

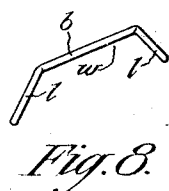
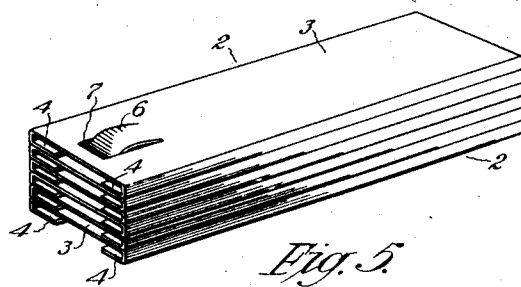
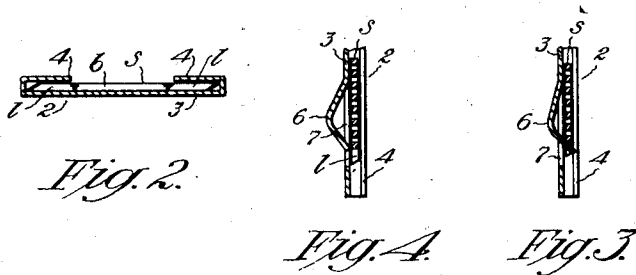
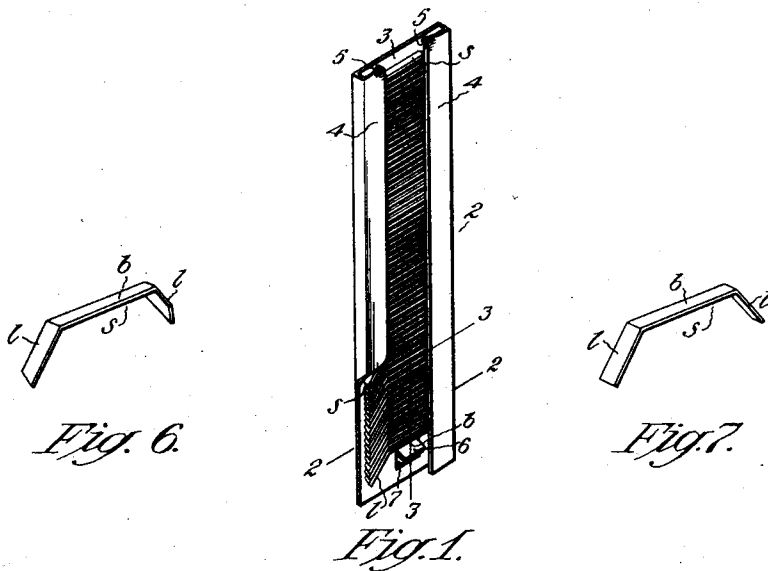
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METHOD OF PACKAGING STAPLES AND PACKAGE PRODUCED THEREBY

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METHOD OF PACKAGING STAPLES AND PACKAGE PRODUCED THEREBY.

Application filed December 15, 1924. Serial No. 755,932.

This invention relates to an improved method of packaging wire staples or the like and to the holder or cartridge for containing the staples.

One object of the invention is to provide an improved method of packaging staples in compact form for packing and shipment and as a merchantable article to supply refills for hand stapling-machines, or as a magazine cartridge for wire-stitching machines used in the binding and kindred arts.

Another object of the invention is to provide a holder or package which will maintain the staples assembled in contiguous relation and parallel alinement to adapt them to be delivered therefrom to the stapling-mechanism of the machine in which they are used.

Another object of the invention is to provide a staple holder or package which may be employed as a cartridge for use either singly or in multiple to load or charge the magazine of the machine in which the staples are applied to the work.

Another object of the invention is to provide a staple package or cartridge for holding partly formed staples to adapt them to deliver therefrom to be completely formed in the machine as they are applied to the work.

Further objects of the improvement are set forth in the following specification which describes a preferred method and means for carrying out the invention as illustrated by the accompanying drawings. In the drawings:

Fig. 1 is a perspective view of my improved staple package or cartridge, showing a portion of its side broken away to illustrate the manner in which the staples are nested therein;

Fig. 2 is an enlarged cross-sectional view of the staple holder taken on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary vertical sectional view of the holder taken on line 3—3 of Fig. 1, showing the means for retaining the staples therein;

Fig. 4 is a similar sectional view showing the staple-retainer released to allow the staples to slide out from the end of the holder or cartridge;

Fig. 5 is a perspective view showing several of the staple holders or cartridges

stacked for packing or for application to the magazine of the stapling-machine; and

Figs. 6, 7 and 8 are perspective views of several different types of partly formed staples for which the package is adapted.

One feature of the present invention consists in providing a substantially flat holder 2 having a backing or main strip 3 against which the staples *s* are held in nested relation by overlapping side-strips or flaps 4. My improved holder 2 may be constructed of any suitable material, such as thin strips of wood, relatively stiff fiber or composition, but I have found it preferable to use thin sheet-metal which can be readily bent or folded into shape in forming dies.

