Feb. 26, 1957 T. PACKARD 2,782,673

MULTI-PRONGED SHEET METAL CORNER FASTENER

Original Filed March 10, 1952

Fig. 1

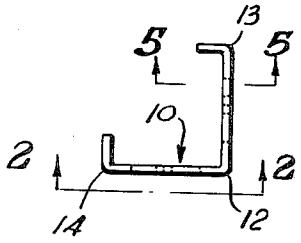


Fig. 2

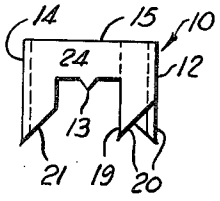
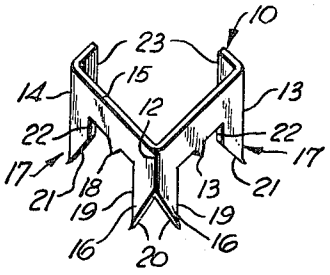


Fig. 3



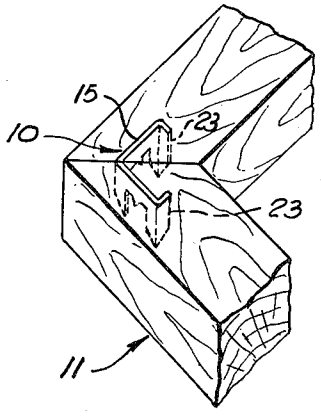


Fig. 4

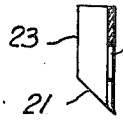


Fig. 5

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United States Patent Office 2,782,673
Patented Feb. 26, 1957

2,782,673

MULTI-PRONGED SHEET METAL CORNER FASTENER

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Original application March 10, 1952, Serial No. 275,830, now Patent No. 2,715,730, dated August 23, 1955. Divided and this application June 13, 1955, Serial No. 514,857

1 Claim. (Cl. 85—13)

This invention relates to wood fasteners and is a division of my copending patent application Ser. No. 275,830, now U. S. Patent No. 2,715,730.

In U. S. Patent No. 2,596,181 there is described and illustrated a wood fastener for fastening a wooden miter-joint, the fastener being characterized in that some of the teeth are so arranged that as the fastener is forced into the wood the two portions of the wood to be joined are drawn together. Subsequently it was found that by a further alteration of some of the teeth a fastener of substantially improved characteristics could be made and of a type readily adapted for countersinking by various forms of a simple and especially designed tool.

It is an object of the instant invention to provide a fastener that will more thoroughly draw the parts of a miter-joint together than heretofore possible.

An additional object is to provide a fastener that will become locked in the wood while drawing the parts of the miter-joint together.

It is also an object of the instant invention to provide a fastener that will substantially reduce crushing and splitting of the wood as compared with known similar devices.

A further object is to provide tools that will both guide the fastener during insertion and countersink the fastener after insertion so that the fastener will not bend during insertion and by countersinking will permit the wood to be finished.

Still other objects of the instant invention will become apparent in the course of the following specification.

In the attainment of the aforesaid objectives, the improved wood fastener is constituted of a substantially flat body divided by the vertical center line into two similar portions forming a right angle with each other. Each similar side of the fastener adjacent the free end is turned laterally inwardly at a right angle to the side. Along the bottom edge of each side of the fastener and adjacent the vertical center line is one-half of a central tooth, each half of the central tooth being bent outwardly to more thoroughly draw the portions of a miter-joint together as the fastener is inserted. At the free end of each side of the fastener is an end tooth, a portion of which is turned laterally inwardly at a right angle to the side to form a virtual anchor across the grain and to further minimize splitting and crushing of the wood. The angular design of the fastener is utilized in providing a tool for guiding the fastener into the wood and for countersinking the fastener in the wood. The tool is made in four forms, in one form it is constituted of a holder of square cross section suitably dimensioned so that the top or upper edge of one of the fasteners can be slip-fitted over the end of the holder. An impeller is slidably inserted on the holder and in operable engagement with the upper edge of the fastener. By making the length of the impeller greater than that of the holder and equipping the holder with a handle, the fastener can be guided into the wood and countersunk by striking the protruding end of the impeller. The tools of the second, third, and fourth forms differ from the first primarily in the holder. The holder of the second form is a resilient cap having an integrally formed handle. In the third form, the holder and handle are made from a single flat strip while in the fourth form the holder and integrally formed handle are die stamped from a sheet of resilient material.

