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A. H. MAYNARD

2,272,773

FASTENER-APPLYING IMPLEMENT

Filed Oct. 6, 1939

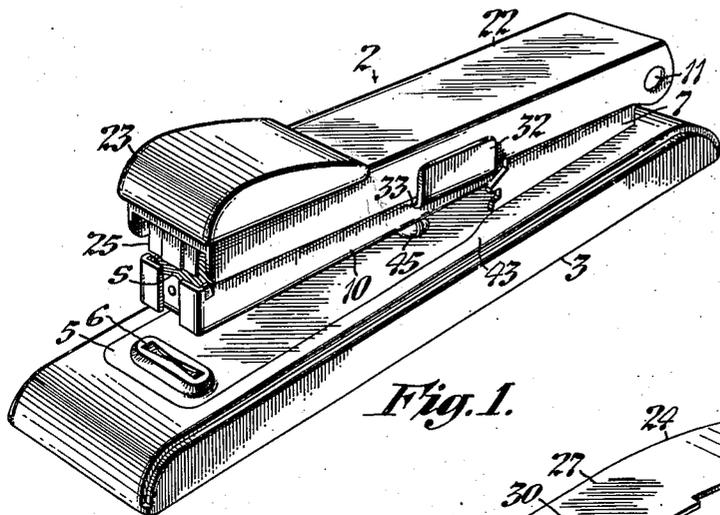


Fig. 1.

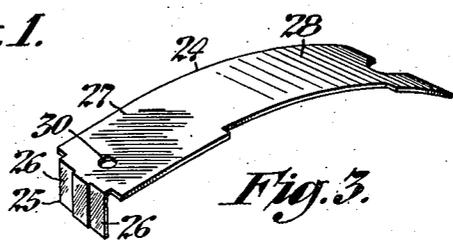


Fig. 3.

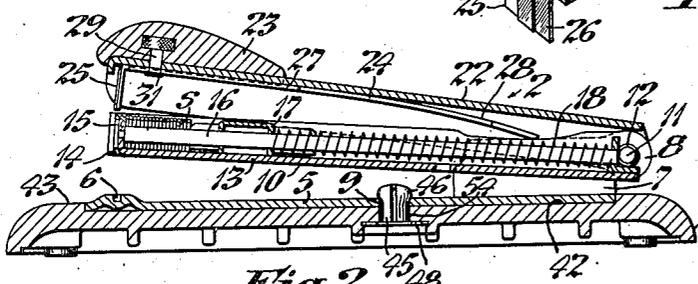


Fig. 2.

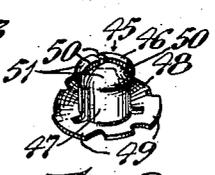


Fig. 9.

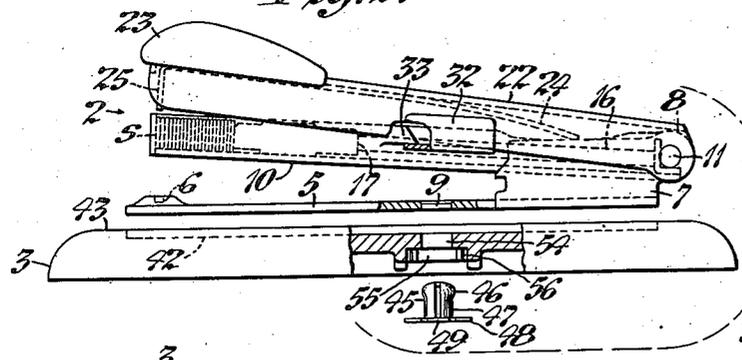


Fig. 4.

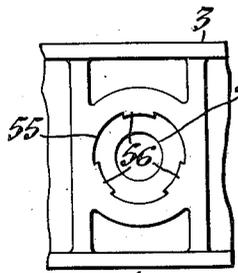


Fig. 5.

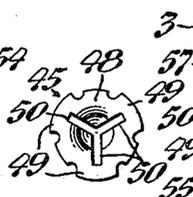


Fig. 6.

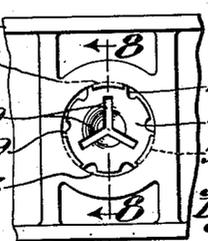


Fig. 7.

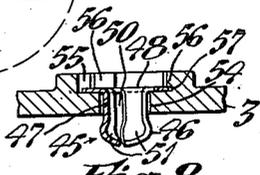


Fig. 8.

