Jan. 14, 1941. F. L. BRANDT 2,228,254

MARKING MACHINE

Filed Jan. 4, 1938 3 Sheets-Sheet 1

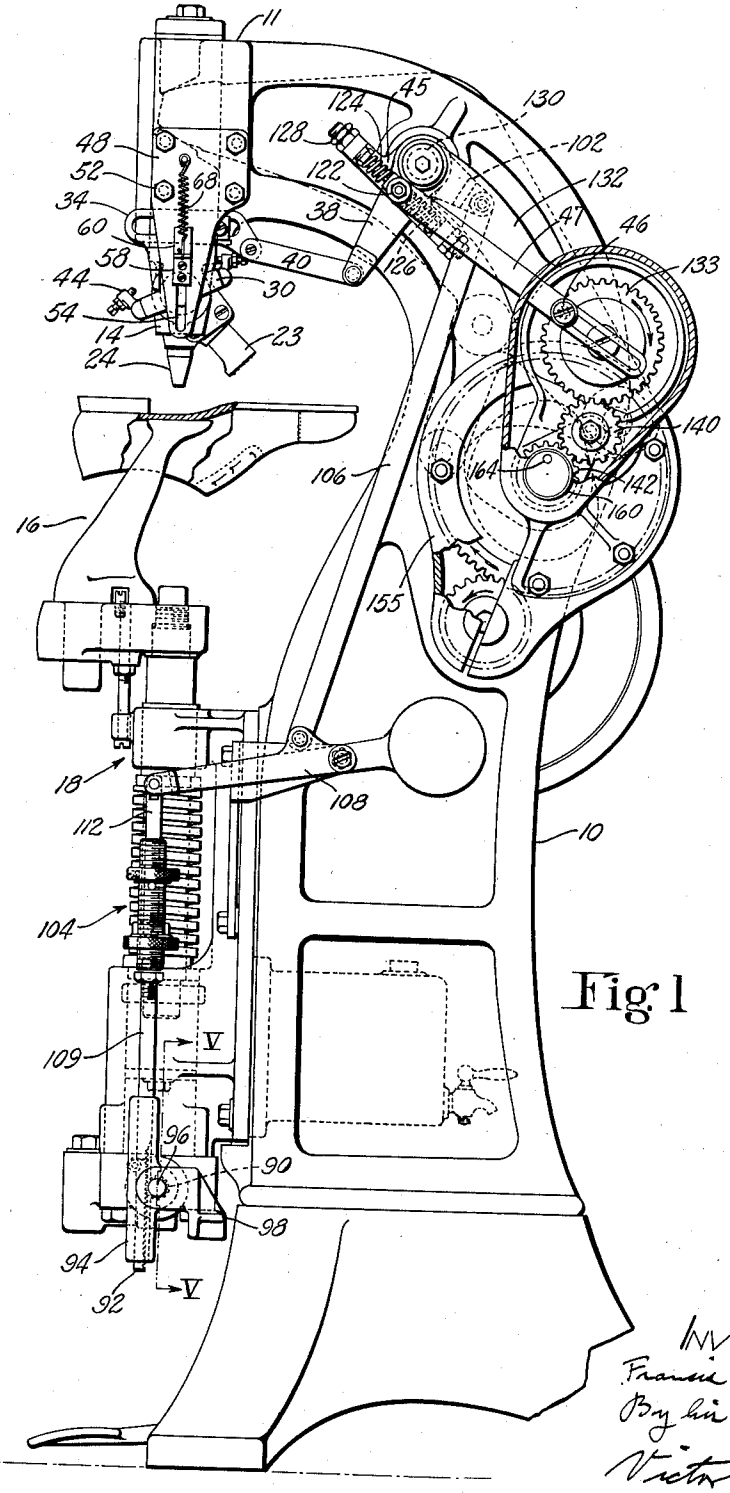


Fig. 1

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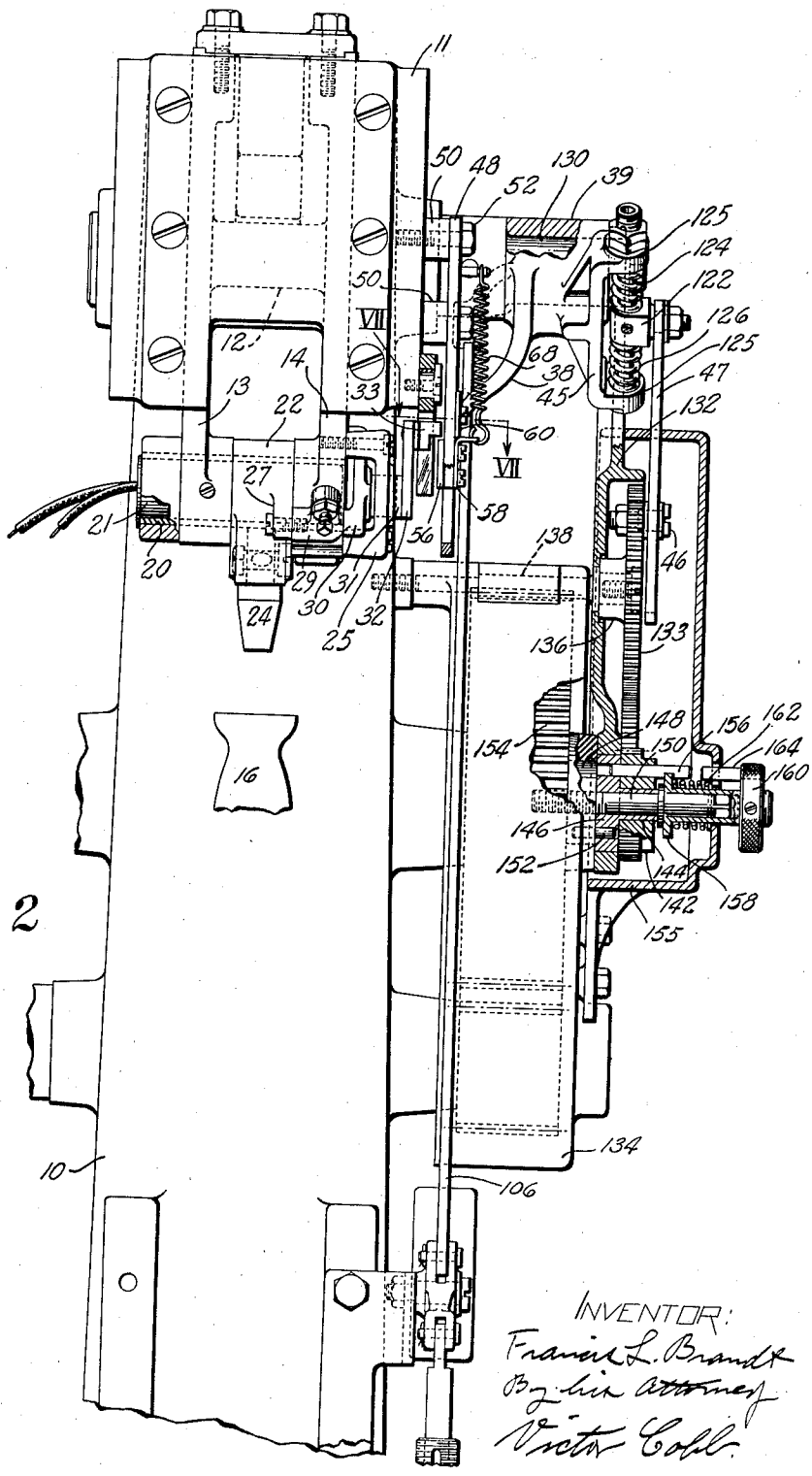


