April 7, 1925. 1,532,546

J. H. POPE

GUARD DEVICE

Filed Sept. 8, 1919

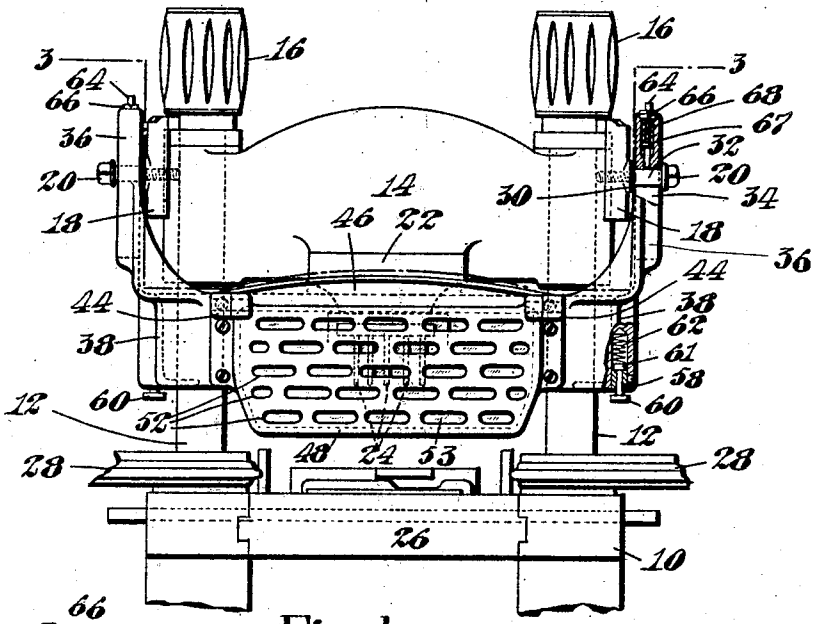


Fig. 1.

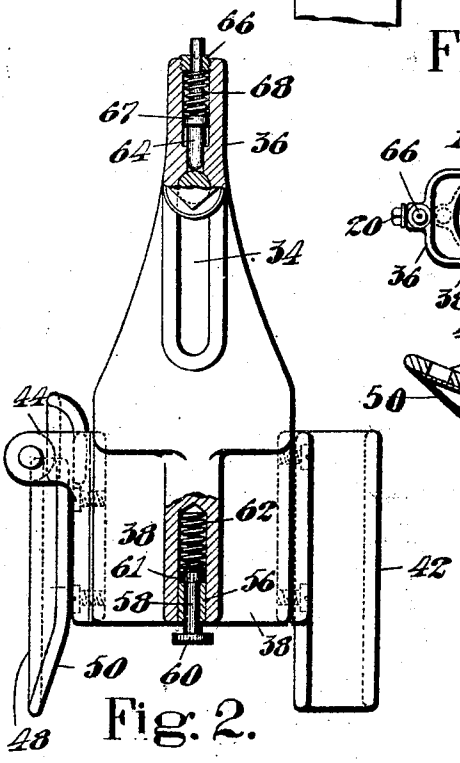


Fig. 2.

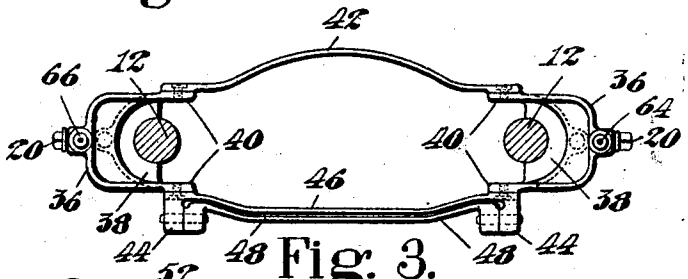


Fig. 3.

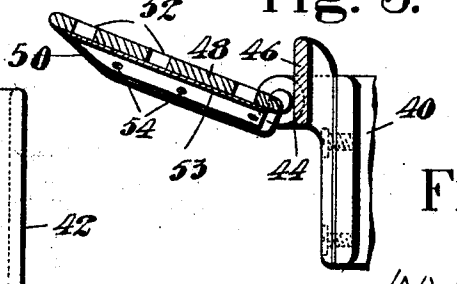


Fig. 4.

