

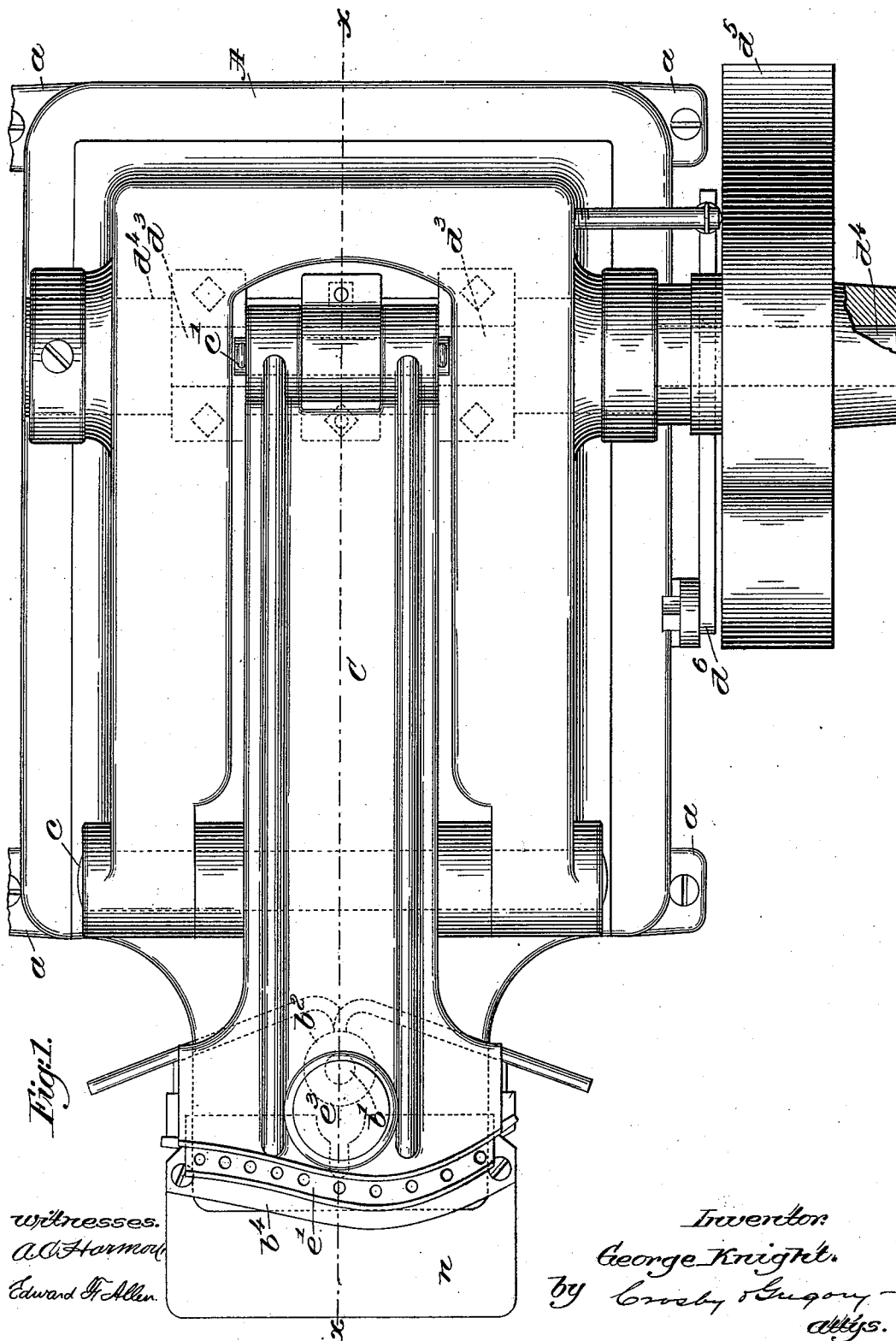
(No Model.)

3 Sheets—Sheet 1.

G. KNIGHT.
PERFORATING MACHINE FOR LEATHER.

No. 550,450.

