Dec. 13, 1966 H. RUSKIN 3,291,357

BLIND CLINCH MECHANISM

Filed March 31, 1965 3 Sheets-Sheet 1

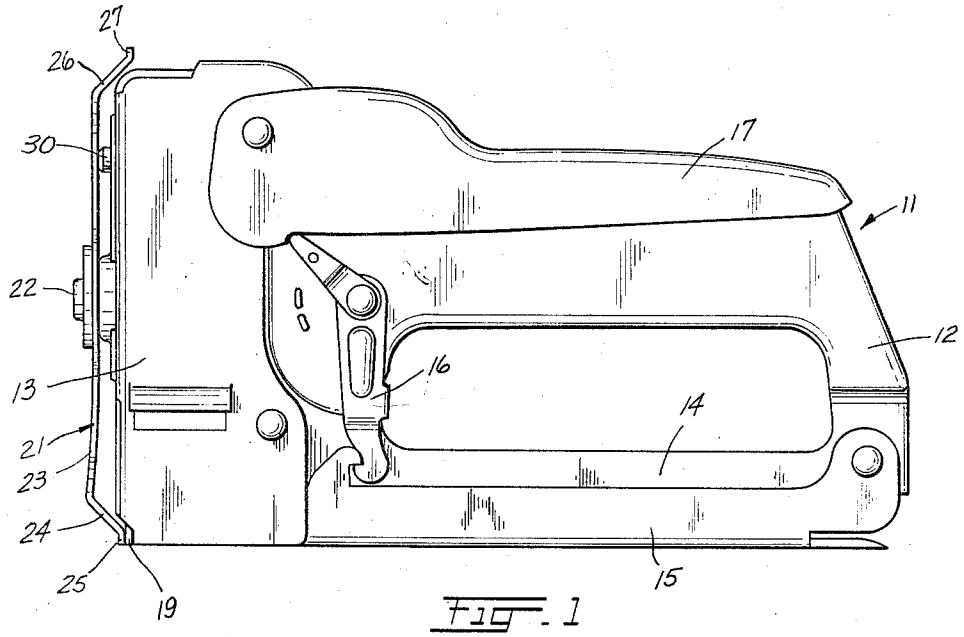


Fig. 1

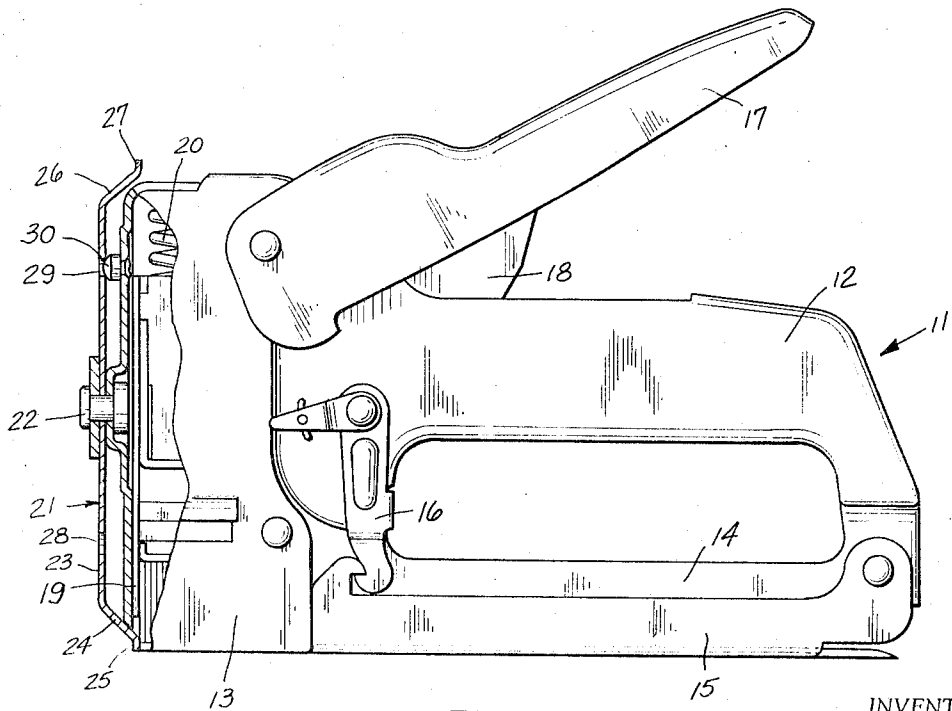


Fig. 2

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BLIND CLINCH MECHANISM

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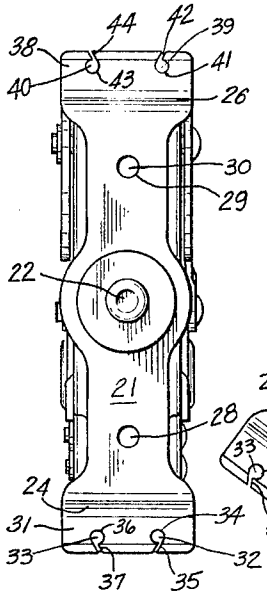