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UNITED STATES PATENT OFFICE.

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GUARD DEVICE.

Application filed September 8, 1919. Serial No. 322,523.

To all whom it may concern:

Be it known that I, JOSEPH H. POPE, a citizen of the United States, residing at Hamilton, in the county of Essex and State of Massachusetts, have invented certain Improvements in Guard Devices, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

My invention relates to devices for guarding against injuring objects, especially persons, in the vicinity of operating machines including members, which, by the pressure to which they are subjected, may break and be projected from the machines. The invention finds a most important utilization in apparatus for attaching heels to shoes. Here the steel drivers, broken by contact with the work or the die-block, may be thrown out in small fragments and at a high velocity, and there have occurred a number of instances of these destroying the sight of operators or onlookers. Objects of the invention are to furnish a protective device or guard of a simple character, which, while effectively preventing such accidents, will not interfere with the operation of the machine.

A feature of the invention consists in mounting the guard in a novel manner to move with the pressure members which it surrounds, it being kept in proper relation to said members to fully protect them, yet freeing for access the parts with which the members co-operate. To permit the co-operation of the pressure members with the associated elements, the guard may also be movable independently of the pressure members. Preferably, when the pressure member support has associated guide members and securing elements, as the side rods of the driver-holding top girt of a heeling machine and the screws for retaining in position the adjusting device for the top girt, the guard or its carriers may be mounted upon the securing elements and move over the guide members.

Since the guard tends, by striking at the ends of its path, to produce a disagreeable noise by its blows, as a feature of the invention, I cushion this movement. For this purpose yieldable means may be interposed between the guard carrier and the support at one extremity of its path and between said carrier and a relatively fixed element of the machine at the other extremity.

It is desired that the operator shall at all times be able to see the nailing mechanism and have ready access to it. I provide for such conditions by furnishing, as a further feature of the invention, a guard member resistive of breaking and having openings, and by covering these openings with transparent material. For this purpose, a perforated metal guard with a celluloid plate over the openings is suitable. The guard, in the form of the machine shown herein, also includes a section which is movaole, there being here illustrated a portion at the front of the machine pivoted near its upper edge upon the carriers, and having an inclined face arranged to move said portion from its normal position upon contact with an object.

In the accompanying drawing, disclosing one of the several forms which my invention may assume,

Fig. 1 is a front elevation of a machine to which my improved guard is attached, parts being broken away;

Fig. 2 is an enlarged end elevation of the guard with portions in section;

Fig. 3 is a horizontal section on the line 3—3 of Fig. 1; and

Fig. 4 is an enlarged detail of the front wall of the guard and its support.

At 10 is illustrated a portion of the frame of a heel-attaching machine of the type disclosed in the patent in my name dated February 24, 1891 and numbered 446,885. Guided for vertical movement in the frame are side rods 12, 12, spaced from one another and connected by a head furnished by a top girt 14. This top girt is adjustably held to the side rods by nuts 16 secured to the ends of the girt by clips 18 maintained in position by screws 20. Secured at the center of the under side of the top girt is a driver block 22 carrying a set of depending drivers 24, these operating upon nails supported in openings in a nail block 26. The nail block is carried horizontally between ways in the sides of the frame beneath the top girt. Pivoted to swing upon the frame at the ends of the nail plate are loader mechanisms for supplying the nails to the die-block, portions

of these being indicated at 28. All this is substantially as shown in the patent previously referred to.

