Feb. 10, 1931. A. H. MAYNARD 1,792,235

STAPLE PACKAGE

Filed May 17, 1929

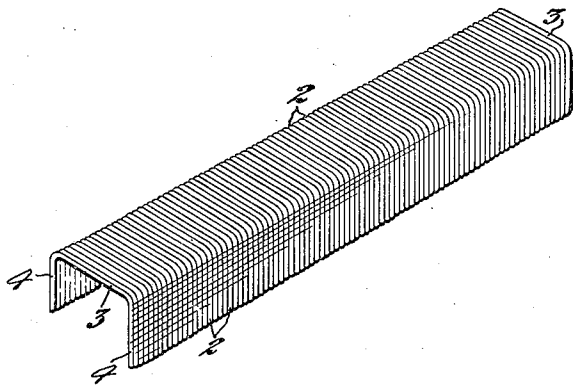

Fig. 1.

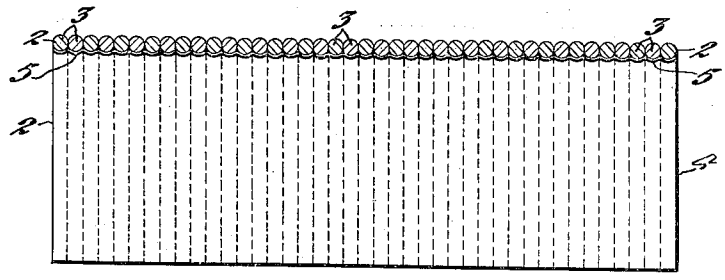

Fig. 2.

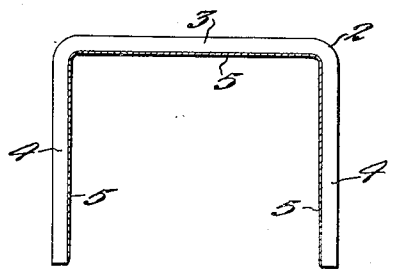

Fig. 3.

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UNITED STATES PATENT OFFICE

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STAPLE PACKAGE

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This invention relates to an improved means for putting up wire-staples or like fasteners in stick form, convenient for handling, packing and shipping, and adapted to serve as a merchantable package to supply refills for stapling machines and wire stitchers.

One object of the invention is to provide a staple stick or refill in which the staples are held together in alinement to adapt them to be conveniently inserted into the machine to deliver one at a time to the staple-setting mechanism thereof.

Another object of the invention is to provide a staple stick or refill package in which the staples are held together without the use of a central core or support and without an outer wrapper or extraneous binder.

Another object of the invention is to provide a staple stick or refill package of greater compactness and less bulk which will withstand considerable handling and rough usage without danger of the staples breaking apart or becoming separated.

Further objects of the invention are set forth in the following specification which describes a preferred method of attaching the staples in the stick and a preferred form of the package as illustrated by the accompanying drawings. In the drawings:

Fig. 1 is a perspective view of the improved stick of staples constituting a refill package;

Fig. 2 is a much enlarged longitudinal sectional view of the same taken in a vertical plane intersecting the crossbars or heads of the staples and showing the film of adhesive on their inner sides which binds them together; and

Fig. 3 is an enlarged cross-sectional view of the staple stick showing how the film of adhesive is preferably applied to the inside of the legs as well as to the under side of the crossbars of the adjoining staples.

The present invention consists generally in assembling staples of inverted U-shape in alinement with their legs and crossbars in abutting relation and applying a coating of suitable adhesive to the inner sides thereof which, when hardened, forms a tenacious film bonding the staples together in a single unit of trough-like form, called for convenience a "stick".

It has before been proposed to assemble staples in stick form by attaching them together with solder; by pasting a strip or strips of paper along their top and sides; and also it has been proposed to fasten glaziers "points", button-fasteners and brads together with glue or cement on their abutting sides. None of these methods has been satisfactory for use with staples of the present type for the reasons as follows:

When a paper strip is pasted to the staples it must be severed in detaching the staples from the stick or unit, and portions of the paper will be left adhering to the staple after it is driven into the work, these fragments being unsightly in appearance. Moreover, the paper particles collect in the grooves of the stapling machine and clog the latter to interfere with its action.

Strips of solder or the like employed for connecting the staples must also be severed to detach the staples from the stick and portions of the solder will be left on the staples after they are applied to the work to render them rough and unsightly in appearance. Particles of the solder becoming loose collect in the machine to hamper its action and damage its parts.