Fig. 3

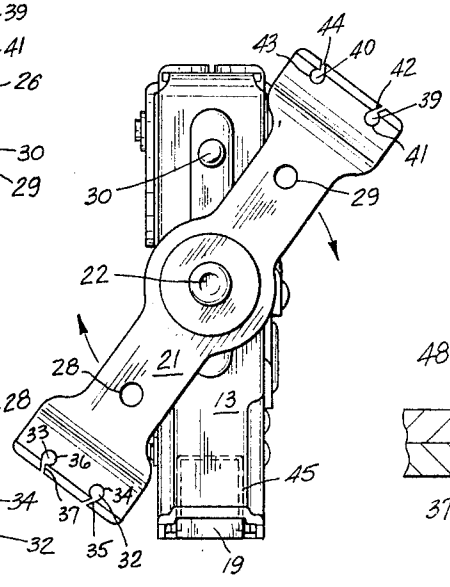


Fig. 4

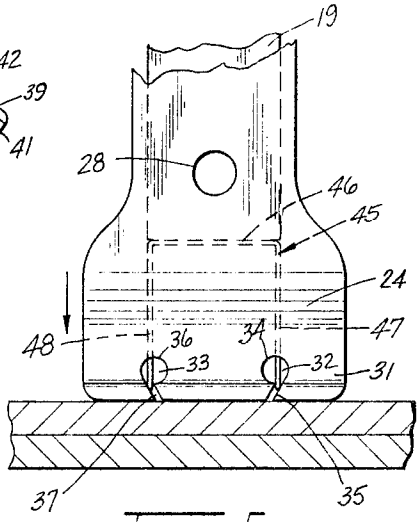


Fig. 5

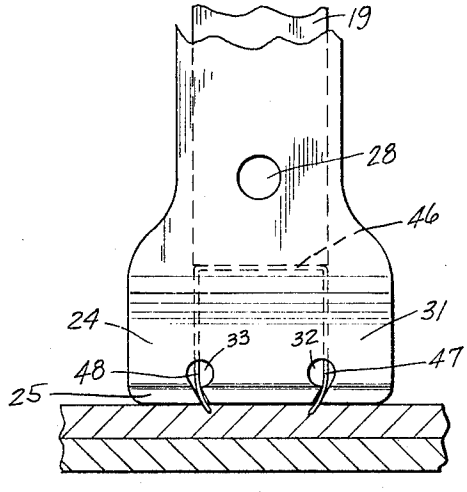


Fig. 6

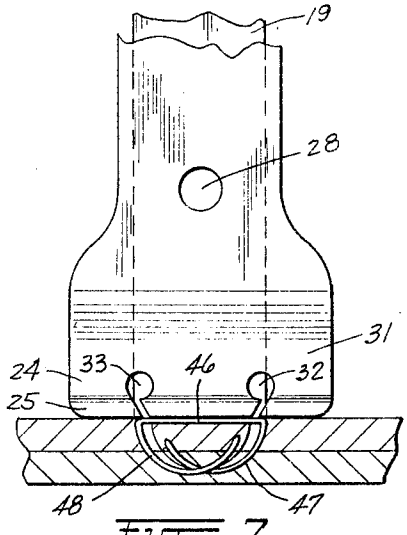


Fig. 7

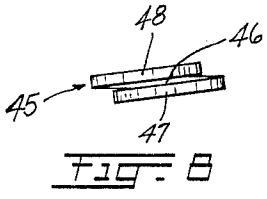


Fig. 8

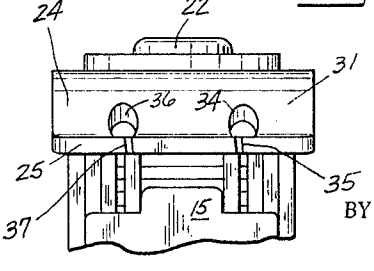


Fig. 9

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BLIND CLINCH MECHANISM

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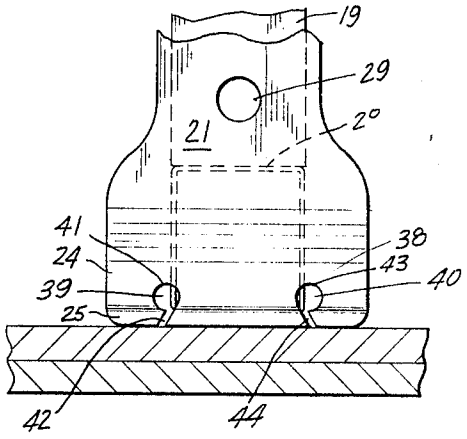


