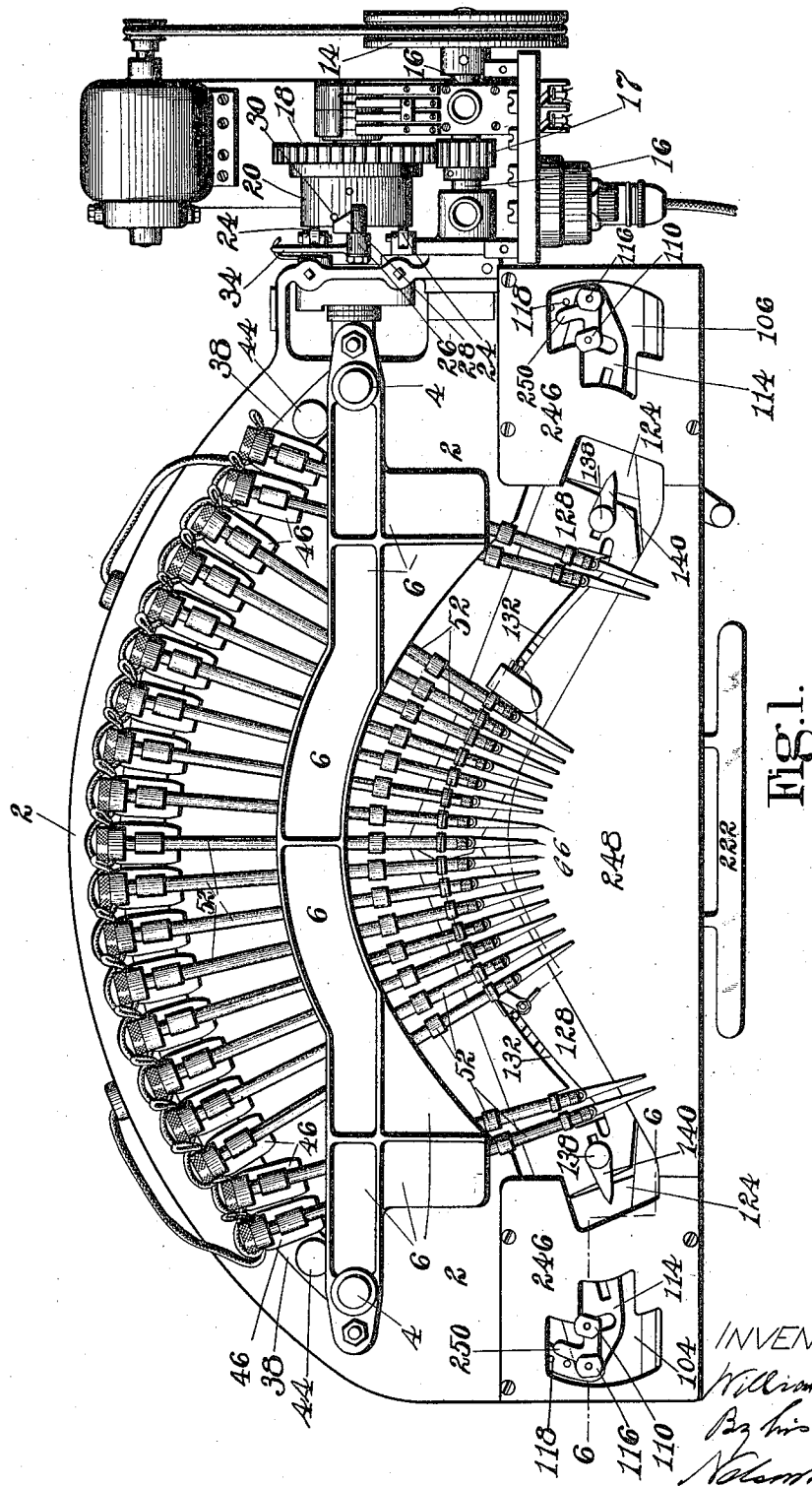


1,317,702.

W. HAMANN.
MACHINE FOR MARKING SHOE UPPERS.
APPLICATION FILED APR. 8, 1916.

Patented Oct. 7, 1919.
7 SHEETS—SHEET 1.



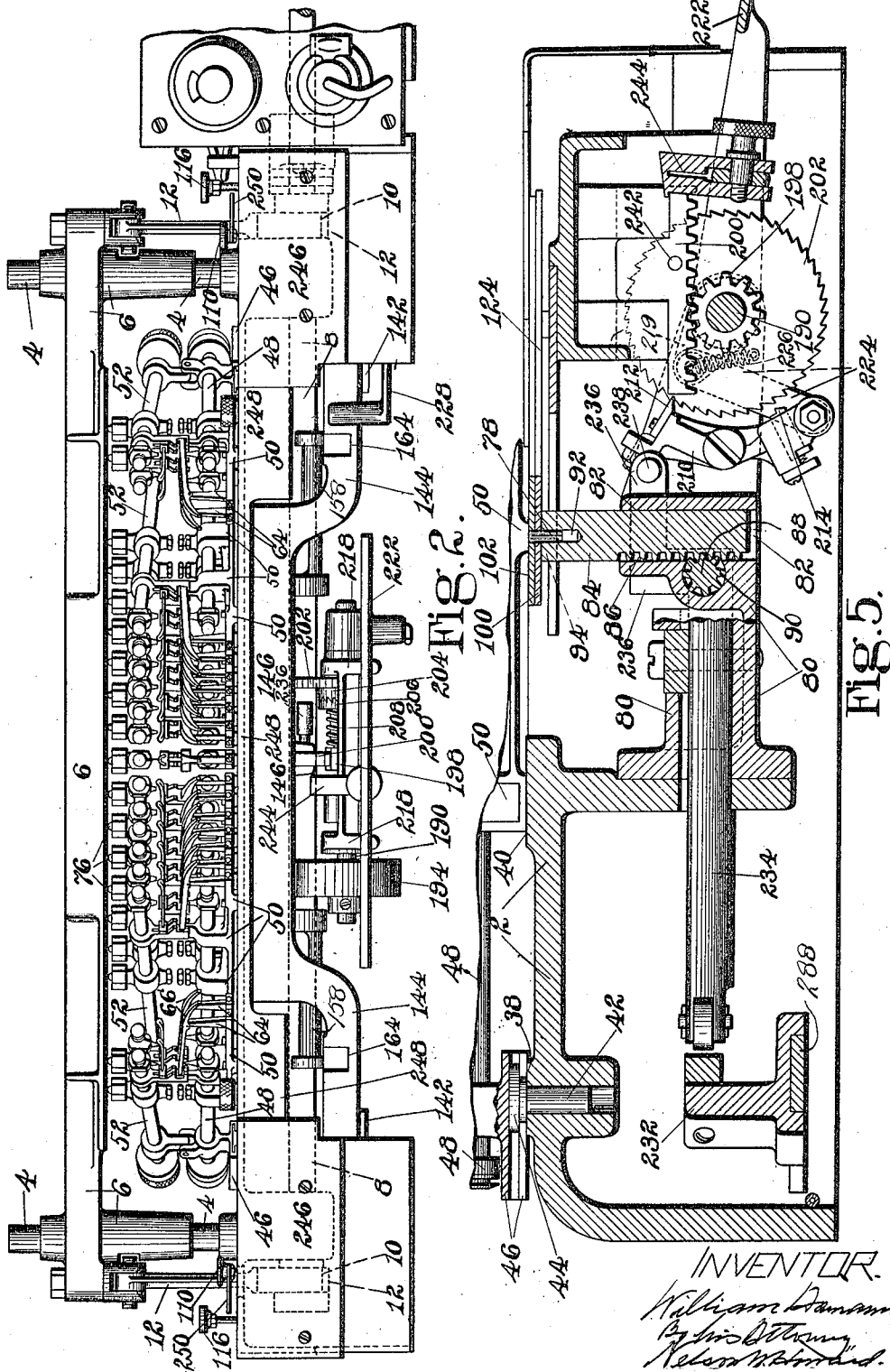
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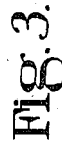
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7 SHEETS—SHEET 2.



1,317,702.

7 SHEETS—SHEET 3.



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7 SHEETS—SHEET 4.