As illustrated in Fig. 1, the metal strip 3 is bent at right-angles along its lateral margins and then folded inwardly to form the side-strips or flaps 4 overlapping its forward face. The space between the main strip 3 and the side-strips 4 is made of suitable width to accommodate the staples *s* in accordance with the particular type of staple to be placed in the holder. My improved holder is adapted for containing any usual type of staple such as employed for stapling sheets of paper together, binding books and pamphlets, fastening tickets to articles of commerce, sealing envelopes and for sundry other purposes. The staples are generally formed from wire cut into short lengths and bent into U-shape with a cross-bar *b* and opposite legs *l*, which latter are driven through the work and clinched on the under side thereof. Fig. 6 illustrates a type of staple formed from a flat wire or ribbon and having its legs *l* cut across at an angle to provide sharpened ends or points; while Fig. 7 shows a similar type of staple having square ends. The staple holder 2 may be proportioned to adapt it to hold staples of this type made in any dimensions from varying widths of stock, or it may be designed to accommodate other forms such as the round wire staple *w* shown in Fig. 8.

As previously stated, the staples *s* are applied to the holder in a partly formed state and when delivered therefrom are further bent to completely form them in the stapling-machine which drives them through the work and clinches their legs against the under side thereof. That is to say, instead of completely forming the staples *s* with

their legs *l* bent at right-angles to the cross-bar *b*, the legs are only partly bent over so that they stand apart or diverge at their ends. This provides that the staples may be grouped or stacked compactly in contiguous nested relation, as shown in Fig. 1, to assemble them in parallel alinement for delivery to the stapling-mechanism of the machine in which they are used.

The staples *s* may be slid into the holders 2 and nested in overlying relation with their legs held beneath the side-strips or flaps 4 as shown in Fig. 1; or in other cases the partly formed staples may be fed onto the strip 2 and its sides bent around and folded thereover by suitable forming means. The staples will thus be held against the back-strip 3 of the holder 2 while being free to slide therein to deliver one at a time from its end.

Any suitable means may be employed for restraining the staples from sliding out of the holder when the package or cartridge is handled or in transit before being applied to use in the machine. For this purpose I have found it convenient to crimp or bend the corners 5 of the side-flaps 4 inwardly at one end of the holder 2 and to provide a detent ear or lug 6 at the opposite end as shown in Fig. 1. The ear or lug 6 may be formed by a section of the metal sheared away from the back-strip 3 and bent at an angle to project through the opening 7 to engage under the bridge or cross-bar *b* of the end staple in the stick or holder 2. The detent ear or lug 6 may have sufficient resiliency to adapt it to spring back to permit the staple to ride off from its inclined end when the staples are pushed downwardly at the top by suitable feeding-means; or in other instances the stapling-machine may be provided with means for springing or bending the detent back at intervals to effect the delivery of the staples one at a time to the stapling-mechanism.

Fig. 5 of the drawings illustrates the manner in which the staple sticks, holders or cartridges may be grouped or stacked for packing to prepare them for shipment in a suitable wrapper or carton. The sticks or cartridges may be applied to the stapling-machine in several different ways to load or charge it with staples. For example, the cartridges may be laid flat one above another in the magazine of the machine as shown in Fig. 5, in which arrangement the lug 6 projecting from the back of one cartridge will nest between the folded sides 4 of the next overlying cartridge. The staples are then fed forward one at a time from the undermost stick or cartridge, and when the supply therein is exhausted the empty holder is ejected from the machine to allow a full cartridge to drop down into its place.

As another method of loading the ma-

chine the cartridge may be placed upright or slightly inclined to the perpendicular so that the staples will feed from its lower end to be operated upon by the stapling-mechanism. One or a series of the cartridges may be placed in the magazine in this manner and in the latter case when the supply of staples in the first cartridge is exhausted the empty holder is ejected and a fresh cartridge substituted therefor.

It will be observed that my invention provides a particularly simple and economical method of packaging staples or like articles in compact form, while producing a convenient package or cartridge for use in charging the stapling-machine in which the staples are used. The holders for the staples may be manufactured at small cost so that they may be discarded when empty without returning them for reloading.

The improved holder is designed to hold a maximum number of staples in a minimum space and is adapted for close packing without waste space in the carton or container. The improved holder also adapts itself to convenient handling and compact grouping when applied to the magazine of the stapling-machine, while also providing for efficient delivery of the staples positively and regularly to the stapling-mechanism. The staples are held in alinement and prevented from cramping or wedging so that they feed from the cartridge in proper position to be acted upon by the stapling-mechanism without danger of clogging or choking the machine.

While I have herein described a preferred method of carrying out the invention and a preferred form of the staple-package or cartridge produced thereby, it is to be understood that variations may be made in the steps of the method and modifications in the form of the package without departing from the spirit or scope of the appended claims.

Without limiting myself in this respect I claim:

1. An improved method of packaging wire staples consisting in assembling them in contiguous nested relation along a strip of suitable material and folding the marginal portions of the strip across the legs of the staple to retain them in position thereon.

2. An improved method of packaging wire staples consisting in assembling them in parallel contiguous relation across a strip of suitable material with their legs nested to overlap one another along the sides of the strip, folding the marginal portions of the strip over the legs of the staples, and deforming the ends of the strip to hold the staples in place thereon.

3. An improved method of packaging wire staples having diverging legs, consisting in assembling the staples in contiguous relation

across a strip of semi-flexible material with their legs in nested relation at the sides of the strip, and folding over the marginal portions of the strip to overlies the legs of the staples to retain them in position thereon.

5 4. A staple package or cartridge comprising a plurality of partly formed wire staples having central cross-bars with legs projecting from the ends thereof, said legs extend-

ing at an obtuse angle to the cross-bars in 10
divergent relation to each other, with the staples laid flat all in the same plane in the package and nested one within another with their cross-bars and legs in contact to compact them in the form of a relatively thin 15
strip or stick.

In testimony whereof I affix my signature.
THOMAS A. BRIGGS.