Dec. 14, 1948. K. F. MORBERG 2,456,526

TACKER

Filed Dec. 21, 1946

Fig. 1

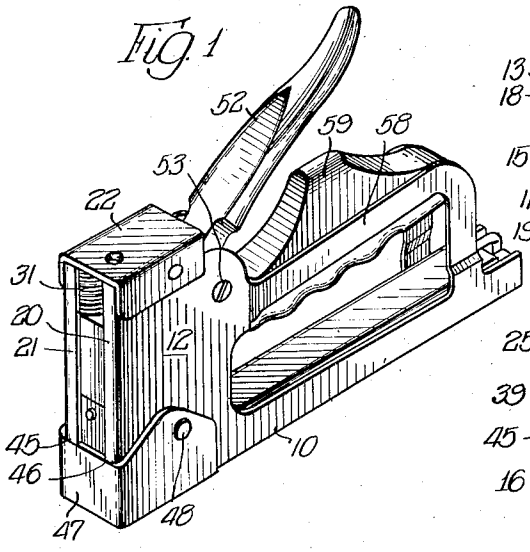


Fig. 3

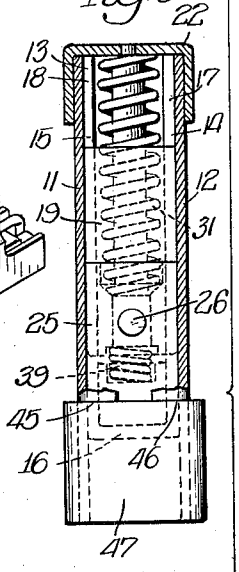


Fig. 5.

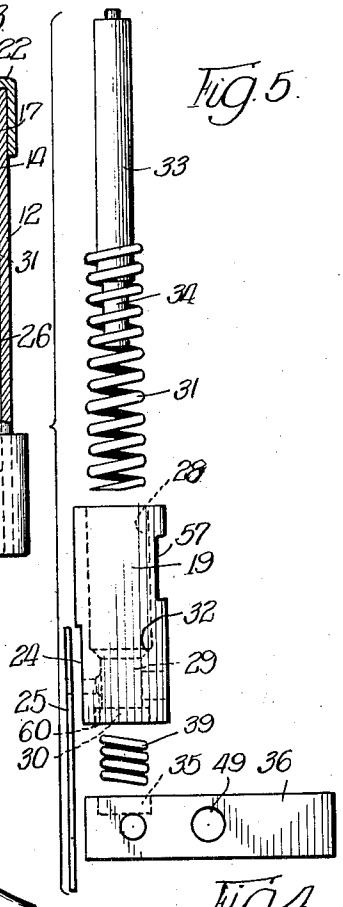


Fig. 2.

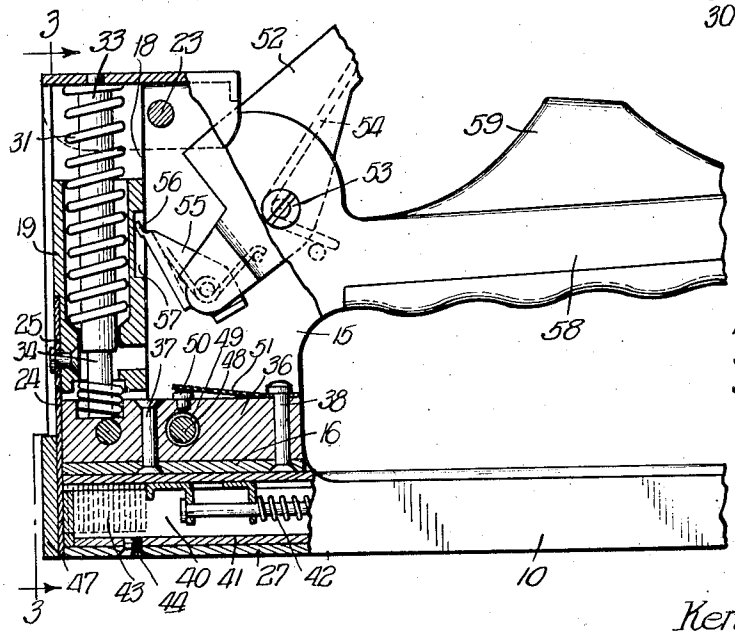
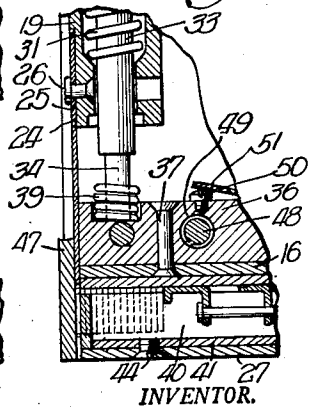


Fig. 4.