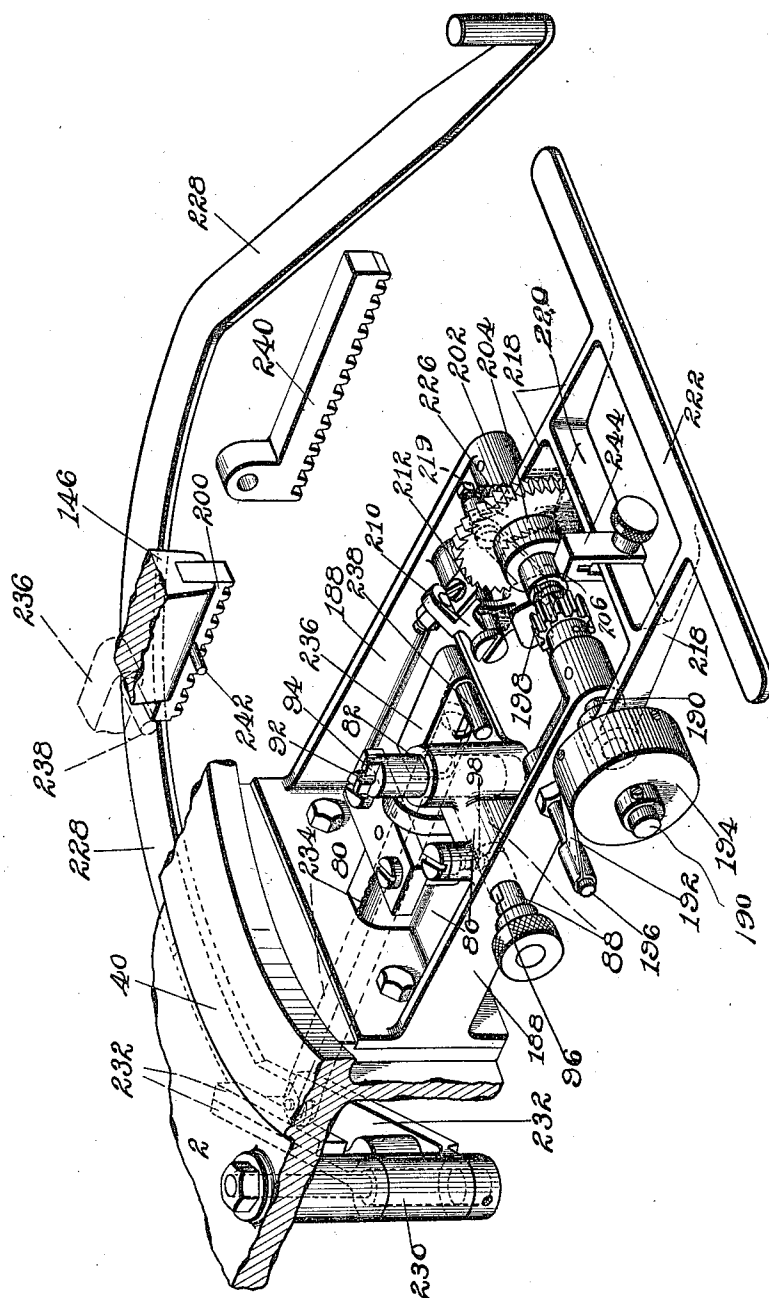


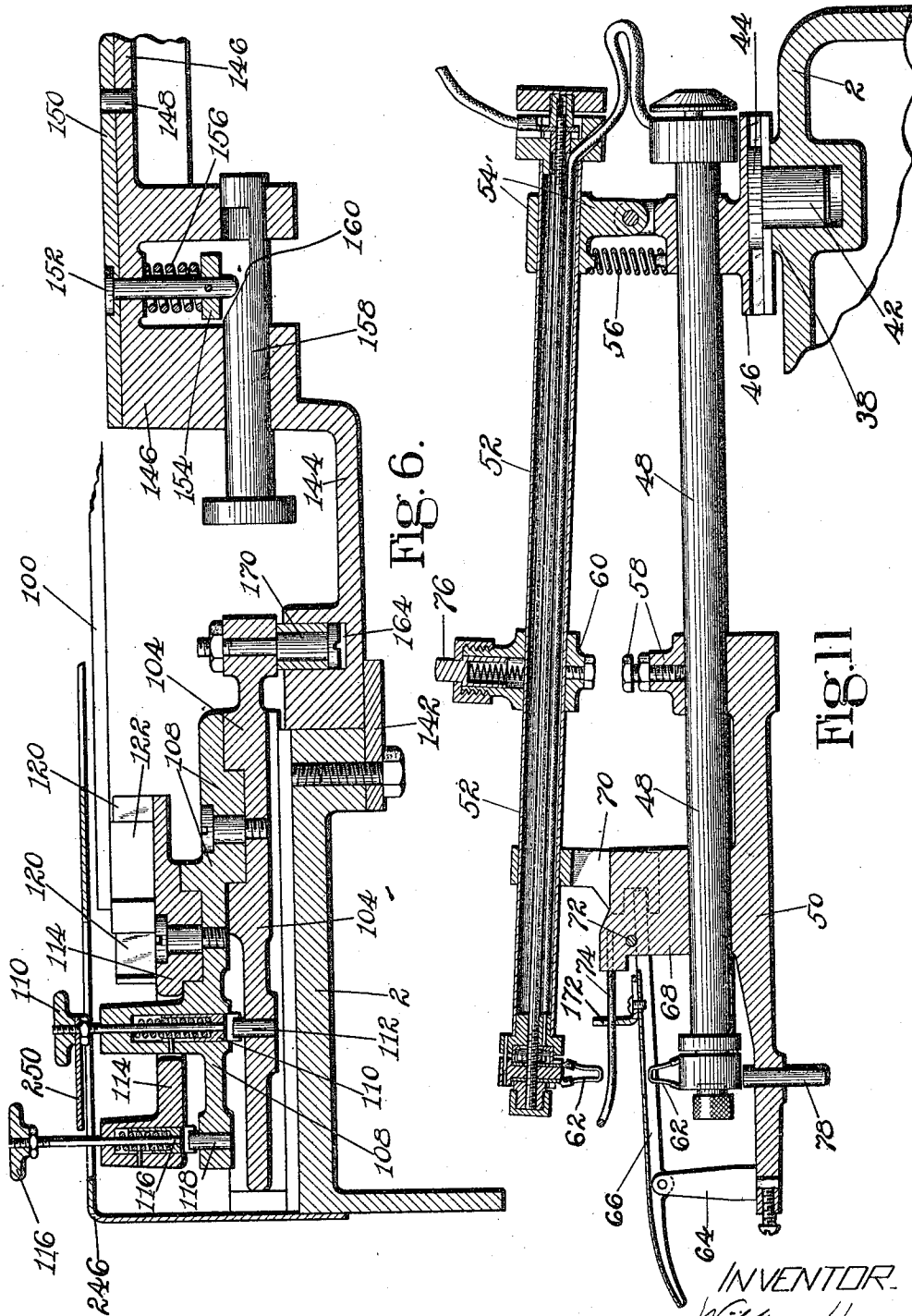
Fig. 4.

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7 SHEETS—SHEET 5.

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7 SHEETS—SHEET 6.

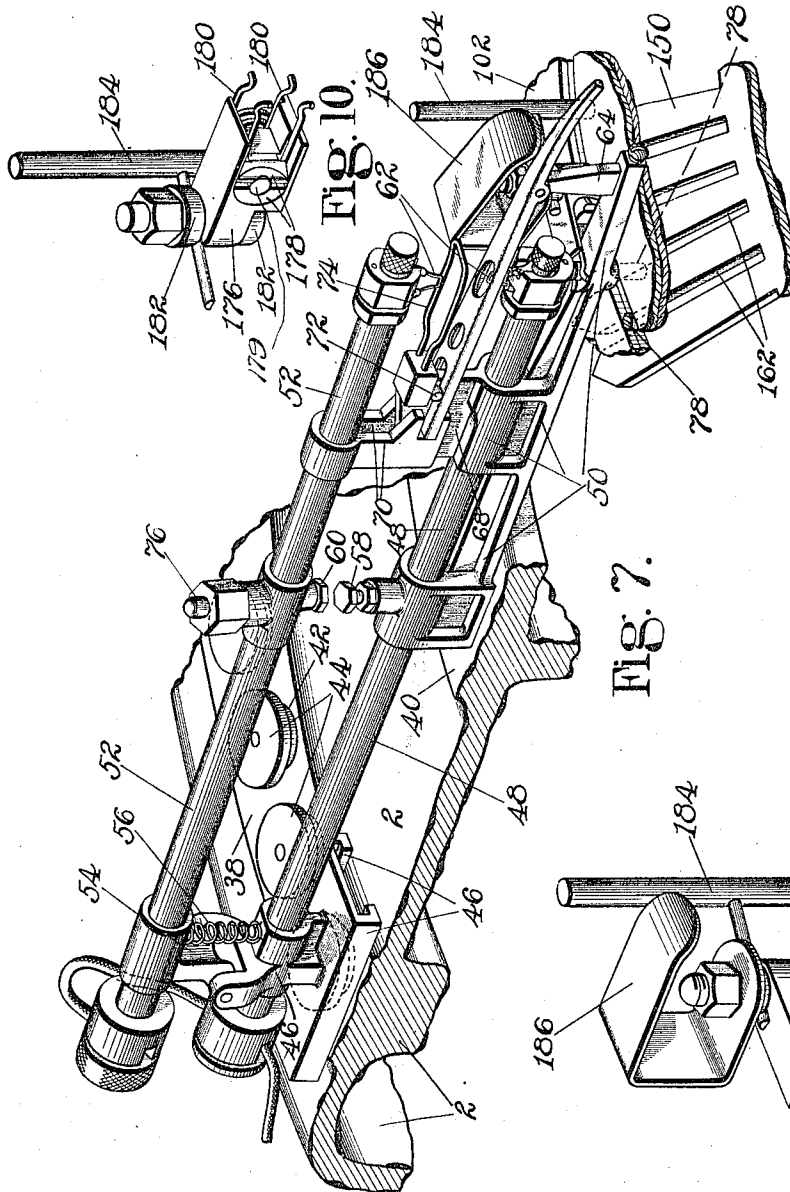


Fig. 10.

Fig. 7.

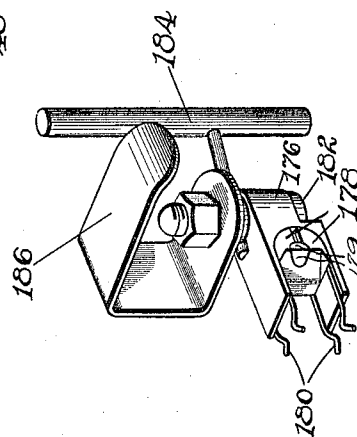


Fig. 9.

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7 SHEETS—SHEET 7.

