Dec. 24, 1968 E. TREATMAN 3,417,908

TACKER WITH ATTACHMENT FOR OUTWARD CLINCH

Filed June 6, 1966

FIG. 1

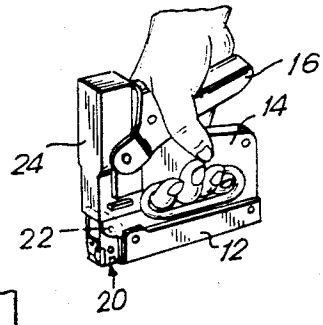
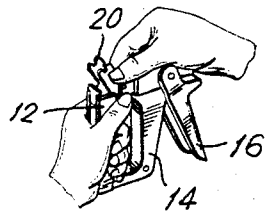


FIG. 2



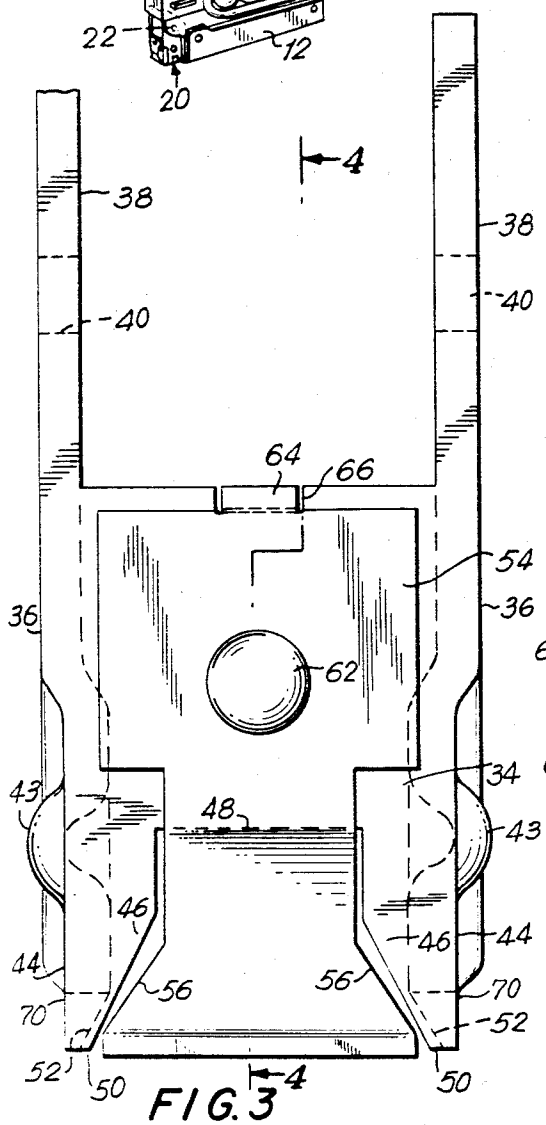


FIG. 3

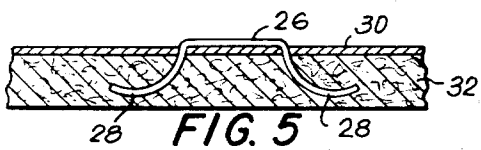


FIG. 5

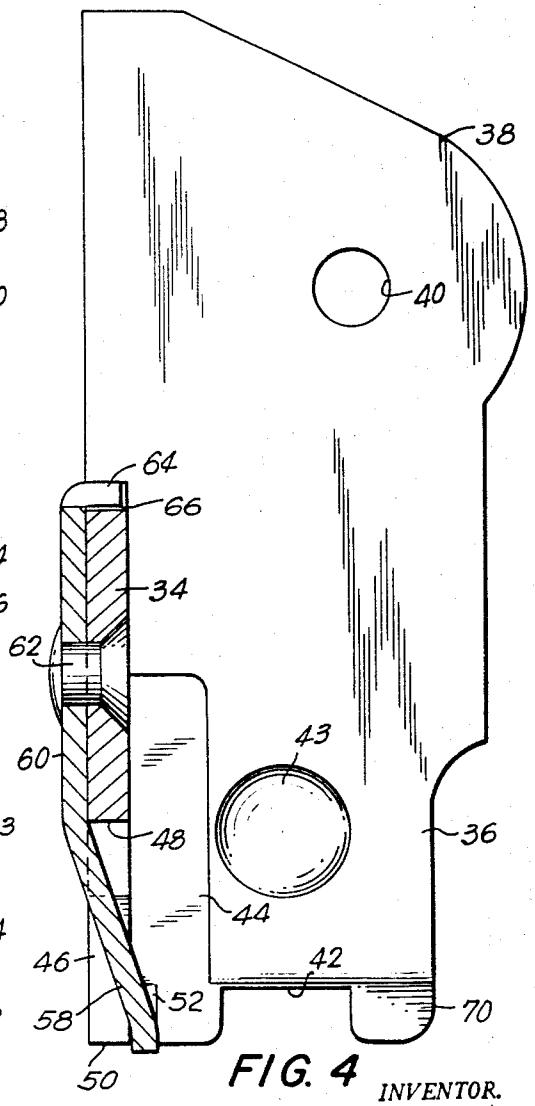


FIG. 4

INVENTOR.
ELI TREATMAN

BY

James and Franklin

ATTORNEYS

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TACKER WITH ATTACHMENT FOR OUTWARD CLINCH

Eli Treatman, Astoria, N.Y., assignor to Markwell Manufacturing Company, Inc., New York, N.Y., a corporation of New York