Fig. 2

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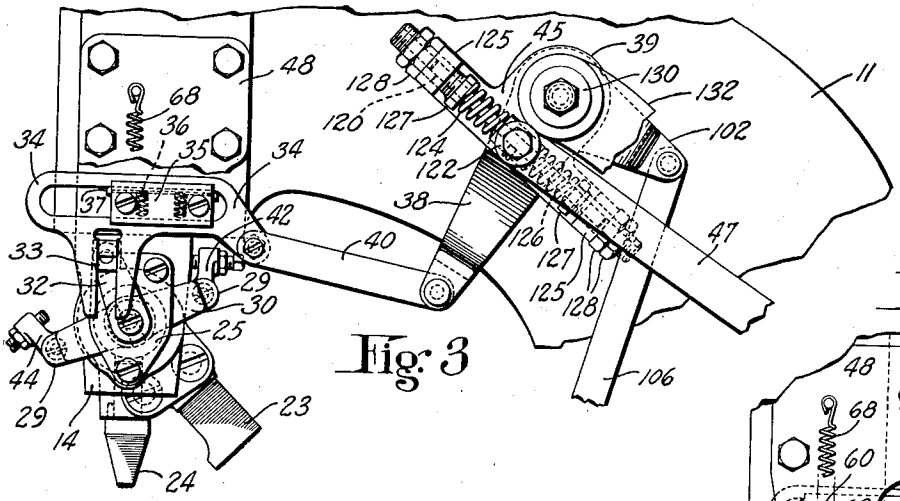


Fig. 3

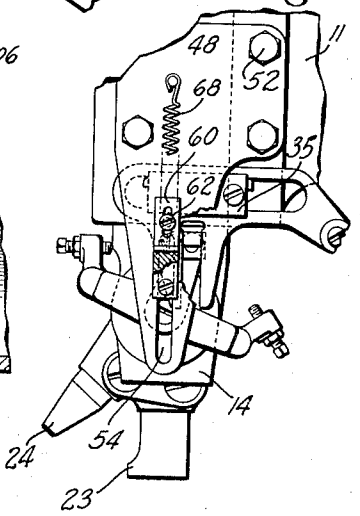


Fig. 4

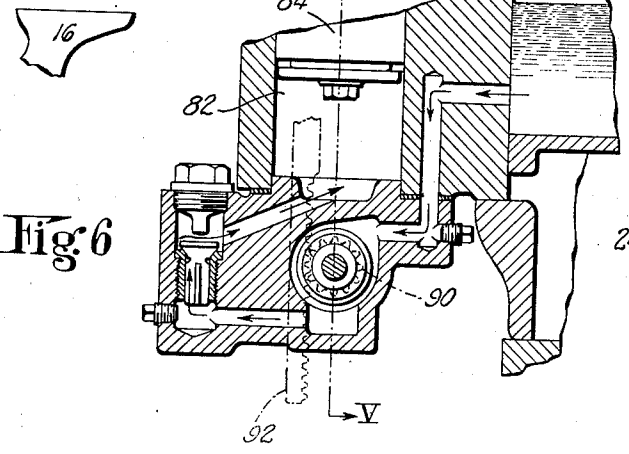


Fig. 6

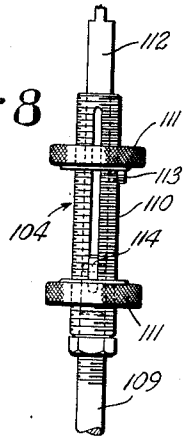


Fig. 8

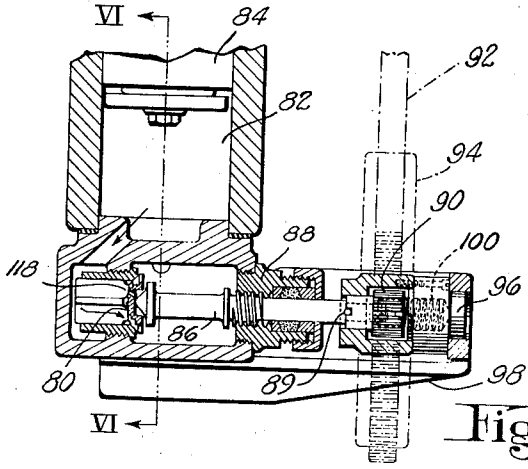


Fig. 5

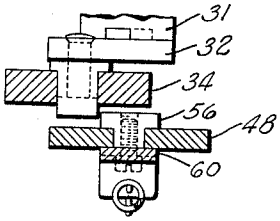


Fig. 7

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Patented Jan. 14, 1941 2,228,254

UNITED STATES PATENT OFFICE

2,228,254

MARKING MACHINE

Francis Low Brandt, Marblehead, Mass., assignor to United Shoe Machinery Corporation, Borough of Flemington, N. J., a corporation of New Jersey

Application January 4, 1938, Serial No. 183,388

25 Claims. (Cl. 101—42)

This invention relates to stamping machines and particularly to stamping machines adapted for impressing designs or other marks upon shoe parts and is illustrated as embodied in a machine of the type disclosed in United States Letters Patent No. 1,028,567, granted June 4, 1912, on an application filed in the names of W. Gordon and L. E. Topham.