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UNITED STATES PATENT OFFICE

2,272,773

FASTENER-APPLYING IMPLEMENT

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Application October 6, 1939, Serial No. 298,265

7 Claims. (Cl. 1—3)

The present invention relates to fastener-applying devices and more particularly to a self-contained fastener-applying implement adapted to be detachably mounted on a relatively stable base.

One of the objects of the present invention is to provide a small compact fastener-applying device adapted to be carried in the pocket as a portable implement or mounted on the relatively stable base to adapt it for use as a desk-type implement.

Another object of the invention is to provide a base of the type indicated adapted to seat on a desk or other support and having a recess in its upper face of a contour to closely fit the bottom member of the fastener-applying implement.

Another object of the invention is to provide cooperating latching or snap-fastener means on the fastener-applying implement and base for detachably connecting them one to the other.

Another object of the invention is to provide snap-fastener means of the type indicated comprising a resilient projection or stud adapted to be permanently fastened in place by merely turning it on the part on which it is mounted.

Another object of the invention is to provide a fastener-applying implement having a single resilient element carried by one of the relatively movable parts which serves as both a driver and lifting spring.

Still another object of the invention is to provide a device of the type indicated which is of simple and compact construction to adapt it for economical manufacture.

Further objects of the invention are set forth in the following specification which describes a preferred form of construction of the device, by way of example, as illustrated by the accompanying drawing. In the drawing:

Fig. 1 is a perspective view showing the fastener-applying implement detachably mounted on the base;

Fig. 2 is a longitudinal sectional view showing the bottom member of the fastener-applying implement seated in the recess in the base and detachably connected thereto by snap-fastener means;

Fig. 3 is a perspective view of a resilient element carried by the actuating lever of the fastener-applying implement and formed to provide a driver at one end and a lifting leaf-spring at its opposite end;

Fig. 4 is a side elevational view partly in section showing the fastener-applying implement,

base and resilient stud in disassembled relationship;

Fig. 5 is an enlarged fragmentary bottom plan view of the base showing a hole and recess therein with ribs projecting into the recess for securing the resilient stud of the snap-fastening means;

Fig. 6 is an enlarged bottom plan view of the resilient stud showing its flange adapted to seat in the recess in the base and the radially projecting lugs on the flange;

Fig. 7 is a view similar to Fig. 5 showing the lugs on the flange of the stud in engagement with the ribs at the sides of the recess;

Fig. 8 is a transverse sectional view taken on line 8—8 of Fig. 7 showing the resilient stud mounted in position on the base; and

Fig. 9 is a perspective view of the resilient stud showing the plurality of longitudinal slits to adapt it to expand and contract;

Fig. 1 of the drawing illustrates a fastener-applying implement 2 mounted on the base 3 and detachably connected thereto by means of the resilient stud 45. The fastener-applying implement 2 is similar to that illustrated and described in my United States Letters Patent No. 2,264,322 for Fastener-applying implement, issued December 2, 1941. Suffice it to state herein that the fastener-applying implement comprises a bottom member or plate 5 having clinching means 6 at its forward end and upwardly projecting spaced stanchions 7 adjacent its rearward end with rearwardly-extending ears 8. In accordance with the present invention the bottom member 5 is also provided with a snap-fastener eye in the form of a hole 9 to adapt it to be attached to the base 3 as will be explained later.

A magazine-arm 10 is positioned between the stanchions 7 and hingedly mounted on a pivot-pin 11 extending between the ears 8 on the member 5. The magazine-arm 10 is of channel-shape with an open top through which the fasteners are supplied. Although the fasteners may take other forms, they are herein illustrated as U-shaped wire staples s adapted to be supported in the magazine-arm 10 by the direct engagement of the ends of their legs with the bottom wall 13 of the magazine. A relatively narrow throat 14 is provided at the forward end of the magazine-arm 10 through which the fasteners are driven and the rearward wall of the throat is constituted by a shear-plate 15. A brace or strut 16 extends longitudinally of the magazine between the shear-plate 15 and pivot-pin 11 and seats in an annular groove 12 in the pivot-pin to hold the

latter in place. A pusher 17 is mounted to slide on the strut 16 and is advanced in the magazine-arm 10 by means of a spring 18 coiled about the strut.

An actuating lever 22 of inverted channel-shape overlies the sides of the magazine-arm 10 and stanchions 7 and is hingedly mounted on the projecting ends of the pivot-pin 11 which extend through the side walls of the lever. A knob 23, preferably constructed of plastic material, is mounted on the actuating lever 22 at its forward end to provide a hand-rest for operating the implement.