It has heretofore been found impracticable to connect the staples with adhesive without coating a portion of their exposed sides, and if the top and outside of the legs are covered the coating will be scraped off in the machine and collect to gum and clog the parts thereof.

In accordance with the present invention I have devised a method of bonding or fastening the staples together in a unit or stick by applying a coating of adhesive to their under and inner sides which will not interfere with the operation of the stapling machine.

Fig. 1 of the drawings illustrates the stick of staples in perspective, the reference character 2 designating the individual staples which are arranged in alinement with their crossbars 3 and legs 4 in abutting relation. The staples 2 may be assembled and held in

contact in this relation in any convenient way and the adhesive applied to their under and inner sides with a brush or by spraying it thereon.

The adhesive should be of a glutinous nature, of relatively thin consistency, capable of hardening by exposure to air while retaining a degree of elasticity, and preferably transparent or translucent. Various lacquers or collodion compounds are suitable for use as an adhesive for the purpose described and it is to be understood that I do not wish to be limited as to this detail of the invention.

While the staples are held together in close contact the adhesive is spread over the under side of their crossbars and preferably on the inside of their legs to form a thin coating indicated at 5 in Figs. 2 and 3. It will be noted by reference to Fig. 2 that the adhesive flows smoothly over the exposed under and inner surfaces of the staples, but is not allowed to penetrate between the abutting sides thereof.

After the adhesive dries the staples are securely bonded together to preserve them in the form of a trough-like stick as shown in Fig. 1. When properly compounded and applied the adhesive forms a thin gelatinous film which, when hardened by exposure to air, becomes extremely tenacious to retain the staples in connected relation. It has been demonstrated that a stick of staples having the individual units connected or bonded together in the manner above described will resist considerable strain and stress tending to tear them apart, the bond being enduring during the handling, packing and shipping of the sticks in boxes or cartons without the need for other support or exterior wrapping of the staples.

The staple package or refill may be used in the stapling machine or stitcher in the ordinary way, a stick being inserted onto the core or into the magazine holder and fed forward by the automatic feed devices to present the individual staples successively to the setting means. As the staple-driver or other setting means descends on each staple in succession the force of its blow breaks the bond between the staple being driven and the others in the stick. The action of the staple-driver thus cleaves the staple cleanly from the stick without leaving any rough projecting fin of the adhesive along its side, the coating on the under side of its crossbar and on the inside of its legs still adhering to the severed staple. This coating is very thin and being on the inside of the staple is not visible when the latter has been driven into the work and its legs bent or clinched against the under side thereof.

It is to be particularly noted that that portion of the coating parted from the stick adheres to and is carried on the driven staple to entirely remove it from the machine. Consequently, no particles of the hardened adhesive will remain in the machine to collect in the grooves or other openings where it would be liable to clog and interfere with the efficient operation of the stapling mechanism.

It will be observed from the foregoing that the present invention provides a particularly simple and effectual method of uniting the staples in a strip or stick without the use of an inner core or central support or an outer wrapper, and without resorting to soldering or brazing. The adhesive or binder for connecting the staples is applied only to the inner sides thereof so that it is not exposed on the outer surfaces when the stick is handled and, furthermore and most important, it cannot come into contact with the staple-driver or with the grooves or guideways in which the staples slide in the machine. The staples are cleanly parted from the stick without leaving projecting fins thereon and consequently no particles of the adhesive remain in or on the machine to gum its mechanism or interfere with its action.

The staples may be assembled and attached in sticks of any appropriate length, thereby providing a most convenient and easily applied refill for machines of different types.

The improved staple stick lends itself to close compact packing in cartons, eliminating the extra bulk and weight of cores, wrappers and other extraneous holding and supporting means, and thus it provides a most economical article of commerce of great utility and advantage in the present art.

While I have herein illustrated my improved staple package as containing a certain type of staples, it is to be understood that other forms of staples and similar fastening devices may be packaged in the same manner, and further that the character of the adhesive employed and other details may be varied without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

As a new article of commerce, a refill package constituted by a plurality of staples arranged in alinement in abutting relation with a film of adhesive applied to their inner sides only to attach them together in a strip or stick while adapting them to be individually detached therefrom as they are applied to use without leaving projections or loose portions of the adhesive on the top of the staples.

In testimony whereof I hereunto affix my signature.

ARTHUR H. MAYNARD.