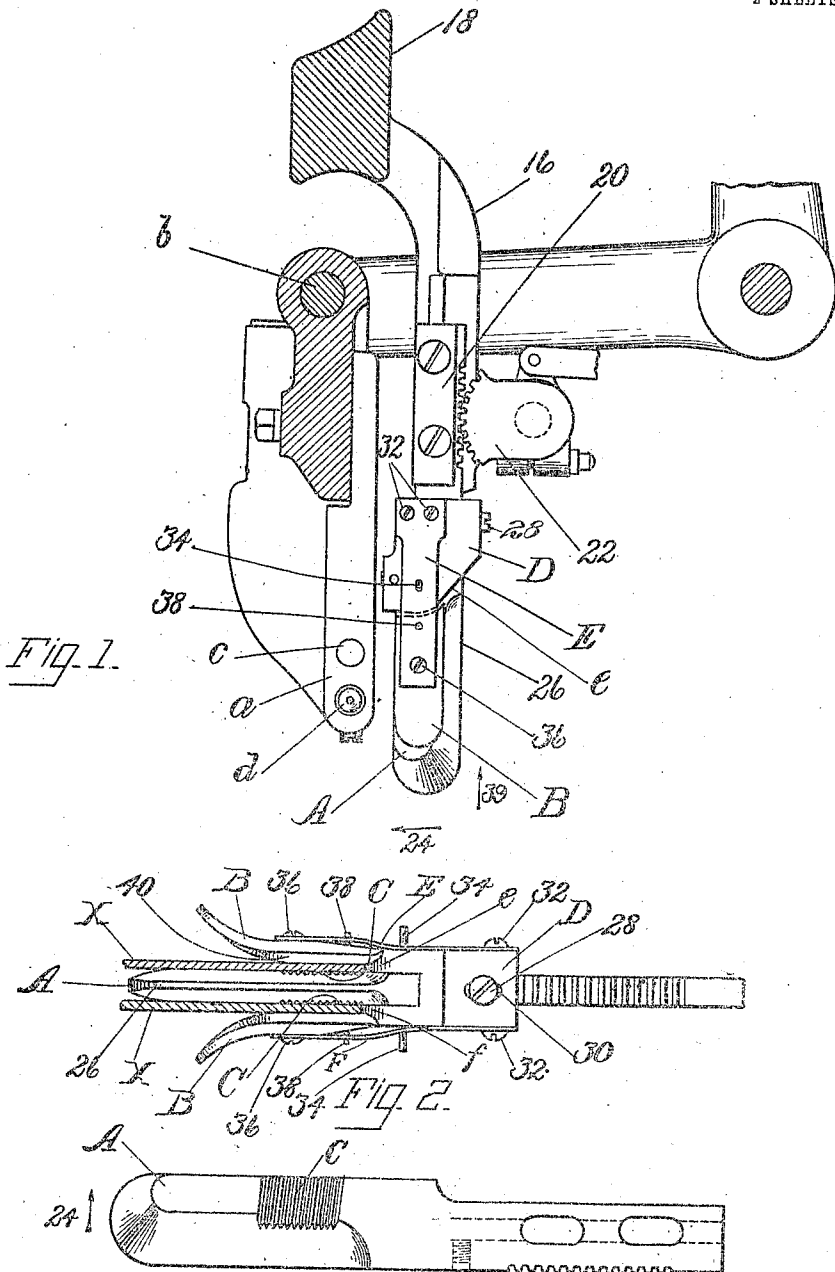


EYELETING MACHINE.
 APPLICATION FILED AUG. 8, 1906.

1,030,833.

Patented June 25, 1912.

2 SHEETS—SHEET 1.



WITNESSES.
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FIG. 3

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Patented June 25, 1912.
 2 SHEETS—SHEET 2.

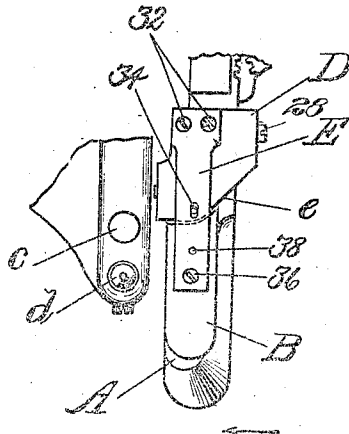


FIG. 4.