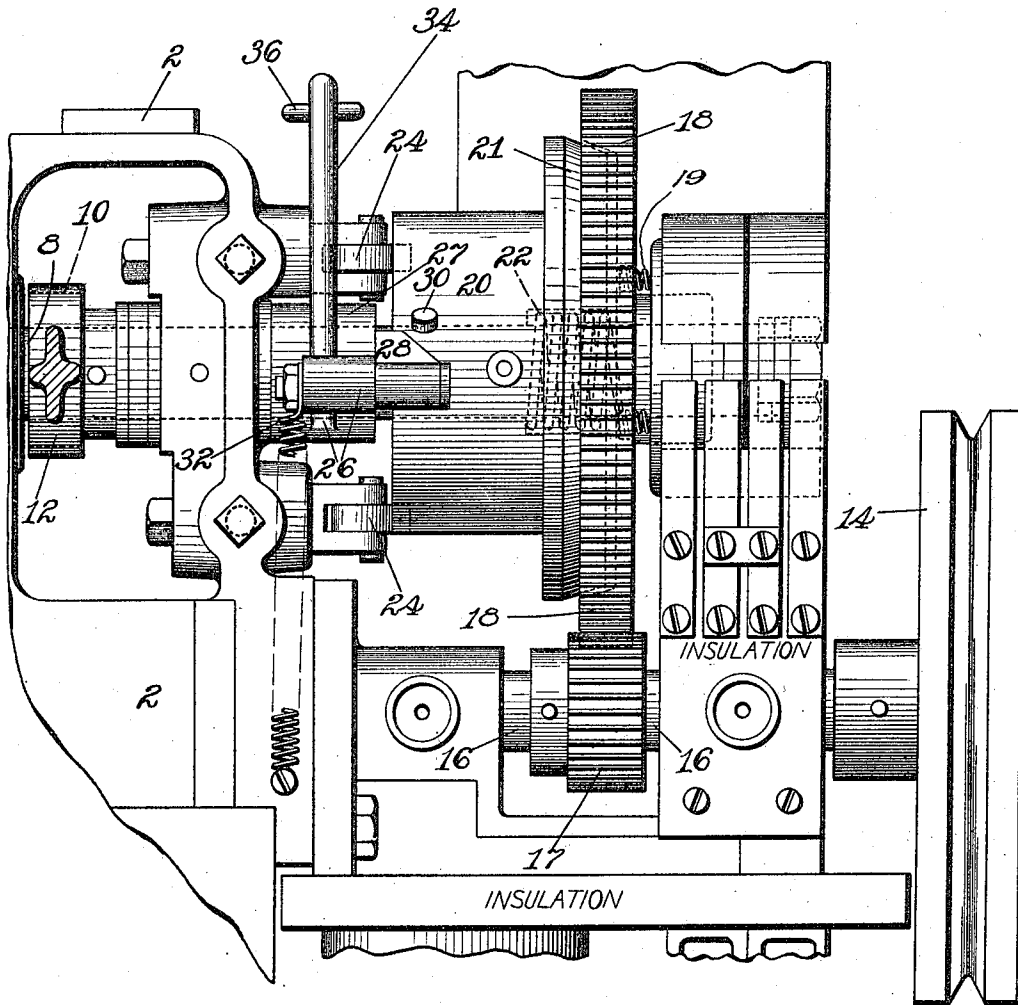


Fig. 8.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR MARKING SHOE-UPPERS.

1,317,702.

Specification of Letters Patent.

Patented Oct. 7, 1919.

Application filed April 8, 1916. Serial No. 89,968.

To all whom it may concern:

Be it known that I, WILLIAM HAMANN, a citizen of the United States, residing at Irondequoit, in the county of Monroe and State of New York, have invented certain Improvements in Machines for Marking Shoe-Uppers, 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 machines for marking shoe uppers, the embodiment of the machine represented herein being especially designed to indicate on the stock the locations of buttons or buttonholes, and more particularly the location of buttonholes on the buttonhole flies of shoe uppers.

The marking machine of this invention is of the gang type and is arranged to mark substantially simultaneously the locations of a desired number of buttonholes on shoe flies. One disadvantage of gang machines of this type has been the difficulty experienced in adjusting the series of markers to variance in spacing and in curvature to conform with the curvature of the fly edge, so that the line of location marks will be substantially parallel with the fly edge and the marks will be uniformly spaced from each other.

It is well known that the curvature of fly edges not only varies slightly from size to size of the same pattern of fly, but that there is radical variance in the curvatures of fly edges of different patterns and styles of button shoes. A gang type of marking machine, to be of practical value, must be constructed to provide for wide variance in the linear arrangement of its markers. In prior Patent No. 1,191,965, dated July 25, 1916 issued on my application filed October 25, 1913, under Serial No. 797,241, I have disclosed a gang type of buttonhole marking machine providing for adjustment of its markers within a relatively wide range of curvilinear arrangement and relative spacing, and have provided means for automatically grading the curve of a selected pattern from size to size of the flies of that pattern, this grading of the curvature being accomplished coincidently with the change in relative spacing of the markers which accom-

panies the change from size to size of flies of the same pattern. In addition, means are provided for varying the pattern curve within a relatively wide range of patterns without affecting the automatic curve gradation from size to size.

An object of the present invention is to provide an improved marking machine of the general type disclosed in said Letters Patent to the end that, without sacrificing any of the many advantages characteristic of the machine disclosed in said Letters Patent and responsible for its successful operation, its capacity may be increased, greater accuracy and facility of adjustment may be secured, and the machine be organized still further to facilitate assembling and disassembling, as well as improved in other important respects. It will be understood, however, that in various aspects the invention is not limited to machines of this type.

One feature of the invention consists in a novel organization in which relative movement of the marker elements to vary their spacing is effected by power-operated mechanism which, as shown, is manually controlled. In accordance with another feature of the invention the mechanism for relatively adjusting the marker elements to vary their spacing is constructed and arranged to be actuated to vary the spacing of the marker elements by determinate step-by-step movements of a marker element spacing member. Advantageously, and as illustrated, the power operating means may be in the form of a mechanical motor arranged to move the spacing member in one element-spacing direction. The spacing member may be moved in the reverse spacing direction through manually operable means and as illustrated, reverse movement of the spacing member is arranged to restore power potential of the motor.

In the machine as previously constructed and as illustrated herein, a series of marker elements are mounted for sliding movement and are provided with projections entering an elongated curved slot in a guiding member arranged for adjustment relatively to the marker elements. The slot in the guiding member determines the linear arrangement of the marker elements and adjusting

movement of the guiding member varies the linear arrangement of the marker elements. A further feature of the invention consists in a novel arrangement and construction of
 5 guiding means by which the position of a guide slot relatively to its guiding member and to the marker elements may be varied independently of the adjustment of the guiding member and serves to increase the range
 10 of curvilinear adjustment of the marker elements. Advantageously the guiding member is detachably supported in the machine and as illustrated, a support for the guiding member is mounted for manually effected
 15 movement to and from supporting position and is provided with means by which it is retained in guide supporting position. In the particular construction illustrated, the support is arranged also to hold a central
 20 marker element against movement relatively to the other elements and is also arranged determinately to position and pivotally to support the guiding member.

These and other features, including a novel construction of detachable spacer plate and support, will be more fully apparent from the following detailed description read in connection with the accompanying drawings.

30 In the embodiment of the invention selected for illustration,

Figure 1 is a top plan view of a machine embodying my invention;

Fig. 2 is a front elevation of the parts
 35 shown in Fig. 1;

Fig. 3 is a view in top plan of the machine with the marker elements and operating parts removed to disclose the adjustment features;

40 Fig. 4 is a fragmentary perspective view on an enlarged scale of the step by step feeding mechanism for the spacing frame and plate;

Fig. 5 is a transverse section through the
 45 bed of the machine on the line 5, 5 of Fig. 3;

Fig. 6 is a fragmentary longitudinal section taken on the line 6, 6 of Fig. 1, the parts being shown on an enlarged scale;

Fig. 7 is a perspective view of a marker
 50 element mounted upon the machine bed and cooperating with the spacing and guiding means;

Fig. 8 is a top plan view on an enlarged scale of the clutch and driving mechanism
 55 of the machine;

Figs. 9 and 10 are perspective views of the end gages carried by the series of marker elements to cooperate with the ends of the buttonhole flies; and

60 Fig. 11 shows in section and on an enlarged scale, one form of marker element which may be employed.

The machine bed 2 is provided at opposite ends with vertical standards 4, upon
 65 which an operating head 6 is guided for re-

ciprocating movement toward and from the bed. A driven shaft 8 extends lengthwise of the machine bed in the line of standards 4 and is provided with eccentrics 10 whose straps 12 are operatively connected to the
 70 head 6 at points adjacent to the standards.

At one end of the bed a pulley 14 is mounted upon a short shaft 16 parallel with the extended end of shaft 8, the pulley being continuously driven by suitable power, 75 such as the belt and motor shown. The shaft 16 carries a gear 17 meshing with a driving gear 18 loosely mounted on shaft 8 and having one face formed as a clutch face. The shaft 8 carries adjacent to the driven 80 gear 18 a hub 20 keyed to the shaft and having a clutch face 21 arranged to engage the corresponding clutch face on the gear 18. The hub has a portion of its bore enlarged to receive and house a coiled spring 85 22, (Fig. 8), sleeved on shaft 8 with one end abutting gear 18, the other end acting against the hub and normally tending to move the hub out of clutching engagement with the gear 18. A plurality of coiled 90 springs 19 interposed between the opposite face of gear 18 and a suitable abutment (Fig. 8) hold the gear against movement on shaft 8 so that it forms a tensioning abutment for spring 22. Opposed rollers 95 24 extend from the side of the machine bed in line with the hub and are arranged to seat in opposed radially offset depressions in the face of the hub to permit the spring 22 to move the hub to unclutching position 100 relatively to the gear 18. These rollers, when the hub has been moved to engage the gear clutch and has been rotated sufficiently to move the depressions in its face beyond the rollers, engage the high face 105 of the hub and hold the hub in clutching engagement with the gear face until the depressions in the hub again aline with the rollers. This will occur at the end of one revolution of the hub and of the shaft 8 110 to which it is keyed, the rollers 24 entering into their respective depressions in the face of the hub 20 and the spring 22 simultaneously throwing the hub out of clutching engagement with the gear. The rotation of 115 the driven shaft 8 will reciprocate the operating head 6 through the eccentrics 10 and their straps 12 which are connected with the head. Reciprocation of the head operates a plurality of marker elements, as hereinafter described. 120

In order to move the hub into clutching engagement with the gear 18 so as to rotate the hub depressions beyond the rollers 24 a clutch operating arm 26 is carried by 125 a sleeve 27 loose on the shaft 8 and is provided with a beveled plate forming a cam finger 28 held in a plane to engage a pin 30 on the hub when the arm is moved to engage the cam with the pin. A spring 32 130

(Fig. 8) connects the arm with the machine bed and normally tends to pull the cam finger out of engagement with the pin. The arm 26, however, is provided with an offset 34 to which a treadle operated rod 36 is connected. The operation of the rod by a treadle (not shown) will partially rotate sleeve 27 to move the arm 26 with its cam 28 in a direction to engage the pin 30 and move the hub into clutching engagement with the gear 18. The treadle may then be released as the initial rotating movement given the hub when first clutched to the gear, will clear the depressions from the rollers 24 and cause the rollers to hold the hub and gear in clutching engagement for one revolution of the hub and its shaft.

