Sept. 14, 1937. S. E. ROSENBERG 2,093,099

MACHINE FOR ORNAMENTING LEATHER

Filed July 28, 1936 2 Sheets-Sheet 1

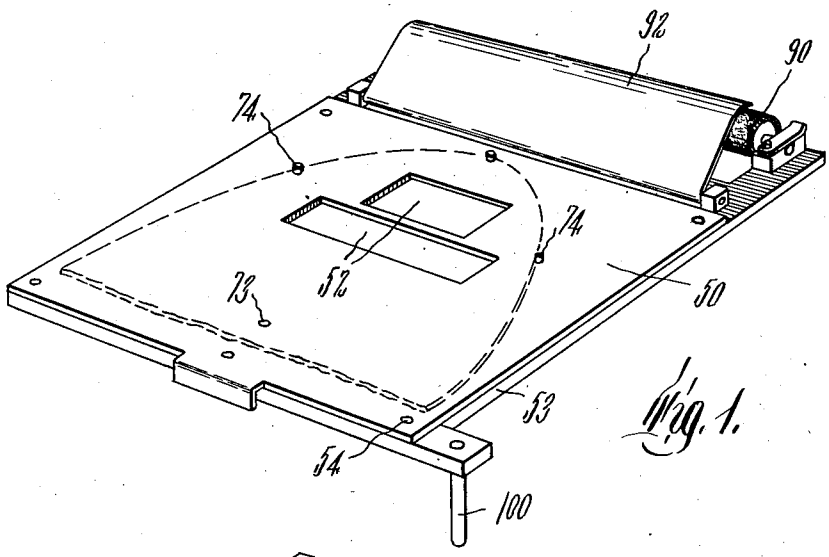


Fig. 1.

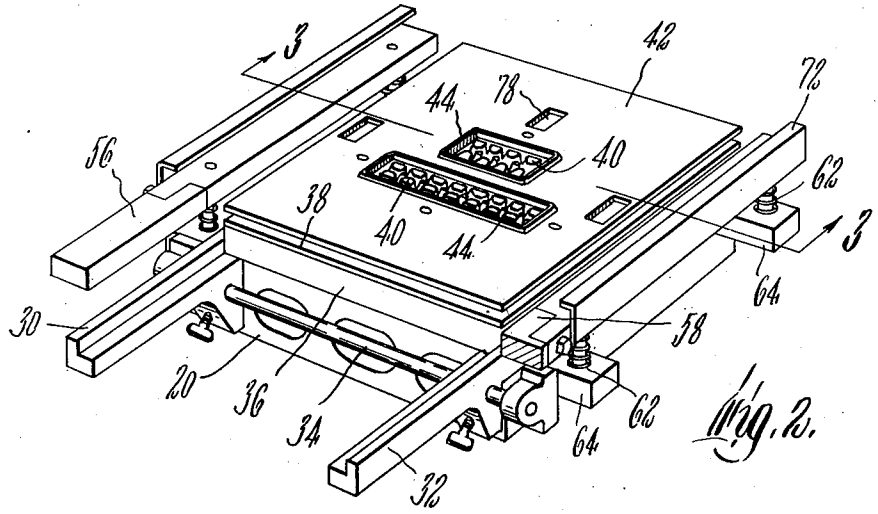
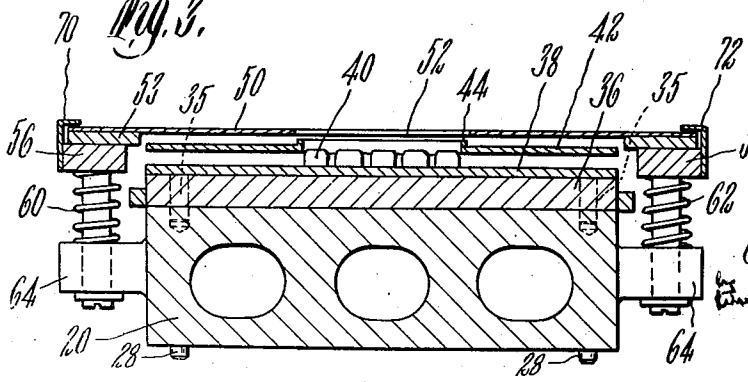


Fig. 2.

Fig. 3.