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TACKER

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5 Claims. (Cl. 1—49)

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My invention is concerned with improvements in a portable tacker or fastener driving device which is adapted to drive a U-shaped staple into a surface of wood, cardboard or similar material.

More particularly, my invention is concerned with a fastener driving device of the type which comprises a forward chamber having a vertical fastener guideway therein, a reciprocal driving plunger in the guideway, a bottom horizontally disposed fastener feeding chamber provided with means for delivering fasteners to driving position beneath the plunger and a plunger actuating mechanism which is operated by a pivotal rearwardly directed handle member. In this type of staple driving device a bumper block is provided beneath the driving plunger to limit the downward movement of the plunger so that the staple will be driven to the proper depth and preferably a shock-absorbing means is provided between the lower end of the driving plunger and the bumper block to cushion the shock as the driving plunger reaches the limit of its downward movement.

It is an object of my invention to provide in a tacker of the type described improved shock-absorbing means for cushioning the movement of the plunger at the end of the driving stroke.

This and other objects and advantages of my invention will be apparent from the description of the preferred embodiment thereof which is shown by way of example in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a tacker embodying the principles of my invention;

Fig. 2 is a side elevation, to an enlarged scale, of the tacker with portions in section;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a partial section; and

Fig. 5 is an exploded view of portions of the driving mechanism.

The preferred form of my device comprises a generally U-shaped frame member 10 having vertical side plates or members 11, 12 forming a forward chamber which contains the staple driving mechanism. An inner U-shaped member 13 having side plates 14 and 15 and bottom member 16 is secured inside the frame side plates 11 and 12 so that the forward edges 17 and 18 of the side plates 14 and 15 form rear guides for a driving plunger or driver 19 received in the front portion of the forward chamber. The front ends 20 and 21 of the frame side plates 11 and 12 are turned inwardly or flanged to form forward guides for the driving plunger 19.

The driving plunger 19 comprises a generally rectangularly shaped block member which reciprocates vertically in the guideway formed by the side plates 11 and 12, the edges 17 and 18 of the plates 14 and 15 and the flanges 20 and 21 of the side frame members 11 and 12. A cap 22

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closes the top of the forward chamber and is secured to the frame side plates 11 and 12 by the pin 23. The plunger 19 is recessed at 24 to receive the top of a staple driving blade 25 which is secured thereto by a pin or rivet 26. The driving blade 25 when in normal inoperative position extends downwardly from the plunger 19 to the base 27 of the frame 10.

The plunger 19 is provided with an axial bore or recess comprising three sections 28, 29 and 30 which are of different size. The upper section 28 is large enough to receive the lower portion of a driving spring 31 with the end of the spring 31 in engagement with an internal shoulder 32 formed between sections 28 and 29 of the axial bore. A vertical guide pin 33 having a reduced end portion 34 is positioned, when in assembled relation (Fig. 2) to extend from the cap 22 through the driving spring 31 and the driving plunger 19 with the reduced end portion 34 thereof extending downwardly into a recess 35 in a bumper block 36 beneath plunger 19. The bore section 29 in the plunger 19 is large enough to receive the main portion of the guide pin 33 with the spring 31 positioned loosely around the same.

The bumper block 36 is positioned with its forward portion beneath the driving plunger 19 and is secured to the bight member 16 of the inner U-shaped member 13 by rivets or the like 37 and 38. The recess 35 in the bumper block 36 receives the lower end of the guide pin 33 and also a compressible bumper spring 39 which functions as a cushioning member for the driving plunger 19. The upper portion of the spring 39 extends above the top surface of the bumper block 36. The spring 39 fits loosely around the reduced pertion 34 of the guide pin 33 which holds it in vertical position.

A generally horizontal staple supply chamber 40 is formed beneath the member 16. Chamber 40 extends rearwardly and receives a fastener magazine 41 and a fastener feeding mechanism 42 which feeds fasteners 43 to driving position beneath the fastener driving blade 25. The fastener magazine 41 is secured to the bottom frame member 27 by screws as at 44.

The flanges 20 and 21 of the side plates 11 and 12 are cut away at the bottom at 45 and 46 and a removable generally U-shaped front plate member 47 is positioned thereon with the legs thereof embracing the sides 11 and 12 of the frame 10 and secured thereto by a pin 48 which is removable in an axial direction. The pin 48 extends through a hole 49 in the block 36 and is held in position therein by a vertically positioned pin 50 and cooperating leaf spring 51. The front plate 47 when in position forms the forward side of the guideway in which the driving blade 25 reciprocates.

