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STAPLE DRIVING MACHINE

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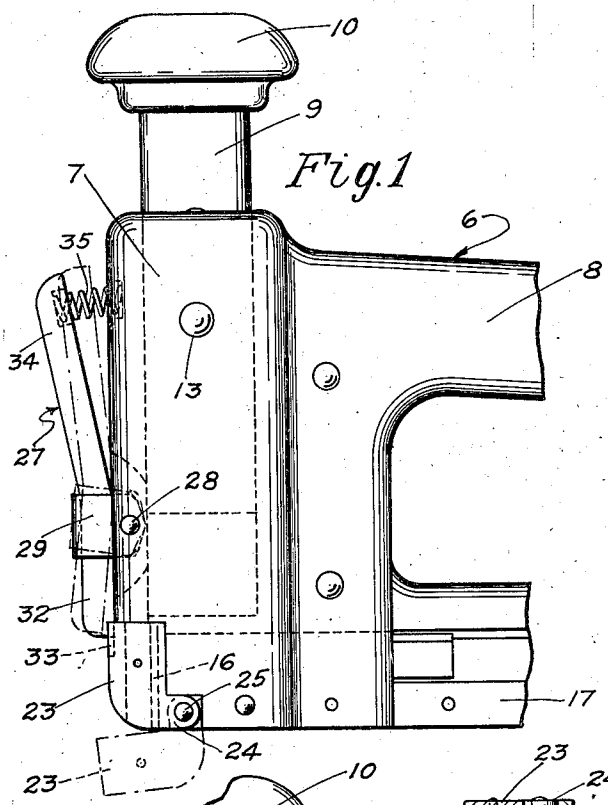


Fig.1

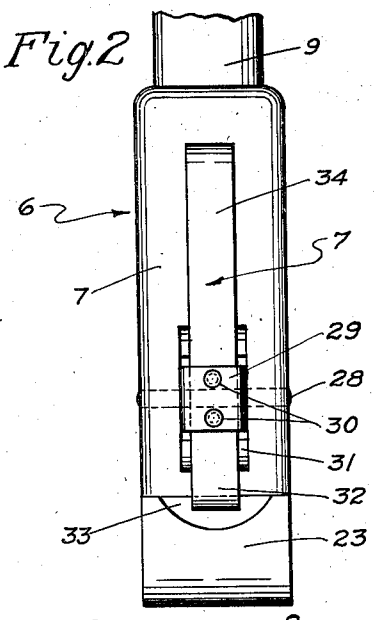


Fig.2

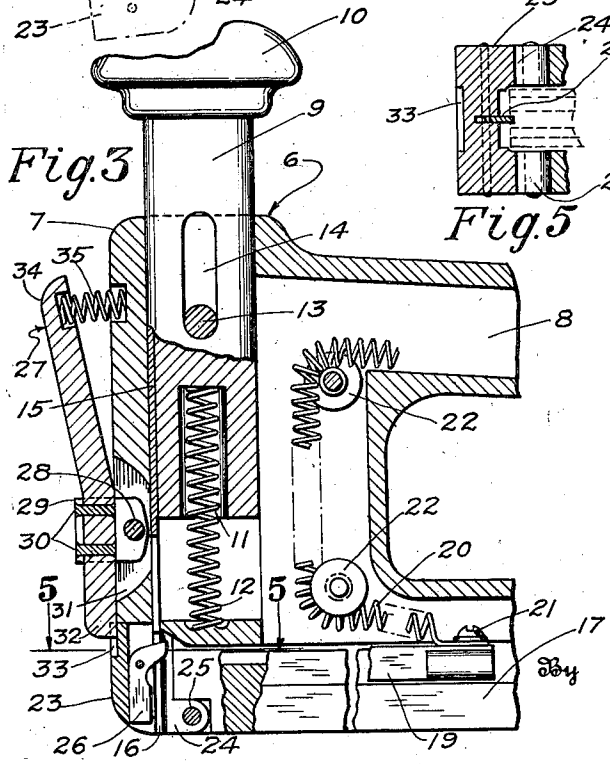


Fig.3

Fig.5

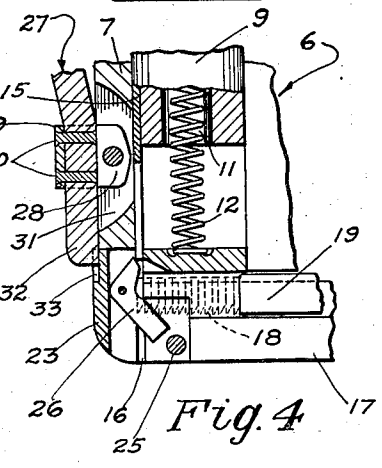


Fig.4

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STAPLE DRIVING MACHINE

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Application April 9, 1932, Serial No. 604,193

9 Claims. (Cl. 1—49)

This invention relates to new and useful improvements in staple driving machines.

