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A. W. ALTVATER

1,834,918

DIE MECHANISM

Filed Nov. 29, 1929

Fig. 1.

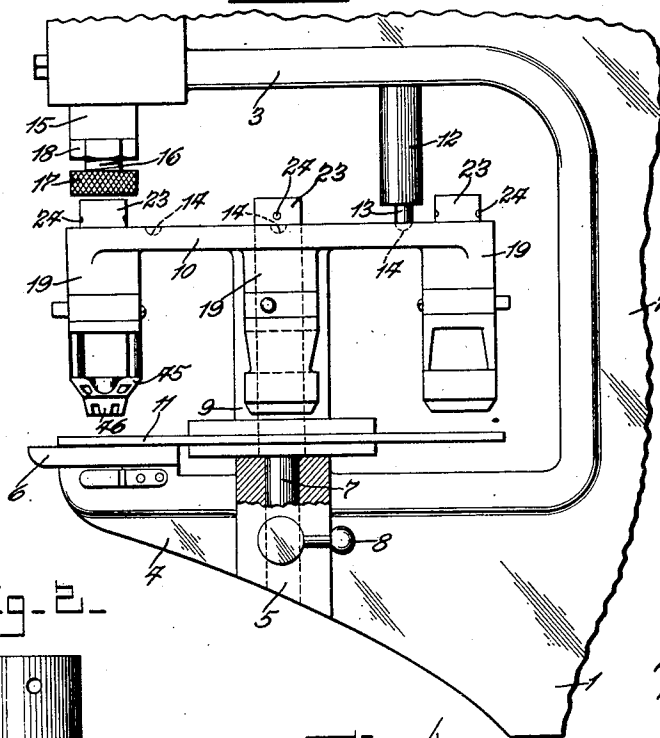


Fig. 2.

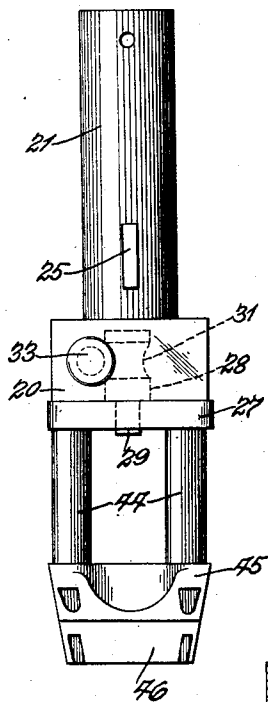


Fig. 4.

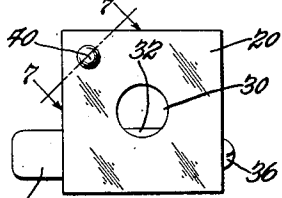


Fig. 5.

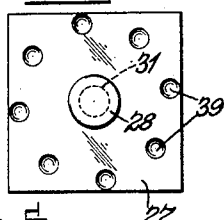


Fig. 6.

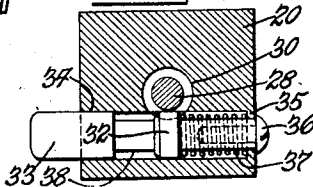


Fig. 7.

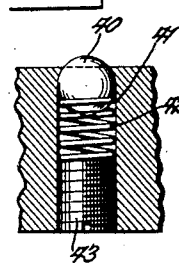
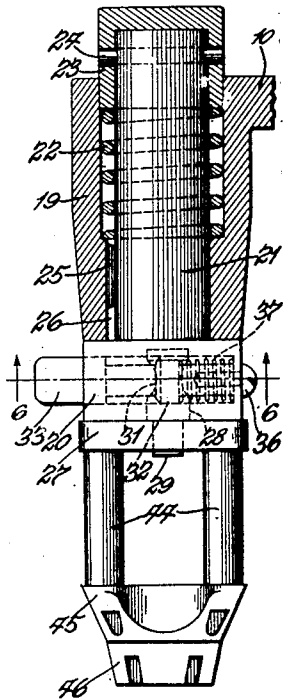


Fig. 3.



Inventor:
Arthur W. Altvater,
by Rippey & Kingsland,
His Attorneys.

UNITED STATES PATENT OFFICE

ARTHUR W. ALTVATER, OF ST. LOUIS, MISSOURI

DIE MECHANISM

Application filed November 29, 1929. Serial No. 410,528.

This invention relates to die mechanism.

One object of the present invention is to provide an improved machine adapted for and capable of application to many useful purposes such, for instance, as making ornamental cut-outs for shoe parts and shoe uppers, and for otherwise ornamenting the work by producing ornamental outlines and demarcations.

Another object of the invention is to provide mechanism for speedily and conveniently attaching a die to its holder.

