June 18, 1946. W. S. MILES ET AL 2,402,426

TOOL

Filed July 18, 1942

Fig. 1.

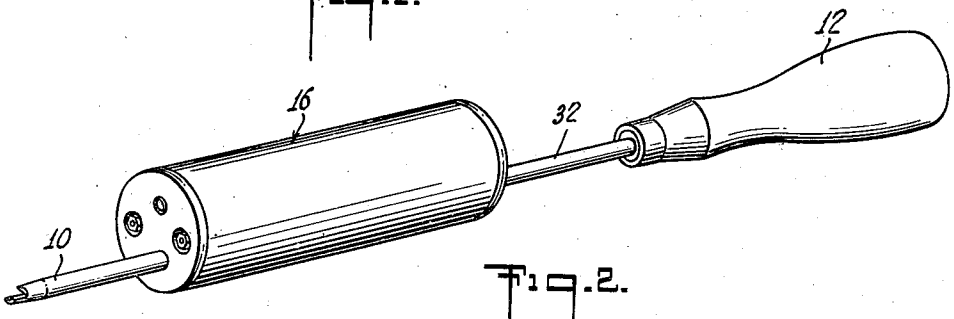


Fig. 2.

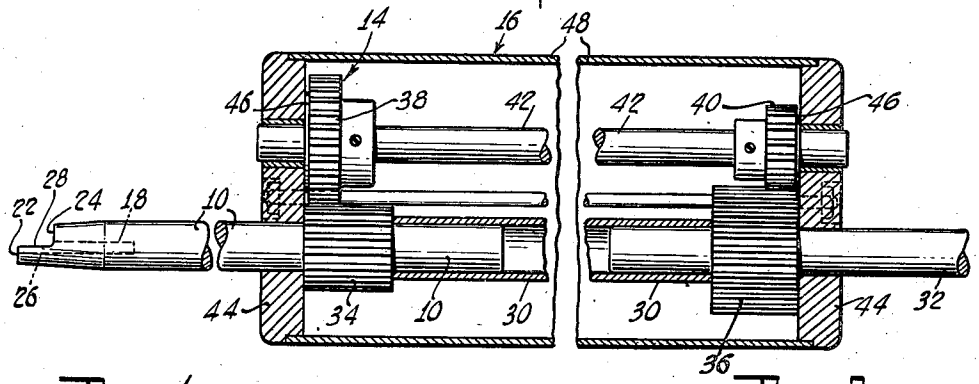


Fig. 4.

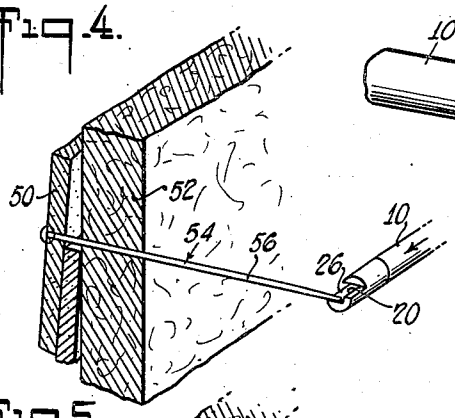


Fig. 3.

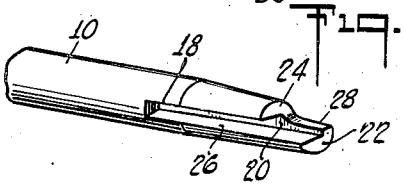


Fig. 5.

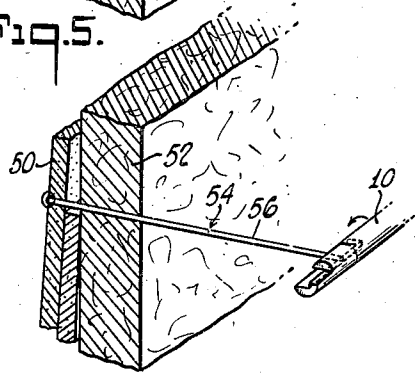
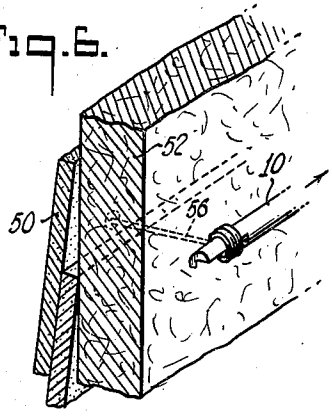


Fig. 6.