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ABSTRACT OF THE DISCLOSURE

The tacker comprises a staple magazine with a staple drive at the forward end of the magazine, and a front wall outside the driver defining part of a staple driving passage. To cause outward spread or clenching of the staple without using an anvil, the tacker is provided with a deflector made of a single piece of resilient sheet metal having downwardly divergent edges near its lower end to deflect the staple legs outward as the staple is driven. The lower end of the front wall is cut away to receive the lower end of the deflector, with the divergent edges disposed in the path of the staple. The upper end of the deflector is secured directly against the outer face of the front wall in face to face contact by means of a single rivet. The lower end of the deflector is offset inwardly relative to its fixed upper end and is resiliently bendable outward in order to afford passage of the crown of the staple. The upper end of the deflector preferably has a rearwardly bent lug received in a slot in the front wall, which slot is slightly larger than the lug in order to afford a limited sideward self adjustment of the deflector about the rivet. The front wall to which the deflector is riveted is preferably part of an openable door for front loading, and for this purpose the said wall is formed integrally with side walls which extend upward and have pivot holes receiving a pivot pin about which the door may be turned outward to open the same.

This invention relates to staple driving machines, especially tackers, and more particularly to such a machine which is modified for outward clinch.

Tackers have no bottom anvil for bending the staple legs, and usually drive the staple with its legs straight. However, when the staple is to be driven into a low density material such as cork, rubber, corrugated board, or insulating materials, it is found desirable to cure and spread the legs of the staple as it is driven, so that it is more securely held in the material. The result is an outward spread or clinch obtained without using an anvil.

It is already known to modify a tacker by cutting away the front wall which defines a part of the staple driving passage, and using a deflector having downwardly divergent edges disposed in the path of the staple legs, the said deflector being slightly movable outward to permit passage of the crown of the staple. The general object of the present invention is to improve such tackers arranged for outward clinch.

A more particular object is to so design and mount the deflector as to afford self-adjustment or equalization at the two edges of the deflector. Another object is to make the device in the form of an attachment which may be used to modify an otherwise standard tacker. Still another object is to combine the improvement with a tacker of the front loading type, the deflector being mounted on and made a part of the door of the tacker, so that a standard tacker may be changed to provide outward clinch by substituting one door for another.

To accomplish the foregoing general objects, and other more specific objects which will hereinafter appear, my invention resides in the tacker and door and deflector elements, and their relation one to another, as are hereinafter more particularly described in the following specification. The specification is accompanied by a drawing in which:

FIG. 1 is a perspective view showing the tacker in use;

FIG. 2 is a perspective view showing the method of opening the tacker for loading;

FIG. 3 is a front elevation of the loading door and deflector, drawn to enlarged scale;

FIG. 4 is a vertical section taken approximately on the stepped line 4—4 of FIG. 3; and

FIG. 5 shows how the staple is outwardly spread or clinched.

Referring to FIG. 1 of the drawing, the tacker may be conventional in comprising a staple magazine located at 12, a handle 14, and a movable means or lever 16 for operating the tacker. The tacker is preferably of the front loading type, for which purpose it has a door generally designated 20, this being pivoted on a pin located in this case at 22.

Referring now to FIG. 2, the tacker is loaded by opening the front door 20 to expose the forward end of the magazine 12. The magazine has the usual fixed core, and a spring-pressed pusher slidable thereon, and is loaded by simply pushing a stick of staples through the open front end of the machine against the pusher. After the staples have been inserted the door 20 is closed and locked. In the present case it is locked by means of notches at its lower edge which move downward over mating stationary lugs.

The staple driving blade moves vertically in the upright housing indicated at 24 (FIG. 1), and in an ordinary tacker it drives the forward or endmost staple downward with its legs straight and substantially parallel to the drive direction.

Referring now to FIG. 5, the staple preferably is made of flat wire, the edge of which is shown. The staple initially had straight legs disposed perpendicular to the crown 26, but the legs have been bent outward as they were driven, resulting in the outward bend or clinch shown at 28. This is particularly useful when attaching something (e.g. a label or a layer of thin material 30) to a thick body of material 32 which is relatively soft or of low density, such as cork, rubber, corrugated board or one of the many known insulating materials intended for thermal insulation or for sound insulation.