Fig. 10

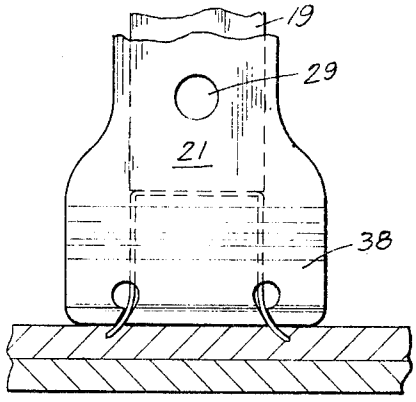


Fig. 11

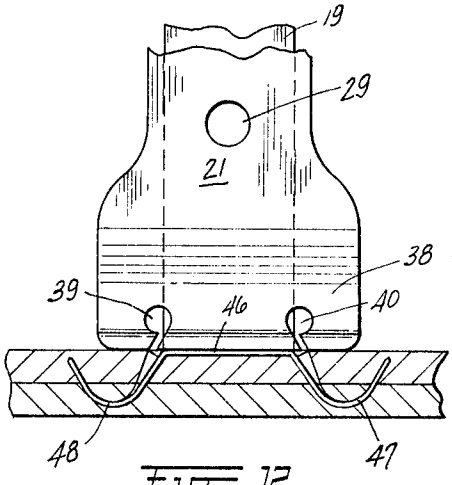


Fig. 12

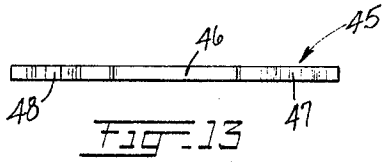


Fig. 13

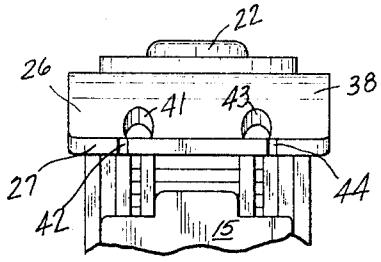


Fig. 14

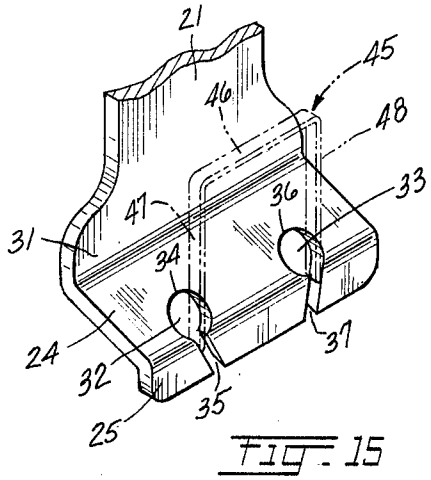


Fig. 15

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3,291,357

BLIND CLINCH MECHANISM

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Filed Mar. 31, 1965, Ser. No. 448,907
3 Claims. (Cl. 227—83)

This invention relates to a blind clinch mechanism having particular application to those devices wherein such blind clinching of a staple element is desired. Conventionally such applications are carton closing, container fastening, etc.

Conventionally a "blind clinch" of a staple element is made by interposing an anvil beneath the staple which is pointed so as to be able to penetrate the material through which the staple is to be driven. A conventional blind anvil is shown in the patent application of Vincent A. Zike, Serial No. 198,998 filed May 31, 1962, now Patent No. 3,224,657. The structure shown in the Zike application constitutes one manner of performing the result involved.

One disadvantage of the conventional structure resides in the fact that the anvil must be pushed through the material into which a blind clinch is to be made. Thus, adjacent to the clinch point of the staple, a pair of holes appear. This, of course, is ugly and unsightly and also permits foreign material to enter the container.

In the device of the instant invention a blind clinch is produced without any other mechanism other than the staple to be clinched penetrating the object into which a clinch is to be put. This, to the knowledge of the inventor, has never been done before.

The advantages of such a structure are quite obvious. The staple can be clinched within the material so that nothing appears on the outer surface of the underside thereof. If it is desired to clinch the staple outside of the material on the underside thereof there will not be any additional openings in the material other than the openings produced by the staple itself.