In stamping shoe parts it is frequently desirable to make more than one mark upon the part stamped, for example, in the case of marking shoe bottoms it is common practice to make an impression in the shank and a different impression in the forepart of the sole, the impressions consisting of monograms, trade marks, price marks or the like. These impressions are made with dies which often have substantially different work-engaging areas, the work-engaging area of each die being dependent upon the subject-matter of the marking. As a result of the difference in the work-engaging areas of the dies, impressions of uneven depths will be made in the shoe parts to be marked unless some adjustment is made for obtaining substantially uniform unit marking pressure before the initial operation of each die. Accordingly, machines of this type which are provided with a plurality of shiftable dies are usually provided with a manually operable means for adjusting the supporting capacity of the work support. Thus in the use of these machines when it is desired to change dies two manual operations are necessary, i. e., the dies must be shifted and the supporting means for the work support must be adjusted.

It is an object of this invention to produce an improved stamping machine wherein the separate manually operable controls for shifting the dies and adjusting the supporting capacity of the work support are eliminated and in lieu thereof there is provided a unitary control for the dies and the work support adjusting means. In the illustrated machine the dies and the work support adjusting means are connected to a control mechanism which is so constructed and arranged that each time the dies are shifted the work support adjusting means is operated to correlate the supporting capacity of the work support with the die which has been moved into stamping position.

It is to be noted that the automatic die-shifting mechanism disclosed herein is useful in stamping machines by itself and apart from the work support adjusting means, as in stamping machines where dies of substantially the same work-engaging areas are used. Likewise, the automatic control of the work support by the machine actuating mechanism is useful in pressure applying machines generally, and is not limited to an association with automatic die-shifting mechanism.

In a stamping machine where the dies are shifted automatically, it is necessary to delay the shift until the dies have been moved far enough away from the work to avoid contact therewith when shifted. For example, if the shank portion of a high heeled shoe were being marked and the dies were shifted too soon after the marking die left the shank, the shifting dies might be moved into contact with the heel injuring the same or might scuff the forepart. Furthermore, as these dies may be heated it sometimes happens that, due to expansion of the parts from heating, there will be sufficient binding developed between the moving parts and the stamping head as to prevent a complete shifting of the dies. Accordingly, additional features of my invention reside in the provision of mechanism for preventing untimely die-shifting operations and safety means for preventing the injury of both the dies and the shift-controlling mechanism in the event of an incomplete shift of the dies. In the illustrated embodiment of this invention wherein the die-shifting mechanism includes a shifting arm, the mechanism for preventing untimely shifting comprises a restraining member which is arranged in the shifting path of the die-shifting arm and is so located that it engages this arm when the head is out of die-shifting position. Thus shifting of the dies is prevented until they are in the proper shifting position when the die-shifting arm is permitted to move across the restraining member. The safety means comprises a yielding coupling for connecting the restraining member to the head of the machine so that in the event of an incomplete movement of the shifting arm across the restraining member the member may yield in the direction of the work support in the event of a subsequent operation of the stamping head.

In the illustrated construction and in accordance with a further feature of the invention a resilient coupling is provided in the connections between the actuating mechanism and the die-shifting arm to permit operation of a portion of the shifting connections by the actuating mechanism while the shifting arm is out of shifting position and to store energy produced by such operation for the ensuing shifting operation.

In the illustrated machine it is desirable to provide means for adjusting the controls which regulate the resistance of the work support to pressure from the stamping head. Accordingly,

another feature of the invention resides in the provision of an adjustable coupling for controlling the adjustment of the work support and in the illustrated embodiment of this invention the adjustable coupling is incorporated in the connections between the actuating mechanism and the member which adjusts the supporting capacity of the work support.

The illustrated machine is provided with a fluid system for sustaining the work support against pressure from the stamping head and includes a valve for regulating the sustaining capacity of the fluid system. This valve may be seated too tightly and thus prevent the desired yielding of the work support and possibly cause the machine to stall or some of the parts to break. Accordingly, another feature of the invention resides in the provision of a by-pass for the valve so that regardless of how tightly the valve is seated the machine will not stall. The opening of the valve is also positively controlled thereby providing a positive adjustment of the resistance of the fluid system to pressure from the marking head.

While this invention is disclosed as embodied in a stamping machine, it can be used in other marking machines operable by pressure wherein the marking is made with or without ink, or by heated type elements or other equivalent marking means.

With the above and other objects in view, the invention will now be described with reference to the accompanying drawings and pointed out in the claims.

Fig. 1 is a side view of a stamping machine embodying my invention;

Fig. 2 is a front view of the stamping machine with parts broken away;

Fig. 3 is an enlarged side view of the head of the machine with parts broken away;

Fig. 4 is a side view partly in section of the machine head, showing the dies shifted to the opposite position from that shown in Fig. 1;

Fig. 5 is a sectional view taken along lines V—V of Figs. 1 and 6;

Fig. 6 is a sectional view taken along lines VI—VI of Fig. 5;

Fig. 7 is a sectional view taken along line VII—VII of Fig. 2; and

Fig. 8 is an enlarged view illustrating details of the lost motion connection shown in Fig. 1.

