Dec. 28, 1926. 1,612,162

A. J. THOMAS

STOP DEVICE

Filed Jan. 21, 1925

Fig. 1.

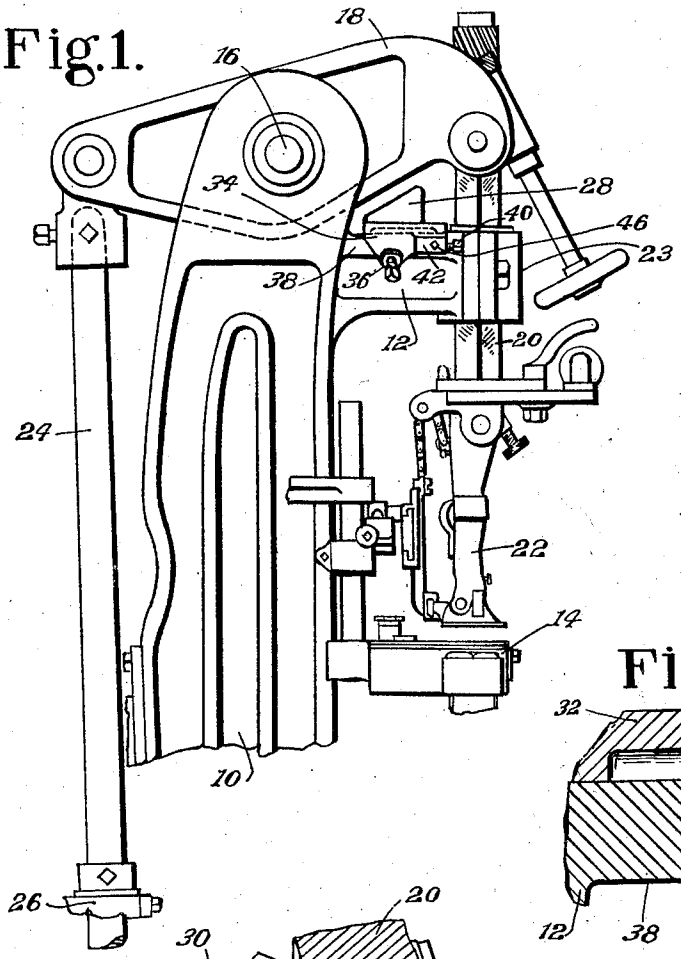


Fig. 3.

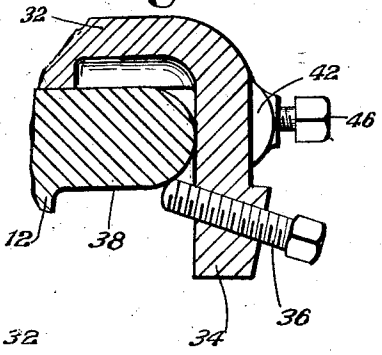
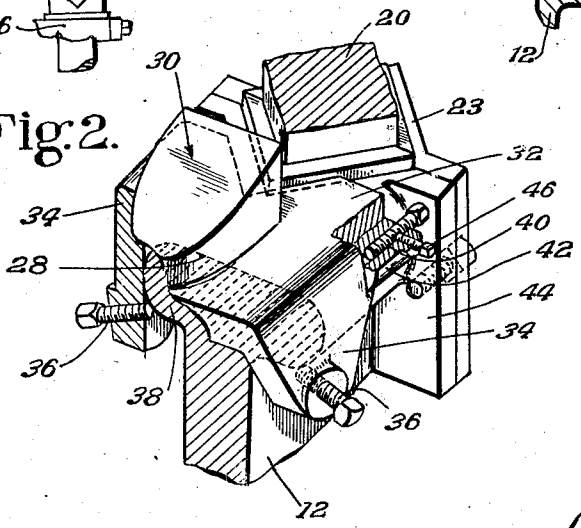


Fig. 2.



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UNITED STATES PATENT OFFICE.

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STOP DEVICE.

Application filed January 21, 1925. Serial No. 3,874.

This invention relates to devices for limiting the movement of machine elements, the particular embodiment herein illustratively described serving as a stop for the top lever of a heel-attaching machine.