The downward movement of the operating head 6 is designed to engage the upper arms of a series of marker elements to move said arms relatively to the lower arms of said series to mark stock supported between the upper and lower arms of said series of marker elements. These marker elements form in effect marking units, each marker element comprising connected relatively movable upper and lower marking arms, and the series of marker elements being mounted on the bed 2 for horizontal swinging movement to vary their relative spacing and for sliding movement relatively to their pivots to vary their linear arrangement. The present invention is not concerned with the specific construction of the marker elements, except as to the general type of marker element. One form of marker element which may be employed, and which is illustrated herein comprising opposed electrically heated cauterizing markers arranged for relative movement to engage and sear or cauterize the surface of the stock interposed between them. The construction and electric heat control for these markers forms the subject-matter of United States Letters Patent No. 1,278,842 granted September 17, 1918 upon application of Arthur W. Brice and Irving E. Booth.

The machine bed is provided with spaced raised bearing portions 38 and 40. The rear bearing portion 38 is of curved outline and has upstanding therefrom a plurality of uniformly spaced studs 42 having flanged heads 44. These studs are engaged by the channeled base plates 46 (Figs. 5 and 7) of a series of marker elements comprising upper marking arms 52 and lower marking arms 48 mounted at their rear ends in frames which include the base plates 46, and at their forward ends, mounted in and carried by base plates 50 supported and guided upon the raised portions 40 of the bed. The rear ends of the upper marking arms 52 of each marker element are carried in brackets 54 and are pivotally connected with the frames at the rear ends of the lower arms. A coiled

spring 56 interposed between the rear ends of the upper and lower marking arms tends to spread these arms apart at their forward or marking ends, while stop members 58, 60 carried by the arms intermediate of their ends limit their movement toward each other. The ends of the marking arms carry markers in the form of loops of resistance wire 62 detachably secured to the ends of the arms and connected in series electrically with each other and with suitable current controlling devices. The specific construction and electrical equipment of the illustrated marker elements is described in detail and forms part of the invention disclosed in the patent aforesaid, and need not be considered in detail herein. It is illustrated sufficiently for the purposes of the present application by Figs. 10 and 11 of the drawings.

The forward ends of the base plates 50 detachably carry posts 64 upon which are pivotally mounted adjacent to their forward ends work supporting tables 66 having openings therein in line with the lower markers 62 and having their rear ends coöperating with the upper arms of the marker elements. Each base plate 50 is formed with an upstanding rib 68 (Figs. 7 and 11) and the upper marking arm 52 carries spaced depending legs 70 embracing opposite sides of the rib. The rear ends of the tables 66 are bifurcated to embrace the ribs 68 and to seat loosely in bifurcations at the lower ends of the legs 70. The coiled springs 56 tend, through this connection, to move the rear bifurcated ends of the tables 66 upwardly to engage normally with pins 72 extending from the ribs 68.

In this position the tables are located above the lower markers 62 and prevent contact of the stock supported by the tables with the markers. The ribs 68 also carry wire guards 74 extending forwardly in line with the ends of the marking upper arms 52 and below their markers 62, so that when a button-hole fly is placed upon the series of tables 66, it will be protected from engagement with the cauterizing wires forming the markers 62 by the tables 66 and by the wire guards 74.

In line with the stops 58, 60, the upper arms 52 carry cushioned abutment studs 76 arranged to be engaged by the operating head 6 when it is moved downwardly by rotation of the shaft 8. This action causes the upper marking arm to move toward the lower marking arm, the upper cauterizing marker 62 passing through the wire guard 74 and the legs 70 moving the tables 66 to bring the lower markers 62 through the aligned openings in the tables so that the stock supported upon the series of tables 66 will be marked at opposite faces by the cauterizing markers 62 which are heated to

cauterizing temperature through certain electric connections and controlling devices that need not be described.

The channeled base plates 46 of the marker elements are of sufficient length to permit a relatively wide range of movement of the marking arms in the direction of their length and relatively to the studs 42. These plates also swivel the marker elements on the flanged heads of the studs so that all of the series of marker elements except a centrally located element may be swung to vary the spacing between adjacent arms and at the same time may be moved in the direction of their length independently to vary their curvilinear arrangement so as to conform to various curvatures of flies operated upon. This central element, best seen in Figs. 1, 2, 3 and 5, is held against bodily and swinging movement by means later to be described.

The forward portion of the machine bed is cut away to provide space for the guiding and adjusting mechanism of the marker elements. This adjustment of the marker elements is made relatively to the central marker element, previously referred to. The base plates 50 for the lower arms 48 of the marker elements carry at their forward ends depending guide pins 78 (Figs. 7 and 11) which, except in the case of the central fixed marker element, extend in and through guiding slots 132 in complementary pivotally interconnected guiding plates or templets 128 and are of sufficient length to extend through these guiding slots and into slots 162 in a reciprocating spacer plate 150 beneath the templet plates which moves the series of marker elements toward and from the fixed central marker element and by reason of certain connections with the pivoted guiding plates 100, 102, also may operate these plates to grade the linear or curvilinear arrangement of the markers coincidentally with the change in relative spacing of the markers, as in my prior patent previously referred to.

My improved construction includes mechanism arranged to engage pin 78 of the central marker element to maintain the central marker element fixed and to support the adjacent inner ends of the guiding plates or templets pivotally mounted upon the pin 78 of the fixed central marker element. This mechanism is designed to facilitate the assembling of the parts as well as their removal.

Conveniently the bed of the machine at its forward edge may be provided with a bracket 80 (Figs. 4 and 5) extending forwardly toward the front of the machine and including a socket 82 receiving and guiding for vertical movement a post 84 having a rack 86 formed on one face thereof. The bracket adjacent to this socket is counter-bored (Figs. 4 and 5) to receive a spindle 88

having a pinion 90 at one end thereof arranged to mesh with the rack 86, so that by turning the spindle the post may be moved up to receive and support the pin 78 of the central marker element, as well as to receive and support the ends of the guiding plates or templets 100, 102 which pivot on said pin 78.

The upper end of the post 84 is apertured as at 92 to receive the pin 78 of the central marker element, and is cut away at opposite sides to form a central web 94 (Fig. 4) through which the aperture or socket 92 extends. The central web 94 will enter into the central straight slot of the spacing plate 150 which coöperates with the pins 78 of the movable marker elements and with their swinging guide plates. In order to lock the post in its raised supporting position, the spindle 88 is formed with a flat portion 96 (Fig. 4) and a spring pressed block 98 mounted in a socket in the bracket normally engages the periphery of the spindle as it is turned, the flattened portion 96 of the spindle engaging the block when the post has reached its raised position and the pressure of the spring against the block holding the post in its raised position until the spindle is forcibly turned in the opposite direction to lower the post. Complementary guide plates 100, 102, seen best in Fig. 3, are pivotally interconnected at their inner ends by the pin 78 of the central stationary marker arm, these ends of the plates being mounted upon this pin and supported by the upper surface of the web 94 (see Fig. 5). The outer or free ends of the plates carry pivoted blocks 122 which seat between inclined guiding walls 120 formed on pivoted adjusting levers at opposite sides of the machine bed, these levers themselves being carried upon sliding beds 104, 106, which coöperate with the marker spacing plate 150. The construction of each guiding plate and the connections between the free ends of the guiding plates and the adjusting levers, and the construction of the adjusting levers and their connection to the sliding spacer plate, are the same, although the arrangement is, of course, reversed on the opposite ends.

At the opposite sides of the machine bed and at the forward or front face of the bed, opposed carrier plates 104, 106 (Figs. 6 and 3) have their edges guided in suitable ways in the machine bed for movement longitudinally of the machine bed and toward and from each other. Pivoted at their inner ends on the carrier plates, are levers 108 carrying spring pressed latches 110 coöperating with a series of pins 112 on the carrier plates 104, 106 to hold the levers 108 in adjusted position (see Fig. 6). Pivotally mounted upon the levers 108 which, for convenience, will be hereinafter designated as

the lower levers, at corresponding points between their pivots and their free ends are upper adjusting levers 114 having arcuate slots therein to permit the latches of the lower levers to extend therethrough and move relatively thereto, and having spring pressed latches 116 at their free ends cooperating with an arcuate series of latching pins 118 on the outer ends of the lower levers 108 to hold the upper levers in adjusted position relative to the lower levers.

The upper levers are provided with rearwardly inclined upstanding guide walls 120 and the outer or free ends of the guiding plates 100, 102, carry pivoted blocks 122 (Figs. 3 and 6) guided between these inclined walls. By swinging the lower levers 108 the upper levers 114 will also be swung to swing in turn the guiding plates 100, 102 on their pivots to vary the line of their slots and the guiding line for the marker elements. As the adjusting means at the opposite sides of the bed are independent, it is obvious that the adjustments may be independent. The upper levers 114 may also be adjusted relatively to the lower levers and independently thereof to provide further variance of the line of the guiding slots.

These described adjustment features are similar generally to those employed in U. S. Letters Patent No. 1,191,965 hereinbefore referred to. I have, however, provided a wider range of adjustment through additional adjustment means in the construction of the guiding plates 100, 102 as best seen in Fig. 3. Each guiding plate includes a main or base plate 124 and a supplemental guiding plate 128. The inner adjacent ends of the base plates 124 are pivotally mounted on the pin 78 of the central marker element and are reduced in thickness to permit these plates to be overlapped at their point of pivotal connection. The base plates 124 carry blocks 122 at the under side of their outer ends, and intermediate of their ends are formed with curved guide slots 126 therein, these slots being enlarged in width from a point adjacent their inner ends to the outer ends of the slots where the width reaches its maximum.