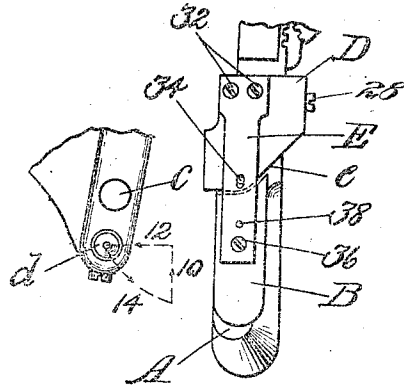


FIG. 5.

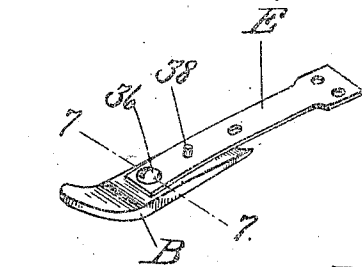


FIG. 6.

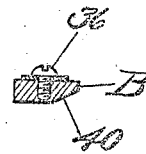


FIG. 7.

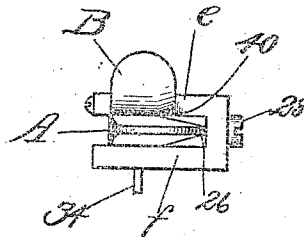


FIG. 8.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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EYELETING-MACHINE.

1,030,833.

Specification of Letters Patent. Patented June 25, 1912.

Application filed August 8, 1906. Serial No. 329,722.

To all whom it may concern:

Be it known that I, FRED A. RUMNEY, a citizen of the United States, residing at Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain Improvements in Eyeletting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to eyeletting machines, and pertains more particularly to those elements which guide the work while it is being fed, and which contribute to maintain the work in proper position when it is at rest.

Prior to this invention it has been a common practice to provide an eyeletting machine with work-controlling means comprising a guide-plate and an intermittently-acting clamp. When the work was at rest between feeding periods, the clamp was actuated to hold the work firmly against the guide-plate; and at the beginning of a feeding period the clamp was withdrawn from active engagement with the work, leaving the latter free to be fed along for the desired distance until, simultaneously with the arrest of the feed, the clamp again engaged the work. The edge of the work was intended to contact constantly with an edge-gage which was arranged to determine the "spread" of the eyelets, *i. e.*, their respective distances from the edge of the work. By means of the devices just described the work was held stationary, at the end of a feeding period, in whatever position it had assumed; but during the feeding movement, the clamp being then inactive, there was no provision for guiding the work, keeping it smooth and maintaining its edge in contact with the edge-gage, except the more or less unreliable and variant grasp of the operator.

While machines having the above suggested characteristics have been operated with success by skilled operators, it has been found that in less competent hands the work may be held too firmly against the edge-gage so as to become wrinkled, or it may be removed entirely from contact with the edge-gage, or otherwise mismanaged so as to give the work an improper position for receiving the next eyelet. Whatever position, correct or incorrect, the work assumed dur-

ing its feeding movement in that position, it was clamped and held when the feed ceased, and the punching and setting operations ensued whether or not they were directed to the proper point on the work.

This invention is designed, as regards one of its features, to provide means, substantially independent of the operator's control, whereby the stock is properly guided and positioned at all times.

A further feature of the invention comprises a presser-foot arranged to engage the work after as well as before the feeding begins.

The invention comprises also guiding means which tend to direct the stock, in its feeding movement, toward an edge-gage.

In using eyeletting machines as heretofore constructed, the work was particularly likely to become misplaced or wrinkled when the edge gages were shifted to vary the spread of the eyelets and especially where this shifting was effected quickly and automatically during the operation of the machine it has been found difficult for the operator to keep the work in uniform contact with the edge gages. This difficulty is avoided in accordance with the present invention by mounting the work guiding and positioning means for movement with the edge gages so that the work may be carried bodily by said positioning means in a direction transverse to the line of feed without any tendency to change its relation with the edge gages.

Another advantage incident to this feature of the invention is that the edge gages may be adjusted relatively to the guide plate without altering the relation of the positioning means therewith and so a uniform feeding movement of the work results regardless of the adjusted position of the edge gages.

Other features of the invention will appear in the following description and will be defined in the claims.