In addition, in one form of this invention, the staple can be clinched with the legs thereof bypassing one another producing much stronger holding power and a cleaner clinch.

There are, of course, numerous other advantages of the instant invention which would become apparent to those skilled in this art.

The above constitutes a brief description of this invention and the objects and advantages thereof.

The invention will now be further described by reference to the accompanying drawings which are made a part of this specification and represent the best modes known to the inventor of taking advantage of his invention. In this connection, however, the reader is cautioned to note that the specific forms of this invention as set forth in the instant specification are for illustrative purposes and for purposes of example only. Various changes and modifications could obviously be made within the spirit and scope of this invention and would occur to those skilled in this art.

In the drawings of this specification—

FIG. 1 is a side view of a tacker having one form of the blind clinch mechanism of this invention affixed thereto with the driver blade of the tacker in "down" position and intervening the casing of the tacker and the guide member of this invention.

FIG. 2 is a view similar to that of FIG. 1 but partly in section and with the driver blade of the tacker in partially "up" position showing the manner in which the guide member of this invention bears against the front portion of the casing of the tacker.

FIG. 3 is a front elevational view of the structure

shown in FIGS. 1 and 2 with the guide member in the position that it assumes when an inward clinch of the staple element is to be made.

FIG. 4 is a view similar to that of FIG. 3 but with the guide member pivotally moved away from its normal position in front of the casing of the tacker.

FIG. 5 is a detail front view, on an enlarged scale, of the manner in which a staple is driven by the driver blade through the openings contained within the guide member of this invention. In this figure the legs of the staple element are at the position immediately prior to their being bent by the recesses within the guide member.