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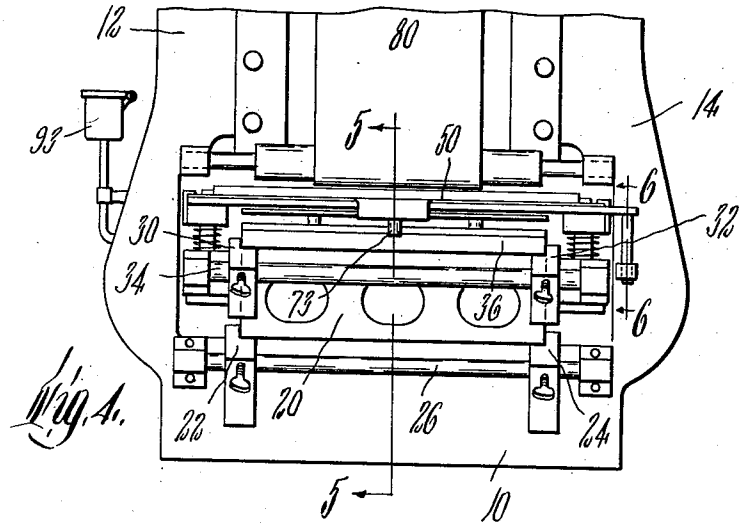


Fig. 4.

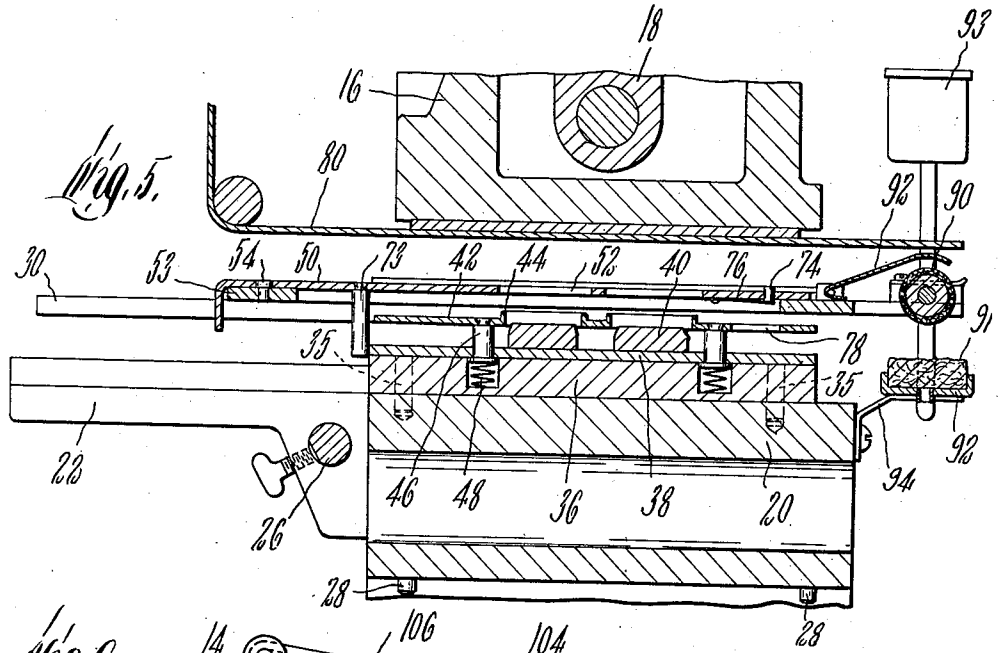


Fig. 5.

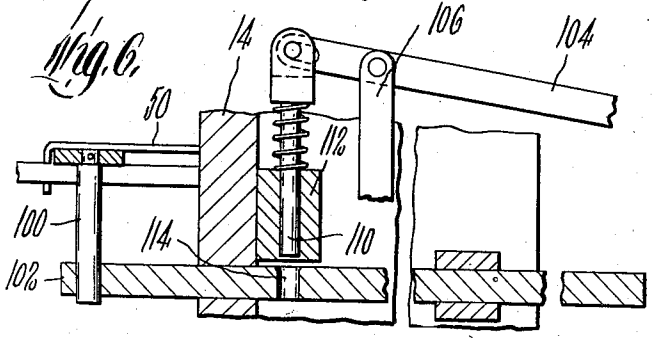


Fig. 6.