One embodiment of this invention may be used to advantage on a machine arranged to set two eyelets simultaneously in the opposite quarters of a shoe upper. Such a machine is shown and described in Letters Patent of the United States, No. 934,066, dated September 14, 1909. The present invention will be described herein, for purposes of illustration, as applicable to a machine of this type: and such parts of an eye-

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5 leting machine as are referred to in the following description and are not shown in the accompanying drawings may be considered, for purposes of illustration, to be identical with corresponding parts shown and described in said patent. The specific embodiment of this invention represented in the accompanying drawings is capable of substitution without change for corresponding parts shown in said patent; and to effect such substitution no alteration is necessitated in the work-feeding or eyelet-setting mechanism shown in said patent, which may well operate in conjunction with the present improved work-controlling devices in the same manner in which they act in conjunction with the work-controlling devices shown in said patent. Nothing herein contained is to be construed as limiting this invention in the scope of its application to use in connection with the machine of said patent, nor to machines of that general type, since the invention may be applied to many sorts of eyeleting machines; moreover, the invention in its broader aspects is obviously applicable to machines for setting other articles than eyelets, such for example as lacing hooks and the like.

10 In using machines of the type shown in the patent aforesaid, the two quarters of a shoe upper are preferably arranged by the operator so as to be substantially parallel, with their edges registering, and are introduced to the machine by sliding them over opposite faces of a guide-plate until their registering edges abut against edge-gages arranged for determining the spread of the eyelets. Coöperating with said guide-plate are two oppositely disposed intermittently acting clamping devices which clamp the quarters of the upper against opposite sides of said guide-plate and hold them stationary when the work is at rest and which release the work to permit it to be fed. As above suggested, an arrangement of this sort is effective when used by a skilful operator; but the present improvements serve to render an eyeleting machine more perfectly automatic by controlling the work through mechanical means rather than manually, thereby permitting eyelets to be set with great accuracy by a comparatively inexperienced workman.

15 In the accompanying drawings, Figure 1 is a top view of work-controlling means embodying this invention, showing them in their association with an anvil-plate, said parts being in proper position for punching the work; Fig. 2 is a side elevation of the work-controlling means of Fig. 1, showing in section two quarters of a shoe upper in their proper association with the work-controlling means; Fig. 3 is a plan view of a preferred form of guide-plate; Figs. 4 is a top view, similar to Fig. 1, showing the rela-

20 tion between the work-controlling means and the anvil-plate when the latter is in position for setting an eyelet; Fig. 5 is a view similar to Fig. 4 showing the relative positions of work-controlling means and anvil-plate when the latter has been shifted to feed the work; Fig. 6 is a perspective of a preferred form of presser-foot; Fig. 7 is a transverse section of said presser-foot on the line 7-7 of Fig. 6; Fig. 8 is an end elevation of the assembled work-controlling means shown in the other figures, one presser-foot being omitted. Figs. 2, 3 and 8 are drawn full size; and Figs. 1, 4, 5, 6 and 7 are drawn three-quarter ($\frac{3}{4}$) size.

25 Fig. 1 shows enough of an eyeleting machine, of the type described specifically in said patent, to exemplify the use of work-controlling means embodying this invention. An anvil-plate *a* is pivotally supported on a stud *b* which is arranged to be moved laterally forward and backward to give the anvil-plate the positions shown in Figs. 1 and 4. The anvil-plate *a* is arranged to be rocked on the stud *b* for the purpose of feeding the work. During the operation of the machine of said Patent No. 934,066, an anvil-plate substantially like the plate *a* is moved to three successive positions, and for the purposes of the following detailed description the anvil-plate *a* may be understood to be moved in the same manner and to the same ends. The three positions of the anvil-plate *a* (named in the sequence in which they are assumed) are the hole-punching position shown in Fig. 1; the eyelet-setting position shown in Fig. 4; and the extreme feeding position shown in Fig. 5. The punching position (Fig. 1) is the initial position of the anvil-plate in the cycle of operations of the machine. The path of movement of the anvil-plate is represented diagrammatically in Fig. 5 by the lines 10, 12 and 14. The anvil-plate *a* carries a punch-anvil *c* and a setting die *d* which are duplicated on the under side of the anvil-plate as viewed in Figs. 1, 4 and 5. In the manner described in said patent, oppositely disposed punches may be provided in axial alignment with each other and with the punch-anvil. In like manner oppositely disposed setting dies may be provided to cooperate with the upsetting dies *d*. It is unnecessary to show in the present drawings these punches and setting dies since the manner of their coöperation with an anvil-plate like the plate *a* is sufficiently elucidated in the aforesaid patent.