Patented Nov. 26, 1895.



(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

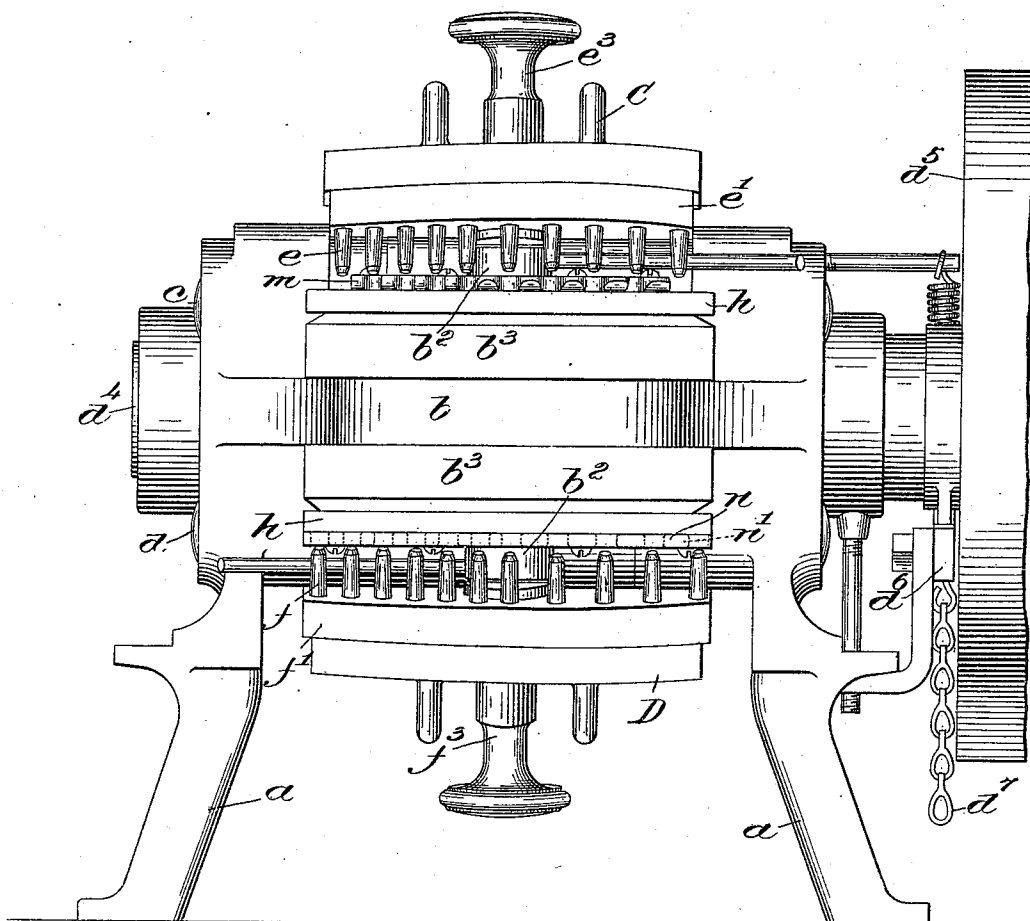
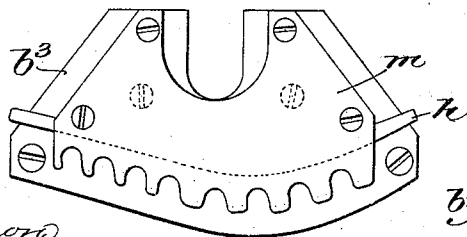


Fig. 4.



Witnesses.