An object of the invention is to provide a staple driving machine including a hinged block forming one side of the lower portion of the raceway of the machine and an improved means normally holding said block in closed position but permitting it to yield without opening and permitting it to be easily opened, whereby the driving plunger of the machine will not become bound in the raceway with sufficient pressure to cause injury to the mechanism and whereby the said driving plunger may be easily released should it bind in the raceway.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein is shown a satisfactory embodiment of the invention. However, it will be understood that this disclosure is for the purpose of making clear the principles of the invention and that the invention is not limited to the details shown but includes all such modifications and variations as fall within the scope of the appended claims.

In the drawing:

Fig. 1 is a side elevational view of the forward portion of a staple driving machine in accordance with the invention;

Fig. 2 is a front elevational view thereof;

Fig. 3 is a vertical sectional view through the forward portion of the machine;

Fig. 4 is a similar view of the lower forward portion of the machine showing a staple strip in place therein; and

Fig. 5 is a detail sectional view substantially along the line 5—5 of Fig. 3.

Referring in detail to the drawing, at 6 is shown a portion of the housing of a staple driving machine which machine may be either a stapling machine or a tacking machine. The housing 6 may include a forward portion or head 7 and a rearwardly extending hollow portion 8 forming a handle. A plunger 9 is operable in the head 7 of the machine and at its upper end the plunger carries a head 10 while its lower or inner end is hollow as at 11 to receive a portion of a coil spring 12 which coil spring normally serves to maintain the plunger in its elevated or outermost position. This coil spring also operates to return the plunger to normal position when it is moved from such position in the operation of driving a staple.

Movement of the plunger is limited as by a pin 13 supported in the head 7 and disposed in a slot 14 in the plunger. Obviously, movement of the plunger is limited by engagement of either of the closed ends of the slot 14 with the pin 13. On its forward face the plunger 9 carries a steel plate 15 forming the staple driving part of the plunger and this plate operates in a raceway 16 as will be understood. The lower portion of the housing 6 may be closed as by a staple strip guide bar 17 at its inner or forward end forming one side of the raceway 16 and this guide bar 17 is adapted to have the staple strip 18 mounted thereon and the strip is fed forwardly along the guide bar to the raceway 16 as by a follower 19. Any spring means may be provided for urging the follower along the guide bar and as here shown a coil spring 20 is connected at one end with the follower 19 as by a screw 21 and this spring is passed over pulleys or idlers 22 and anchored within the handle 8.

As above stated the inner or forward end of the guide bar 17 forms one side of the raceway 16 and the other side of this raceway is formed by a block 23 having extensions 24 straddling the raceway and at their inner ends pivotally connected to the housing, as to a portion of the guide bar 17, by a pin 25. It will thus be seen that while the pivotal mounting for the block 23 is located at the inner side of the raceway 16 the block itself when in normal position forms the outer side of the raceway. The block in Figs. 1 through 4 is shown in full lines in its normal position and the block is adapted to swing on the pin 25 into the open position in which it is shown by dot and dash lines in Fig. 1. As here disclosed the block 23 carries a pivotally mounted dog or finger 26 adapted to prevent a second staple of the strip 18 entering the raceway 16 until the first staple to enter the raceway has been driven therefrom. This dog or finger 26 is fully disclosed and claimed in my Patent Number 1,829,537, patented October 27, 1931.

According to the present invention, means are provided for yieldingly securing the block 23 in its normal position in which position it forms one side of the raceway 26. Said means as herein disclosed includes a lever 27 pivoted intermediate its ends to the head 7 of the machine as by means of a pin 28 passing through the end portions of the arms of a substantially U-shaped clip 29 secured to the lever as by the rivets 30. If desired, a recess 31 may be cut in the forward face of the head 7 of the housing, the said recess receiving the pivotally mounted end portions of the arms of the clip 29 whereby the lever 27 may be dis-

posed close to the housing so as not to detract from the appearance of the machine.

The lever 27 is so arranged that its lower end portion 32 is adapted to overlap the upper edge portion of the block 23 when the parts are in their normal positions and if desired the upper edge portion of the block may be notched as at 33 to receive the lower end portion of the lever. The upper end portion 34 of the lever is off-set with respect to the end portion 32 thereof and arranged between the upper end portion 34 of the lever and the forward or adjacent face of the head 7 of the housing is a coil spring 35. This spring has its respective end portions anchored to the lever and the housing as by entering recesses in the lever and housing as shown. Obviously, the spring normally urges the portion 34 of the lever in a direction away from the housing with the result that the lower end portion 32 of the lever is pressed against the block 23 yieldingly securing it in its normal position.

In the normal operation of the machine, assuming a staple strip 18 to be in place on the guide bar, the follower 19 will be operated to feed the strip along the bar and dispose the foremost staple of the strip in the raceway 16. The head 10 of the plunger may now be struck or pressed in a direction against the action of spring 12 causing the steel plate 15 to move downwardly through the raceway and drive the staple therethrough. On the plunger being released the spring 12 will normally return it to its upper or outermost position ready for the next operation. If it should happen that the steel plate or staple driving part 15 of the plunger binds in the raceway because of lateral pressure caused by a staple jammed in the raceway and the spring 12 is not strong enough to return it to normal position, owing to the fact that the block 23 is yieldingly held in normal position forming one side of the raceway this block may yield or move slightly toward open position on the lateral pressure becoming excessive and thereby prevent damage to the machine.