The upper faces of these main or base plates 124 between the ends of the plates are reduced in thickness to receive the supplemental upper guide plates 128 pivoted to the base plates 124 at their inner ends, as at 130, and having guide slots 132 formed therein of a width which is sufficient to receive and guide the pins 78 of the marker elements. These slots at their outer ends are enlarged in width to the maximum width of the slots in the base plates 124 and form with the base plates housings to receive the pins 78 of surplus end markers of the series of marker elements (see Fig. 3).

The outer ends of these upper plates 128

carry studs 137 (Fig. 3) which may be clamped in a series of notches 136 formed in the base plates 124 by means of a clamping nut 138. Preferably, a pointer 140 is carried by the stud and cooperates with indication marks formed on the faces of the outer ends of the base plates 124, such as the numerals 5, 4, etc., shown in Fig. 3, to indicate certain curve adjustments of the slots in the upper plate. Obviously, as the curved slot in the base plate 124 is of substantial width, the provision of a supplemental upper plate 128 having a curved slot alined with the slot in the base plate 124 and of narrower width to receive and guide the pins 78 of the marker elements, provides the guiding plates 100, 102 with a relatively wide range of curve adjustment, *per se*, and with a wider range of curve adjustment than the single guiding plates of my prior patent aforesaid.

Aside from the curve adjustment of the guiding plates 100, 102 obtained through manually swinging the adjusting levers 108, 114, to establish a desired pattern or style curve, means are provided for automatically swinging said guiding plates to effect an automatic grading of the selected pattern curve in changing the spacing of the marker elements from size to size of the pattern.

The machine bed is provided with opposed supporting plates 142 extending from the front edge thereof rearwardly (Figs. 3 and 6) and a spacer frame 144 is mounted within the bed and supported by these plates for movement transversely of the bed. This frame is formed with a central raised portion 146, upon the inner edge of which are dowel pins 148 which enter into corresponding apertures in a spacer plate 150 supported upon and extending inwardly from the inner edge of the spacer frame. This plate is detachably clamped to the frame by means of headed pins 152 whose heads seat in channeled slots in the rear edge of the spacer plate (see Figs. 3 and 6).

The lower ends of the pins 152 extend through the frame and carry washers 154 (Fig. 6). Coiled springs 156 seated on the pins 152 between the frame and the washers 154 act against these washers and normally tend to hold the pin heads in locking position relatively to the spacer plate. At the opposite sides of the frame 144 below the lower ends of the pins 152, bolts 158 (Figs. 2 and 6) are guided for movement longitudinally of the frame and have cam faces 160 arranged to engage with the lower ends of the studs 152 to lift the studs from engagement with the spacer plate to permit the latter to be detached from the frame.

The spacer plate 150 is formed with a series of divergent open ended slots 162 therein. For uniformly spacing markers

along a curved line which is not the arc of a determinate circle, the slots will be divergent along non-radial lines, although in some instances the arrangement may be substantially radial. Obviously, as the plate is detachable, differently slotted plates may be supplied for different ranges of curve adjustment. The central slot is straight and will extend in the line of movement of the spacer plate and will embrace and be guided on the web 94 of the supporting post for the central marker element and for the guiding plates, so that the central marker element is not moved laterally by movement of the spacer plate 150. The slots 162 will correspond in number to the greatest number of markers which it is desired to use on the machine and with which the machine will be equipped. The pins 78 of the marker elements except the central marker element will extend through the slots in the guides 100, 102 a sufficient distance to enter into the divergent slots 162 so that these marker elements of the respective pins will be relatively moved as the spacer plate 150 is moved toward and from the series of marker elements. Since the guiding plates 100, 102 are pivoted on the pin 78 of the central marker element, adjustment of these plates will not affect said central element.

The base of the spacer frame 144 at the edges adjacent the guides 142 of the bed is formed with guide channels 164 (Fig. 3) having outwardly converging portions 166 (Fig. 3) adjacent the front end of the frame. The carrier plates 104, 106 at the opposite sides of the bed carry depending rollers 170 (Fig. 6) which enter into the straight portions of the guide channels 164 at the rear of the spacer frame when the frame is first inserted into the bed and moved along the guide plates 142. When the frame has been positioned to enter the pins 78 of the marker elements into the open ends of the spacer plate slots 162, the rollers 170 will have reached the converging portions 166 of these guide channels. This position will locate the markers 162 in their positions of greatest relative spacing. It will also locate the guiding plates 100, 102 with the slots forming the longest and flattest curve for the selected pattern.

As the spacer frame and plate is moved inwardly from this point, the sides of the diverging slots 162 acting against the pins 78 will cause the marker elements to be moved closer together and relatively to the fixed central marker with which the straight central slot of the spacer coöperates. By reason of such movement of the frame and spacer plate, the carrier plates 104, 106 will be moved inwardly toward the center of the spacer plate by reason of the cam action of the sides of the converging slots 166 upon the rollers 170 of these carrier plates. Such

a movement of the carrier plates will move the ends of both guiding plates 100, 102 outwardly or toward the operator, by reason of the thrust against the pivoted blocks 122, by the converging guide walls 120 of the upper adjusting levers, as the carrier plates are moved toward the center of the machine inwardly. Consequently, the curvature of the slot in the guiding plates 100, 102 will be reduced as the spacing of the markers is increased for increasingly smaller sizes of buttonhole flies.

Upon movement of the spacer frame and plate in the opposite direction or toward the operator for increase in sizes of the flies, the reverse action takes place, the spacing of the markers being increased and the curvature afforded by the slots in the guiding plates being relatively decreased. It should be stated that in referring to spacing for larger and smaller sizes, it is understood that reference is made to larger and smaller sizes of shoe flies employing the same number of buttonholes, so that for a larger size of fly an increased spacing of the buttons is necessary, and vice versa. The described construction, therefore, provides means for automatically grading the line of curve of the markers to correspond with the change from one size to another of the flies being marked and this automatic gradation is effected through the coöperation of the spacing mechanism which changes the relative spacing of the markers for the different sizes of flies with the guiding plates which initially determine the curvilinear arrangement of the marker elements.

The described construction permits substitution of other guiding plates 100, 102, and spacer plates 150 so that with the one machine it is possible to use a plurality of guiding plates having different ranges of curve adjustment for different ranges of patterns such as occur in different factories, and a corresponding plurality of spacer plates the divergence of the slots in a spacer plate being based on the curve adjustment of its corresponding guiding plates.

Preferably, charts will be provided giving the positions of adjustment of the latches 110, 116 of the adjusting levers of the guide plates, and of the adjusting pointers 140 of the upper guide plates 128 for different patterns of flies. Conveniently, the heads of the latches and the nuts 138 or their pointers, may bear different designations such as "A", "B", "C", etc., to which the adjustment directions in such a chart may refer.

In order properly to position the buttonhole flies relatively to the markers so that the buttonhole locations will be uniformly spaced from the outer edge of the fly and so that the end buttonholes will be at predeter-

mined distances from the ends of the fly, work gaging means are provided to engage the outer or curved edge of the fly and the opposite ends of the fly, these gaging means being arranged to retain the same positional relation to the stock in all adjusted positions of the markers.

Accordingly, a plurality of back or fly edge gages 172 (see Fig. 11), preferably three in number, are carried by the stock supporting tables 66 of certain of the markers including the fixed central marker and marking elements at opposite sides of the central marker. These gages are in the form preferably of L-shaped plates, one arm of which is slotted and is adjustably secured to the stock supporting table 66, the other arm of the plate forming a vertical abutment against which the edge of the stock,—in the present instance, the curved edge of the buttonhole fly,—will rest when the fly is properly positioned on the table. As these gages are carried by the tables of the several marking elements and move with the elements in all adjustments thereof, they will necessarily maintain the same positional relation to the elements and to the work in all positions of adjustment of the marker elements.

The number of marker elements on a machine will correspond with the greatest number of buttonhole locations that may be desired upon buttonhole flies. When a less number is desired to be used, the surplus marker elements at the ends of the series will be displaced from the work marking area by retracting the spacer frame with its plate 150 until the pins 78 of these markers are freed, and then moving pins 78 of the surplus marker elements into the outer enlarged ends of the slots of the guiding plates 100, 102 the pins of such displaced marker elements being shown in section in Fig. 3. The spacer frame and its plate are then moved back to engage the pins of the active marker elements. If the pins 78 of those marker elements which must be displaced from the work marking area cannot all be entered into the enlarged ends of the slots, the pins of the surplus marker elements may be positioned at the extreme ends of the slots in the guiding plates out of the work marking area and will simply be moved rearwardly or forwardly upon similar movements of the spacer and guiding plates without interfering with the operation of the machine.

Under such conditions of operation it will be obvious that end gages for the stock, if carried by the marking elements, must be detachable. Accordingly, I employ detachable end gages arranged to be detachably secured to the pins 78 of the operative end marker elements of the series of marker elements. These gages may take the forms

illustrated in Figs. 9 and 10 of the drawings in which blocks 176 are recessed and threaded at one end to receive split sleeves 178 interiorly threaded and grooved transversely to form seats for the rear bent ends of spaced spring clasps 180 whose ends project outwardly from the ends of the blocks and are arranged to clasp the portions of the pins 78 immediately above and below the base plates 50 for the forward ends of the lower marking arms 48 of the marker elements. The split sleeves are spread to grip the ends of the spring clasps by threaded studs 179. The sides of the sleeves and the end of one stud (Fig. 9) are beveled to conform substantially to the side of the base 50.

This connection to the pins 78 of the end marker elements will, therefore, detachably pivot the blocks 176 on the pins of the marker elements. Stud 182 is inserted in the opposite ends of these blocks and have reduced threaded upper ends carrying nuts. The transversely extending arms of gage rods 184 extend through the studs 182 above the blocks and rest upon the blocks. The gage rods extend substantially vertically, their lower ends extending into the slots 132 and their upper ends extending to points above the line of the stock supporting tables 66, these portions forming gages arranged to be engaged by the opposite ends of the flies. As the gage rods are carried by the blocks 176 which are fixedly positioned relatively to the end marking elements of the series, and are guided in the curved slots 132 in the plates 100, 102, they will occupy the same positional relation to the work in all adjusted positions of the markers.