The machine comprises a frame 10 provided with an overhanging arm 11 in which is formed guideways for a plunger or stamping head 12 which is arranged to reciprocate toward and from the horn 16 of a work support 18 supported by the lower part of the machine frame. The mechanism for reciprocating the plunger or stamping head 12 is the same as that disclosed in the Gordon et al. Patent No. 1,028,567, referred to above, to which reference may be had for a detailed description of this mechanism.

The stamping head is forked at its lower end and is provided with arms 13, 14 (Fig. 2) which are arranged to receive a hollow spindle 20 in which is mounted a heating unit 21. Rotatably mounted on the spindle 20 between the arms 13, 14 of the stamping head is a turret 22 having a pair of stamping dies 23 and 24 attached thereto. Also formed on the turret are a pair of oppositely disposed bosses 27, one of which is shown in Fig. 2. Attached to the bosses 27 are a pair of members 29 which extend across the sides of the arm 14 of the stamping head and are joined to the base of a turret shifting member 30 located on the outside of the arm 14 as viewed in Fig. 2. Extending outwardly from the base 30 and coaxial with the turret 22 is a stud 31 to the end of which is fixed a shifter arm 32. As is shown in Fig. 3, the members 29 are spaced from the arm 14 and have lugs 42, 44 formed thereon in which are mounted adjustable stop members which are arranged to engage a side of the arm 14 when the turret is shifted so as to arrest the shifting movement of the turret and thus locate the dies in their proper stamping position on the stamping head. Mounted on the arm 14 adjacent to the turret shifting member 30 is a bracket 25 which acts as a bearing for the stud 31. The bracket 25 is spaced from the arm 14 and located between the base of the shifting member 30 and the shifting arm 32 by laterally projecting fingers best shown in Fig. 2. Pivotally attached to the end of the shifting arm 32 is an L-shaped block 33 which is slidingly received between spaced arms of a shifting fork 34. The shifting fork is arranged to slide with respect to the head on a block 35 which is received in a longitudinal slot in the shifting fork. The block 35 has a pair of recesses formed therein in which are mounted springs 36 which engage the under side of a gib 37 located between the block and the adjoining face of the shifting fork, and thus urge the gib into frictional engagement with the shifting fork so as to hold it in its selected position. As shown in Fig. 3, the ends of the gib 37 are bent around the ends of the block 35 so as to prevent the movement of the gib lengthwise of the block.

The shifting fork 34 is automatically shifted after each stamping operation by a control system which is operated by the actuating mechanism of the stamping machine. In the illustrated machine the control system comprises a link 40 which is pivoted to the shifting fork 34 and an arm 38 of a three-armed crank 39 which is rotatably mounted on a stud 130 projecting outwardly from the head of the machine frame. A second arm 45 of the crank 39 is connected to a pin 46 on a gear 133 by a slotted link 47, the slot of which surrounds the pin 46. The gear 133 acts as a driver for the crank 39 and is mounted for rotation on the frame as will be described further on in the specification. The length of the slot is less than the diameter of the path traced by the pin 46 in each revolution of the gear 133 so that the link 47 is shifted and the crank 39 is oscillated twice in each revolution of the gear 133, once as the pin 46 moves to the position shown in Fig. 1 and again as it moves to a diametrically opposite position. The link 47 is connected to the arm 45 of the crank 39 by a spring coupling which consists of a rod 120 (Fig. 3) having a collar 122 fastened thereto intermediate its ends to which is pivoted one end of the link 47. The rod 120 is slidably mounted in openings formed in the parallel upturned ends 125 of the arm 45 and is drivingly coupled with the arm 45 by a pair of springs 124, 126 which surround the pin 120 and are located between the collar 122 and the ends 125 of the arm 45 as is clearly shown in Figs 2 and 3. Movement of the link 47 by the pin 46 on the gear 133 causes a corresponding shifting of the rod 120 and collar 122 which compresses one or the other of the springs 124, 126 thus transmitting a turning force to the arm 45 which results in the operation of the shifting fork 34. Threaded into the openings in the ends 125 of the arm 45 are bushings 127 which may be adjusted relatively to the members in which they are mounted and

thus regulate the tension in the springs 124, 126 and the force transmitted to the shifting fork 34, as the greater the tension under which the springs are placed, the greater will be the force transmitted by the springs to the arm 45 and through it to the shifting fork. The bushings are held in their adjusted positions by pairs of lock nuts 128 located on the outside of the ends 125 as is clearly shown in Fig. 3.

It is important to prevent the shifting of the stamping dies until the stamping head has been moved far enough away from the shoe being stamped to avoid the possibility of contact between the shifting dies and any portion of the sole or heel. This distance will vary with the type of work being operated upon as obviously the head will have to move further to clear a high heel on a lady's shoe than it will to clear the relatively low heel on a man's shoe. In the illustrated embodiment of the invention, adjustable mechanism is provided for preventing shifting of the dies until they have been moved a sufficient distance from the work to clear the same. This mechanism consists of a T-shaped guide member 56 (Figs. 2 and 7) which is adjustably mounted in a vertical slot 54 (Fig. 1) formed in a supporting plate 48. The plate is attached to the arm 11 by bolts 52 and is spaced from the head by spacers 50 (Fig. 2) which surround the bolts and so position the plate as to overlie the shifting arm 32 and block 33. The stem of the T-shaped guide member projects through the slot 54 and has attached thereto on the opposite side of the plate 48 a plate 58 of the same shape as the base of the T-shaped guide member thus forming oppositely disposed channels on the guide member between which are received the adjoining dges of the plate 48. Abutting the guide member 56 is an adjustable stop 60 which determines the upper position of the guide member 56 and thereby controls the position, at which the die shifting operation will take place. This stop member 60 is provided with a central slot, as shown in Fig. 4, through which extends a clamping screw 62 which is threaded into the plate 48, thus providing the arrangement by which the position of the stop may be adjusted. The guide member 56 is normally held in abutting relation with the adjustable stop 60 by a spring 68 which is connected at one end to a flange formed on the plate 58 of the guide, best shown in Fig. 2, and at the other end to a pin fastened to the fixed plate 48. As shown in Figs. 2 and 7, the head of the guide member 56 projects into the shifting path of the member 33 on the shifting arm 32 when the stamping head 12 is moved out of shifting position and down toward the work support, and will thus prevent an untimely shifting of the dies.