30 The work-controlling means comprise a normally stationary guide-plate *A* and oppositely disposed presser-feet *B B* (see Fig. 2). The guide-plate is mounted on a bracket *16* (see Fig. 1) projecting from the frame *18* of the machine and relative to the direction of feed, is located in the rear of

the punch and setting tools. As shown in Fig. 1 the guide-plate A is arranged to be reciprocated endwise on the bracket 16 for varying the spread of the eyelets, and to this end the guide-plate is slidable on the bracket 16 and has a rigid rack 20 engaging with a toothed sector 22 which may constitute an instrumentality of an automatic spacing mechanism.

In the operation of the improved machine shown in the present drawings, the work is fed along opposite faces of the guide-plate A in approximately the direction indicated by an arrow 24 in Figs. 1, 3 and 4. Preferably the outer end and an edge of the guide-plate A are tapered in cross-section to form a wedge 26 (see Figs. 2 and 8) which shall serve to separate the quarters of the upper and facilitate their feeding movement. On its opposite faces the guide-plate A has a series of parallel ribs C presently to be described. Secured to the guide-plate A in any convenient manner as by a machine-screw 28, is a gage block D having edge-gages *e* and *f* on opposite sides of the plate A. The screw 28 as shown in the drawings preferably passes through an elongated slot 30 (see Fig. 2) in the gage block D and threads into an edge of the shank of the guide-plate. The elongation of the slot 30 permits the block D to be adjusted lengthwise of the guide-plate A. Leaf-springs E and F are attached by screws 32, 32 to opposite sides of the block D, and pins 34, 34 projecting from said block extend through holes in said springs to maintain the latter in proper alinement. The opposite ends of the leaf-springs E F are respectively attached by screws 36, 36 (see Figs. 6 and 7) to the presser-feet B B. Each presser-foot B has a pin 38 (see Fig. 6) which projects through a hole in its attached leaf-spring to maintain the presser-foot in alinement with the spring and gage block. Each spring E F is arranged to hold its presser-foot yieldingly near to the adjacent face of the guide-plate A but permits it to move relative to the same for inserting the work or to allow for any inequality in the thickness of the work. The toe of each presser-foot is curved outwardly from the guide-plate, as shown in Figs. 2 and 8, to facilitate the insertion of the work between the presser-foot and said plate, which may be effected conveniently by holding the two quarters of an upper face to face with their edges registering, moving them thus to the wedge-shaped end of the guide-plate so that the latter shall take between the quarters, and then sliding said quarters along opposite faces of the guide-plate under the yielding presser-feet, in the general direction of the arrow 39 in Fig. 1, until the edges of the quarters abut respectively against the edge-gages *e* and *f*. The proper positions of the

quarters constituting the work are shown at X X, Fig. 2. The presser-feet are preferably beveled or curved on one edge (see 40 Figs. 2, 7 and 8) adjacent to the wedge 26 of the guide-plate so as to permit the work to feed easily between the presser-feet and guide-plate without encountering any sharp edges.

As shown in Figs. 2 and 3 the guide-plate A has on each of its oppositely disposed acting surfaces a series of parallel ribs C which incline inwardly as they extend toward the rear of said plate. It will be noted that these ribs are oblique to the normal direction of feed of the work (arrow 24, Fig. 3). It is preferable to make the crests of these ribs rather sharply tapering in cross-section so that their edges may more readily engage the adjacent face of the work. It is readily apparent that if the work be fed in the direction of arrow 24 (Figs. 1 and 3) and at the same time be maintained in contact with the ribs C, said ribs will tend constantly to deflect the work from its normal path toward the edge-gages *e f*. If one of the quarters of the work be positioned with its edge not in contact with an edge-gage *e* or *f*, subsequent feeding movement of the work will serve to move the edge up to the edge-gage into proper position by reason of the action of the ribs C. The presser-feet B B cooperate with these opposite series of ribs C to hold the work in effective engagement with the latter; and said presser-feet also keep the work smooth and flat on the guide-plate so that it cannot be so far deflected by the ribs C or otherwise, as to become wrinkled. The presser-feet though capable of movement relative to the guide plate are normally stationary except when slightly displaced by the insertion of the work or by an inequality in the thickness thereof. Obviously the cooperation of presser-feet and ribs C exerts a constant influence on the work tending to assure at all times the proper spread for the eyelets. Although it is preferred to employ a series of the above described ribs, some of them might be omitted or a single rib might be employed. As hereinafter described, the acting face of each presser-foot which engages the work extends across the path of that portion of the work in which each eyelet is to be set; consequently said portion of the work is subjected to the smoothing out or "ironing" action of the presser-foot before being presented to the action of the punching and eyelet-setting devices.