The position of the gage rod of the gage for the upper end of the fly will be nearer its end marker than the position of the gage rod for the lower end of the fly since the top button-hole is nearer the top edge of the fly than the first or lower buttonhole is to the lower edge of the fly. The lower end gage is, therefore, preferably provided with a bent plate 186 clamped upon the gage rod by its nut and having its upper arm positioned to lie in the line of the supporting tables 66 to receive and support the end of the fly projecting beyond the first or lower button-hole location, so that it will lie flat and enable the end gage rod accurately to space the lower end of the fly.

In moving the spacer plate 150, it is very desirable that the latter be provided with means for determinately positioning it with reference to the engaged marker elements and for holding it in the position selected, so that accurate spacing adjustment may be secured and so that the graded curvature of the guide plates 100, 102, may be maintained with the spacing adjustment during the marking operations. It is also desirable to provide means which will facilitate the

speed with which this may be accomplished without detracting from the accuracy of the adjustment.

Accordingly, the bracket 80 at the forward side of the bed plate of the machine, includes spaced forwardly extending arms 188, whose ends are formed as journals to receive a shaft 190 (Figs. 4 and 5). The shaft carries one end of a coiled spring 192 mounted in a housing 194, the other and outer end of the spring being secured and held by a pin 196 projecting from one of the arms 188. The shaft 190 intermediate of its ends carries a pinion 198 aligned with and normally engaging a rack bar 200 attached to the under side of the central portion 146 of the spacer frame. The spring 192, when wound, normally tends to rotate the pinion 198 in a direction to move the rack 200 and the spacer frame toward the rear of the machine bed, so as to move the marker elements inwardly toward the central fixed element.

In order to permit the power spring to perform this operation by a series of determinate steps or feeding movements an escapement mechanism is provided. A ratchet 202 is loosely mounted on the shaft 190 and has its hub on the side adjacent the pinion 198 formed with a toothed clutch face 204 (Figs. 2 and 4). A cooperating toothed clutch face is formed on a sleeve 206 keyed on the shaft 198 and is normally held in engagement with the ratchet clutch 204 by means of a spring 208, best seen in Fig. 2, coiled about the shaft between the pinion and sleeve clutch. Rearwardly of the ratchet wheel 202 an escapement lever 210 is journaled between its ends on a post extending from the arm 188 and carries at its opposite ends, pawls 212 and 214, the latter being spring pressed.

Tandem rock arms 218 are loosely journaled on the shaft 190 with a connecting web 220 adjacent their forward ends and with a spacing bar 222 formed at their forward ends and normally extending out beyond the front of the machine for actuation by the operator in a manner similar to the spacing bar of a typewriter. One end of one of the arms 218 is extended beyond the shaft in line with the escapement lever 210, as shown at 219, Figs. 4 and 5. A link 224 pivotally connects this extended end of the arm 218 with the lower end of the escapement lever. A coiled spring 226 (Figs. 4 and 5) is anchored at one end to the bracket arm 188 and is attached to the extended end of the arm 218 tending normally to pull this extended end downwardly and maintain the engagement of the pawl 212 with the ratchet.

Obviously, therefore, when the operator depresses the space bar 222 the escapement lever will be moved to retract the upper pawl 212, the lower pawl 214 being thrown

into position to stop the ratchet when it has moved the distance of one tooth and to hold it until the pawl 212 is again returned, into engagement with a ratchet tooth by the pull of spring 226 against the rock arm 218 when the spacing bar is released. The escapement therefore permits the power spring to feed the spacer frame and plate step by step to secure uniform gradations in spacing and to hold the adjustment when secured.

The buttonhole flies usually come to the operator graded from the largest sizes downwardly. The outer position of the spacer frame will position the markers for the largest size of fly, and subsequent operation of the space bar 222 will grade the markers to the smaller sizes.

When the spacer frame 144 with its plate 150 has been moved inwardly to the inward limit of adjustment, it may be retracted by means of a bent lever 228 having its forward end projecting out beyond the front end of the machine bed and having its rear end pivoted beneath the bed at its central rear portion (see Figs. 3 and 4) as at 230, and provided with an enlargement 232 (Fig. 5) positioned to engage an antifric-tion roller carried at the rear end of a plunger 234 guided in the machine bed and extending through bearings in the bracket 80. The outer end of the plunger is formed with an upwardly and forwardly extending head 236 (Figs. 4 and 5) having a pin 238 positioned to engage the spacer frame 144 at a point adjacent to the rack 200. By moving the bent lever 228, the spacer frame may be moved to its outer position, restoring the potential of the power spring 192 through the rotation of the pinion 198 engaged by the rack bar 200, the teeth of the sleeve clutch 206 riding over the cooperating teeth of the hub clutch 204 of the escapement ratchet wheel during this reverse movement of the shaft 190.

To provide for initial tensioning of the coiled spring 192 and for any subsequent tensioning of the spring which may be necessary independently of the re-tensioning movement through the retraction of the spacer frame, a separate rack bar 240 (shown in Fig. 4) is provided, and is apertured adjacent to one end to fit upon the pin 238 of the plunger 234 so that its rack portion may be dropped into engagement with the pinion 198. When the lever 228 is operated to move the plunger outwardly, the rack bar 240 attached to the plunger and engaging the pinion acts to rotate the pinion and wind up the spring. This operation can only take place after the spacer frame is removed from the machine bed to permit the insertion and operation of the rack bar 240.

Under normal operating conditions, it is necessary to prevent the spacer frame from being moved outwardly sufficiently far to free the marker pins 78. The rack bar 200
 5 on the spacer frame is provided with a laterally offset pin 242 and a stop bar 244 is clamped upon the web 220 in the path of outward movement of the pin 242, normally preventing the spacer frame from being
 10 moved outwardly to a position where the ends of the slots of the spacer plate 150 will clear the pins 78 of the marker elements.

When it is desired to move the spacer frame 144 either entirely from within the machine bed for spring re-winding or other operations, or to partially remove the frame to clear the spacer slots from the pins 78 and permit the surplus marker elements to be moved to the outer ends of the guiding
 20 plates 100, 102, the stop 244 may be loosened and swung to one side.

Preferably, the adjusting levers and their carrier plates at the opposite sides of the machine bed, are covered by detachable
 25 housings 246 and the intervening space is covered by a detachable front plate 248 latched to the bed and covering the spacer frame and part of the spacer plate. The housings 246 may bear certain adjustment
 30 indications for the inner adjusting latches 110 and the stems of the latches 110 may carry indicator plates 250 for the adjustments of the latches 116. The adjustment indications for the upper guide plates 128
 35 may be placed on the lower guide plates 124 adjacent to their outer ends as shown in Fig. 3 of the drawings. In using the described machine, the operator adjusts the latches 110 and 116 and clamping studs 137 (Fig.
 40 3) if necessary, to secure the curve adjustment of the slots in the guiding plates 100, 102, as given in the chart for the style or pattern of fly to be marked. If the number of buttonholes to be marked is less than the
 45 number of operatively positioned marker elements, the surplus marker element or elements are first displaced from one or both ends of the series, as heretofore described and the end gages 184 are attached to the
 50 operative end marker elements. As the flies usually come to the operator arranged in lots of the same pattern and number of buttonholes this displacement does not become necessary very often.

With this effected, the parts will be in the positions shown generally in Figs. 1 and 2. Right and left flies of the same size and pattern are placed back to back so that their curved edges coincide, and thus held, are
 60 placed on the series of tables 66 with their curved edges engaging the central back gage 172. The spacing bar 222 is then operated until the gage rods 184 of the end gages contact with the opposite ends of the fly,

said rods acting as visual indicators to tell the operator when the desired spacing adjustment has been secured. During this spacing adjustment the outer ends of the guiding plates 100, 102, will be moved toward the center of the machine (when the
 65 relative spacing of the markers is reduced) to increase the curvature of the guide slots, and if the proper initial adjustment of the guide plates 100, 102, for the pattern curve has been made, all three back gages 172 will
 70 engage the curved edges of the flies equally when the end gage pins contact with the ends of the flies. The markers of the marker elements are thereby uniformly and equally spaced from the curved edges of the flies and
 80 the end markers are determinately positioned relatively to the ends of the flies.

In this position of the stock, the machine is conditioned for operation to cause the markers 62 to mark the buttonhole locations.
 85 When cauterizing markers are used as suggested and illustrated herein, the stock will be guided from the heated markers by such means as the guard wires 74 and tables 66 until the markers are moved to operate upon
 90 the stock. This movement in the illustrated machine, is accomplished by depressing the treadle operated rod 36, which will move the sleeve clutch into engagement with the clutch face of the continuously driven gear
 95 18 and, through shaft 8 and the eccentric connections to the head 6, will reciprocate said head.

As the head is moved downwardly from the position shown in Figs. 1 and 2, it will
 100 engage simultaneously the series of abutment studs 76 carried by the upper arms of the series of marking elements and will move these upper arms with their heated cauterizing marker wires toward the lower
 105 arms and their heated marker wires, these marker wires passing through the openings in their respective guards and engaging the outer surfaces of the superposed right and left flies to sear or cauterize the buttonhole
 110 locations on the outer surfaces of both flies substantially simultaneously.

When the head 6 is returned upwardly upon the completion of one revolution of the shaft and the clutch is automatically disconnected as described, the springs 56 interposed between the upper and lower arms of the series of markers, will return the arms to their initial position. The marker flies are then withdrawn from the supporting
 120 tables 66 and other stock placed on the tables, the necessary adjustments, if any, made, and the treadle rod again operated for a second cycle of operations such as described.
 125

While the invention herein described is shown and described as especially designed for marking buttonhole flies, it is to be

understood that it is adapted for use generally for operating upon shoe uppers where adjustments such as described, are desirable, and that the character of the spaced elements may be varied as desired.

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

1. In a shoe upper marking machine, in combination, a series of marker elements mounted for relative movement to vary their relative spacing, manually controlled power mechanism arranged for operation determinately to vary the relative spacing of the marker elements.