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UNITED STATES PATENT OFFICE

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MACHINE FOR ORNAMENTING LEATHER

Stig E. Rosenberg, Brockton, Mass.

Application July 28, 1936, Serial No. 92,976

15 Claims. (Cl. 101—28)

This invention relates to mechanism for ornamenting leather by cutting patterns therein and marking patterns thereon.

In preparing parts of shoe uppers to be assembled on the last, it has for some time past been customary to ornament such parts by cutting or punching bits of leather from the parts of the upper so as to form ornamental patterns therein. It is also desirable at times to ornament the uppers of shoes by stitching the parts in such a way as to form additional ornamental patterns. In order to provide suitable guides for such lines of stitching, a stitching pattern may be impressed or imprinted on the surface of the parts of the upper. For this purpose, it is preferable to form such stitching patterns with some marking substance such as a temporary or permanent ink. Such marking substance may be light colored for dark leathers or dark colored for light leathers.

While the main purpose of cutting patterns in shoe uppers or blanks therefore either by cut-out dies, perforating tubes, or combinations thereof, is ornamental, the chief purpose of ink-marking said uppers and blanks is utilitarian in that the ink lines are used as guides in subsequent machine and hand operations. The inked guide lines may indicate the center and tip stitch lines, the lap of one upper blank over an adjacent upper blank, or the location of collars, imitation tips, overlays, underlays, additional perforations or cut-outs, embossings and stitches.

The inked mark should be sharply defined to provide the operative, who performs the subsequent operation, with a legible guide line. At the same time the sharply defined line should be delicate to obviate the necessity for its removal after performing its function as a guide line in the subsequent operation. If the subsequent operation is fancy stitching, for instance, the mark should be delicate so that it is completely hidden thereunder. While the requirement that the mark should provide a delicate, sharply defined guide line is well understood in the shoe industry, heretofore this requirement has not been obtainable through the use of machines for performing a combined ink-marking and perforating operation owing to the difficulty of preventing the ink-marking means and the supported work from creeping while in marking engagement. This creeping results in the formation of a wide, ragged line which causes irregularities in the subsequent operation. As the fancy stitching or the overlapped part, such as an applique or an assembled upper blank, cannot hide completely the wide, ragged line, the exposed portions thereof must be removed after the shoes are finished, obviously at a time when considerable care and labor must be expended in eradicating the excess ink.

The principal object of the present invention is to produce a combined ink-marking and perforating machine by which the work may be provided with a delicate, sharply defined mark.

In my copending application, Serial No. 25,955, filed August 13, 1935, I have disclosed a perforating machine constructed to receive interchangeably anvil and flat bed dies.

Another object of the present invention is to produce a combined ink-marking and perforating attachment for the perforating machine, disclosed in the application just referred to, which attachment shall be interchangeable with the anvil and flat bed dies, and thus render said machine capable of performing all the known cut-out or perforating operations on uppers or blanks therefore.

Heretofore, the inking means employed to ink the marking means in a combined ink-marking and perforating machine generally comprised a roll manually supplied with ink to provide its own source of supply.

Another object of the present invention is to produce a combined ink-marking and perforating machine in which the means for inking the marking means is supplied with ink during each cycle of operations thereof.

To the accomplishment of these objects and such others as may appear hereinafter, the various features of the present invention reside in certain devices, combinations, and arrangements of parts hereinafter described and then pointed out broadly and in detail in the appended claims which possess advantages readily apparent to those skilled in the art.

The various features of the present invention will be readily understood from an inspection of the accompanying drawings illustrating the best form of the invention at present known to the inventor, in which,

Figure 1 is a perspective view of a work-supporting plate with associated parts attached thereto.

Figure 2 is a perspective view of cutting and marking dies, together with associated apparatus on which the work-supporting plate is movable.

Figure 3 is a section on the line 3—3 of the apparatus shown in Figures 1 and 2.

Figure 4 is a fragmentary front elevation of a

perforating machine having an embodiment of the present invention incorporated therein.

Figure 5 is a section on the line 5—5 of Figure 4.

Figure 6 is a fragmentary sectional view on the line 6—6 of Figure 4, showing interlocking mechanism for preventing operation of the machine except when the work-supporting plate is in position for operation.