A heel-attaching machine of the character described in Patent No. 1,157,688, Glidden, Oct. 26, 1915, has its work-supporting jack depending from the forward extremity of a lever fulcrumed upon the top of the frame. To allow the machine to apply most effectively clamping pressure to a jacked shoe, and a heel to be nailed thereon as the thickness of these associated work-pieces varies, a preliminary or measuring pressure is placed upon the work by rocking the lever under the control of some such arrangement as the wedge mechanism of the just-mentioned patent, this control being exercised through a rod joining the upper wedge-block to the top lever. When a shoe is in place upon the jack, this measuring movement is limited by the contact of the heel-seat with the heel held above the die-block ready for the nailing. When, however, the machine is turned over without the work in place, the unbalanced weight of the top lever, jack and the spindle which connects the lever and jack, comes sharply upon the wedge mechanism at the end of its range of movement, and tends to cause breakage of its elements. To prevent such an effect, it is necessary to arrest the oscillation of the top lever before the strain is thrown upon the measuring mechanism. In doing this, account must be taken of the fact that the form of the arrested element, as the inclination of its contact-face, may be such as to throw upon the stop device a strain acting to shear off any securing means. It is further true that the contacting elements, as the operating member, the frame upon which it is mounted and the stop device itself, are all preferably of cast metal, and more or less irregular, so that the limit of movement furnished may vary in an undesirable manner. My invention has as an object the provision of a stop device efficient in meeting the conditions outlined. To this end, I have combined with the machine-frame and operating member mounted thereon a stop member for the operating member, which stop member is retained in place, in a novel manner, by frictional engagement with the frame of its securing means. Consequently, there is nothing to be destroyed by the displacing tendency of the received impact. Then, since the mechanism connected to the operating member is to be guarded against injury which might be caused by displacement of the stop, I have further provided abutment means positively limiting movement of said stop. To permit the extent of travel of the operating member to be definitely fixed with relation to the effect of the measuring or other connected mechanism and regardless of the character of the contact-surfaces, I preferably include means to variably fix the relation of the stop member to the operating member, as by altering the position of the abutment means.

In the accompanying drawing,

Fig. 1 shows, in side elevation, a heel-attaching machine to which a particular form of my invention is applied;

Fig. 2 illustrates my improved stop device in perspective; and

Fig. 3 is a vertical, transverse section through such device.

The main frame member or standard of a heel-attaching machine appears in part at 10, this having projecting forwardly, from a point just below its upper end, a horizontal arm 12. At 14 is the die-block, above which a heel to be attached is held, while the nails contained in openings in such block are driven through it. Fulcrumed at 16 upon the frame, above the arm 12, is a top lever 18, carrying at its forward end a vertically reciprocatory spindle 20, upon the lower extremity of which is mounted a jack 22, by which the shoe to be heeled is presented over the die-block for the nailing operation. The spindle is preferably guided in its reciprocation by an opening formed between the end of the arm 12 and a cap-piece 23. The rear extremity of the top lever is united by a rod 24 to the wedge mechanism, which, under the influence of springs, as illustrated in the patent previously mentioned but not appearing here, creates the preliminary pressure between the jacked shoe and the heel held above the die-block. Of this wedge mechanism, only the upper block 26 is shown, fast upon the rod 24.

If, when the jack and die-block are without work-pieces, the wedge mechanism is caused to act, the top lever and connected elements, unless otherwise controlled, will be brought to rest at the limit of travel of the wedges,

and the strain produced by their inertia placed directly upon such wedges. These are not of sufficient strength to safely resist this, and the impact is therefore received by a stop-block 28 mounted upon the frame-arm 12 beneath the lever. The block is arranged to receive the contact of the under side of the forward arm of the top lever before the wedges reach the ends of their paths. The bottom of the lever-arm diverges upwardly from the frame-arm, and the contact-surface 30 of the block is corresponding inclined, to give a suitably extended area to receive the impact. This angle of the engaging surfaces produces a force acting outwardly along the frame-arm and tending to displace the block in this direction. Consequently, if screws are inserted through the block into the arm, or in the reverse direction, these are liable to be quickly sheared off. To avoid this destruction of the securing means, I have formed the block upon a plate 32 extending across the frame-arm, and having projecting vertically down, parallel to each other at opposite sides of said arm, lugs 34, 34. At the lower extremity of each lug is an inwardly and upwardly inclined threaded opening to receive a screw 36. These screws are arranged to bear against the outer lower edge of a flange 38 from the top of the arm 12, this arm being of I-form in cross-section. The screws therefore converge upwardly, engaging the flanges at the opposite side of the arm from that against which the plate 32 rests, and clamp such plate with its block firmly against the arm. The contact of the inner plate-wall and the screw-ends with the arm gives a large frictional engaging surface, effectively resisting displacement under the blows of the lever, while there is nothing in this securing means which is destroyed if relative movement occurs.