In accordance with the present invention a single resilient element 24 is carried by the lever 22 to serve for the several functions of driving the staples 8 from the magazine-arm 10, holding the lever 22 raised with respect to the magazine-arm, and holding the magazine-arm raised with respect to the plate 5. As illustrated in detail in Fig. 3, the resilient element 24 comprises a forward end-portion bent at right-angles to provide a driver 25, a flat portion 27 adjacent the driver adapted to bear against the top wall of the actuating lever 22, and a curved tail-portion 28 constituting a leaf-spring. The bent portion of the element 24 constituting the driver 25 is narrower than the adjacent flat portion 27 and its sides 26 are of reduced thickness to adapt the driver to fit closely within the throat 14. The resilient element 24 is permanently attached to the actuating lever 22 by means of a stud 29 embedded in the plastic knob 23 and projecting through the lever and a hole 30 in the element with its end 31 riveted over around the edges of the hole. Thus, the stud 29 serves to attach both the knob 23 and the resilient element 24 to the actuating lever 22. The resilient element 24 is so positioned on the lever 22 that the driver 25 aligns with the throat 14 and the end of its curved tail-portion 28 bears against the top edges of the side walls of the magazine-arm 10 and the top edges of the stanchions 7. A latch-member 32 on the actuating lever 22 cooperates with an abutment 33 on the magazine-arm 10, see Figs. 1 and 4, for limiting the upward movement of the lever with respect to the arm, whereby the resilient element 24 acts to hold the actuating lever raised with respect to the magazine-arm and the magazine-arm raised with respect to the bottom member 5.

The base 3 may take any desired form and as herein illustrated it is of generally rectangular shape having rounded front and rear ends. A recess 42 in the top face 43 of the base 3 has the same contour and dimensions as the bottom member 5 of the fastener-applying implement 2 to adapt the latter to seat therein with a close fit at the marginal edges of the member and with its upper face flush with the upper face of the base.

A resilient projection or split stud 45 projects upwardly from the recess 42 in the base 3 in alignment with the hole 9 in the bottom member 5 of the fastener-applying implement 2, the stud being adapted to snap through the hole to detachably connect the implement to the base. As illustrated in detail in Fig. 9, the resilient split stud 45 has a rounded head 46, a shank 47 and a radial flange 48 at its bottom with spaced radial lugs 49 projecting from the periphery of the flange. A series of angularly-related slits 50 are formed in the stud 45 which extend through the head 46, shank 47 and a portion of the flange 48 to provide a series of resilient prongs 51. The prongs 51 of the stud 45 may be flexed inwardly

toward each other and are automatically spread or expanded away from each other due to the inherent resiliency of the material.

To fasten the resilient stud 45 on the base 3 the latter is provided with a hole 54 in alignment with the hole 9 in the bottom member or plate 5 and an annular recess 55 which surrounds the hole at the bottom of the base with a series of spaced ribs 56 projecting radially inwardly into the recess. The stud 45 is mounted on the base 3 by inserting the head 46 and shank 47 through the hole 54 with the lugs 49 on the flange 48 positioned in the space between the inwardly extending ribs 56 in the recess 55 until the flange becomes seated against the top of the recess, as illustrated in Fig. 2. The stud 45 is then turned to cause the lugs 49 to cut or score slots 57 in the ribs 56 which provide seats for the lugs and bind against the latter to permanently mount the stud on the base. Thus, the resilient stud 45 on the base 3 and the eye or hole 9 in the base-member 5 constitute cooperating snap-fastener means for detachably connecting the fastener-applying implement to the base. One form of the invention having been described in detail the operation of the assembled device is explained as follows:

The fastener-applying implement 2 is so constructed and arranged that it may be made extremely compact and light in weight to adapt it to be carried on the person in the vest pocket or in a bag or purse as a portable implement. To adapt the device 2 for use as a desk-type implement it is applied to the relatively stable base 3 and connected thereto by the snap-fastener means 9 and 45. To this end the bottom member 5 of the fastener-applying implement 2 is seated in the recess 42 in the base 3 and pressed against the latter by causing the stud 45 of the snap-fastener means to snap through the hole or eye 9 of the bottom member or plate 5. During the relative movement of the member 5 and base 3 the prongs 51 of the stud 45 yield by moving inwardly toward each other to adapt the head 46 to pass through the restricted hole or eye 9 and thereafter the prongs expand, due to the inherent resiliency of their material, to cause the head 46 to bind against the member 5 at the edges of the hole, see Fig. 2. When the fastener-applying implement 2 is seated in the recess 42 of the base 3 the engagement of the edges of the bottom member or plate 5 with the shoulders at the sides of the recess holds the implement against longitudinal or lateral movement with respect to the base; and the engagement of the snap-fastener means 6 and 45 holds the implement firmly seated in the recess in the base. Thus, the fastener-applying implement is detachably connected to the base 3.