FIG. 6 is a view similar to that of FIG. 5 but showing the manner in which the legs of the staple element are bent by the guide member to form an inwardly extending blind clinch of the staple element.

FIG. 7 is a view similar to that of FIGS. 5 and 6 but showing the final clinched position of the staple element.

FIG. 8 is a bottom plan view of the clinched staple element in the position shown in FIG. 7.

FIG. 9 is a bottom plan view of a tacker embodying this invention with the guide member in position to form an inward clinch of staple element.

FIG. 10 is a detail front view, on an enlarged scale, of the guide member of this invention with the legs of a staple element in position to be bent thereunder. The guide member shown in this figure produces an outwardly directed blind clinch of a staple element.

FIG. 11 is a view similar to that of FIG. 10 but showing the position that the staple element assumes as the legs thereof commence their outward bend through the action of the guide member.

FIG. 12 is a view similar to that of FIGS. 10 and 11 but showing the position that the staple element assumes when the outward clinch is completed.

FIG. 13 is a bottom plan view of a staple element clinched in the manner shown in FIG. 12.

FIG. 14 is a bottom plan view of a tacker and guide member thereupon with the guide member in the form utilized to produce the clinch shown in FIG. 12.

FIG. 15 is a perspective view, on an enlarged scale, of the bottom portion of the guide member utilized to produce an inward clinch with a staple shown in operative relationship therewith in phantom lines.

Now referring to the drawings for a specific description of this invention a tacker **11** is formed with a casing **12** having a front portion **13**, a magazine **14** and an openable cover **15** about the magazine. Cover **15** may be opened by means of the movement of latch **16** to expose the magazine for loading of staple elements. A handle **17** is upwardly movable and controls trigger **18** which in turn moves driver blade **19** upwardly against the pressure of spring **20** and thereafter releases the same in order to drive a staple element into work.

The magazine also contains staple feeding means (not shown) to move the leading staple element in position to be driven by the driver blade.

The above structure is now conventional since it is described in the patent application of Elliott J. Lash et al., Serial No. 283,029 filed May 24, 1963, now Patent No. 3,199,158.

A guide member **21** is pivotally secured by rivet **22** to front portion **13** of casing **12**. Guide member **21** is formed with a support portion **23**, an offset portion **24** at one end thereof and a face portion **25** adjoining offset portion **24**. A second offset portion **26** is disposed at the opposite end of member **21** having a face portion **27** adjacent portion **26**. A first opening **28** and a second opening **29** are provided within guide member **21**. A pin **30** is designed to be selectively abuttable with openings **28**

and 29 so as to position guide member 21 in one or the other operating positions.

End portion 31 of guide member 21 is provided with a plurality of recesses 32 and 33. Recess 32 is formed with a substantially circular upper portion 34 and an elongated offset lower portion 35. Recess 33 is formed with a substantially circular upper portion 36 and an elongated offset lower portion 37. Portions 35 and 37 are pointed toward one another. Portions 35 and 37 are also offset from the perpendicular with respect to the face portion 25 of guide member 21 so that a twist is produced upon the legs of the staple element as will be subsequently explained.

At the opposite end portion 38 of guide member 21 a plurality of recesses 39 and 40 are provided. Recess 39 is formed with a substantially circular upper portion 41 and an elongated offset lower portion 42. Recess 40 is formed with a substantially circular upper portion 43 and an elongated offset lower portion 44. Portions 42 and 44 are pointed away from one another.

With the foregoing specific description the operation of this invention may now be explained.

