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W. SCHAFROTH ET AL

2,470,726

STAPLE REMOVER

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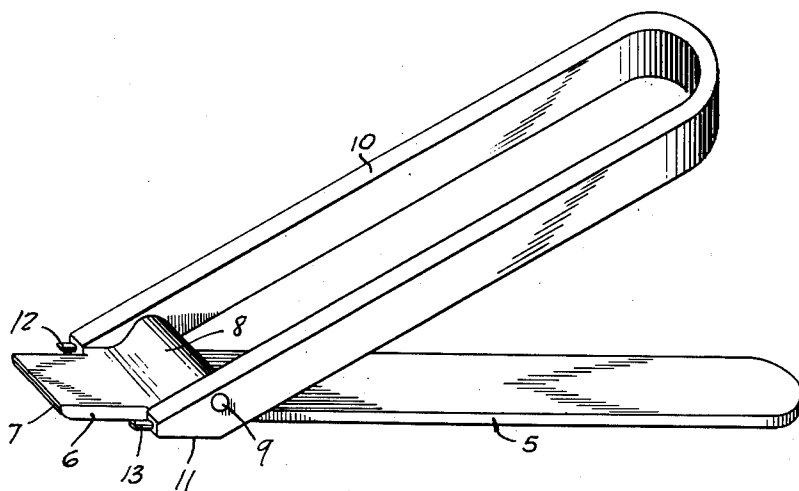


Fig. 1

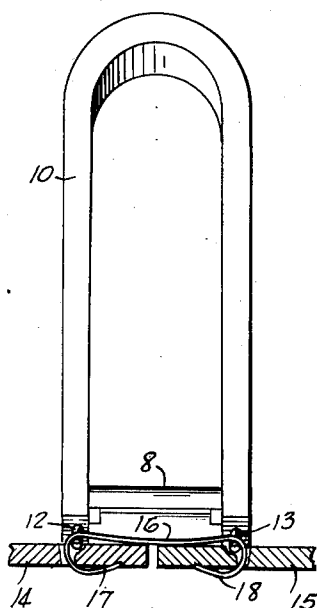


Fig. 3

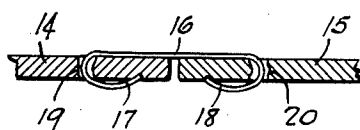


Fig. 2

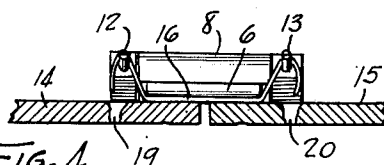


Fig. 4

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STAPLE REMOVER

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3 Claims. (Cl. 254—28)

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This invention is concerned with staples of the type which are driven through and clinched over the surface of the materials which the staples are designed to hold together. A device for driving and clinching such staples, as well as the staples themselves, are shown in Schafroth Patent Number 2,080,634, issued May 18, 1937.

More particularly, this invention is concerned with the provision of a device for removing such staples after they have been clinched, and when it is desirable to separate the clinched sheets which the staples hold together.

Staples, of the character described, are frequently employed to secure the end flaps of cardboard or corrugated paperboard containers in closed position. Many times it is desirable to re-use the containers after they have served the purpose of protecting and carrying to destination the articles contained therein. Due to the fact that the clinched ends of the staples are within the closed container and hence cannot be reached for straightening to permit easy withdrawal, successful removal without resulting damage to the container flaps has been difficult of attainment.

A broad object of this invention is the provision of such a device which may be used to remove such clinched staples easily and without resulting damage to the materials which the staples hold together in clinched position.

A more limited object is the provision of such a device which may be operated from the exterior of a closed and clinched container and will pull the clinched ends of the staples from clinching relation and through the same openings which were made during the driving and clinching of the staples when they were applied.

A further object of this invention is the provision of a device of the character noted which is economical to manufacture, one in which the parts are so constructed as to give a long life of service, and one in which the construction is simple.

Other objects will appear hereinafter as this description proceeds in connection with the accompanying drawings in which:

Figure 1 is a perspective view of this invention.

Figure 2 is a sectional view of a pair of juxtaposed sheets of material through which a staple has been driven and clinched thereover to hold the sheets in desired relation.

Figure 3 is a front elevational view of the de-

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vice in the early stage of removing the staple shown in Figure 2.

Figure 4 is a front elevational view of the device in the position the parts assume when the staple of Figure 2 is entirely removed.