When the stamping head is in its shifting position shown in Fig. 2, and a shifting operation takes place, the block 33 is pulled across the upper end of the guide 56, as viewed in Fig. 2, by the shifting fork 34. However, the block 33 may not be moved completely across the end of the guide 56 due to the fact that the stamping dies are heated and the heat may cause the moving parts to expand and bind on each other to such an extent as to prevent the completion of the shifting operation. In the event of such an incomplete traverse of the guide by the block 33, a portion of the latter member will be left overhanging the guide, in which case the spring 68 will prevent damage to either the shifting member or the guide if the machine is operated when the dies are in this position, inasmuch as the spring will yield, allowing the guide to move downwardly in the slot in the plate 48 toward the stamping head.

When stamping dies having substantially different work-engaging areas are used, as for example those disclosed herein, it is necessary to adjust the supporting capacity of the work support to correlate it with the work-engaging area of the stamping die used in the stamping operation as, if this were not done, the impression formed by one die would be pressed deeper into the surface of the work than would the impression formed by the other. In the illustrated machine, wherein the work support 18 is sustained by a fluid system which is controlled by a relief valve 80 (Fig. 5), the relief valve is coupled to the die shifting mechanism so that each time a shift of the die is made the valve is adjusted to regulate the rate of escape of the fluid from the cylinder 82 upon downward movement of the piston 84 under stamping pressure applied to the horn 16 of the work support and thus correlates the supporting capacity of the work support with the work-engaging area of the selected die. The illustrated fluid system is similar to the one disclosed in the patent to Gordon et al. No. 1,028,567, with certain modifications which will be pointed out below.

The extent of opening of the relief valve is governed by the position of the solid valve rod 86 which limits the movement of the relief valve away from the valve seat under the influence of the escaping fluid. The rod is threaded into a cap member 88 so that, upon rotation of the valve rod it is moved inwardly or outwardly and towards or away from the relief valve 80 depending upon the direction of rotation of the rod. Mounted on the end of the valve rod 86 and attached thereto by a pin 89 is a pinion 90 which engages a reciprocating rack 92. Surrounding the rack and pinion is a gear casing 94 which has a stud 96 projecting therefrom. The stud 96 is received in a similarly shaped opening in the end wall of the support 98 which is attached to the casing containing the fluid system. The casing 94 slidably engages the notched hub of the pinion 90 so as to permit the pinion to move backward or forward in the casing as it is rotated, depending upon the direction of movement of the valve rod 86. As is best shown in Fig. 5, the gear casing 94 is supported by the valve rod 86 and the stud 96, the latter being firmly seated in the opening in the end wall of the support 98 at all times by the spring 100 which is compressed between the end of the pinion 90 and the inner side of the end wall of the casing, and which urges the casing toward the end wall of the support.

The pinion 90 is connected to the arm 102 (Fig. 1) of the three-arm crank 39 by a pair of links 104, 106 which are connected at their adjacent ends to an arm of a pivoted lever 108, the other arm of which is provided with a weighted end which tends to rotate the lever in a clockwise direction. The link 104 is provided with an adjustable lost motion connection so that the extent of movement of the valve rod 86 may be regulated. This connection is best shown in Fig. 8 and comprises a rod 109 having a slotted, hollow sleeve 110 threaded thereon. The outer surface of the sleeve 110 is also threaded and has mounted thereon a pair of spaced nuts 111. Extending through the slot in the sleeve 110 between the nuts 111 is a pin 114 which is attached to the lower end of a rod 112 which in turn is slidably received in the open end of the sleeve 110. The rod 112 is connected to the lever 108 and

the rod 109 is connected to the rack 92. Upward movement of the rod 109 and rack 92 caused by engagement of the pin 114 with the upper nut 111 causes the valve rod to be screwed inwardly thus moving the valve towards its seat and increasing the supporting capacity of the work support and conversely the downward movement of the rod 109 and rack 92 will reduce the supporting capacity of the work support. The amount of movement which is transmitted from the rod 112 to the rod 109, and hence the extent of movement of the relief valve, is regulated by the adjustment of the nuts 111, the upper nut controlling the extent of closing of the valve while the lower nut controls the opening of the valve. Thus for a maximum variation of the supporting capacity of the work support both the nuts will be screwed into engagement with the pin 114, in which event the entire movement of the rod 112 will be transmitted to the rod 109 and valve rod 86. Similarly, the further apart the nuts are moved the smaller will be the change in the supporting capacity of the work support until they are moved out of the range of movement of the pin 114 when there will be no change at all. The stop 113 on the sleeve 110 limits the downward movement of the upper or high pressure nut 111 and is so located that it corresponds with the valve closing position of the valve rod.

In order to prevent the machine from stalling when the valve is fully closed, due to the fact that the work support could not yield under pressure from the stamping head as no liquid could escape from the cylinder, a by-pass 118 has been formed in the valve with the result that no matter how tightly the valve may be seated sufficient fluid will be permitted to escape to prevent the machine from stalling or damage to parts of the actuating mechanism.

The stamp shifting mechanism and the operating connections for the relief valve are both operated by the actuating mechanism for the stamping head through a system of gearing which will now be described.

As shown in Figs. 1 and 2 the gear 133 is rotated by an idler gear 140 which in turn is driven by a pinion 142. The pinion 142 is mounted on the projecting hub 144 of an extension member 146 which in turn is attached to a rotatable shaft 148 by a bolt 150 and pins 152. The shaft 148 is driven by a gear 154 which corresponds to gear 122 of the machine disclosed in the Gordon et al. patent referred to above. The actuating mechanism for rotating the gear 154 is the same as that disclosed in the Gordon patent for rotating the similar gear 122 of the patent.