The driving plunger 19 is elevated against the

action of the driving spring 31 and then released to deliver the driving blow by means of an operating lever or handle 52. Handle 52 is pivoted at 53 to the side plates 11 and 12 and is urged to inoperative position by the spring 54. A pivotally mounted trip member 55 on the inner end of the operating lever 52 is provided with an end 56 which is held in engagement in a recess 57 in the driving plunger 19 until the plunger 19 is raised to a predetermined position. Further movement of the lever 52 withdraws end 56 from its engagement with the plunger 19 and permits plunger 19 to descend to drive the fastener. The side frames 11 and 12 are provided with rearward extensions 58 having a grip member 59 secured between them for cooperation with the handle 52 to operate the driving plunger 19.

The operation of my device will be apparent from the description of the improved mechanism. When the handle 52 is moved about its pivot 53 the trip member 55 moves upwardly with its end 56 in engagement in the recess 57 in the plunger 19. The plunger 19 is moved upwardly to raise the driving blade 25 a sufficient distance to permit the fastener feeding mechanism 42 to deliver a fastener into driving position beneath the blade 25. When the plunger 19 reaches a predetermined position the end 56 of the trip member 55 moves out of the recess 57, releasing plunger 19 and allowing spring 31 to drive the plunger 19 downwardly, the blade 25 striking the fastener and driving it as desired. The internal shoulder 60 between sections 29 and 30 of the bore in the plunger 19 strikes the top of the spring 39 near the end of the driving movement of the plunger 19 and the shock at the end of the block is absorbed by the spring 39.

While I have referred to specific details of construction in illustrating the preferred form of my device, it will be understood that other details may be resorted to within the spirit of my invention.

I claim:

1. In a fastener driving mechanism comprising a housing having an upright guideway, a hollow driver mounted in said guideway, spring means for forcing the driver downwardly to drive a fastener, means for feeding fasteners to a driving position beneath the driver, means for raising the driver against the action of the spring to a predetermined position and then releasing the same, a bumper block having cushioning spring means beneath the driver and a guide member extending upwardly from the bumper block within the hollow driver and both said spring means whereby upon descent of the driver to deliver a blow to drive a fastener the driver will engage said spring means near the end of its movement to cushion the same.

2. In a fastener driving mechanism comprising a housing having an upright guideway, a hollow driver mounted in said guideway, spring means for forcing the driver downwardly to drive a fastener, means for feeding fasteners to a driving position beneath the driver, means for raising the driver against the action of the spring to a predetermined position and then releasing the same, a bumper block beneath the driver having a recess therein, a coiled compression spring extending upwardly from said recess, fixed guide means extending upwardly from said recess through said compression spring, said hollow driver and said driving spring means whereby upon descent of the driver to deliver a blow to drive a fastener the driver will engage said coiled spring near the end of its movement to cushion the same.

3. In a fastener driving mechanism comprising a housing having an upright guideway, a driver mounted in said guideway, spring means for forcing the driver downwardly to drive a fastener, means for feeding fasteners to a driving position beneath the driver, means for raising the driver against the action of the spring to a predetermined position and then releasing the same, a bumper block beneath the driver having a recess in the top thereof, said driver having a recess in the bottom thereof, a coiled spring seated in the recess in said bumper block, and a guide pin for said coiled spring extending from said recess in said bumper block into said recess in said driver, whereby upon descent of the driver to deliver a blow to drive a fastener the driver will engage said coiled spring near the end of its movement to cushion the same.

4. In a fastener driving mechanism comprising a housing having an upright guideway, a driver mounted in said guideway, said driver having an axial bore provided with a reduced portion adjacent the lower end thereof, a driving spring seated in said bore and extending upwardly therefrom for forcing the driver downwardly to drive a fastener, means for raising said driver against the action of the spring to a predetermined position and then releasing the same, a bumper block beneath said driver having a recess therein which is in substantial axial alignment with the bore in said driver, a cushion spring member seated in said recess and extending upwardly therefrom into the path of said driver, and a fixed guide rod extending through said driving spring, said reduced portion of the bore in said driving plunger and into said recess in said bumper block.

5. A fastener driving device comprising a forward chamber having a vertical guideway therein, a fastener driving member operative in said guideway, said driving member having an axial bore provided with an internal abutment shoulder, a driving spring seated in said bore with one end thereof in engagement with said abutment shoulder and the other end in engagement with a top portion of said forward chamber above said driving member, a bumper block beneath said driving member provided with a recess in alignment with the axial bore in said driving member, a coiled compressible spring in said recess, and extending above said bumper block, a guide pin seated in said recess and extending upwardly therefrom through said coiled spring, said driving member and said driving spring, means for delivering a fastener into driving position beneath said driving member, and means for retracting said driving member to compress said driving spring and thereafter releasing the same to drive a fastener.

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The following references are of record in the file of this patent:

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