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2,402,426

TOOL

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Application July 18, 1942, Serial No. 451,420

5 Claims. (Cl. 140—124)

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The instant invention relates to building constructions, and, more particularly, to tools or devices for use in securing fastening elements of the type disclosed in our copending application Serial No. 439,036, filed April 15, 1942, of which the present application is a continuation-in-part, and now Patent 2,351,994.

As pointed out in said copending application, heretofore attempts have been made to employ a sheathing material for building constructions, the material having relatively little ability to hold ordinary nails or other conventional fastening means. The copending application describes and claims one type of construction and method which is of particular advantage in solving this problem, the method involving the use of wire-like fasteners or nails which are driven through the shingle or other covering element and the sheathing material to extend a substantial distance therebehind. The extending ends of the fasteners are wound into a coil bearing tightly against the rear face of the sheathing, whereby the covering elements are held against the sheathing under yielding pressure and the fastener is prevented from pulling through the sheathing due to the presence of the coil.

Our present invention has for its principal object the provision of a tool for use in the method of our said prior application.

Another object of the invention is the provision of an improved tool or device constructed to enhance the facility and speed with which the securing or clinching of the fasteners may be accomplished.

A still further object of the invention is the provision of a tool which can be operated efficiently without the use of highly skilled labor.

Our invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow and to the accompanying drawing, in which:

Fig. 1 is a perspective view of a tool or device in accordance with the invention;

Fig. 2 is a perspective view on an enlarged scale and with parts in section of the device of Fig. 1;

Fig. 3 is a detailed perspective view on an enlarged scale of a portion of the apparatus;

Fig. 4 is a partial perspective and partial sectional view, illustrating one step in the use of the tool of Fig. 1;

Fig. 5 is a view similar to Fig. 4, illustrating a further step; and

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Fig. 6 is a view similar to Fig. 4, illustrating a final step in the use of the tool.

Referring now to the drawing and, more particularly, to Figs. 1 and 2, a tool in accordance with the invention comprises a shaft 10 connected to an operating handle 12 through the medium of transmission gearing 14 carried in a cylindrical gear box 16. The free end of shaft 10 is provided with a radially projecting slot 18 extending from the free end for a substantial distance up the shaft. Slot 18 does not extend completely through the shaft, but is in the form of a recess with a closed end or rear wall 20, and defines connected tines 22 and 24, the latter being cut back a substantial distance to provide an open-face flange 26 terminating in a right-angle flange or wall 28 formed as an extension of the rear wall of the slot. Preferably, the end of the shaft is tapered as illustrated.

The transmission gearing illustrated generally at 14 is preferably arranged to provide for a plurality of revolutions of the shaft upon a single rotation of handle 12. As will be understood, other suitable gearing or transmission means may be substituted for that specifically described. As shown, the arrangement comprises a sleeve 30 connecting shaft 10 to a stub shaft 32 projecting from handle 12, both shaft 10 and stub shaft 32 being, preferably, freely rotatable in the sleeve.

Fixed to shaft 10 is a gear 34 and to shaft 32 is a gear 36. Gears 34 and 36 mesh with larger diameter gears 38 and 40, respectively, carried by and keyed to a countershaft 42 supported in suitable bearings in the heads 44 of gear box 16. The keying of the gears to their respective shafts prevents endwise removal of the shafts through the heads. Spacing rings 46 may be provided between the heads and gears 34 and 36, if desired. The gear box includes a cover 48 fastened to heads 44 in any suitable manner. As illustrated, preferably the heads 44 are circular to provide a cylindrical gear box 16, the latter serving as a hand grip for the workman in his use of the tool.