In order to brace the stud 130, and to prevent relative movement of the stud 130 and gears 133, 140 and 142 of the gear train which operates the shifting mechanism, a plate 132 has been used to tie these members together and thus give rigidity to the whole assembly. As is best shown in Figs. 1 and 2, plate 132 has openings formed therein which fit around the stud and the member 146 which carries the gear 142 and a third opening which receives a shoulder formed on the bolt 138 which in turn supports the gear 133.

Surrounding the gear train 142, 140, 133 is a gear casing 155 which has a circular opening and a notch offset from the opening formed therein to receive the hub of a knob 160 and a pin 164 carried by the knob. The pinion 142 is clutched to the extension member 146 by a drift pin 156, best shown in Fig. 2. The drift pin is provided with a recess which receives a flange 158 projecting from the hub of the knob 160. As shown in Fig. 2, the hub of the knob 160 extends through the opening in the gear casing 155 and is surrounded by a spring 162 which is located between the projecting flange 158 and the gear casing and normally urges the pin 156 into engagement with the extension member 146. To disconnect the pinion 142 from the extension 146 the knob is moved outwardly, carrying with it the pin 156 until the pin 156 is moved out of engagement with the member 146 by which time the pin 164 projecting from the knob 160 will have been moved beyond the outer face of the casing 155 and the knob may be turned so as to move the pin 154 away from the notch in the gear casing which receives it and into a position where it will overlie a portion of the casing so that upon releasing the handle, the pin 164 will engage the outer face of the casing and hold the knob and clutch pin 156 in an upper clutch releasing position.

The operation of the machine is as follows. When a piece of work, for example a shoe, as shown in Fig. 1, is placed upon the horn 16 of the work support and the treadle depressed, the stamping head 12 is moved downwardly into engagement with the sole of the shoe by the actuating mechanism which is similar to that disclosed in the Gordon et al. patent above referred to. This actuating mechanism also operates the gearing 142, 140, 133 with the result that the pin 46 on the gear 133 is moved from the position such as shown in Fig. 1 to its diametrically opposite position. This pin will be approaching its opposite position as the stamping head is moved upwardly away from the work. However, due to the fact that the slot in the link 47 is shorter than the diameter of the path traced by the pin 46, the pin 46 will engage the rearmost end of the slot before the stamping head has returned to its shifting position. Further movement of the pin 46 toward the opposite position will result in compressing the spring 126 which will continue until the stamping head is moved upwardly sufficiently for the block 33 to clear the guide 56, at which time the compressed spring will move the three-arm lever 39 in a counterclockwise direction. This movement will cause the shifting fork to move to the right, as viewed in Fig. 2, and will move the link 106 upwardly. The movement of the shifting fork to the right will be limited by the engagement of the stop 44 with the arm 14 of the stamping head, thus accurately positioning the stamp 23 in stamping position and at the same time the rod 109 will be moved upwardly as soon as the nut 111 is engaged by the pin 114. The upward movement of the rod 109 will result in a similar movement of the rack 92 and in a clockwise rotation of the pinion 90 which will cause the valve rod 86 to be screwed inwardly and in a valve seating direction, thus correlating the supporting capacity of the work support with the work engaging area of the stamping die which has been shifted into stamping position. Upon the following stamping operation the above-described operations will be reversed and will shift the die 24 back into stamping position and will simultaneously move the relief valve to correlate the supporting capacity of the work support with the work-engaging area of that die.

To adjust the die shifting position to different types of work the clamping screw 62 (Fig. 4) is loosened and the stop 60 is moved up or down

to so position the guide 56 that it will prevent the shifting operation from taking place until the stamping head has moved to an appropriate die shifting position.

Whenever dies are changed on the turret 22 the nuts 111 (Fig. 8) must be manually adjusted to correlate the opening of the valve 80, and hence the supporting capacity of the work support, with the work-engaging areas of the new dies. However, when once set they do not have to be touched as long as those dies are in use.

If it is desired to use one die for a series of stamping operations all that is necessary is to move the knob 160 outwardly when the proper die is in stamping position thus declutching the shifting mechanism from the actuating mechanism for the stamping head. When it is desired to use the other die, or to return to the automatic die shifting control, the knob 160 need only be turned until the pin 164 registers with the notch in the casing after which the spring 164 will force the clutch pin 156 into the pin receiving recess in the member 146 as soon as they are in proper alignment.

The term "fluid system" as used herein is to be understood as including both the container of the fluid as the cylinder, reservoir, passages, etc., as well as the fluid in the container.

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

1. In a marking machine, a marking head having a pair of marking members adjustably mounted thereon whereby the members may be selectively moved into and out of marking position, a work support, a yieldable sustaining means for said work support, actuating mechanism for operating said marking head, and means associated with the actuating mechanism for moving the marking members into and out of marking position and for adjusting the supporting capacity of the yieldable sustaining means in accordance with the work-engaging area of the marking member moved into marking position.

2. In a stamping machine comprising a stamping head having an adjustable mounting means for a plurality of marking devices which may have different work-engaging areas, a work support having an adjustable sustaining means and actuating mechanism for causing a stamping operation, the combination with the above, of means under the control of the actuating mechanism for moving the marking devices on the adjustable mounting means relatively to the head to move them into and out of marking position on the said head and for automatically adjusting the sustaining means in accordance with the work-engaging area of the marking device moved into marking position on the stamping head.

3. In a machine having a marking head provided with a plurality of marking members mounted for movement into and out of marking position, a work support, actuating mechanism for causing the member in marking position to contact a work piece on the support, means for sustaining the work support against the pressure of the marking head, and means under the control of the actuating mechanism operative after each marking operation and before the following marking operation for shifting the marking members so as to position a different marking member in the marking position on the marking head and for automatically regulating the sustaining means in accordance with the marking member selected.

4. A stamping machine comprising a work support, a yieldable sustaining means for the work support having an adjustment for controlling its supporting capacity, a stamping head having a pair of dies adjustably mounted thereon for movement into and out of stamping position, said dies having different stamping areas, actuating mechanism for causing the die in stamping position to contact a work piece on the sustaining means, and means under the control of the actuating mechanism for shifting said dies and regulating the adjustment of the yieldable sustaining means to correlate the supporting capacity of the work support with the stamping area of the selected die.