The fastener-applying implement 2 is operated by depressing the knob 23 of the actuating lever 22 which causes the lever and magazine-arm 10 to rock as a unit on the pivot-pin 11 toward the bottom member 5, the spring portion 28 of the resilient element 24 yielding to permit this movement. When the magazine-arm 10 has been moved into engagement with the work seated on the member or plate 5 overlying the clinching means 6 the lever 22 will continue to move with respect to the magazine-arm 10. Relative movement between the magazine-arm 10 and lever 22 causes the driver 25 at the forward end of the resilient element 24 to descend through the throat 14 to drive a staple through

the work and engage the ends of its legs with the clinching means 6.

Upon release of the actuating lever 22 the spring-portion 28 of the resilient element 24, acting against the top of the stanchions 7, raises the lever away from the bottom member 5. The actuating lever 22 first moves relative to the magazine-arm 10 and withdraws the driver 25 from the throat 14 until the latch 32 on the lever engages with the abutment 33 on the arm 10, the lever and magazine-arm thereafter moving together as a unit. The upward movement of the magazine-arm 10 and actuating lever 22 continues until the top edges of the side walls of the magazine-arm engage the end of the spring-portion 28 of the resilient element 24. The parts then are in equilibrium with the spring-portion 28 acting between the lever 22 and the magazine-arm 10 and resting against the top of the stanchions 7. With this relationship of the parts the driver 25 is withdrawn from the throat 14, permitting the pusher 17 to advance the staples s in the magazine to deliver the next staple s into the throat. The implement is then ready for a subsequent operation to drive another staple.

It will now be observed from the foregoing description that the present invention provides a novel construction and arrangement of the elements of a fastener-applying implement to adapt it to be either carried in the pocket or other receptacle as a portable implement, or to be detachably mounted on a base for use as a desk-type implement. It will also be observed that the present invention provides a novel form of fastener-applying implement of simplified construction to adapt it for economical manufacture.

While a preferred embodiment of the invention is herein described and illustrated, it will be understood that various modifications may be made in the structure and arrangement of its parts without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, a member movable relatively of the magazine-arm, and a single resilient element carried by the last-named member and constituting a driver at one end for driving fasteners one at a time from the magazine-arm and a lifting spring at its opposite end for raising the arm from the bottom member.

2. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, a lever movable with respect to the magazine-arm, and a resilient element having a bent end portion for driving fasteners one at a time from the magazine-arm and a curved portion constituting a lifting spring for raising the lever with respect to the magazine arm.

3. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, a member movable relatively of the magazine-arm, and a single resilient element carried by the last-named member and having one end formed as a driver for driving fasteners one at a time from the magazine-arm and its opposite end engageable with the magazine-arm for raising the member with respect thereto.

4. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, an actuating member movable relatively of the magazine-arm, means connecting the magazine-arm and actuating member, and a single resilient element carried by the actuating member and having one end formed as a driver for driving fasteners one at a time from the magazine-arm and its opposite end engaging the bottom member to hold the magazine-arm raised with respect thereto.

5. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, an actuating member movable relatively of the magazine-arm, and a single resilient element carried by the actuating member and having one end formed as a driver for driving fasteners one at a time from the magazine-arm and its opposite end engaging the magazine-arm and bottom member to raise the actuating member with respect to the magazine-arm and to raise the magazine-arm with respect to the bottom member.

6. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, a lever movable with respect to the magazine-arm, a substantially right-angular element on the lever having a portion underlying the lever and a driver portion for driving fasteners from the magazine-arm one at a time, an actuating knob on the lever overlying the right-angular element, and a stud connecting the lever, driver and knob for securing the parts in operative relationship.

7. In a fastener-applying implement, a bottom member, a magazine-arm adapted to hold a supply of fasteners, said arm being movable toward and away from the bottom member, a lever movable with respect to the magazine-arm, a single resilient element on the lever adjacent the magazine-arm, said element having one end formed as a driver for driving fasteners one at a time from the magazine-arm and its opposite end engageable with the magazine-arm for raising the member with respect thereto, and a knob on the lever having a depending stud extending through the lever and resilient element for attaching the knob and resilient element to the lever.

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