The screws 20 are longer than is necessary for the performance of their clip-retaining function, they each having a flange 30 for contact with the outer face of the corresponding clip and being provided beyond this with a smooth cylindrical portion 32 terminating in the head of the screw. The cylindrical portion of each screw lies in a vertical slot 34 in an upwardly extending arm 36 rising from a carrier member 38. The carrier member is preferably semi-cylindrical, its inner surface bearing against and being retained in position and guided by the adjacent rod 12. At the opposite inner edges of the members 38 are pairs of flanges 40, 40, and secured to the rear flanges is a guard wall 42, the upper edge of which, when the tops of the slots in the carrier arms are resting upon the screw portions 32, is well above the tops of the drivers 24, while the lower edge of the wall extends for a considerable distance below the lower ends of the drivers. Upon the opposite or front flanges are secured brackets or pivot members 44, 44 connected by a cross-bar 46. Hinged upon these brackets and lying across the front of the drivers is a guard wall 48. When the section 48 of the guard is raised by the operator and thrown back against the top girt, it fully frees the drivers and die-block so they may be changed or adjusted. The inner lower portion of the wall 48 is shown as inclined downwardly and outwardly at 50. This, contacting with objects at the edge of the die plate, will be deflected upon its pivots, avoiding injury to such objects and to the elements of the machine. But for this, the hands of the operator or his assistant might be caught when the top girt desccends in the nailing operation. In the walls of the guard are series of openings 52 of such size and so spaced that, while rendering visible the parts within the guard, they leave walls of ample strength to resist fracture under the impact of broken pieces of drivers and retain most of these against being thrown outside the guard. To complete the closure without obscuring the operator's view, sheets 53 of transparent material, as celluloid, may be placed across the inside of the walls and secured thereto at the ends by series of screws 54.

As the top girt is lowered and raised in the operation of the machine, the bottom portion of the guard structure would first tend to strike the loader mechanisms 28 or the die plate, and, upon the upward travel of the top girt, the screw portions 32 would contact with the upper extremities of the slots 34. This would produce a disagreeable rattle. To aviod this, cushioning means are placed at each of these points and at both sides of the guard. In each of the carrier members 38, guided by a sleeve 56 fixed by a set screw in a vertical bore, is a plunger 58 having a contact head or enlargement 60 lying normally some little distance below the corresponding carrier member, and a head 61 within the bore to retain it against displacement. Interposed between the head 61 and the upper extremity of the bore is a helical spring 62, holding the head 60 of the plunger yieldably below the carrier member. Extending through a vertical bore alined with the center of each screw portion 32 at the top of its slot 34 in the carrier arm, is a plunger 64 having an upper reduced portion passing through a threaded sleeve 66 at the top of the bore, and a head 67 limiting its downward travel in the bore. Surrounding the reduced portion of the plunger is a spring 68 urging the plunger 64 toward the screw portion 32. Upon the downward travel of the top girt the heads 60 of the plungers 58 strike the upper surfaces of the loader mechanisms 28, and, yielding, absorb the shock and considerably reduce the noise. The same effect is produced when the screw portions 32 contact with the plungers 64, so that the contact of the guard at both ends is relatively noiseless.

It will be evident that the drivers, when protected by the guard of this invention, will be retained at all sides against being thrown from the machine, by means which does not obscure the operator's view of the driving mechanism nor prevent his access to it. It is also to be observed that the only change necessary for the attachment of the guard in the heeling machine as previously arranged is to substitute special securing screws 20 for those holding the adjusting clips.

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 pressure member, a movable support therefor including guide members, and a guard carried by the support and retained in position by contact with the guide members.

2. In a machine of the class described, a pressure member, a movable support therefor including a securing element for portions of the support, and a guard for the pressure member mounted upon the securing element.

3. In a machine of the class described, a pressure member, a movable support therefor including a securing element, and a guard for the pressure member mounted to move over the securing element.

4. In a machine of the class described, a pressure member, a movable support therefor including guide members and a securing element, and a guard mounted to move

over the securing element in contact with the guide members.

5. In a heeling machine, a movable head, drivers secured thereto, a carrier depending at each side of the head, and a wall fixed to the carriers and guarding the drivers.

6. In a heeling machine, a movable head, drivers secured thereto, and guard walls situated at the front and rear of the drivers and movable upon the head.

7. In a heeling machine, a movable head, drivers secured thereto, a carrier mounted to slide on each side of the head, and a wall fixed to the carriers and guarding the drivers.