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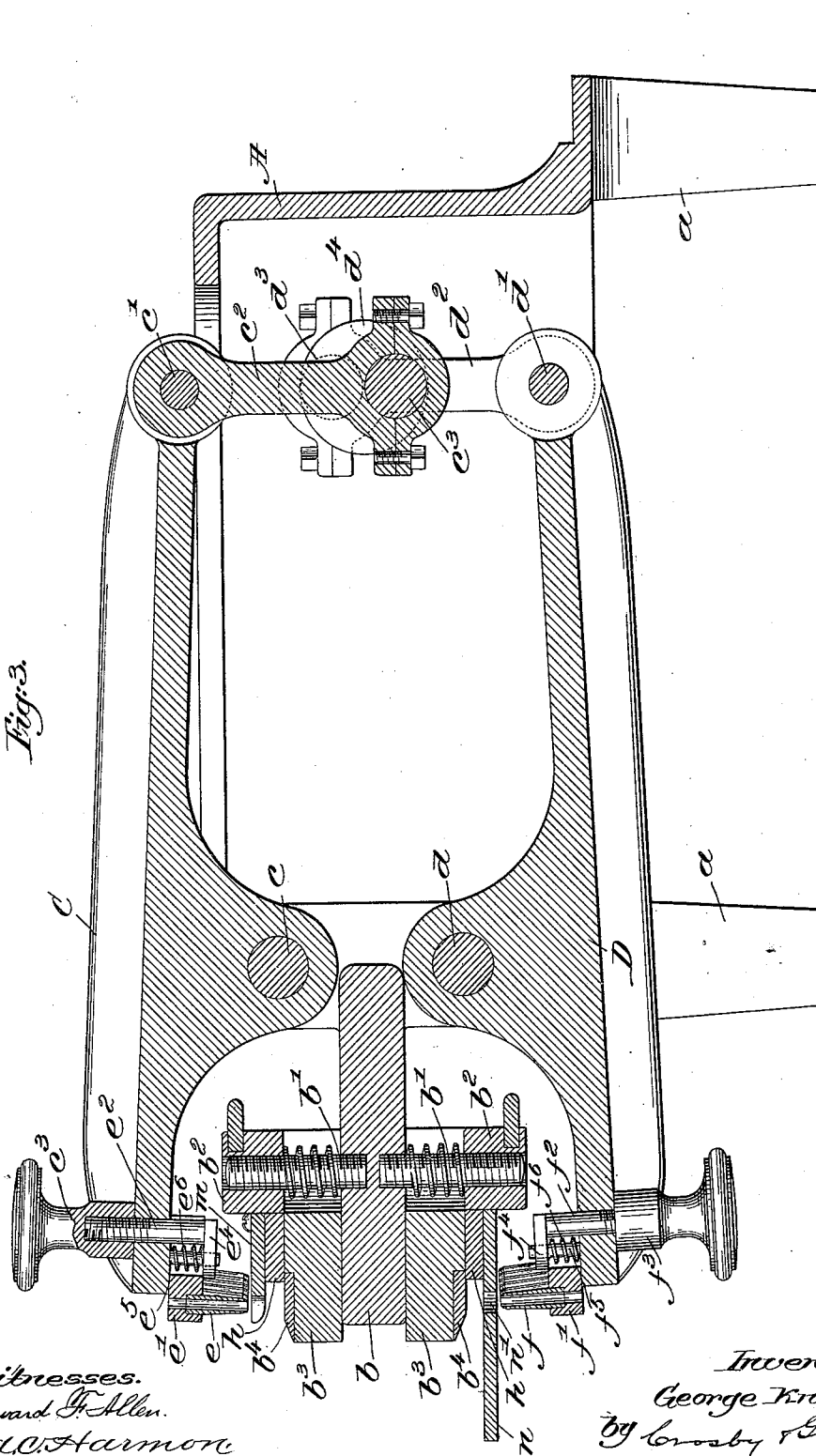
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3 Sheets—Sheet 3.

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PERFORATING MACHINE FOR LEATHER.

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UNITED STATES PATENT OFFICE.

GEORGE KNIGHT, OF BROCKTON, MASSACHUSETTS.

PERFORATING-MACHINE FOR LEATHER.

SPECIFICATION forming part of Letters Patent No. 550,450, dated November 26, 1895.

