

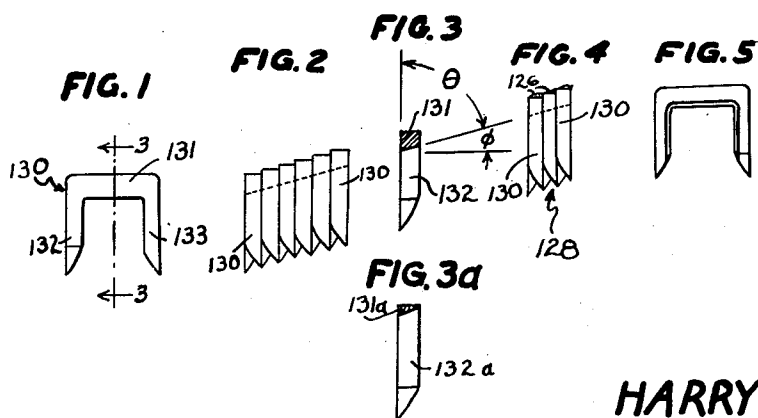
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STAPLE FOR AUTOMATIC HAMMER

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STAPLE FOR AUTOMATIC HAMMER

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3 Claims. (Cl. 85—49)

The invention relates to a staple for a self feeding automatic hammer of the staple driving variety and it particularly pertains to a staple stick therefor.

The instant application is a continuation-in-part of the copending U. S. patent application Serial Number 138,787 for an automatic hammer filed January 16, 1950 and thereafter issued as U. S. Patent 2,624,047 on January 6, 1953.

Automatic hammers having rack-and-pinion, inertia, and hydraulic force reversing means are known to the art, but these are possessed of several disadvantages which have deterred popular use to considerable extent. One disadvantage is that it is very difficult to provide the balance necessary for easy handling. In many such hammers there has been insufficient attention paid to providing clearance for the operator's hand to avoid the danger of bruising or even seriously injuring the hand. Another disadvantage is that the heavy blow with which the hammer type tacker is wielded tends to break up the staples in the staple stick which leaves the hammer prone to stoppages. Some suggestions have been made toward providing an automatic hammer that is properly balanced or arranged to protect the operator's hand, but each of the hammers suggested has tended toward structures that are unduly complicated and prone to an undue amount of jamming, together with the attendant increased construction cost.

An improved automatic hammer overcoming these and other disadvantages of the prior art devices is shown and described in the copending U. S. patent application Serial Number 615,691 filed October 12, 1956 and constituting a division of the instant application as originally filed. As indicated in the copending divisional application, conventional staples may be arranged in sticks for use in such hammers, but they are prone to jam the hammer due to heavy blows causing the insufficiently glued staples of the sticks to separate.

It is an object of the invention to provide a staple and a staple stick for an automatic hammer basically arranged as taught in the copending U. S. patent application Serial Number 615,691 hereinbefore mentioned.

It is another object of the invention to provide an improved staple for such an automatic hammer which will be of no greater cost than the conventional staple and which will not break up in the stick due to heavy hammer blows.

The objects of the invention and other features which will appear as the specification progresses are attained in a staple and further in a stick comprising a plurality of staples formed of wire, or other elongated material, of substantially triangular or trapezoidal cross section having two legs with differential points and a cross bar which is flat on the upper side and parallel to the plane of the work into which the staple is driven. Collodion or other adhesive material is used to cement the staples together in a somewhat conventional staple stick. It is a feature of the invention that the staple stick has larger

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surface areas by which adjacent staples are cemented one to another.

The invention will be described in detail with reference to the accompanying drawing forming a part of the specification and in which:

Fig. 1 is a front view of a staple according to the invention;

Fig. 2 is a view of a plurality of staples as arranged in a staple stick according to the invention;

Fig. 3 is a cross-section view of a staple as shown in Fig. 1 taken along the line 3—3;

Fig. 3a is a cross-section view of an alternate form of staple according to the invention;

Fig. 4 is a side view of a plurality of staples as shown in Fig. 2 cemented together in a staple stick according to the invention; and

Fig. 5 is a rear view of the staple according to the invention.

Referring to Figs. 1–5, there are shown staples according to the invention, alone or in stick form, with an alternate construction shown in Fig. 3a. The wire forming the staples is drawn in trapezoidal cross-section as shown in Fig. 3, or in the limiting form of triangular cross-section of the bridge 131a, if desired. Preferably a slight edge should be left on the thin side of the wedge-shaped cross-section for better action of the cement, or collodion, although the construction of the staple according to the invention provides sufficient strength because of the wedge-shaped cross-section 126 of the cement as shown in Fig. 4. The wire, after being drawn in the desired shape, is bent into generally inverted U-shaped staples 130 of uniform depth from front to rear with the uppermost surface of the cross bar 131 to normal to the axis of the legs 132, 133 as shown in Figs. 1–5. Preferably the legs are pointed by diagonally running surfaces extending in opposite directions, which construction is termed differential pointing. The under surface of the cross bar 131 is then at an angle ϕ with respect to the upper surface and at the complementary angle θ with respect to the axis of the legs 132, 133.

According to the teaching in the copending U. S. patent application Serial Number 615,691, hereinbefore mentioned, the angle ϕ is preferably between 3° and 10° with the optimum angle at 5°. The complementary angle θ will lie between 87° and 80° with the optimum angle θ at 85°.

The under surface of the cross bar 131 slides over the guide bar channel member and the guide block in the device in which the staples are used; an example of which is known in the copending U. S. patent application Serial Number 615,691, at exactly the correct angle for feeding the staples to the staple slot. The staple to be driven is sheared from the staple stick by the blade in the device. The wedge-shaped bit of collodion atop the staple and beneath the drive blade is compressed by the blade so that the staple is properly driven. The cushioning action of this bit of collodion is helpful rather than harmful to the operation of an automatic hammer when using a staple stick according to the invention.

The invention claimed is:

1. A staple having a cross bar portion and two leg portions depending in the same direction from the ends of said cross bar portion, said portions being of uniform depth, at least said cross bar portion having upper and under surfaces extending substantially across the depth of the staple, said upper surface lying in a plane normal to said leg portions and said under surface lying in a single plane between 3° and 10° to the plane of said upper surface.

2. A staple having two leg portions of uniform depth joined by a cross bar portion of substantially the same depth, at least said cross bar portion having a wedge-

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shaped cross-section, the upper surface of said cross bar portion lying in a plane substantially normal to said leg portions, and the under surface of said cross bar portion lying in substantially a single plane at an angle of 3° to 10° with respect to the plane of said upper surface.

3. A staple adapted to be assembled in contiguous relationship to similar staples to form a staple stick, said staple being formed of elongated rigid stock of uniform cross-section having two substantially flat surfaces extending substantially across the depth of the staples and arranged at an angle between 3° and 10° to each other and comprising a substantially straight cross bar with legs depending from opposite ends thereof substantially normal to one of said flat surfaces and in a direction at which the other flat surface is the under surface of said cross bar.

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