In the operation of the specific machine described above the work is positioned as shown at X in Fig. 2 the parts being initially in the position shown in Fig. 1, that portion of each quarter in which it is intended to set an eyelet being arranged to register with a punch-anvil *z*. Punches registering also

with said punch-anvil are actuated each to punch a hole in one quarter for the reception of an eyelet; and the punches are withdrawn. Thereupon the anvil-plate *a* is moved endwise rearwardly from the position shown in Fig. 1 until the oppositely disposed setting dies *d d* register with the recently punched holes in the work the parts then having assumed the positions shown in Fig. 4. Setting devices are then actuated to present eyelets to, and to set them in, said holes, the shank or other fastening means of each eyelet being upset or clenched against an up-setting-die *d*. When this setting has been completed the setting devices are preferably retracted slightly so as to relieve the eyelets from the extreme clenching pressure, but they are not sufficiently retracted to disengage the eyelets entirely. Thus the work is engaged, through the agency of the eyelets, by the oppositely disposed setting devices and their cooperating up-setting dies *d d*. This permits the work to be fed by rocking the anvil-plate *a*, on its pivot *b* and concurrently moving the setting devices so as to keep them constantly in axial alinement with the up-setting dies *d d*. This movement takes place in the direction of the line 12 of Fig. 5. As this movement progresses the two quarters are drawn across the opposite sides of the guide-plate *A* and between the latter and the oppositely disposed presser-feet *B B*. The ribs *C* cooperate with the feeding means to maintain the edges of the work in proper relation to the edge-gages; and the presser-feet serve the double purpose of smoothing out that portion of the work in which an eyelet is subsequently to be set and of maintaining the work in proper engagement with the ribs *C*. It will be noted that the line of engagement between each presser-foot and the work intersects the path in which the work is fed (exemplified by the line 12, Fig. 5).

Obviously, in the use of the above described devices it is unnecessary for the operator to exercise the watchful and skilful care required by the machines illustrated and described in the aforementioned patent since, after the work has been inserted between presser-feet and guide-plate of work-controlling means embodying this invention, automatic means are constantly acting to control the work with greater and more uniform accuracy than most operators could attain.

The above description has been devoted to a single embodiment of this invention which may be used in connection with machines of the type already referred to; but it is to be understood that many changes which will appear to those skilled in the art may be made in the devices shown and described without removing work-controlling means embodying such changes from the

proper field of this invention as it is defined in the sub-joined claims.

As already stated this invention is applicable to machines for setting other articles than eyelets such as lacing hooks, rivets, etc., and therefore the expression eyeleting machine, used herein for convenience, is not to be construed as limiting the invention to use with machines for setting that particular kind of fastener.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described having setting and feeding means, the combination of a guide plate having oppositely disposed guiding surfaces, a block mounted on said guide plate, and yieldingly supported work positioning members mounted on said block and arranged to position the work and hold it in contact with the opposite surfaces of said guide plate during the feeding movement of the work.

2. In a machine of the class described having setting and feeding means, the combination of a guide plate having oppositely disposed guiding surfaces, and oppositely disposed presser feet supported at points without the planes of said guiding surfaces and arranged to position the work and clamp it in contact with said surfaces continuously during the feeding movement of the work and the setting operations.

3. In a machine of the class described having setting and feeding means, the combination of a guide plate, an edge gage projecting therefrom, a work-engaging member substantially equal in thickness to the height of said edge gage, a spring connecting the outer sides of said edge gage and work-engaging member, and means for moving said edge gage and presser foot bodily, transversely to the direction of feed.