Application filed June 24, 1895. Serial No. 553,785. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KNIGHT, of Brockton, county of Plymouth, State of Massachusetts, have invented an Improvement in Perforating-Machines for Leather and the Like, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of an improved and simplified machine for perforating leather or other stock, the machine being especially adapted for perforating boot and shoe uppers for the reception of usual lacing eyelets or hooks.

15 In the manufacture of boots and shoes it is necessary to have different gangs of punches or perforators for the different sizes or shapes of the various uppers, and I have aimed to so construct a machine as to enable an operator to perforate the largest number possible of uppers.

20 In accordance with my invention I provide a single (what I shall call "work") support, and I mount the perforators or punches at opposite sides of this work-support in suitable carriers, preferably pivoted and provided with means for moving the carriers toward and from the opposite sides of the said work-support, and to obtain a change in the number, size, or arrangement of punches it is necessary simply for the operator to transfer the work from one to the other side of the work-support, thereby enabling the operator to
35 handle large numbers of pieces of different shapes or sizes with little waste of time for changes.

40 In the drawings, Figure 1 is a top or plan view, partially broken away, of the machine embodying my invention; Fig. 2, a left-hand end elevation of Fig. 1; Fig. 3, a vertical longitudinal section taken on the dotted line *xx*, Fig. 1; and Fig. 4 a detail to be referred to.

45 In the particular embodiment of my invention herein selected for illustration and shown in the drawings, A is a frame or bed of suitable shape and construction to sustain the several parts, and it is herein shown as mounted upon suitable legs *a a*.

50 At one end of the frame A (see Fig. 3) the machine shown is provided with a horizontal

table, or as I shall hereinafter denominate it, "work-support" *b*, shown as provided at its opposite sides with threaded studs *b'*, on which are screwed the clamping-nuts *b²* for securing to the work-support the work-supporting face-pieces *b³*, slotted to receive the studs, as shown. These face-pieces may be provided with suitable brass or other preferably soft metal or material-perforating plates *b⁴*.

60 C D are carriers pivoted, respectively, at *c d* in the frame, and at their extreme right-hand ends, Fig. 3, have jointed to them at *c' d'* the connecting-rods *c² d²*, connected, respectively, with two cranks *c³ d³*, the latter shown only in dotted lines, Fig. 3, on the main or driving shaft *d⁴* of the machine.

70 In the present instance of my invention there are two cranks *d³* arranged, respectively, at opposite sides the crank *c³*, and there are therefor two connecting-rods *d²*, which straddle a single connecting-rod *c²*.

75 The shaft *d⁴* is driven by or from a suitable pulley *d⁵* through suitable intermediate usual clutch mechanism, which need not be herein shown, as it forms no part of my invention, said clutch mechanism being under the control of a clutch-lever *d⁶*, which may be connected by an operating-chain *d⁷*, (see Fig. 2,) with a suitable treadle. (Not shown.) Rotation of the driving-shaft *d⁴* will cause the opposite or front ends of the carriers C D to simultaneously move toward and from the work-support *b*, like the opening and closing of a pair of shears.

85 The carriers C D are fitted at their front ends with suitable punches or "perforators," as I shall hereinafter call them, *e f*, the same as herein shown, being tubular in form and mounted in suitable heads *e' f'*, which are clamped to the front ends of the carriers by suitable clamping-screws *e² f²*, which are carried through the ends of the carriers and provided outside the same with suitable clamping-nuts *e³ f³*.

95 In the present instance of my invention the bolts or screws *e² f²* at their inner ends are provided with laterally-extended and enlarged heads *e⁴ f⁴*, through which are extended guiding-pins *e⁵ f⁵*, which prevent rotation of the bolts during rotation of the nuts. The heads *e' f'* are slotted to receive the pins *e⁵ f⁵* and

bolts $e^2 f^2$, and springs $e^6 f^6$ are preferably interposed between the carriers and the heads of the bolts to move the latter to free the heads $e' f'$ when it is desired to release the
 5 perforators.

