

United States Patent [19]

Maier

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[54] **NAIL HOLDER FOR A SETTING DEVICE OPERATED BY EXPLOSIVE FORCE**

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[58] **Field of Search** 85/17, 10 E; 206/560 F; 227/136

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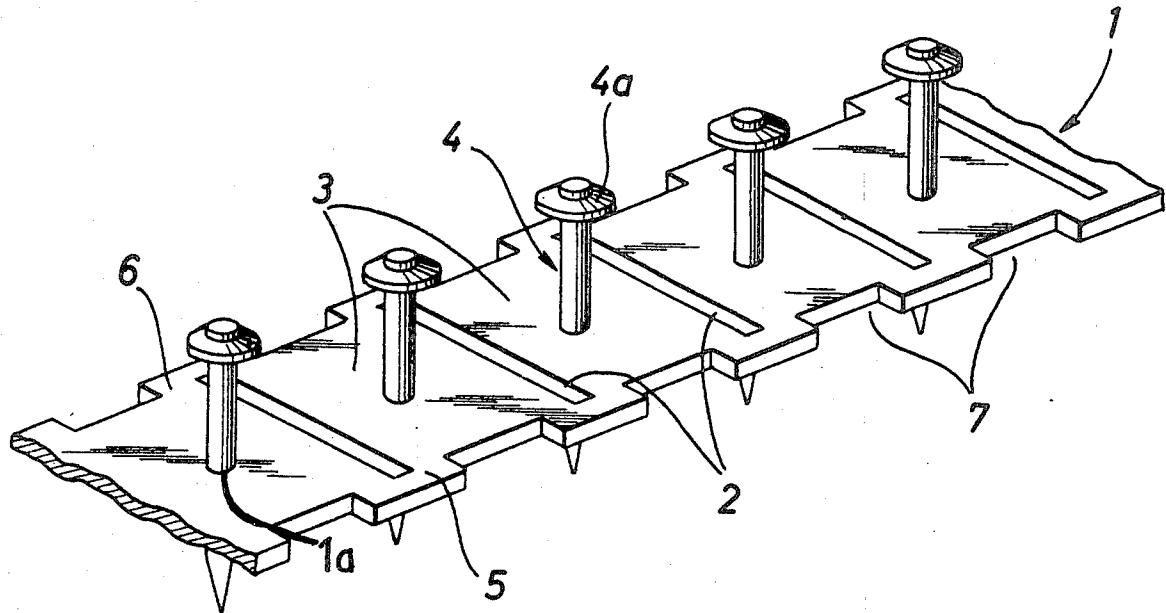
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[57] **ABSTRACT**

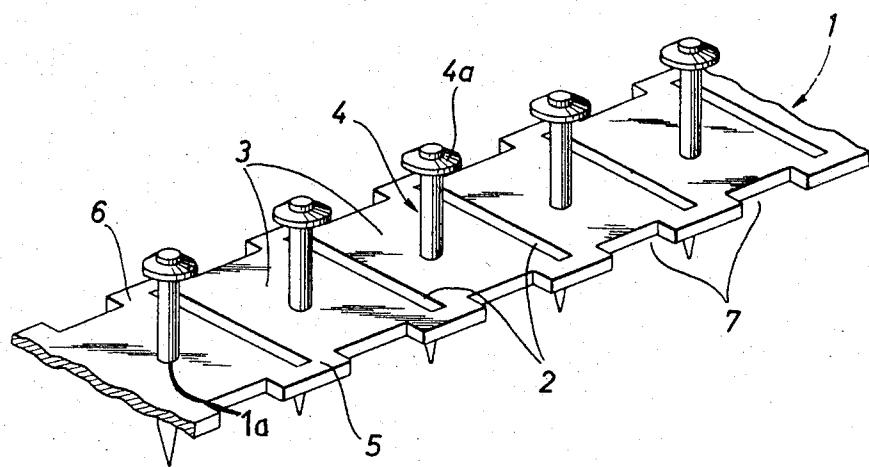
A nail holder for feeding nails serially into a setting device from which they are driven by an explosive force into a target material is formed by an elongated belt or strip which has a plurality of longitudinally spaced holes each of which holds the shank of a nail. Between each pair of holes a transversely extending slot is arranged which extends across a major portion of the strip between its longitudinal edges. When a nail is driven from the setting device, its head contacts the strip and the section between the slots separates from the remainder of the strip forming a disc or washer on the shank of the nail. The disc or washer has an area which is a multiple of the area of the nail head and its extended surface is useful in securing low strength materials to the target material.

3 Claims, 1 Drawing Figure



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NAIL HOLDER FOR A SETTING DEVICE OPERATED BY EXPLOSIVE FORCE

SUMMARY OF THE INVENTION

The present invention is directed to a nail holder for use in a setting device from which the nails are driven by explosive force and, more particularly, it concerns a holder arranged to form a disc or washer on the shank of the nail as the nail is driven into a target material.

While it has been known to use nail holders in nail setting devices, generally speaking it is necessary to use nails having the smallest possible head diameter, since nails with a large size head are difficult to supply into the setting device. It has been known to use belt-like holders in which the individual nails are guided in jacks, however, for structural reasons in such holders it is possible to only use nails with small heads.