5. A stamping machine comprising a work support provided with an adjustment for controlling its supporting capacity, a stamping head having a pair of dies pivoted thereon for movement into and out of stamping position, said dies having different stamping areas, actuating mechanism for moving the stamping head bodily relatively to the work support to move the die in stamping position into and out of contact with the work, and periodically operable means controlled by said actuating mechanism for automatically shifting the dies into and out of stamping position and for regulating the work support adjustment to correlate the supporting capacity of the work support with the stamping area of the die shifted into stamping position.

6. A stamping machine comprising a work support provided with an adjustment for adjusting its supporting capacity, a stamping head having a plurality of stamping devices pivoted thereon for movement into and out of stamping position, said stamping devices having unequal stamping areas, actuating mechanism for moving said stamping head bodily relatively to the work support to move the stamping device in marking position into and out of contact with the work, and means under the control of the actuating mechanism for shifting said stamping devices to bring a different stamping device into stamping position and for regulating the work support adjustment to correlate the supporting capacity of the work support with the stamping area of the stamping device shifted into marking position whereby uniform impressions will be made in the work regradless of the work engaging area of the marking device in stamping position.

7. A stamping machine comprising a work support provided with an adjustment for controlling its supporting capacity, a stamping head having a pair of dies mounted thereon for movement into and out of stamping position, said dies having different stamping areas, actuating mechanism for causing the die in stamping position to press the work, means controlled by the actuating mechanism for shifting the dies and for regulating the work support adjustment to correlate the supporting capacity of the work support with the stamping area of the die shifted into stamping position, and manually operable means for rendering inoperative the means for shifting the dies and for regulating the support adjustment thereby to hold a desired one of the dies in stamping position for a plurality of stamping operations.

8. A stamping machine comprising a work support provided with an adjustment for adjusting its supporting capacity, a stamping head having a pair of stamping devices mounted thereon for movement into and out of stamping position, said stamping devices having unequal stamping areas,

actuating mechanism for causing the die in stamping position to press the work, and means cooperating with said actuating mechanism for moving said stamping devices to bring different devices into stamping position and for regulating the work support adjustment to correlate the supporting capacity of the work support with the stamping area of the stamping device moved into stamping position, said means comprising a member constructed and arranged to be periodically operated by the actuating mechanism, and connections between said member and the stamping devices and work support adjustment.

9. A stamping machine as defined in claim 8 having means arranged to cooperate with the means for shifting said stamping devices when the stamping head is moved out of shifting position to prevent untimely shifting of the stamping devices and wherein a resilient coupling is included in the shifting means to compensate for movement of the periodically operated member while the stamping head is out of shifting position and to store energy for the shifting and pressure regulating operations when the stamping head returns to its shifting position.

10. In a machine for stamping the bottoms of shoes, a stamping head having a pair of dies mounted thereon for movement into and out of stamping position, said dies having different work-engaging areas, a work support, a fluid system for sustaining the support against pressure from the stamping head, said fluid system comprising a valve for regulating the capacity of resistance of said sustaining system to the pressure from the marking head, actuating mechanism for moving said stamping head toward and from the work support for stamping and releasing the shoe bottoms, and means cooperating with said actuating mechanism and operative at the completion of each stamping operation for shifting the dies and for automatically adjusting said valve to correlate the resistance of said fluid system with the work-engaging area of the die moved into stamping position whereby uniform impressions will be made in the shoe bottoms regardless of the work-engaging area of the stamping die in stamping position.

11. In a machine for stamping the bottoms of shoes, a stamping head having an adjustable mounting means thereon for a pair of dies which may have different work-engaging areas, a work support, a fluid system for sustaining said support against pressure from the marking head, said fluid system comprising a valve for regulating the sustaining capacity of the fluid system, actuating mechanism for moving said stamping head toward and from the work support for stamping and releasing the shoe bottoms, and means associated with said actuating mechanism and automatically operative after each stamping operation for shifting the dies and adjusting the valve to correlate the sustaining capacity of the fluid system with the work-engaging area of the die moved into stamping position, said means comprising a member constructed and arranged for periodic operation by the actuating mechanism, and adjustable connections between said member and the valve whereby the extent of operation of the valve in response to the movement of the periodically operated member may be regulated.

12. In a machine for stamping the bottoms of shoes, a stamping head having a pair of dies mounted thereon for movement into and out of stamping position, said dies having different work-engaging areas, a work support, a fluid system for sustaining said support against pressure from the stamping head, said fluid system comprising a valve for regulating the sustaining capacity of the fluid system, actuating mechanism for moving said stamping head toward and from the work support for stamping and releasing the stock, and means associated with said actuating mechanism and automatically operative after each stamping operation for shifting the dies and adjusting the valve to correlate the sustaining capacity of the fluid system with the work-engaging area of the die moved into stamping position, said means comprising a member constructed and arranged for periodic operation by the actuating mechanism, and connections controlled by the member for adjusting positively the extent of opening of the valve.

13. A stamping machine comprising a stamping head having a pair of dies mounted thereon for movement into and out of stamping position, said dies having unequal stamping areas, a work support, a fluid system for sustaining said support against pressure from the stamping head, said fluid system comprising a valve for regulating the sustaining capacity of the fluid system, actuating mechanism for causing the die in stamping position to press the work, means associated with the actuating mechanism for shifting the dies and adjusting the valve to correlate the sustaining capacity of the fluid system with the work-engaging area of the die shifted into stamping position, and a bypass in said fluid system whereby stalling of the machine is prevented in the event that the valve is tightly sealed by valve adjusting means.

14. In a stamping machine, a work support, a stamping head having a pair of dies pivotally mounted thereon for movement into and out of stamping position, said dies having different stamping areas, actuating mechanism for causing relative bodily movement of the work support and stamping head for causing pressing engagement between the die in stamping position and the work, shifting means cooperating with said actuating mechanism for shifting said dies after each pressing operation, said shifting means comprising a device arranged to move said dies into and out of stamping position and connections between said device and actuating mechanism, and pressure regulating means associated with said shifting means for correlating the pressure exerted on the work with the stamping area of the die shifted into stamping position.

