b$, Fig. 2; Fig. 5 is a section on the line $a-a$, Fig. 2; Fig. 6 is a top plan view showing a modified form of the invention; Fig. 7 is a section on the line $y-y$, Fig. 6; Fig. 8 is a detail of the roll for holding the edge of the counter in place; Fig. 9 is a section on the line $c-c$, Fig. 2.

The knife which I preferably employ is a rotary disk knife herein shown at 3. This knife is mounted on a suitable shaft 4 which is supported in bearings 5 formed in the frame 6 that sustains the work-supporting table. The shaft 4 may be rotated by any suitable means, and is herein shown as having fast thereon a driving pulley 7 so that it may be rotated by a suitable belt. The blank which is to be split is shown at 8 and it is supported on a work-supporting table 9. In this embodiment of my invention the relative movement between the work-supporting table and the knife to bring the latter against the blank 8 is secured by giving the table a movement toward and from the knife, and for this purpose the table 9 is slidably mounted on the frame 6.

The pocket which it is desired to cut in the blank has substantially the shape shown by the dotted lines 70 in Fig. 2. This pocket is formed by moving the blank when in the position shown in Fig. 2 toward the knife to cause the latter to enter the blank and split the latter near one end, as shown in dotted lines Fig. 2, and then moving the blank longitudinally to carry the splitting operation toward the other end thereof thereby to give the requisite length to the pocket. This requires two movements of the table, one toward the splitting knife, and the other at right angles to the first movement. Suitable stops are provided to limit the movement of the table in each direction so that all the operator has to do is to properly place a blank on the table, move the latter toward the knife as far as the stops will permit it

to go, and then to move the table longitudinally as far as it will go in that direction.

For guiding the table in its movement I have herein shown it as provided with a lip or flange 10 at one edge which overlies the edge of the frame 6, as shown in Fig. 4. The frame 6 is also provided with a stop 11 which is properly positioned to limit the movement of the table toward the knife thereby to gage the depth of the pocket. When the table has been moved against the stop 11, it is then moved longitudinally until its movement is checked by a stop 12 on the under side of the table which engages the edge 13 of the frame 6. By using a circular or disk cutter, the ends of the pocket formed in the blank are rounded to conform substantially to the rounded ends of the counter, and a pocket of the desired shape is thus produced. The stop 12 is adjustable so that the movement of the table longitudinally may be more or less according to the length of the counter being split. This adjustment may be secured by making the stop in the form of a nut which is screwed to a stem 120 that is adjustable in a slot 121 in the table 6.

Where the edge 90 of the table is straight, as shown in Fig. 1, the movement of the table longitudinally will be in a straight line, and as a result the top edge 91 of the pocket will be a straight line. This will answer well enough where the counter has a comparatively flat top as the straight side 91 of the pocket would conform substantially to the top edge of the counter. If, however, the counter is made with a top edge of more or less curvature, as shown in Fig. 6, the forming of the pocket with the straight edge 91 would leave a considerable width at the middle of the counter between said edge and the top of the counter which was not split and which, therefore, could not be stiffened by the insertion of the stiffening member. A counter made in this way would have many disadvantages, as a counter such as shown in my above-mentioned application should be one in which the top edge of the stiffening member conforms substantially to the top edge of the counter.

In Figs. 6 and 7 I have shown a modification of my invention which permits the pocket to be cut in such a way that the top edge thereof will conform to the top edge of the counter. This is provided for by making the edge 90 of the table with the concave portions 92 so that as the table is moved longitudinally, the movement of the stops along the concaved portions permits the table to have a slight movement toward the knife. As shown in Fig. 6, the movement of the table toward the knife is limited by two stops 11 and the two concaved portions 92 are so positioned that when the table is moved into the dotted line position Fig. 6,

the stops contact with the edge of the table beyond the concaved portions. When, however, the table is moved longitudinally, the concaved portions 92 permit the table to move also toward the knife slightly so that the pocket split in the counter will have a contour corresponding substantially to that of the counter. The depth of the concaved portions 92 will vary according to the shape of the top of the counter, and to permit counters of different shapes to be cut, I propose to make the edge portion 94 of the table removable so that different edge portions having different curvatures 92 can be used according to the contour of the counter.

It is necessary, of course, to provide some means for properly holding the counter in place on the table, and it is also desirable to provide some means for holding firmly the portion of the counter acted on by the knife, which means shall accomplish this end without applying any pressure on the top of the counter that would tend to bind the knife between the two split parts thereof and thus produce sufficient friction to cause the knife to become heated or to retard the splitting operation. For positioning the counter on the table I have shown a gage 15 which may be a plate cut to fit the contour of the counter. The counters are usually skived at their edges, as at 16, and preferably the edge of the gage 15 will be undercut, as at 17, see Fig. 3, to overlie the skived edge 16 of the counter.