2. In a shoe upper marking machine, in combination, a series of marker elements mounted for relative movement to vary their relative spacing, a spacing member cooperating with said elements and mounted for movement in a direction to effect simultaneous relative spacing movement of said elements, and manually controlled power mechanism for effecting determinate step by step movement of said member in spacing direction.

3. In a shoe upper marking machine, in combination, a series of marker elements mounted for relative movement to vary their relative spacing, a spacing member cooperating with said elements and mounted for movement in a direction to effect simultaneous relative spacing movement of the elements, power operated means for moving the spacing member in element-spacing direction and manually operable controlling mechanism for said power operated means arranged determinately to control said movement of the spacing member by said power-operated means.

4. In a shoe upper marking machine, a series of marker elements mounted for sliding movement, a guide cooperating with said elements to control the linear arrangement of the series, a spacing member movable toward and from said elements to vary their relative spacing along said guide, manually controlled power-operated means for determinately moving said spacing member in one spacing direction, and manually operated means for moving said spacing member in the reverse direction.

5. In a shoe upper marking machine, a series of marker elements mounted for sliding movement, a guide cooperating with said elements to control the linear arrangement of the series, a spacing plate cooperating with said elements to vary their spacing along said guide and when moved in one direction, arranged to move said elements toward each other, and when moved in the reverse direction to move the marker elements of said series from each other, power-operated mechanism normally tending to move said plate in one spacing direction,

manually controlled means determinately controlling spacing movement of said plate through the power operated mechanism, and manually operated means for moving said spacing plate in the reverse spacing direction.

6. In a shoe upper marking machine, a series of marker elements mounted for sliding movement relatively to each other to vary their relative spacing, a spacing plate cooperating with said marker elements movable relatively to said elements in reverse directions effective to move said elements toward and from each other, respectively, manually controlled power operated means for imparting step by step movement to said plate in one marker spacing direction, and means to move the plate in the reverse spacing direction.

7. In a shoe upper marking machine, a series of marker elements mounted for sliding movement relatively to each other to vary their relative spacing, a guide cooperating with said elements to control the linear arrangement of the series of elements, a slotted spacer plate movable relatively to said elements in reverse direction to effect relative movement of the elements toward and from each other, respectively, mechanical motor operated means normally tending to move said spacer plate in one spacing direction and manually controlled and operated escapement mechanism to permit a step by step feed of said plate by said motor operated means in said direction and manually operated movement of said plate in the reverse direction.

8. In a shoe upper marking machine, a series of marker elements mounted for sliding movement relatively to each other to vary their spacing, a spacer member movable toward and from said elements and cooperating therewith to move them toward and from each other, respectively, in its opposite directions of movement, mechanical motor operated means normally tending to move said spacer member in one spacing direction, and manually controlled and operable escapement mechanism to cause said motor to impart a step by step feed to said spacer member in said direction and arranged to permit manually operated reverse movement of said spacer member to effect restoration of power potential.

9. In a shoe upper marking machine, a series of marker elements arranged for sliding movement toward and from each other to vary their relative spacing and having guide projections, a spacer plate having divergent slots therein positioned to receive said projections and movable toward and from said elements to move said elements toward or from each other, a mechanical motor, driving connections between said motor and the spacer plate for moving said plate

in one spacing direction, a manually operable escapement mechanism determinately to control motor operated movement of said plate, and manually operated means to move
5 said plate in reverse spacing direction against the power of said motor.

10. In a shoe upper marking machine, a series of marker elements arranged for sliding movement toward and from each other to
10 vary their relative spacing, and having guide projections, a spacer plate having divergent slots therein positioned to receive said projections and movable toward and
15 toward or from each other, a mechanical motor, driving connections between said motor and the spacer plate for moving said plate in one spacing direction, a manually operable escapement mechanism determinately to
20 control motor operated movement of said plate, manually operated means to move said plate in reverse spacing direction against the power of said motor, and connections between said plate and motor operative upon
25 such reverse movement to restore the motor potential.

11. In a shoe upper marking machine, in combination, a series of marker elements arranged for relative adjusting movement,
30 movable guiding means cooperating with said elements to effect relative adjusting movement of the marker elements, and manually controlled power mechanism for effecting determinate step by step movements of
35 the guiding means in marker element adjusting direction.

12. In a shoe upper marking machine, in combination, a series of marker elements arranged for relative adjusting movements,
40 movable guiding means cooperating with said elements to effect relative adjustment of the marker elements substantially simultaneously, power-operated means normally tending to move said guiding means in a
45 direction to effect adjustment of the marker elements, and manually operated mechanism for controlling the operation of the power operated means to effect step by step movement of the guiding means.

13. In a shoe upper marking machine, in combination, a series of marker elements arranged for relative adjusting movement,
50 movable guiding means cooperating with the marker elements to effect relative adjusting movement of the elements, mechanical motor operated means normally tending to move
55 said guiding means in a direction to effect adjustment of the marker elements, and an escapement mechanism for controlling the motor actuated movement of the guiding means, including manually controlled means for said escapement mechanism to operate
60 said mechanism to effect step by step movement of the guiding means.

14. In a shoe upper marking machine, in

combination, a series of marker elements arranged for relative adjusting movement, movable guiding means cooperating with the marker elements to effect relative adjusting
70 movement of the elements, spring motor operated means normally tending to move said guiding means in a direction to effect adjustment of the marker elements, an escapement mechanism for controlling the motor actuated
75 movement of the guiding means, including manually controlled means for said escapement mechanism to operate said mechanism to effect step by step movement of the guiding means, and manually operable means for moving the guiding means in the
80 reverse direction to effect restoration of power potential of said motor.

15. In a shoe upper marking machine, a series of marker elements mounted for sliding movement relatively to each other to
85 vary their spacing, a spacer member movable toward and from said elements and cooperating therewith to move them toward or from each other in its opposite directions of movement, spring motor operated means
90 normally tending to move said spacer member in one spacing direction, and manually controlled and operable escapement mechanism to cause said motor to impart a step by step feed to said spacer member in said
95 direction, including a manually operable spacing bar for effecting said step by step feed and motor operated connections to the spacer member constructed and arranged to permit reverse movement of the spacer member
100 independently of the escapement mechanism.

16. In a shoe upper marking machine, a series of marker elements mounted for sliding movement and having guide projections,
105 a guide member mounted for adjustment relatively to the marker elements and having an elongated slot to receive the projections to guide their marker elements in the line of the slot, and means for varying
110 the position of said guide slot relatively to said guide member and marker elements independently of the adjustment of the guide member.

17. In a shoe upper marking machine, a series of marker elements mounted for sliding movement and having guide projections,
115 and a guide member having an elongated relatively wide slot therein and having a plate adjustably superposed thereon with an elongated slot therein of relatively less width adapted to align with the wide slot
120 in said member and to receive said projections to guide said marker elements in the line of the slot.

18. In a shoe upper marking machine, a series of marker elements mounted for sliding movement and having guide projections,
125 a guide member having an elongated relatively wide curved slot therein and having

a plate adjustably superposed thereon with an elongated curved slot therein of relatively less width adapted to aline with the wide slot in said member and to receive said
 5 projections to guide said marker elements in the line of the slot, and means for adjusting said guide member relatively to the marker elements.

19. In a shoe upper marking machine, a
 10 series of marker elements mounted for sliding movement and having guide projections, a guide member pivoted for adjusting movement relatively to said elements and having an elongated slot therein to receive and
 15 guide said projections and their marker elements in the line of the slot, and means for varying the position of said slot relatively to said guide member and marker elements independently of the adjustment of the
 20 guide member.

20. In a buttonhole location marking machine, a series of buttonhole marker elements mounted for sliding movement and having guide projections, a guide member
 25 pivotally mounted to swing relatively to said elements and having an elongated curved slot therein to receive and guide the projections and their marking elements, in the line of the slot, and means to vary the
 30 position of said elongated slot relatively to its guide member and to the marking elements independently of the swinging movement of the guide member.

21. In a buttonhole location marking machine, a series of buttonhole marker elements mounted for swinging and sliding movement and having guide projections, a guide member pivotally mounted to swing relatively
 35 to said elements and having an elongated curved slot therein to receive and guide the projections and their marking elements, means to vary the position of said elongated slot relatively to its guide member and to the marking elements independently
 40 of the swinging movement of the guide member, and means cooperating with said marker elements to vary their relative spacing along said guide slot.

22. In a buttonhole location marking machine, a series of marker elements mounted for sliding and swinging movements and having guide projections, an adjustable
 50 guide member having an elongated curved slot therein to receive the projections of said elements and guide the elements in a line conforming substantially to the curved edge of a buttonhole fly, means to vary the position
 55 of the slot relatively to the guide member and marker elements independently of the adjustment of the guide member, means cooperating with the marker elements to vary their relative spacing along said guide slot, and means to adjust the guide member
 60 to vary the curvilinear arrangement of the
 65 elements.

23. In a buttonhole location marking machine, a series of marker elements including a plurality of marker elements mounted for sliding and swinging movement relatively
 70 to a centrally positioned fixed marker element and having guide projections, complementary guide members pivotally interconnected in line with the fixed element and having elongated curved slots therein to provide
 75 curvilinear guide slots to receive and guide the projections of the movable marker elements to position the series of elements in a line conforming substantially to the curved edge of a buttonhole fly, means for
 80 independently varying the position of said guide slots relatively to their guide members and marker elements, and means for moving said guide members on their pivot and relatively to each other to vary the
 85 curvilinear arrangement of the marker elements guided thereby.

24. In a shoe upper marking machine, a series of marker elements mounted for sliding movement and having guide projections, and a guide member having an elongated slot
 90 therein to receive and guide said projections and their marker elements, said slot being laterally enlarged at one end to receive the projections of surplus inoperative marker elements.

25. In a buttonhole location marking machine, a series of marker elements including a plurality of elements mounted for sliding movement relatively to a centrally
 100 positioned fixed marker element and having guide projections, complementary guide members pivotally interconnected in line with the central fixed marker element and having curved guide slots therein to receive
 105 said projections and guide the movable marker elements to position the series of elements in a line corresponding substantially to the curved edge of a buttonhole fly, said curved guide slots having lateral
 110 enlargements at their outer ends to receive the projections of surplus inoperative marker elements at the opposite ends of the series of elements, and means for effecting relative sliding movement of the movable
 115 elements to vary the relative spacing of the series of elements.