Referring now to Figure 1, our device comprises a base plate 5 having a flat bottom face and a forwardly extending bending anvil 6 which is beveled upwardly and forwardly at its free end 7.

In the preferred embodiment of our invention disclosed, the bottom face of the anvil 6 and the base plate 5 lie in the same plane and present a flat surface designed to rest against the surface of the material which carries the staple which is to be removed. The base plate and anvil, in this preferred form, are made from a solid bar of steel and the width of the anvil is slightly less than that of the base plate, but the proper width of the anvil depends upon the size of the staple which is to be removed.

Rearwardly of the bevel end 7 of the anvil and extending transversely of the base 5 is an upwardly extending rib 8, which is provided with a pin-receiving bore into which a pivot pin 9 is inserted. This pivot pin 9 carries a U shape lever 10 whose lower ends below the pivot pin 9 are beveled as at 11 to permit the staple hooks 12 and 13, which are pressed into appropriate bores in the lower spaced ends of the lever 10, to be brought into a plane slightly below the bottom face of base 5 and anvil 6 when the device is in use, as will be later described.

In Figure 2 are shown a pair of juxtaposed fiber sheets 14 and 15 which are held together by a clinched staple 16, the spaced legs 17 and 18 of which have been driven through the staple-receiving openings 19 and 20, respectively. In many cases, the cover flaps of a container are overlapped and secured together by staples, such as staple 16, and the clinched ends are concealed and contained within the inclosed container. It is in such cases that the removal of the staple is difficult as it is desired to prevent damage to the container flaps so that the container may be used again.

As can be seen from Figure 3, when it is desired to remove the staple 16 shown in Figure 2, the base plate 5 and anvil 6 are laid upon the surface of the sheets 14 and 15 with the anvil 6 lying upon the staple. Preferably then the lever 10 is raised so that either staple hook 12 or 13 can be forced under one end of the staple; then the base 5 and lever 10 are swung into position so that the other of the two staple hooks 12 or 13 can be

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forced under the other end of the staple. The staple hooks then assume the position shown in Figure 3 and when lever 10 is depressed, the clinched ends of the staples are brought outwardly from their clinched positions while anvil 6 holds the center of the staple securely in position. As the lever 10 is forced downwardly to complete the motion, the clinched ends of the staples traverse almost the same path they traversed when they were driven and clinched, and thus the sheet material is not torn and is suitable for reuse as desired.

While we have shown and described our preferred form of construction, we do not wish to be limited to the details shown and described, but wish to avail ourselves of all variations coming properly within the scope and spirit of the appended claims.

What is claimed is:

1. A staple remover designed for use in removing heavy duty staples from cartons and similar packages, said staple remover comprising a flat elongated base plate, one end portion of which is formed as an anvil adapted to engage the exposed face of the back of a staple with the entire remainder of the base plate resting on the exposed surface of the carton from which the staple is to be removed, a pivot pin carried by said base plate, a lever carried by said pivot pin, and a pair of spaced pointed members carried by said lever, positioned on each side of said anvil and adapted to be inserted beneath the back of said staple.

2. A staple remover designed for use in removing heavy duty staples from cartons and similar packages, said staple remover comprising a flat elongated base plate, one end portion of which is formed as an anvil adapted to engage the exposed face of the back of a staple with the remainder of the base plate resting on the exposed surface of the carton from which the staple is to be removed, a pivot pin carried by said base plate on

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the upper face thereof and closely adjacent to said anvil, a U-shaped yoke having a pair of legs secured to the opposite ends of said pivot pin with the legs of said yoke partially overlapping said anvil, each leg of said yoke having a bevelled surface adapted to engage the face of said carton on which said base plate rests and an end face normal to said bevelled surface, and a pointed pin carried by the free end of each leg of said yoke and projecting from said end face at an upwardly inclined angle whereby it is adapted to be inserted beneath the back of a staple to be removed.

3. A staple remover designed for use in removing heavy duty staples from cartons and similar packages, said staple remover comprising a flat elongated base plate, one end portion of which is formed as an anvil adapted to engage the exposed face of the back of a staple with the entire remainder of the base plate resting on the exposed surface of the carton from which the staple is to be removed, a pivot pin welded to the upper face of said base plate with its opposite ends projecting therebeyond, a U-shaped yoke having a pair of spaced legs with each leg pivotally mounted on a projecting portion of said pivot pin, and a pin carried by the free end of each leg and having a point defined by a bevelled surface that is adapted to engage the top face of the carton as the pin is inserted beneath the staple to be removed.

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

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