This machine may be operated to trim and cut out the linings of completed shoes to correspond with previously formed cut-outs in the uppers of the shoes, when the linings were left without cut-outs in the shoe uppers in order to reinforce and prevent stretching and distortion of the shoe uppers during the lasting and finishing operations. In these operations of trimming and forming cut-outs in the linings of completed shoes to correspond with previously formed cut-outs in the shoe uppers, the cutting edges of the dies are located in the cut-out openings or holes in the shoe uppers by preliminary manual operations of the dies, after which the dies are positively driven to cut through the linings of the completed shoes along the edges of the cut-outs or holes in the shoe uppers in which the dies had been inserted. In these operations, the dies function as gages to guide the operator in the location of the shoe uppers and completed shoes, by placing the cutting edges of the dies within the correspondingly shaped cut-outs or holes in the shoe uppers.

Various other objects will appear from the following description, reference being made to the accompanying drawings, in which—

Fig. 1 is a view partly in section of a machine including the mechanism.

Fig. 2 is a view of the die and die holder.

Fig. 3 is a view of the die and die holder similar to Fig. 2 from another side, in combination with the die carrier partly in section.

Fig. 4 is a plan view of the die holder head.

Fig. 5 is a plan view of the face plate of the die.

Fig. 6 is a cross-section through the die holder head on the line 6—6 of Fig. 3.

Fig. 7 is a vertical section through the same on line 7—7 of Fig. 4.

The supporting frame 1 of the machine includes a vertical portion 2, a forwardly extending top portion 3 and a forwardly extending bottom arm 4. The bottom arm 4 has the socket 5 and the work support 6. The socket 5 receives the member 7 which may be held in position by the locking device 8. The die carrier 9 is rotatably mounted upon the axial member 7 and includes the radially extending plate 10 for supporting the dies. A die striker plate 11 is provided in connection with the die carrier 9 and may be made to rotate with the die carrier or not, as desired. As shown, the striker plate is in the form of a disc and is arranged to rest upon the work support 6 so as to support the work for operation of the dies. The die carrier 9 is rotative about the member 7 as an axis to locate any of the dies that may be carried by the die carrier plate 10, in proper operative position.

The forward end portion 3 of the frame carries a latch support 12 having mounted therein a movable latch 13 actuated downwardly by a spring (not shown) to engage successively and selectively in an annular series of cavities or holes 14 in the upper surface of the die carrier 9. Thus, when the latch 13 is engaged in any one of the cavities or holes 14, it will prevent the die carrier from turning as a result of vibration and oscillation of the machine. However, this latch device will permit forcible turning of the die carriers to selected adjustments.

A plunger 15 is mounted for vertical sliding movements in the forward end of the top portion 3. This plunger has an internal threaded hole in its lower end (not shown) into which is screwed the threaded stem 16 of a head 17. Because of this manner of connection, it is obvious that the head 17 is adjustable toward and away from the end of the plunger 15. A nut 18 is screwed on the stem 16 and is designed and adapted to engage the end of the plunger 15 so as to lock the stem 16 in connection with the part

15 and prevent said stem from working from the desired adjustment.

The die carrier plate 10 has a circumferential series of sockets 19. In each of the sockets 19 a die holder is mounted, the same comprising a head 20 having a stem 21 projecting through a hole in the bottom wall of the socket 19 and upwardly into said socket. A spring 22 is within the socket 19 and has its lower end seated upon the bottom wall of said socket. Said spring encircles the stem 21 and has its upper end abutting against the lower end of a cap 23. The cap 23 is mounted on the upper end of the stem 21 and projects downwardly into the socket 19 and is thereby guided. Said cap is removably attached to the upper end of the stem 21 by a removable pin 24.

The stem 21 may be cylindrical and have a key 25 to seat in a vertical channel 26 in the lower wall of the hole at the bottom of the socket 19 and through which the stem 21 projects, thus to prevent rotative movement of the die holder.

The face plate 27 of the die element has the attaching member 28 rigidly secured to it by the pin 29. The attaching member 28 of normal cylindrical shape fits into a socket 30 in the die holder head. The attaching member 28 has an annular arcuate channel 31 to cooperate with the flange 32 on a securing member 33. The securing member 33 is situated in a hole 34 through the head 20 of the die carrier. The hole 34 has an inwardly extending annular flange 35. The securing member 33 is secured in position by the screw 36 abutting the outer edge of the flange 35. A spring 37 is placed about a reduced portion of the securing member 33, having one end bearing against the flange 35 and the other end against the flange 32 of the securing member. An annular groove 38 is cut from the securing member 33 so that when the member 33 is pushed inwardly, it will register with the socket 30, permitting the attaching member 28 to be withdrawn without interference; otherwise, the flange 32 engages in the arcuate channel 31, holding the die in position.

The face plate 27 of the die has a series of circumferential holes 39 arranged about its axis to cooperate with the ball detent 40 positioned in a hole 41 by the spring 42 positioned behind the screw member 43. It will thus be seen that when the die is mounted in its support, it will be held against movement due to oscillations or vibrations in the machine, and yet may readily be manually rotated from one position to another, depending upon the number and spacings of the cavities 39.