Depending upon the clinch desired the operator positions member 21 in order to juxtapose the desired face portion of member 21 against the outer face of driver blade 19. Assuming that an inwardly directed clinch is desired the parts will assume the positions shown in FIGS. 3, 5, 6 and 7. The staple element 45 formed with a crown portion 46 and a pair of legs 47 and 48 is driven by driver blade 19. As driver blade 19 is depressed face portion 25 of guide member 21 bears against portion 13 of casing 12 with recesses 32 and 33 in direct alignment with legs 47 and 48 of staple 45. As legs 47 and 48 enter recesses 32 and 33 they are bent inwardly by lower portions 35 and 37 as shown clearly in FIGS. 5, 6 and 7. Since recesses 35 and 37 are offset from the perpendicular in opposite directions with respect to face portion 25 legs 47 and 48 of staple 45 bypass one another as shown clearly in FIGS. 7 and 8. Guide member 21 is springable and crown 46 of staple 25 moves downwardly in the direction shown by the arrow in FIGS. 5 and 15 as the staple is being driven downwardly by driver blade 19. As driver blade 19 continues to move downwardly and to push crown 46 down the side of driver blade 19 intervenes guide member 21 and portion 13 of casing 12 thereby pushing guide member 21 outwardly and away from its normal position of impingement against casing 12. This permits crown portion 46 of staple 45 to clear member 21. At this point legs 47 and 48 slide outwardly through the open sides of portions 35 and 37 of recesses 32 and 33.

If an outward clinch is desired face portion 27 is brought in juxtaposition with driver blade 19 as shown in FIGS. 10, 11, 12 and 14. The mechanism of action is similar to that wherein an inward clinch is produced but since recesses 42 and 44 are pointed away from one another the staple is clinched outwardly. Since no bypass is necessary with this type of clinch recesses 42 and 44 do not have to be offset from the perpendicular with respect to face portion 27.

The foregoing sets forth the manner in which the objects of this invention are achieved.

I claim:

1. A tacker having a casing, a magazine within said casing adapted to hold a plurality of staple elements, staple feeding means within said magazine, a reciprocatingly movable driver blade operatively connected with said magazine adapted to drive the leading staple from said magazine, said driver blade having a face portion thereupon, a single guide member carried by said casing having a face portion adapted to springably abut the face portion of said driver blade, said guide member also having an offset portion spaced from said casing and provided with a plurality of spaced recesses therewithin, each of said recesses having an upper portion in said offset portion and a connecting lower portion in said face portion, the upper portion being of greater width than the lower portion, the lower portion of each of said recesses extending obliquely from the corresponding upper portion, each of said recesses adapted to accommodate the leg of a staple therewithin and to bend it into clinched position.

2. In a tacker having a casing having a front face thereupon, a magazine within said casing adapted to hold a plurality of staple elements in aligned relationship, and a reciprocatingly movable driver blade adapted to drive staples from said magazine, the improvement which comprises a face portion upon said driver blade, a spring guide member pivotally secured to the front portion of said casing, said spring member having a securing portion adjacent said casing, an offset portion spaced from said casing, and a face portion normally engaging the front portion of said casing, said spring member provided with a plurality of spaced recesses therewithin adapted to accommodate the legs of the staple to be clinched and to bend said legs into clinched position, said face portion being adapted to be pushed away from engagement with said casing by said driver blade so as to permit the crown of the staple to pass said guide member.

3. In a tacker having a casing formed with a front face thereupon, a magazine within said casing adapted to hold a plurality of staple elements in aligned relationship, and a reciprocatingly movable driver blade adapted to drive staples from said magazine, the improvement with comprises a face portion upon said driver blade, a spring member pivotally secured to the front face of said casing, said guide member having a pair of oppositely extending offset portions spaced from said casing and a face portion adjacent each of said offset portions, each of said face portions being selectively adapted to engage the front portion of said casing adjacent said magazine, each of said face portions of said spring member provided with a plurality of spaced recesses therewithin adapted to accommodate the legs of the staple to be clinched, the recesses in one of said face portions extending in a diverging direction and the recesses in the other of said face portions extending in a converging direction, the face portion selectively engaged with said front portion of said casing adjacent said magazine being adapted to be pushed away from engagement with said portion by said driver blade so as to permit the crown of the driven staple to pass said spring member.

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