4. In a machine for operating on boots and shoes, having setting devices and means for feeding the work, the combination of a normally stationary guide plate mounted for reciprocation transversely to the line of feed, one or more ribs on said guide plate, and means movable with the guide plate for yieldingly pressing the work in contact with said guide plate.

5. In a machine for operating on boots and shoes, having setting devices and means for feeding the work, the combination of an edge gage, a normally stationary guide plate mounted for reciprocation transversely to the line of feed, ribs thereupon which incline inwardly at the rear to keep the work in contact with said edge gage, and means movable bodily with said guide plate and acting to clamp the work in contact with said ribs.

6. In a machine for operating on boots and shoes, having setting devices and means for feeding the work, the combination of a

relatively stationary guide plate for guiding the work on opposite sides thereof, ribs on said opposite sides, edge gages on said opposite sides, continuously acting positioning means to clamp two marginal portions of the work respectively in contact with said ribs and edge gages, and automatically acting mechanism for moving said edge gages and positioning means transversely to the line of feed while in engagement with the work.

7. In a machine for operating on boots and shoes, having setting devices and means for feeding the work, the combination of edge gages, a relatively stationary guide plate for guiding the work on opposite sides thereof, ribs on said opposite sides inclined to keep the work in contact with said edge gages, and yielding presser feet arranged to keep two marginal portions of the work respectively in contact with said ribs and edge gages, and mechanism for moving said presser feet and guide plate transversely to the line of feed while in engagement with the work.

8. In a machine for operating on boots and shoes, having setting devices and means for feeding the work, the combination of an adjustable edge gage, and a normally stationary guide plate, together with means located in the rear of said setting devices relative to the direction of feed continuously acting to yieldingly press the work in contact with said edge gage regardless of its adjusted position.

9. In an eyeleting machine, having means for feeding the work, the combination of a guide plate, an edge gage, a spring supported thereon, a presser block supported on said spring and bearing upon the guide plate and having its outer surface beveled adjacent the guide plate to facilitate placing the work in position.

10. In an eyeleting machine, having means for feeding the work, the combination of a guide plate, an edge gage mounted thereon to be adjustable longitudinally thereof, a spring mounted on said adjustable edge gage, and a presser block supported by said spring and bearing upon the guide plate.

11. In an eyeleting machine, having means for feeding the work, the combination of a guide plate, an edge gage, a spring mounted on said edge gage, a presser block supported on said spring and bearing upon the guide plate, and means for holding said presser block in position.

12. In a machine for operating on boots

and shoes, a presser foot and guide plate, said presser foot comprising a spring and a presser block connected thereto at a point within its periphery and a pin to retain said spring and presser block in alinement.

13. In a machine for operating on boots and shoes, having means for performing a succession of operations on the work and work feeding means, a movable guide plate, an edge gage adjustable thereon transversely to the line of feed and work positioning means for clamping the work to the guide plate mounted for movement with said edge gage, said guide plate, edge gage and positioning means being mounted in the machine to permit bodily movement transversely to the line of feed.

14. In a machine for operating on boots and shoes, having means for performing a succession of operations on the work and work feeding means, a guide plate, an edge gage adjustably mounted thereon, and a yieldable presser member mounted for adjustment with said edge gage relative to said guide plate.

15. In a machine for operating on boots and shoes, having means for performing a succession of operations on the work and work feeding means, the combination of a guide plate, an edge gage and yieldable presser member adjustably mounted thereon, and means for simultaneously shifting said edge gage, presser member and guide plate transversely to the line of feed.

16. In a machine for operating on boots and shoes, having work feeding means, the combination of an edge gage, work guiding means including a rigid plate and a relatively yielding presser-member, and means for shifting said edge gage and work guiding means in unvarying relation transversely to the line of feed.

17. In an eyeleting machine, having means for feeding the work, the combination of a guide plate mounted for movement transversely to the line of feed, an edge gage carried thereby, a spring mounted on said edge gage, a presser member supported on said spring and bearing upon the guide plate, and means for holding said presser member in position.

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

FRED A. RUMNEY.

Witnesses:

NELSON B. TODD,
JOHN H. RUCKMAN.