Each die further comprises a hollow frame including depending side members 44 having a head 45 on their lower end with a cutting or ornamenting die 46 on its underside. If

the die 46 is a cutting die, it is provided with an opening through the head (not shown) communicating with the space between the side members 44 so that the cut-out waste material may be discharged through the die.

The device is preferably operated by a cam cooperating with the plunger 15, imparting a uniform thrust to the plunger. With such an arrangement, the thrust of the die can be accurately controlled by adjusting the tappet comprising the stem 16, the head 17 and the nut 18.

This mechanism may be used with and operated by a machine which may be variously constructed. Such a machine is illustrated and described in my application for Letters Patent of the United States filed January 25, 1929, Serial No. 334,934.

This application is an improvement upon the machine illustrated and described in that application, and more particularly with reference to the method of attachment and the arrangement between the die and its support and the arrangement between the support and the carrier. It is not, however, limited to use with a machine of the details there described.

From the foregoing description, the intended functions of the machine must be apparent. The arms 4 and work support 6 are adapted to be extended into fitted shoe uppers and into completed shoes. It is clear enough that these parts will support shoes that are completed, in which openings have not been cut in the linings opposite previously formed openings in the shoe uppers, preparatory to operation of the machine to cut or trim openings through the linings in register with the openings through the uppers. The linings are left uncut until after the shoes have been lasted and otherwise completed in order to prevent stretching and distortion of the shoe uppers having the holes cut therein. Such stretching and distortion would result if holes were cut through the linings and shoe uppers before lasting. The otherwise completed shoes may be placed on the parts 4 and 6 and the dies 45-46 may be depressed to extend the beveled cutting edges 46 of the dies into correspondingly shaped cut-outs or openings in the uppers of completed shoes, thus enabling the operator to gage the completed shoes for a final cutting operation of the dies to produce the cut-outs in the linings. The tapered construction of the cutting edges 46 of the dies leaves the marginal portions of the lining around the cut-out openings extending entirely to or slightly beyond the marginal edges of the uppers around the cut-out openings. Thus, any lines of stitches formed through the uppers and the linings around said cut-out openings will necessarily engage both the uppers and the linings sufficiently to secure said parts together.

It is apparent that the construction, arrangement and relationship of the parts of the mechanism may be altered and varied within a wide range of limits without departing from the nature and principle of the invention. It is also apparent that parts of these improvements may be advantageously used without appropriating the whole.

I do not restrict myself to any unessential details, but what I claim and desire to secure by Letters Patent is:

1. A die having a face plate, and a series of circumferential recesses, in combination with a die support and means for holding the die selectively in a plurality of rotative positions, including on said face plate a post having a circular cross-section and an annular recess in its periphery, an attaching block on said support having a socket in its lower end to receive said post and a lateral pin through said block intersecting said socket, said pin having a flange to engage said recess and a reduced portion sufficient to clear the socket, and a spring to normally hold the flange in engagement in the recess, and a detent on the bottom of said block to selectively engage in any one of said circumferential recesses on the die face plate.

2. A die mechanism comprising a die carrier, means forming a socket having a bottom wall in connection with said carrier, a stem mounted for longitudinal movements through said socket, means in said socket for actuating said stem longitudinally in one direction, means in connection with said stem co-operating with said socket to prevent said stem from turning about its axis, a head attached to said stem, and means for supporting a die in selected adjusted positions in connection with said head.

3. A die mechanism comprising a carrier, means forming a socket in connection with said carrier, a stem mounted for longitudinal movements in said socket, a head on said stem engaging said socket and limiting extent of movement of said stem in one direction, a spring in said socket for moving said stem to the extent permitted by said head, and means for attaching a die to said head in different selected adjustments.

4. A die mechanism comprising a carrier, means forming a socket in connection with said carrier, a stem mounted for longitudinal movements in said socket, a head attached to said stem and abutting against said socket and limiting extent of movement of said stem in one direction, a spring in said socket for moving said stem to the position permitted by said head, means for supporting a die in connection with said head, and means for holding said die in any one of a number of selected adjustments in connection with said head.

5. A die mechanism comprising a carrier, means forming a socket in connection with

said carrier, a stem mounted for longitudinal movements in said socket, a head attached to said stem and abutting against said socket and limiting extent of movement of said stem in one direction, a spring in said socket for moving said stem to the position permitted by said head, means for supporting a die in connection with said head, means for holding said die in any one of a number of selected adjustments in connection with said head, and means for releasing said die from said head.

6. A die mechanism comprising a carrier, a stem supported by said carrier for longitudinal movements, means preventing said stem from turning about its axis, a head attached to said stem, a device supported by said head for engaging and supporting a die in connection with said head, means for holding said die in any one of a number of selected positions in connection with said head, and means for releasing said device from said die.

ARTHUR W. ALTVATER.

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