26. In a shoe upper marking machine, a series of marker elements including a central fixed element and a plurality of elements mounted for sliding movement relatively to
 120 each other and to the central fixed element, a guide for said movable elements, and a support manually movable to and from a position to engage and fix the central marker element and to position and support said
 125 guide to cooperate with the movable elements, means for retaining the support in adjusted position, and means for adjusting the movable elements relatively to said guide and to each other.

27. In a shoe upper marking machine, a series of marker elements including a central fixed element and a plurality of elements mounted for sliding movement relatively to each other and to the central fixed element, projections carried by said movable elements, a guide plate for said movable elements, a supporting stud manually movable to and from a position to engage and fix the central marker and coincidentally to position said guide for cooperation with said projections, means for retaining the stud in such position, and means for effecting relative movement between movable marker elements.

28. In a buttonhole location marking machine, a series of marker elements including a central fixed marker element and a plurality of marker elements mounted for sliding movement relatively to each other and to the central fixed element to vary their relative spacing, projections carried by the plurality of movable elements, a guide for said movable elements having a curved guide slot therein arranged to receive said projections, a manually movable support arranged to be moved to and from position to engage and fix the central marker element and coincidentally to engage and position the slotted guide to cooperate with the movable elements, means for retaining said pin in adjusted position, and means for effecting relative movement of said movable elements.

29. In a shoe upper marking machine, a series of marker elements including a central fixed element and a plurality of pivoted elements mounted for swinging movement relatively to each other and to the central fixed element to vary their relative spacing, projections carried by said elements, complementary guide plates cooperating with the projections of said movable elements and having their adjacent ends overlapping at a point in line with the fixed element and pivoted on the projection thereof, a supporting stud manually movable to engage and hold the projection of the central element and coincidentally to support the pivoted overlapping ends of said guide elements upon their pivot projection, means for retaining said stud in such position, means for determinately positioning the free ends of said guide elements, and means for effecting relative movement of said movable elements.

30. In a buttonhole location marking machine, a series of marker elements, each comprising opposed relatively movable markers, and including a central fixed element and a plurality of pivoted elements mounted for longitudinal and transverse movement, guide projections carried by said elements, complementary guide plates having their adjacent ends overlapping in line with and pivotally mounted upon the projection of

the central fixed marker and having curved slots therein to receive the projection of the movable elements, a stud movable to and from a position to engage and fix the projection of the central marker element and coincidentally to engage and support the overlapping ends of said slotted guides on their pivot projection, means for retaining said stud in adjusted position, means for swinging the free ends of said guides to vary the curvilinear arrangement of the marker elements, a spacing member cooperating with said guide projections to effect relative movement of the pivoted marker elements toward or from each other and toward or from the fixed marker element, and means for effecting relative movement between the opposed markers of said series of marker elements substantially simultaneously.

31. In a shoe upper marking machine, a bed, a series of marker elements mounted on the bed for relative movement to vary their spacing, a frame mounted to slide in said bed toward and from said marker elements, and a spacer plate detachably mounted on said frame and arranged to cooperate with said marker elements simultaneously to vary their relative spacing upon movement of said frame toward and from said elements.

32. In a shoe upper marking machine, a bed, a series of marker elements pivotally mounted on the bed for relative movement to vary their relative spacing and having guide projections, a frame mounted for sliding movement on said bed toward and from said elements, a spacer plate having divergent slots therein to receive said projections, and latches arranged detachably to secure said plate in position on said frame.

33. In a shoe upper marking machine, a bed, a series of marker elements mounted on the bed for relative movement to vary their relative spacing and having guide projections, a spacer plate mounted to slide in said bed toward and from said elements and having divergent slots therein to receive said projections and vary the relative spacing of the marker elements as the plate is moved toward and from the marker elements, and a movable stop member arranged in one position to retain said slotted plate on said bed with its slots in cooperative relation to said projections.

34. In a shoe upper marking machine, a bed, a series of marker elements mounted on the bed for movement to vary their relative spacing, a spacing member mounted in said bed for movement toward and from the marker elements and cooperating with said elements relatively to move them to vary their relative spacing, said spacing member being mounted for bodily removal from said bed, a mechanical motor, driving connections between said motor and the

spacing member normally tending to move the spacing member relatively to the marker elements to vary their relative spacing and arranged to restore power potential to the motor upon reverse movement of the spacing member, manually operable means independent of the spacing member to effect reverse movement of said member and in a direction to remove the spacing member from the bed, and an independent power restoring connection arranged to cooperate with said manually operable means and said motor driving connections when the spacing member is withdrawn to increase the motor potential additionally and independently of the movement of the spacing member.

35. In a shoe upper marking machine, a bed, a series of markers mounted on the bed for movement to vary their relative spacing, means to support work, means relatively to move the series of markers and the work supporting means, and end gages to position the ends of the work relatively to the markers, one of said gages comprising a gage rod and a table supported in the plane of the said work supporting means.

36. In a shoe upper marking machine, a bed, a series of marker elements mounted on the bed for movement to vary their relative spacing, each element comprising a stationary and a relatively movable marking arm arranged in opposed relation, means to support work between the opposed marking arms of the series of elements, means to move the movable marking arms of said series toward the opposed stationary arms of said series and toward the work supported therebetween, and work end gages supported at the ends of said series of marker elements, one of said end gages comprising a gage rod and a work end supporting table positioned in the plane of the said work supporting means.

37. In a shoe upper marking machine, a bed, a series of marker elements mounted on the bed for movement to vary their relative spacing, each of said elements comprising a stationary marking member and a relatively movable marking member in opposed spaced relation, means to support work between the opposed series of marker members, means to move the series of movable members relatively to the opposed stationary members and in the direction of work supported therebetween, pins projecting vertically from opposite faces of the stationary marker members of the terminal elements of the series, and work edge gages having spaced spring clasps arranged to engage said projecting pins to pivotally mount gages on the terminal elements of the series of marker elements.

38. In a shoe upper marking machine, a bed, a series of marker elements mounted on

the bed for movement to vary their relative spacing, each of said elements comprising a stationary marking member and a relatively movable marking member in opposed spaced relation, means to support work between the opposed series of marker members, means to move the series of movable members relatively to the opposed stationary members and in the direction of work supported therebetween, pins projecting vertically from opposite faces of the stationary marker members of the terminal elements of the series, and work edge gages having spaced spring clasps arranged to engage said projecting pins to pivotally mount gages on the terminal elements of the series of marker elements, one of said end gages comprising a gage rod extending vertically above the plane of the work supporting means and a table extending in the plane of the work supporting means to receive and support the end of the work.

39. A machine of the class described, having, in combination, a series of elements for operating upon shoe uppers, power actuated spacing mechanism cooperating with said elements to vary their relative spacing, and manually operable controlling means for said mechanism to control the extent of power actuation of said mechanism.

40. A machine of the class described having, in combination, a series of elements for operating upon shoe uppers, spacing means cooperating with said elements and movable to vary their relative spacing, power means for moving said spacing means to vary the relative spacing of said elements, and manually operable means for determinately controlling the extent of power-actuated movement of said spacing means.

41. A machine of the class described having, in combination, a series of elements for operating upon shoe uppers, power actuated spacing mechanism cooperating with said elements to vary their relative spacing, and controlling means for said power actuated spacing mechanism manually operable to effect step by step relative spacing movements of said series of elements.

42. A machine of the class described having, in combination, a series of elements for operating upon shoe uppers, a movable spacing member cooperating with said series of elements and effective simultaneously and relatively to move said elements to vary their relative spacing, power-operated mechanism for moving said spacing member in a direction to effect said relative spacing movement of the elements, and controlling means for said power-operated mechanism manually operable to effect determinate element-spacing movement of said spacing member.

43. A machine of the class described hav-

ing, in combination, a series of elements for operating upon shoe uppers, a cooperating spacing plate movable relatively to said elements for effecting simultaneous relative movement of said elements to vary their relative spacing, means normally tending to move said plate in element-spacing direction, and manually controlled mechanism for causing said plate-moving means to effect step by step element-spacing movement of said plate.

44. A machine of the class described having, in combination, a series of elements for operating upon shoe uppers, a cooperating spacing plate slidable relatively to said elements for effecting simultaneous relative movement of said elements to vary their relative spacing, a mechanical motor in operative connection with said plate and normally tending to slide the plate in element-spacing direction, and escapement mechanism cooperating with said motor and manu-

ally operable to cause step by step motor-actuated movement of said plate.

45. A machine of the class described having, in combination, a series of elements for operating upon shoe uppers, a cooperating spacing member arranged for movement in reverse directions relatively to said elements to increase and diminish, respectively, their relative spacing, power operated mechanism normally tending to move said member in one element-spacing direction, controlling means for said mechanism manually operable determinately to control the amount of power-actuated movement of said member, and manually operable means for moving said spacing member in the reverse element-spacing direction independently of said power operated mechanism.

In testimony whereof I have signed my name to this specification.

WILLIAM HAMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

It is hereby certified that in Letters Patent No. 1,317,702, granted October 7, 1919, upon the application of William Hamann, of Irondequoit, New York, for an improvement in "Machines for Making Shoe-Uppers," errors appear in the printed specification requiring correction as follows: Page 3, line 72, before the word "ends" insert the word *forward*; same page, line 110, strike out the word "marking"; same page and line, after the word "upper" insert the word *marking*, and line 117, after the word "upper" insert the word *marking*; page 4, line 42, for the word "of" read *or*; page 6, line 72, after the word "moved" insert the word *inwardly*, and same line after the word "machine" insert a period; same page, line 73, strike out the word "inwardly" and the period following; line 75, for the word "reduced" read *inwardly*; line 76, for the word "increased" read *reduced*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of December, A. D., 1919.

[SEAL.]

M. H. COULSTON,

Acting Commissioner of Patents.