Should the staple driving plate or part 15 bind in the raceway it is obvious that it may be more easily released when the side of the raceway yields laterally than would be the case if the side of the raceway were rigid and immovable with respect to the housing. Of course, the pressure exerted on the block 23 by the lever 27 must be considerably greater than the normal lateral pressure due to the feeding of the staple strip by the follower 19 and the lateral pressure developed in the normal or ordinary operation of driving a staple through the raceway. However, when the lateral pressure is sufficient to bind the plunger the pivoted block 23 will yield without binding the plunger in such a manner as to injure the mechanism and the plunger will not be held so tightly but that it is easily released.

Additionally, if the pressure of the lever 27 on the block 23 is relieved somewhat as by pressing the upper end portion 34 of the lever inwardly with the hand against the action of the spring 35 the plunger will be released and moved back to normal position by the plunger spring 12. In machines wherein the sides of the raceway are rigid should a staple wedge in the raceway then some part of the machine would likely be broken under the force of the blow when the plunger had been driven downwardly as by a mallet. Or the plunger and the staple would be so tightly jammed in the raceway that it would be difficult to free them. With the present device the block 23 or the front of the raceway yields and no damage is done to the machine, and in addition the plunger is easily released and the raceway cleared of a jammed staple. The block 23 may yield sufficiently to allow a staple to be forced out of the raceway and when the staple has been forced out the block is immediately returned to normal position. Should the lateral pressure be very great the block will be forced out sufficiently to pass from under the lower portion of the lever and move to wide open position as shown by the dot and dash lines in Fig. 1.

The staple driving machine of the present invention may be loaded from the front by pressing inwardly on the upper portion of the lever 27 so as to shift the lever to the position in which it is shown by dot and dash lines in Fig. 1. This will permit the block 23 to be swung to open position exposing the forward end of the staple strip guide bar 17 over which the new staple strip may be passed as will be understood. On the new staple strip being placed in position the block or gate 23 may be returned to normal position and secured by the lever 27.

Having thus set forth the nature of my invention, what I claim is:

1. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, a plunger operable to drive staples through said raceway, a block pivoted to said housing normally forming one side of said raceway and adapted to move laterally therefrom, means yieldingly tending to turn the block on its pivot to secure said block in normal position, and manually manipulatable means for shifting said block securing means to relieve the pressure with which it engages the block.

2. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, a plunger operable to drive staples through said raceway, a block including an extension pivoted to the lower portion of the housing at one side of the raceway, said block having a normal position forming the opposite side of said raceway and extending above said extension, and means engaging said block above said pivoted extension and yieldingly securing said block in normal position.

3. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block pivoted to said housing and when in normal position forming one side of said raceway, a spring pressed lever pivoted to said housing, and said lever engaging said block and yieldingly retaining it in normal position.

4. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block pivoted to said housing and when in normal position forming one side of said raceway, a lever pivoted intermediate its ends to said housing, and a spring means normally urging one end portion of the lever in a direction away from the housing and the other end portion of the lever against said block whereby the block is yieldingly held in normal position.

5. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block pivoted to said housing and when in normal position forming one side of said raceway, a lever pivoted to said housing, a spring means normally urging one

end portion of said lever in a direction away from said housing, said spring means urging the other end portion of the lever against said block whereby the block is yieldingly held in normal position, and said lever adapted to be moved about its pivot against the action of said spring means to permit said block to swing to an open position.

6. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block pivoted at its lower end to said housing and when in normal position forming one side of said raceway, a spring pressed lever pivoted to said housing, and said lever including a portion engaging the upper portion of said block and yieldingly retaining it in normal position.

7. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block hingedly connected at its lower end to said housing and when in normal position forming one side of said raceway, a lever pivoted intermediate its ends to said housing, and a spring means normally urging one end portion of the lever in a direction away from the housing and the other end portion of the lever against said block whereby the block is yieldingly held in normal position.

8. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block hingedly connected at its lower end to said housing and when in normal position forming one side of said raceway, a lever pivoted to said housing, a spring means normally urging one end portion of said lever in a direction away from the housing, said spring means urging the other end portion of the lever against said block whereby the block is yieldingly held in normal position, and said lever adapted to be moved about its pivot against the action of said spring means to permit said block to swing to an open position.

9. In a staple driving machine, a housing having a raceway therein, means for feeding staples to said raceway, means operable to drive staples through said raceway, a block including an extension pivoted to the lower portion of the housing at one side of a raceway, said block having a normal position forming the other side of said raceway, a spring pressed lever pivoted to said housing, and said lever including a portion engaging said block and yieldingly retaining it in normal position.

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