As shown in Figures 4 and 5, the invention may be applied to a machine such as that described in my said copending application Ser. No. 25,955 hereinbefore referred to. This machine includes a stationary bed 10, from the sides of which rise suitable side frames 12 and 14 which support the top portion of the machine (not shown). Between the side frames 12 and 14 is carried a vertically reciprocating platen or cutting block 16 operated by any suitable mechanism such as a toggle mechanism, the lower link of which is partly illustrated at 18 in Figure 5. Mounted on the bed 10 is an auxiliary bed or track 20 which may be held against lateral displacement as by a pair of suitable rails 22 and 24 adjustably mounted on a rod 26 which is secured to the front face of the machine. These rails each have a portion resting on the bed, and another portion projecting out in front. In the present invention, the track may be supplied with a pair of pins 28 projecting into the bed 20, the rails 22 and 24 thus being unnecessary for the track 20 but being available for use if it is desired to employ the machine with ordinary cutting dies of the anvil type instead of the track 20. The track 20 may carry a pair of similar rails 30 and 32 laterally adjustable on a rod 34 mounted on the front of the track for use with ordinary flat bed cutting dies. According to the present invention, however, a die mechanism is mounted on the track 20 and is held in place thereon as by pins 35 (Figure 3). This die mechanism may comprise a base block 36 having a top plate 38 to which is secured one or more cutting dies 40. These dies are thus solidly supported from beneath, so that, when the platen 16 descends, it forces the work against the cutting dies so that suitable patterns are cut or punched therein, the small pieces of leather which are punched out escaping as usual through passages (not shown) in the base 36 and track 20. Above the top plate 38 is a marking plate 42 having raised pattern-forming dies 44 projecting normally above the level of the cutting edges of the cutting dies 40. The marking plate 42 is yieldingly supported in its elevated position as shown in Figure 5, by plungers 46 which project down into the base 36 and bear against compression springs 48 located within said base. Above the marking plate 42 is a work-supporting table 50. This table is provided with suitable openings 52 which register with the cutting and marking dies when the table 50 is in position for operation.

As indicated in Figure 1, the table 50 may comprise a sheet of metal supported on a frame 53, the sheet being held in suitable position on the frame by pins 54 which project loosely into holes in the frame 53. The frame 53 slides on a pair of rails 56 and 58 which are yieldingly supported by compression springs 60 and 62 located between the under faces of the rails 56 and 58 and brackets 64 projecting laterally from the track 20. The rails 56 and 58 are provided with flanged guide members 70 and 72, the flanges overhanging the side edges of the work-supporting table 50. These guide members and a suitable stop element, such as a pin 73, determine the position of operation of the table 50 so that the apertures 52 register correctly with the dies. The table 50 is preferably supplied with suitable gage pins 74 which extend therethrough and are supported yieldingly as by leaf springs 76 secured to the bottom of the table 50. Suitable apertures 78 may be provided in the marking plate 42 to receive the gage pins 74 and springs 76 when the table is pressed down by the platen 16 in the operation of the machine. A suitable backing strip 80 of heavy paper or the like is fed through the machine immediately below the platen 16, as described in my application hereinbefore referred to. It is evident from Figure 5 that, when the table 50 is in position for operation, with work thereon, the platen 16 descends to press the backing strip 80 against the work and thereupon to press the table 50 down so that the marking dies 44 pass through the apertures 52 and engage the face of the work, impinging the desired pattern thereon. Further descent of the platen 16 causes the marking plate 42 and the die 44 thereon to yield downwardly until the cutting dies 40 pass through the openings 52 and cut out the desired pattern in the leather, the machine being preferably adjusted so that the cutting edges of the dies pass entirely through the leather and enter part way into the backing strip 80 so that clean cut-outs result.

When the face plate on the bottom of the platen 16 forces the backing paper 80 initially against the work the springs 60 and 62 back up the work support with sufficient pressure to cause the work to be flattened thereon and to be drum-headed across the apertures 52. Then the work support, the paper backed face plate and the work clamped therebetween are carried down to engage the drum-headed portion of the work successively with the marking and perforating dies. After the ink-marking and perforating operation the work remains clamped between the work support and the paper face plate until the work support returns to its original elevated position whereupon the ascending paper face plate withdraws from the work and leaves it unclamped upon the work support. During the return of the work support to its original elevated position it acts as the main stripper to strip the work from the cutting edges of the dies 40.