Referring now to Figs. 3, 4, and 5, the operation of the tool is shown. Shingles 50 are secured to a sheathing 52 by pins or other wire-like fastening elements 54, which are of such length as to have extending shanks 56 projecting a substantial distance to the rear of the sheathing. When the fastening pins have been driven through the shingles and sheathing as illustrated in Fig. 3, for example, the tool is grasped by handle 12 with one hand and preferably by the gear box 16 with the other hand and the end of

shaft 10 is manipulated until the extending shank 56 rests on flange 26 (see Fig. 4).

The tool is then moved endwise, and laterally if necessary, to shift the end of the fastener shank against rear wall 20 and along flange 26 until it slides into groove 18 (see Fig. 5). The shaft is then rotated by rotation of handle member 12, whereby the fastener shank is wound around the shaft until the coil thus provided is in engagement with the rear of the sheathing 52. An extra twist is preferably given to the tool to bring the coil into tight engagement with the rear of the sheathing and to draw the head of the fastener firmly against the shingles and the shingles and sheathing into tight engagement with each other (see Fig. 6).

Gearing 14 is, as previously stated, suitably arranged to permit multiple revolutions of the shaft 10 upon a single revolution of handle 12. Preferably, the relationship between the gear diameters is such that, say, approximately a half-rotation of the handle causes two complete revolutions of the shaft. In the normal case, this will permit the complete clinching of the fastener shank without shifting the hand on the handle.

As will be understood from the explanation of the operation of the tool, the particular flange and slot construction of the shaft permits the easy engagement of the tool with the fastener shank. In the event that a fastener is closely adjacent to a stud or other framing member to the right of the fastener, the tool may be held in the reversed position and brought downwardly onto the shank until the flange 26 rests upon the shank end. In either case, no great degree of skill is required to manipulate the tool for rapid and efficient operation.

Having thus described our invention in rather full detail, it will be understood that these details need not be strictly adhered to, but that various changes and modifications will suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What we claim is:

1. A device for clinching an extending wire-like fastener shank, said device comprising a shaft, a radially projecting, closed end slot in said shaft extending to an end of said shaft, said slot being of less depth than the diameter of said shaft, said slot defining tines connected at the closed end of the slot, one of said tines having a greater length than the other, said slot being adapted to receive an end of said wire-like shank, and a handle connected to said shaft for rotation thereof.

2. A device for clinching an extending wire-like fastener shank, said device comprising a shaft, a slot projecting radially inwardly of said shaft and having a closed end, said slot extending to the end of said shaft and defining tines connected at the closed end of said slot, one of said tines being greater in length than the other and defining a flange comprising a continuation of the closed wall of said slot, said slot being adapted to receive an end of said wire-like shank, and a handle for rotating said shaft.

3. A device for clinching an extending wire-like fastener shank, said device comprising a shaft, a slot projecting radially inwardly of said shaft and having a closed end, said slot extending to the end of said shaft and defining tines connected at the closed end of said slot, one of said tines being greater in length than the other and defining a flange comprising a continuation of the closed wall of said slot, said slot being adapted to receive an end of said wire-like shank, a rotatable handle, and means connecting said shaft and handle to provide for complete rotation of said shaft upon partial rotation of said handle.

4. A device for clinching an extending wire-like fastener shank, said device comprising a shaft, a radially projecting, closed end slot in said shaft, said slot being of less depth than the diameter of the shaft, said slot extending to an end of said shaft and adapted to receive an end of said wire-like shank, a rotatable handle, a box between said shaft and handle and including transmission means operatively connecting said shaft and handle, said box being of such dimensions as to provide a hand grip.

5. A device for clinching an extending wire-like fastener shank, said device comprising a shaft, a slot projecting radially inwardly of said shaft and having a closed end, said slot extending to the end of said shaft and defining tines connected at the closed end of said slot, one of said tines being greater in length than the other and defining a flange comprising a continuation of the closed wall of said slot, said slot being adapted to receive an end of said wire-like shank, a rotatable handle, a box between said shaft and handle and including transmission means operatively connecting said shaft and handle, said box being of such dimensions as to provide a hand grip.

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