Referring now to FIGS. 3 and 4, the loading door comprises a front wall 34 formed integrally with side walls 36. The side walls extend upwardly as shown at 38, and have pivot holes 40 which receive a cross pin, previously mentioned as located at 22 in FIG. 1. In the particular tacker here shown, the pin may be moved upward against spring pressure so that the door may be raised a little to free notches 42 at its lower end from mating fixed lugs which lock the door against outward movement. To facilitate raising the door the sidewalls may be provided with projections indicated at 43. A part 44 at each side of the door may be indented slightly to define the edges of a staple driving passage. Ordinarily the front of the said passage is defined by the front wall 34 of the door, this wall being intact and extending down to the bottom edge of the door.

However, in the present case the front wall 34 is cut away as shown as 46 to provide an opening the top of which is defined by the line 48, the said opening extending all the way down to the bottom edge 50 of the door. Near the bottom of the door some of the material of the sidewalls is outwardly indented or removed to provide sloping guide walls indicated at 52.

The cut out portion of the front wall receives the lower end of a resilient deflector blade 54. This has downwardly divergent edges 56 near its lower end, to deflect the staple legs outward as the staple is driven.

The lower end of the deflector is displaced inward as shown at **58** in FIG. 4, so that the divergent edges **56** (FIG. 3) are disposed in the staple driving passage and in the path of the descending staple legs. This lower end **58** is free to yield outward resiliently to permit passage when engaged by the crown of the staple and the staple driving blade. The upper portion **60** of the deflector is secured to the outer face of the front wall **34** by means of a single rivet **62**.

The upper end of the deflector preferably has a rearwardly bent lug **64**, and this is received in a slot or recess **66** in the front wall, most simply located in the top edge of the front wall. The slot **66** is slightly larger than the lug **64** to afford limited sideward self-adjustment of the deflector about the rivet **62**, thus equalizing the deflection passages and the clinching of the legs. This makes possible considerable dimensional tolerance when making and assembling the door here shown.

The side walls **36** may be indented also along the bottom, as shown at **70**, to accurately fit a mating part of the tacker body at the locking lugs which enter the notches **42**.

It will be understood that a standard tacker may be modified to provide outward clinching by substituting the door here shown for the standard door, the pivot holes **40** and the locking notches **42** being dimensioned and located the same in both cases. Such a modification is particularly convenient for the manufacturer of the tackers, who may have both doors available, and who then assembles the tacker with one door or the other as needed.

It is believed that the construction and method of assembly and use of my improved tacker, as well as the advantages thereof, will be apparent from the foregoing detailed description. In practice, it is found that with this improvement the manufacturer may rely on statistical testing in accordance with known procedures for that purpose, and with great resulting economy compared to 100% inspection and testing, which would be needed without the improvement. This is so because the parts are heat treated, with resulting distortion, which precludes high precision unless the parts are clamped and restrained in special mating fixtures during the heat treatment.

It will also be apparent that while I have shown and described the invention in a preferred form, changes may be made without departing from the scope of the invention, as sought to be defined in the following claims.

I claim:

1. A tacker comprising a housing, a staple magazine, a staple driver mounted at the forward end of the magazine, and movable within the housing, a handle and movable means for operating the tacker, and an outward clinch attachment mounted on the housing, the attachment comprising, a front wall outside the driver defining part of a staple driving passage, a deflector made of a single piece of resilient sheet metal having downwardly divergent edges near its lower end to deflect the staple legs outward as the staple is driven, the lower end of the aforesaid front wall being cut away to receive the lower end of the deflector with its aforesaid divergent edges in the path of the staple, the upper end of the deflector being secured directly against the outer face of the front wall in face-to-face contact by means of a single rivet, the lower end of the deflector being offset inwardly relative to its fixed upper end and being resiliently bendable outward relative to its fixed upper end in order to afford passage of a staple when said deflector is engaged by the crown of the staple, the most forward part of the deflector being substantially flush with the most forward part of the housing so that staples may be driven close to an inside wall.

2. A tacker as defined in claim **1**, in which the upper end of the deflector has a rearwardly bent lug which is received in a slot in the said front wall, said slot being slightly larger than the lug to afford a limited sideward self-adjustment of the deflector about the rivet.

3. A tacker as defined in claim **1**, in which the said front wall to which the resilient deflector is riveted is part of an openable door for front loading, whereby a standard tacker may be modified for outward clinch by simply replacing a regular door with a modified door having the defined deflector riveted thereto.

4. A tacker as defined in claim **2**, in which the said front wall is part of an openable door for front loading, and in which the front wall is formed integrally with sidewalls which extend upward and have pivot holes receiving a pivot pin about which the door may be turned outward to open the same, said tacker having additional means to lock the door in closed position.

5. A tacker as defined in claim **2**, in which the said front wall to which the resilient deflector is riveted is part of an openable door for front loading, whereby a standard tacker may be modified for outward clinch by simply replacing a regular door with a modified door having the defined deflector riveted thereto.

6. A tacker as defined in claim **1**, in which the said front wall is part of an openable door for front loading, and in which the front wall is formed integrally with sidewalls which extend upward and have pivot holes receiving a pivot pin about which the door may be turned outward to open the same, said tacker having additional means to lock the door in closed position.

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TRAVIS S. McGEHEE, *Primary Examiner.*

U.S. Cl. X.R.

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