If the marking plate 42 were relied upon solely to strip the work from the ornamenting means, the springs 48 would have to be made so strong that there would be great danger of the marking dies 44 cutting completely through the work. In the illustrated embodiment of the present invention the stripping action of the marking plate 42 under the influence of the light compression springs 48 is augmented by the heavier springs 60 and 62 so that all danger of the marking dies 44 cutting the work is obviated. The light compression springs 48 act to impart a quick kick to that portion of the work overlying the apertures in the work support upon the release of the work by the paper backed platen 16 and thus perform an important stripping function independently of the stripping function of the work support.

It is desirable to apply some marking material such as ink to the marking edges of the dies 44. To this end, an inking roll 90 may be mounted at the rear end of the work-supporting frame 53, a suitable shield 92 being provided to protect the paper backing 80 from contact with the inking roll. As the marking dies 44 ordinarily take very little ink, the roll 90 can be used

a considerable number of times before the ink film thereon need be replenished. This can quickly be done by manual application of ink to the roll by means of a brush or otherwise. If desired, any suitable inking means, such as illustrated, for example, in Figure 5, may be employed. This may include an absorbent pad 91 in a suitable trough 92 to which ink may be supplied from time to time from a funnel or reservoir 93, the trough being preferably supported by springs 94 so that it can yield when strongly pressed. After each operation of the machine, the work table 50 with a piece of work thereon is manually drawn out on the rails 56 and 58 so that the work which has been operated upon can be replaced by a fresh piece of work. The act of drawing the work-supporting table out serves to move the inking roller 90 over the marking dies 44. When the table 50 is pushed back into operating position under the platen 16, the roll 90 again presses over the marking dies 44. Thus these dies are freshly supplied with a film of ink each time a fresh piece of work is moved into position to be operated on by the cutting and marking dies. When the table 50 is pressed down by the platen, a portion of the surface of the ink roller 90 is pressed against the saturated pad 91 to receive ink therefrom. During the movements of the work from the position of work-locating to the position of operation and back again the work is carried by the resiliently supported table 50 above the dies 40 and 44 so that work cannot be smeared by coming into contact with the marking dies 44 prior to the operation of the platen 16. Furthermore, the parts are so arranged that the work is never pressed through the apertures 52 but is flat against the backing strip 80 and the platen 16 when the cutting actually takes place, the marking and cutting dies passing through the apertures 52 to engage the work without distorting the latter out of its plane.

Figure 6 illustrates a simple interlocking mechanism to prevent operation of the machine when the work-supporting table is not in its proper position for operation. A pin 100 projects down from the frame 53 and extends loosely through a horizontal bar 102 which is slidable longitudinally with the work-supporting table 50. The bar 102 may project through the side frame 14, as shown. To the rear of this frame is a clutch-actuating lever, the end portion of which is indicated at 104. This lever is operable by a conventional treadle below the machine, connected thereto as by a rod 106. The clutch mechanism operated by the lever 104 may be of any suitable type well known and widely used in machines of the kind described, the clutch being characterized by its automatic operation to connect the mechanism of the machine to the drive shaft when the treadle is depressed, and to disconnect the mechanism from the drive shaft automatically at the termination of a single revolution of the clutch mechanism. Thus, each time the treadle is depressed, the machine goes through a single cycle of operations and then automatically stops. Pivotally connected to the end of the lever 104 is a plunger 110 which projects down through a fixed guide block 112. The lower end of the plunger 110 is adapted to enter a hole 114 through the bar 102 when the hole 114 is in line with the plunger 110. This occurs only when the work-supporting table 50 is in its position for operation, that is, with the apertures 52 registering with the dies 40 and 44. Unless the table 50 is in such position, the hole 114 will not be in line with the plunger 110, so that any attempt to depress the treadle will result in the engagement of the lower end of the plunger 110 with the upper surface of the bar 102.

It is obvious that various modifications and changes may be made in the specific features of the invention herein shown and described without departing from the spirit or scope thereof as defined in the following claims.

I claim:

1. In a machine for ornamenting leather, an upwardly facing cutting die and marking die, and a work-supporting table yieldingly supported at a higher level than the work-engaging surfaces of said dies movable endwise relatively to said dies and provided with at least one aperture registering with said dies only when the table is in position for operation.