My machine is adapted to operate on counters of different sizes and I propose, therefore, to make the gage 15 detachable so that gages of different sizes may be employed. The gage may be held to the table in any suitable way, as by means of clamping screws 18. The holes for the screws are given the same relative position in all gages so that the same clamping screws can be used for clamping any of the gages to the table.

In order to properly split the counter it is necessary that it should be "in temper" as it is termed, that is, that it should be moistened sufficiently to soften it. Where the counter is thus moistened, it is apt to yield and give at the point where the knife is acting on it, and to hold the counter from such yielding movement, I have provided a holding device 20 which is situated just outside of the edge of the knife, but which is shaped to conform to the curvature of the knife. This holding device is positioned above the table just sufficiently to permit the counter to pass beneath it and it acts to hold that portion of the counter immediately surrounding the periphery of the knife firmly against the table, thus preventing such portion from crumpling or yielding. This is essential, for unless the material should be thus held, the knife would be likely to cut

through one side or the other of the material and the pocket might not be formed centrally of the counter. Another advantage of this form of holder is that it does not apply any pressure to the portion of the leather immediately above or below the knife, and thus the knife is not subjected to the friction that would be applied thereto if pressure were applied to that portion of the leather 21 immediately above the knife.

The holder 20 is preferably capable of vertical movement so that it may be lifted slightly to permit the leather to pass under the same and then may be depressed into contact with the leather while the knife is acting thereon. To accomplish this the ends of the holder are secured to two posts 23 which are vertically slidable in the frame. Each post has secured thereto a collar 24 which is acted upon by an arm 25 carried by a rock-shaft 26 supported in suitable bearings 27 carried by the frame. Said rock-shaft has fast there-to an arm 28 to which a connection 29 is secured that leads to a treadle so that the operator by depressing the treadle can raise the holder 20.

The holder is yieldingly held against the material by means of springs 30 which surround each post and which engage at one end the table and at the other end the collars 31 fast on the posts. I have also provided a device for acting on the bottom edge 33 of the counter as it is moved longitudinally, whereby said edge is firmly held against the table and the counter is prevented from becoming wrinkled or crumpled as the cutting proceeds. In the preferred embodiment of my invention this edge-holding device is normally out of operative position but is thrown into operative position by the table when the latter moves forwardly into the dotted line position Fig. 2. This edge-holding device as herein illustrated comprises a roll 34 which is pivotally mounted to move toward and from the edge 33 of the counter. This roll is herein shown as pivoted on an arm 35 which in turn is pivoted at 37 to a stand 36. The arm 35 also has rigid therewith another arm 38 through which passes a push-pin 39, said latter extending through the bracket 36 and through a guide member 40 rising therefrom. The push-pin has a collar 41 thereon between which and the arm 38 is a spring 42. The push-pin is arranged to be engaged by the edge of the table 9 when the latter is moved toward the cutter, and the movement of the table therefore throws the roll 34 down onto the edge 33 of the counter. This roll is situated closely adjacent to the edge of the knife, as will be seen from Figs. 2 and 6, and it acts to hold the edge of the counter firmly in position as it is being fed to the knife. It will be noted that the holding device 20 is offset at the end adjacent the roll as shown at 96, this being done so as to per-

mit the edge-holding roll 34 to engage the counter immediately adjacent the knife. The stops 11 are preferably adjustably mounted on the frame so that the movement of the table toward the shaft of the knife can be regulated according to the width of the counter being operated on. One convenient way of thus adjustably mounting these stops is to provide each with a slotted foot piece 111 through which slots pass the clamping bolts 112 for clamping the stops in position.

In order that the edge-holding roll 34 shall act properly it is essential that it have a definite position with relation to the stops 11 for said roll is thrown down into operative position by engagement of the edge of the table with the push-pin 39, and the position of the edge of the table is in turn determined by the stops 11. Accordingly I propose to make the bracket 36 adjustable on the frame which may conveniently be done by providing the foot portion 80 thereof with a slot 81 in which the clamping screw 82 is received. It may also be desirable to adjust the edge-holding roll toward and from the cutter and this may be accomplished by clamping the base 80 to a carriage 83 which is mounted on the frame for adjustment toward and from the knife.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, and means whereby the table and the knife may be moved relative to each other in one direction to cause the knife to enter and split the work on the table and also be moved relative to each other in a direction at substantially right angles to the first-named direction but in the same plane thereby to split the work and form therein a pocket having a length in excess of the width of the knife.

2. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table movable toward the knife to cause the latter to enter and split the work and also movable in another direction in the same plane, said knife having a cutting edge of a shape to continue the splitting operation during the latter movement of the table.

3. In a machine for splitting counters, the combination with a splitting knife, of means to sustain a counter in substantially the plane of said knife, and means whereby the counter and knife may be moved relative to each other in substantially the plane occupied by them both to cause the knife to enter the counter near the lower edge thereof and also be moved relative to each other in a direction at right angles to the first-named movement but in the same plane thereby to form an elongated split in the counter.

4. In a machine for splitting counters, the combination with a splitting knife, of means to sustain a counter in the plane of the knife, said means and the knife being movable relative to each other in a direction at right angles to the length of the counter to cause the knife to enter and split the counter and also being movable relative to each other in a direction longitudinally of the counter to continue the splitting operation.
5. In a machine for splitting counters, the combination with a rotary splitting knife having a disk shape, of a table for sustaining the counter to be split, said table being freely movable in one direction to cause the knife to enter the counter and in another direction to continue the splitting operation.
6. In a machine for splitting counters, the combination with a rotary leather-splitting knife, of a table for sustaining the counter, said table being freely movable relative to the knife in two different directions in the same plane, and means to guide said table in its movement in both directions.
7. In a leather-splitting machine, the combination with a rotary disk splitting knife, of a work-supporting table movable relative to the knife, and means acting on the work supported on the table immediately circumjacent the edge of the knife to hold said work while acted on by the knife.
8. In a leather-splitting machine, the combination with a rotary disk splitting knife, of a work-supporting table movable relative to the knife, and yielding means acting on the work supported on the table immediately circumjacent the edge of the knife to hold said work while acted on by the knife.
9. In a machine for splitting counters, the combination with a rotary splitting knife, of a counter-supporting table, counter-positioning means thereon, said table being movable relative to the knife both in a direction transverse to the counter and in a direction longitudinally thereof, and means acting on the edge of the counter immediately adjacent the edge of the knife for holding the counter in place during such longitudinal movement.
10. In a leather-splitting machine, the combination with a rotary disk knife, of a table movable relative to the knife for supporting the leather to be split, a normally inoperative edge-holding device to act on the edge of the material being split, and automatic means to throw said edge-holding device into operative position.
11. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table movable toward and from the knife, an edge-holding device to engage the edge of the work, and means operated by the table to throw the edge-holding device into operative position against the edge of the work.
12. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, means whereby the table and the knife may be moved freely relative to each other in one direction to cause the knife to enter the work on the table and make therein a split having substantially the contour of the knife and also be moved freely relative to each other in a direction at an angle to the first-named direction but in the same plane thereby to elongate the split.
13. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, means whereby the table and the knife may be moved freely relative to each other in one direction to cause the knife to enter the work on the table and make therein a split having substantially the contour of the knife and also be moved freely relative to each other in a direction at an angle to the first-named direction but in the same plane thereby to elongate the split, and means to limit the relative movement of the knife and table in both directions.
14. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, means whereby the table and the knife may be moved relative to each other in one direction to cause the knife to enter the work on the table and make therein a split having substantially the contour of the knife and also be moved relative to each other in a direction at an angle to the first-named direction but in the same plane thereby to elongate the split, and means to guide the parts in their movements relative to each other and to limit their movements.
15. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, means for supporting said table for movement relative to the knife in a direction to cause the latter to enter the work supported on the table and also in another direction in the same plane to permit the splitting operation to be continued, and means to guide the table in both its movements.
16. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, means for supporting said table for movement relative to the knife in a direction to cause the latter to enter the work supported on the table and also in another direction in the same plane to permit the splitting operation to be continued, and means to guide the table in a curved line during its latter movement.
17. In a leather-splitting machine, the combination with a splitting knife, of a work-supporting table, means to sustain said knife and table whereby they may be moved relative to each other in one direction to

cause the knife to enter the work on the table and in another direction in the same plane to continue the splitting operation.

18. In a leather-splitting machine, the
5 combination with a splitting knife, of a
work-supporting table, means supporting
said table for permitting it to move toward
the knife and then to be moved in the same
plane at an angle to its first movement, a
10 detachable gage sustained by the table, and

guiding means coöperating with said gage to guide the table in the latter movement.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS H. MAYO.

Witnesses:

LOUIS C. SMITH,

THOMAS J. DRUMMOND.