The perforators, as herein shown, are arranged, as best indicated in Fig. 1, to perforate at one operation all the necessary eyelet-holes along the curved edges of the two quarters of
 10 a boot or shoe upper.

Referring to Figs. 3 and 4 I have provided the face-pieces b^3 with the limiting or stop-pieces h , which are suitably and preferably adjustably attached to the said face-pieces b^3 , and to these stops h I have, in the
 15 present instance of my invention, secured, as by screws, the stripper-plates $m n$. The stripper-plate m , herein shown as at the upper side of the work-support, has its outer edge
 20 serrated or notched to receive the perforators $e f$, the portions of the plate between the notches extending as so many fingers between the perforators, and the stripper-plate n is provided with a series of holes n' , through
 25 which the perforators work, said stripper-plate n being projected forward beyond the front of the machine to serve as a table on which the work may be positioned prior to the perforating operation.

The operation of the machine is as follows, viz: The operator inserts the two quarters to be perforated beneath the stripper m and upon the plate b^4 with their edges in contact with the stop h and operates the clutch to
 30 cause the perforators e to descend and perforate the quarters adjacent the edges thereof. The operator continues to employ the perforators e as long as required in perforating any particular sizes or quarters, the lower carrier
 40 D with its perforators operating continuously all the time, but performing no work. When the operator comes to a batch of quarters of different size—for instance, those larger than can be perforated by the perforators e —
 45 he simply inserts them beneath the work-support and the table and against the stripper n thereat and uses the lower series of perforators f so long as needed. It is also possible for an expert operator to use both series at
 50 the same time.

In practice a single series of perforators is usually sufficient for three sizes of uppers—that is, for the uppers of three sizes of shoes—a series made right for a six shoe being also
 55 considered near enough for a five and a seven shoe, and the lower series of perforators f , if made for a nine, is near enough to an eight or a ten shoe for practical purposes, so that by providing the two series of perforators arranged and operating as shown the operator
 60 has before him at all times proper perforators for all sizes of men's shoes.

The strippers m and n serve to prevent the stock following the retreating perforators.

65 The work-supporting faces referred to in the claims are the faces which support the

work during the perforating operation, and toward which and from the perforators move.

My invention is not limited to the particular embodiment herein shown, for it is evident that the same may be varied without
 70 departing from the spirit and scope of my invention.

I claim—

1. In a machine of the class described, a
 75 work-support having work-supporting faces at its opposite sides against either of which, at will, and without necessary change in the machine, the work may be placed, a plurality of perforator carriers arranged respectively
 80 at opposite sides of and movable toward and from the said work-support, perforators on the said carriers, and means to move the latter, substantially as described.

2. In a machine of the class described, a
 85 work-support having opposite work-supporting faces against, either of which, at will, the work may be placed, a plurality of perforator carriers arranged respectively at opposite
 90 sides of said work-support, perforators on the said carriers, and means to simultaneously move the latter toward and from said work-support, substantially as described.

3. In a machine of the class described, a
 95 work-support having opposite work-supporting faces against, either of which, at will, the work may be placed, a plurality of perforator carriers arranged respectively at opposite
 100 sides of said work-support and movable toward and from the same, perforators on the said carriers, and strippers for the perforators of said carriers to prevent the stock following the retreating perforators, substantially as described.

4. In a machine of the class described, a
 105 work-support having opposite work-supporting faces against, either of which, at will, the work may be placed, pivoted carriers arranged respectively at opposite sides said support, perforators removably attached to said
 110 carriers and adapted on movement of the latter to move toward and from said work-support, and strippers for the perforators of said carriers, one of said strippers serving as a work-table preparatory to the perforating
 115 operation, substantially as described.

5. The work-support b , work-supporting faces adjustably secured to opposite sides thereof, the stops and strippers, the pivoted perforator carriers, and perforators adjustably attached thereto, the driving shaft and connections between the same and carriers to operate the latter by the former, substantially as described.

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

GEORGE KNIGHT.

Witnesses:

FREDERICK L. EMERY,
 EMMA J. BENNETT.