The invention will appear more clearly from the following detailed description when taken in conjunction with the accompanying drawings showing by way of illustration the preferred embodiments of the inventive concept.

In the drawings:

Figure 1 is a plan view of the fastener constructed in accordance with the principles of this invention;

Figure 2 is a view of the fastener taken along 2—2 of Figure 1;

Figure 3 is a perspective view of the fastener shown in Figure 1;

Figure 4 is a perspective view of the fastener shown in Figure 1 inserted across a wooden miter-joint; and

Figure 5 is a section along the line 5—5 of Figure 1.

Referring now in greater detail to the fastener shown in the drawing, where like reference numerals indicate like parts, reference numeral **10** indicates the fastener, and **11** a miter-joint.

The fastener **10** is constituted of a substantially flat body portion made from any suitably rigid material. However, by using the later described tools, the fastener **10** can be made from less rigid material than that now used for making similar fastener but of different design. The aforementioned body portion is turned laterally along the vertical center line **12** until the included angle between the sides is a right angle. Of course, each turned side is of equal length and adjacent the free end one side is turned laterally inwardly along the line **13** and the opposite side along the line **14**, and the turned end extremities forming a right angle with the respective sides. Thus, the sides between the vertical center line and the lines of turning **13** and **14** form two sides of a square. The fastener has an upper edge **15**, a central tooth **16**, an outer tooth **17**, and an intermediate tooth **18**.

The outer edge **19** of each half portion **16** of the central tooth is substantially vertical or parallel to the vertical center line **12** while the inner edge **20** extends upwardly from a point on the outer edge of each portion of the tooth to a common point on the vertical center line **12**. The tip or point of each half of the central tooth is curved outwardly relative to the plane of the side as illustrated. The shape of the edges of the central tooth portions draw the two parts of the miter-joint together along one line while the outwardly curved surface of each portion of the tooth draw the joint together along other lines. Either could be used separately but in combination provide a miter-joint of high quality.

Each outer tooth **17** is of V-shape with the point of the tooth on the line of turning **13** or **14** as the case may be. The inner edge **21** of each outer tooth is inclined inwardly and upwardly from the line of turning to a point on a line **22** parallel to the center line **12**, the line **22** forming the remainder of the inner edge of each outer tooth. The outer edge of each outer tooth extends outwardly and upwardly (Fig. 4) from the bottom of the edge **21** to intersect the edge **23**.

Intermediate each portion **16** of the central tooth and outer tooth **17** is an intermediate tooth **18** of V-shape but having a height less than that of the central and outer teeth. Each intermediate tooth **18** serves to part the wood and thereby facilitates the entrance of the web **24** of the fastener into the wood.

What is claimed is:

A fastener for wooden joints, said fastener comprising

two adjacent side portions of equal length having a common center line and forming an included angle of substantially ninety degrees, and two other side portions constituting a continuation of the first-mentioned side portions and located at the ends thereof, each first-mentioned side portion forming an angle of substantially ninety degrees with the adjacent second-mentioned side portion along a common line of turning which extends parallel to said center line, the two second-mentioned side portions being of equal length, the second-mentioned side portions forming free end extremities substantially less in length than the first-mentioned side portions, said fastener having an upper edge and a lower edge, a central tooth extending from said lower edge and having two oblique inner edges joining each other at a point upon said center line, said central tooth further having two outer edges extending substantially parallel to said center line upon separate first-mentioned side portions and joining separate inner edges, whereby said central tooth consists of two separate half portions located upon separate first-mentioned side portions and having separate points, said points curving obliquely outwardly relative to the planes of the first-mentioned side portions, two outer teeth extending from said lower edge, each outer tooth having inner and outer edges, said inner and outer edges having oblique portions joining each other at a point upon a separate line of turning, whereby each outer tooth is located upon two adjacent first-mentioned and second-mentioned side portions the inner edge of each outer tooth further having a portion extending parallel to the center line from the lower edge to said oblique portion, the outer edge of each outer tooth further having a portion extending parallel to the center line from the oblique portion to the upper edge of the fastener, and two intermediate teeth extending from said lower edge, each intermediate tooth being located upon a separate first-mentioned side portion between the central tooth and an outer tooth and being of substanially V-shape, said central and outer teeth being of substantially the same height, said intermediate teeth having a height less than that of the inner and outer teeth.

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