To more positively guard against displacement of the stop-blocks, I have associated with the securing means just described, abutment means in the form of contact-screws 40, 40. These lie parallel to each other at opposite sides of the stop member and longitudinally of the arm, being threaded into bosses 42, 42 projecting from the upper portions of the lugs 34. Their heads may be turned out into contact with a vertical flange 44 at the forward end of the arm, against which the cap 23 is bolted. Thus positioned, they interpose a positive resistance to the horizontal force produced by the blows between the inclined surfaces of the top lever and stop-block. Since, however, the resistance provided by the securing means 36 is great, the screws 40 need not be large. The position of the stop-block along the frame-arm determines the limit of downward movement of the jack. This should be as great as possible, to permit the maximum range of movement of the jack in connection with the nailing of low heels, yet should cease before strain is put upon the wedge mechanism. The effect of the stop-block will be influenced by the vertical relation of the contact-surfaces, and this will depend upon the condition of the metal. That is, the proper location of the block will vary with the roughness of the cast metal at 30, over the opposed surface of the lever, and at the under side of the plate 32 and the arm-surface on which it rests. The desired position of the stop-block may be determined quite exactly by use of the adjusting means furnished by the abutment-screws. With the screws 36 loosened, the screws 40 may be turned to move the block 28 back until its movement-arresting action is as desired. Then the block is clamped in place by the screws 36, displacement of the screws 40 under the vibration of the machine being prevented by set-screws 46 threaded through the walls of the bosses 42 and engaging the abutment-screws. To apply the stop-block to the machine or to remove it, the screws 36 need only to be loosened until their ends are withdrawn from beneath the flanges 38. The block is then free for movement, without disturbing any machine-element.

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

1. In a machine of the class described, a frame, an operating member mounted to move upon the frame, a stop member arranged to receive contact of the operating member, and securing means constructed and arranged to retain the stop member in place by frictional engagement with opposite faces of the frame.

2. In a machine of the class described, a frame, an operating member mounted to move upon the frame, a stop member for the operating member, said stop member resting upon the frame and having separated projections, and securing means carried by the projections and extending oppositely into engagement with the frame.

3. In a machine of the class described, a frame having a projecting member, a lever fulcrumed at one side of the frame member, a stop member resting against the frame member to receive contact of the lever, and screws threaded through the stop member at opposite sides of the frame member with their points engaging said frame member.

4. In a machine of the class described, a frame having a projecting member, a lever fulcrumed at one side of the frame member, a stop member resting against the frame member to receive contact of the lever and having lugs extending at opposite sides of said frame member, and screws threaded through the lugs and converging inwardly into engagement with the opposite side of the frame member from that against which the stop member rests.

5. In a machine of the class described, a frame, an operating member mounted to move upon the frame, a stop member arranged to receive contact of the operating member, securing means constructed and arranged to retain the stop member in place upon the frame by frictional engagement, and abutment means positively limiting the movement of the stop member.

6. In a machine of the class described, a frame, an operating member mounted to move upon the frame, a stop member arranged to receive contact of the operating member, securing means constructed and arranged to retain the stop member in place upon the frame, and means arranged to variably fix the relation of the stop member to the operating member.

7. In a machine of the class described, a frame, an operating member mounted to move upon the frame, a stop member, and abutment means variable in position and arranged to alter the relation of the stop member to the operating member.

8. In a machine of the class described, a frame, an operating member mounted to move upon the frame, a stop member for the operating member, said stop member resting upon the frame and having separated projections, securing means carried by the projections and extending oppositely into engagement with the frame, and positioning means for the stop member movable upon the projections.

9. In a machine of the class described, a frame having a projecting member, a lever fulcrumed at one side of the frame member, a stop member resting against the frame member to receive contact of the lever, and and a screw extending in a direction substantially parallel to the contacting surfaces of the stop member and frame and variable in position to positively limit movement of said stop member at different points.

10. In a machine of the class described, a frame having a projecting member, a lever fulcrumed at one side of the frame member, a stop member resting against the frame member to receive contact of the lever and having lugs extending at opposite sides of said frame member, screws threaded through the lugs and converging inwardly into engagement with the opposite side of the frame member from that against which the stop member rests, and screws threaded into the lugs in a direction longitudinal of the frame member and contacting with said member.

11. In a heel-attaching machine, a frame having a substantially horizontal arm, a top lever fulcrumed upon the frame above the arm, a stop-block for the top lever resting upon the frame-arm, and a screw threaded through the block and arranged for contact of its end only with the frame to retain said block against movement.

12. In a heel-attaching machine, a frame having a substantially horizontal arm, a top lever fulcrumed upon the frame above the arm and with its under side converging upwardly therefrom, a stop-block resting upon the frame-arm and having its upper surface inclined similarly to the opposed side of the lever and arranged to receive contact thereof, and means adjustable upon the block longitudinally of the arm and arranged to contact with the frame to resist the stress produced by contact of the inclined surfaces.

13. In a heel-attaching machine, a frame having a substantially horizontal arm, a top lever fulcrumed upon the frame above the arm, a stop-block for the top lever resting upon the frame-arm, and screws threaded through portions of the block and contacting with the under side of the arm.

14. In a heel-attaching machine, a frame having a substantially horizontal arm, a top lever fulcrumed upon the frame above the arm, a stop-block for the top lever resting upon the frame-arm, screws threaded through portions of the block and contacting with the under side of the arm, and a screw threaded into the block longitudinally of the arm and arranged for contact with the frame.

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

ALFRED J. THOMAS.