15. In a stamping machine, a work support, a stamping head having a pair of stamping members mounted thereon for movement into and out of stamping position, actuating mechanism for causing the die in stamping position to press the work support, and means cooperating with the actuating mechanism for automatically shifting the stamping members after each stamping operation, said means comprising a rotatable pin-carrying member and a shiftable member having a slot therein receiving said pin, the length of said slot being less than the diameter of the circle traced by said pin in each revolution whereby the shiftable member is moved in opposite directions by the pin in each rotation of the pin-carrying member.

16. In a stamping machine, a work support, a stamping head having a pair of marking members pivoted thereon for movement into and out of stamping position, actuating mechanism for moving said stamping head toward and away

from the work support, a shifting device automatically operative after each stamping operation for swinging said members alternatively backward and forward to move them successively into stamping position, said shifting device comprising an operating member for said marking members and connections between said operating member and the actuating mechanism, and means cooperating with said shifting device to prevent a shifting operation until the stamping head has returned to a predetermined shifting position.

17. In a stamping machine, a work support, a stamping head having a plurality of dies mounted thereon for movement back and forth into and out of stamping position, actuating mechanism for causing the die in stamping position to press the work, and die shifting means controlled by the actuating mechanism for shifting said dies back and forth, said die shifting means including a resilient coupling arranged to be energized as the stamping head moves away from the work support.

18. In a stamping machine, a work support, a stamping head having a plurality of dies mounted thereon for movement into and out of stamping position, actuating mechanism for moving said stamping head toward and away from said work support, die shifting means controlled by said actuating mechanism for automatically shifting said dies after each stamping operation, and adjustable means cooperating with said shifting means to prevent a shifting operation until the stamping head has returned to a predetermined shifting position, said die shifting means including a resilient coupling whereby energy received from the actuating mechanism before the stamping head has reached the shifting position is stored for use in the subsequent shifting operation.

19. In a stamping machine, a work support, an operating head having a pair of pivoted dies mounted thereon, a shifting arm for moving said dies into and out of stamping position, actuating mechanism for causing the die in stamping position to press the work, connections between said shifting arm and said actuating mechanism constructed and arranged automatically to operate the shifting arm to shift the dies after each stamping operation, a member arranged to engage a portion of said shifting arm when the head is moved out of shifting position to prevent shifting of the dies, said member terminating short of the returned position of the head whereby the member engaging portion of the arm may be moved across said member to shift the dies, and yielding means for connecting said member to the machine to permit the member to yield in the direction of the work support in the event of operation of the operating head after an incomplete shift which failed to move the member engaging portion of the shifting arm completely across the member.

20. In a stamping machine, a work support, a stamping head movable toward and away from the work support, a pair of dies mounted on said head, a shifting arm arranged to move said dies into and out of stamping position, a member for delaying the operation of the shifting arm until the head reaches a predetermined position, said member being arranged slidably to engage a portion of said shifting arm when the stamping head is out of the die shifting position, the member engaging portion of said shifting arm being movable across the member when said dies are shifted, and yielding means for connecting said member to the machine to permit the member to move in the direction of the work support in the event of operation of the stamping head after an incomplete shift which failed to move the member engaging portion of the shifting arm completely across the member.

21. In a pressing machine, a work support provided with an adjustment for adjusting its supporting capacity, a supporting member having a plurality of pressure-applying members adjustably mounted thereon for movement into and out of work-engaging position, said pressure-applying members having unequal work-engaging areas, actuating mechanism for moving the supporting member toward and away from the work support thereby to move the member in work-engaging position into and out of engagement with the work on the work support, and means controlled by the actuating mechanism for shifting the pressure-applying members and for automatically regulating the work support adjustment to correlate the supporting capacity of the work support with the work-engaging area of the pressure-applying member moved into work-engaging position so as to maintain constant the unit pressure applied to the work by the pressure applying members.

22. In a stamping machine, a work support, a stamping head having a plurality of marking members mounted thereon for movement into and out of stamping position, actuating mechanism for moving said stamping head toward and away from the work support, a shifting device associated with the actuating mechanism for automatically shifting said marking members after each stamping operation, and means cooperating with said shifting device to prevent a shifting operation until the stamping head has returned to a predetermined shifting position, said shifting device comprising connections including a resilient coupling between the operating member and the actuating mechanism whereby operation of the connections by the actuating mechanism before the stamping head reaches the shifting position is compensated for by the resilient coupling.

23. In a pressing machine, a work support, sustaining means for the work support having an adjustment for controlling its supporting capacity, a pressure applying member, a work-engaging member adjustably mounted on said pressure applying member for movement into and out of a work-engaging position, actuating mechanism for causing relative bodily movement of the work support and the pressure applying member to cause the work-engaging member to be pressed against a work piece on the work support, and means controlled by the actuating mechanism for moving the work-engaging member into its work-engaging position on the pressure applying member and for regulating the adjustment for the sustaining means when the work-engaging member is moved into its work-engaging position.

24. In a marking machine, a marking head, a pair of marking devices adjustably supported on the marking head, said marking devices having different work engaging areas, a work support, actuating mechanism for causing the marking device in marking position to contact the work on the work support, and means controlled by the actuating mechanism for moving the marking devices into and out of marking position and for regulating the pressure exerted on the work

by the marking device in marking position in accordance with the work engaging area of that device whereby impressions of uniform depth will be made in the work.

25. In a marking machine, a work support having an adjustable sustaining means, a marking head having a pair of marking members adjustably mounted thereon whereby said members may be selectively moved into and out of marking position, actuating mechanism for causing relative bodily movement between the work support and the marking head to cause the marking device in marking position to contact the work, and means controlled by the actuating mechanism for moving the marking members into and out of marking position and for regulating the adjustable sustaining of the work support to correlate the supporting capacity of the work support with the area of marking member moved into marking position.

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