8. In a heeling machine, reciprocatory side rods, a top girt mounted thereon, drivers carried by the top girt, and a driver guard supported on the top girt and bearing against the side rods.

9. In a heeling machine, reciprocatory side rods, a top girt mounted thereon, an adjusting device for the top girt including a screw, drivers carried by the top girt, and a driver guard supported on the screw.

10. In a heeling machine, reciprocatory side rods, a top girt mounted thereon, an adjusting device for the top girt including a screw, drivers carried by the top girt, a slotted carrier movable over the screw, and a driver guard fixed to the carrier.

11. In a heeling machine, reciprocatory side rods, a top girt mounted thereon, an adjusting device for the top girt including a screw, drivers carried by the top girt, a slotted carrier movable over the screw and guided by the side rods, and a driver guard fixed to the carrier.

12. In a machine of the class described, a movable pressure member, a carrier mounted to move therewith, a guard movable upon the carrier, and cushioning means mounted upon the carrier.

13. In a machine of the class described, a pressure member, a movable support therefor, carriers spaced from one another upon the support, cushioning means interposed between the carriers and the support, and guard members connecting the carriers.

14. In a machine of the class described, a movable pressure member, a carrier movable with and independently of the pressure member, a guard movable upon the carrier, and cushioning means interposed between the carrier and a relatively fixed portion of the machine.

15. In a machine of the class described, a pressure member, a movable support therefor, carriers spaced from one another upon the support, cushioning means interposed between the carriers and the support and between said carriers and a relatively fixed portion of the machine, and guard members connecting the carriers.

16. In a machine of the class described, a pressure member, a movable support therefor, a guard for the pressure member movable with and upon the support, and means arranged to cushion the movement of the guard with the support and also its movement upon the support.

17. In a machine of the class described, a pressure member, a movable support therefor including a securing element, a guard for the pressure member mounted upon the securing element, and a resilient member interposed between the securing element and guard.

18. In a heeling machine, a movable head, drivers carried thereby, a guard wall for the drivers mounted upon the head, and a yieldable member situated between the guard wall and head.

19. In a heeling machine, a movable head, drivers secured thereto, a carrier depending at each side of the head, cushioning means mounted in the carrier, and a wall fixed to the carriers and guarding the drivers.

20. In a heeling machine, a movable head, drivers secured thereto, a carrier mounted to slide on each side of the head, yieldable means interposed between the carrier and head, and a wall fixed to the carriers and guarding the drivers.

21. In a heeling machine, reciprocatory side rods, a top girt mounted thereon, an adjusting device for the top girt including a screw, drivers carried by the top girt, a driver guard supported on the screw, and a spring situated between the guard and screw.

22. In a machine of the class described, a pressure member, a movable support therefor, carriers spaced from one another upon the support, and a guard member for the pressure member movable upon the carriers and having an inclined face arranged to move the guard member from its normal position upon contact with an object.

23. In a machine of the class described, a pressure member, a movable support therefor, carriers spaced from one another upon the support, and a guard member pivoted near its upper portion to the carriers, said guard member having a portion formed to turn it about its pivots.

24. In a machine of the class described, a pressure member, a movable support therefor, carriers spaced from one another upon the support, and a guard member for the pressure member movable upon the carriers and having a contact face inclined downwardly and outwardly at its lower portion.

25. In a machine of the class described, a pressure member, a movable support therefor, carriers spaced from one another upon the support, a guard member fixed to the carriers at the rear of the pressure member, and a guard member pivoted to the carriers at the front of said pressure member.

26. In a heeling machine, a movable head, drivers secured thereto, a carrier depending from each end of the head, and a guard movable upon the carriers in front of the drivers.

27. In a heeling machine, a movable head, drivers secured thereto, a carrier depending from each end of the head, pivot members fixed to the carriers, and a guard wall mounted to swing upon the pivot members opposite the drivers.

28. In a heeling machine, a movable head, drivers secured thereto, a carrier depending from each end of the head, a perforated guard movable upon the carriers in front of the drivers, and a sheet of celluloid extending across the perforations.

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

JOSEPH H. POPE.