2. In a machine for ornamenting leather, an upwardly facing cutting die, a marking die having its work-engaging surfaces yieldingly supported at a higher level than the cutting edges of the cutting die, a work-supporting table yieldingly supported at a higher level than the marking die movable endwise relatively to said dies and provided with at least one aperture registering with said dies only when the table is is position for operation, and means for inking the marking die as the table is moved into and out of operative position.

3. In a machine for ornamenting leather, a bed, a cutting die unyieldingly supported on said bed, a marking die yieldingly supported with its marking surfaces at a higher level than the cutting edges of the cutting die, a work-supporting table yieldingly supported above said dies, movable endwise relatively to said dies and provided with at least one aperture registering with said dies only when the table is in position for operation, and yielding gage pins mounted on said table and normally projecting above the surface thereof.

4. In a machine for ornamenting leather, a bed, a die block on said bed, a cutting die mounted on said block, a marking die yieldingly mounted on said block, said marking die normally projecting above said cutting die, a work-supporting table supported above said dies, said table having at least one aperture registering with said dies only when the table is in position for operation, a pair of rails supporting the side margins of the table and on which the table is slidable endwise, and means yieldingly supporting said rails whereby said table can yield downwardly when pressed.

5. In a machine for ornamenting leather, a stationary bed, a work-supporting table movable to and from a position for operation over said bed, means resiliently supporting said table whereby limited downward movement thereof is permitted, a marking die, means carried by said table for inking said marking die when said table is moved to and from its position for operation, and ink-supplying means engageable by said inking means when said table is depressed to impart ink to said inking means.

6. In a machine for ornamenting leather, a stationary bed, a marking die supported on said bed, an apertured work-supporting plate resiliently supported above said die and movable to and from a position for operation wherein said dies register with apertures in said plate, an ink roll carried by said plate at the rear thereof and arranged to engage said marking die when the table is moved to or from its position for operation, and ink-supplying means carried by

said bed at the rear thereof, said ink-supplying means being engageable by said ink roll when said table is depressed in the operation of the machine.

7. In an ornamenting machine, the combination with a cutting block and an ornamenting means having relative fixed positions laterally, of a combined supporting means for the work and work-stripping means for the ornamenting means mounted for periodic movement endwise into and out of position between the cutting block and the ornamenting means.

8. In an ornamenting machine, the combination with a cutting block and an ornamenting means having relative fixed positions laterally, of a combined supporting means for the work and work-stripping means for the ornamenting means movable manually and automatically in two directions normal to each other, respectively, to interpose it between the cutting block and the ornamenting means and to strip the work from the ornamenting means, respectively.

9. In an ornamenting machine, the combination with ornamenting means having upstanding ornamenting edges and a work support, having at least one aperture, yieldingly supported at a higher level than said edges and movable at that level periodically relatively to the ornamenting edges to register the aperture directly over said edges and means for drum-heading the work across the aperture and for depressing the work support to engage the drum-headed portion of the work with the ornamenting edges.

10. In an ornamenting machine, the combination with a bed, a pair of spaced anvil die-supporting rails, a pair of spaced flat bed die-supporting rails, and an auxiliary bed mounted between the anvil die-supporting rails and detachably secured to the bed, of a die block mounted between the flat bed die-supporting rails and detachably secured to the auxiliary bed.

11. In a perforating machine, the combination with a bed, and a perforating die secured in a fixed position to the bed, of a work-stripping plate for the die movable endwise into and out of work-stripping relation thereto.

12. In a perforating machine, the combination with a bed and a perforating die secured in a fixed position to the bed, of a combined work-supporting and stripping plate for the die movable endwise into and out of work-stripping relation thereto.

13. In an ornamenting machine, the combination with a work support and ornamenting means, including a marking plate having at least one marking die thereon, of spring means acting on the marking plate and work support, respectively, in a direction to cause each of them to exert a stripping pressure on the work.

14. In an ornamenting machine, the combination with a work support and ornamenting means, including a marking plate having at least one marking die thereon, of differential spring means, the lighter acting on the marking plate and the heavier acting on the work support, in a direction to cause each of them to exert a stripping pressure on the work.

15. In an ornamenting machine, the combination with ornamenting means including a marking plate having at least one marking die thereon, of spring means acting on the marking plate and independently thereof, respectively, for exerting a stripping pressure on the work.

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