Accordingly, it has not been possible to use nail holders in nail setting devices operated by explosive force for fastening low strength materials to a target material. When such low strength materials are being secured to a target material, it is necessary that the nail or fastening member include a disc or washer of the largest possible area for securing the low strength material without causing it any damage.

It is necessary to provide a disc or washer on a fastening element for use in attaching a low strength material to a target material for adequately transferring the impact created by the fastening member as it is driven into the target material. If the area of the disc or head on the nail is too small, the low strength material may be damaged by the impact, or the nail may penetrate through the material so that it is ineffective in providing the attachment of the material to the target material.

Accordingly, the invention is directed to the problem of supplying a nail or fastening device mounted in a holder which provides a large area disc or washer when it is driven by a setting device into a target material. Therefore, in accordance with the present invention, an elongated strip-like holder is provided for the nails with holes spaced apart in the longitudinal direction for holding the nails about their shanks. Between each pair of holes, the holder has transversely extending slots which form breaking points in the holder. Further, the area of the holder between adjacent slots is considerably greater than the area of the nail head so that its surface provides a multiple of the surface of the nail head. Accordingly, when a nail is driven by the setting device and its head contacts the holder, the section of the holder between adjacent slots breaks away from the remainder of the holder strip and forms a disc or washer on the shank of the nail.

By using such a holder strip, it is possible to provide a large-area disc or washer on the nail and, in addition, it is possible to feed any desired length of the holder strip into the setting device. Accordingly, the time consuming refilling or replacing of the holder for the nails is obviated. Furthermore, the holder assures that the nails are adequately guided into the setting device, since the holder is firmly retained in the device and the section of the holder each holding one nail between adjacent slots, easily separates from the remainder of the holder strip only in the final portion of the driving operation. Due to the transversely extending elongated slot, the material of the holder separates into the required discs or washers when the nail head, driven by a pro-

pelled piston within the setting device, contacts the holder strip.

Preferably, the longitudinally extending edges of the holder strip are provided with spaced recesses for engagement by conventional actuating members for feeding the holder strip through the setting device.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

The drawing is a perspective view of a section of a nail holder formed in accordance with the present invention, and with nails positioned in holes in the holder.

DETAILED DESCRIPTION OF THE INVENTION

In the drawing a longitudinally extending strip 1 forms a holder for a plurality of nails 4. A plurality of holes 1a are provided in the strip for receiving and holding the nails 4. Between each pair of holes 1a, a transversely extending slot 2 is provided through the strip 1 with the slot extending across a major portion of the strip but having its edges spaced inwardly from the longitudinally extending edges of the strip. The slots 2 divide the strip 1 into a plurality of sections 3 with each section containing a nail hole 1a in which a nail is secured. Since the transversely extending slots do not extend over the full width of the strip, a web 5, 6 is provided along each of the longitudinally extending edges of the strip. Accordingly, the location of the slots provides predetermined breaking points in the strip so that it can be easily separated into the sections 3.

Spaced recesses 7 are formed along each of the longitudinally extending edges of the strip and the recesses are provided for engagement with conventional feed actuating members for serially aligning each of the nails in the holder strip in position within a setting device for insertion by a piston driven by an explosive force. Since such feed actuating members are well known and do not form a part of the invention, they are not shown.

Each nail 4 has an elongated shank portion and a head 4a extending transversely from the shank portion. During the nail driving operation, a piston is explosively propelled within the setting device and drives the nail forwardly through the holder strip until the nail head 4a strikes the surface of the strip. When the nail head contacts the strip, due to the explosive force transmitted to it, the impact causes the section 3 of the strip between adjacent slots 2 to separate at the predetermined breaking points from the remainder of the strip providing a disc or washer about the nail. Accordingly, if the nail is being used to secure low strength material, panels or the like to a target material, the disc affords a relatively large surface area, as compared to the area of the nail head, for transmitting the impact of the nail to the low strength material so that it is not damaged as it is secured to the target material.

As an example, and not in any sense limiting the scope of the invention, the strip 1 can be made of steel with a thickness of 1.5 to 2 mm. The length of the slots

2 varies in accordance with the conditions involved and the length can be about 90 to 95 percent of the width of the strip. The width of the slots 2 is about the same dimension as the thickness of the strip.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the inventive principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A nail holder assembly for feeding nails serially into a setting device from which the nails are driven into a target material by an explosive force, said nail holder assembly comprising a plurality of nails each having an elongated shank and a disc-like head portion extending transversely from the shank, an elongated belt-like strip having a width substantially greater than the diameter of said disc-like portion, said strip having a plurality of longitudinally spaced holes therethrough, each said nail extending through one of the holes in said strip and having its shank secured within the hole for holding the nail in place with its disc-like head portion spaced axially from said strip, said strip having a plurality of slot-like openings extending through said strip and transversely of its longitudinal direction and each slot-like opening being spaced between an adja-

cent pair of said nail holes, the area of said strip between adjacent said slots being a multiple of the area of said disc-like head portion on said nails secured within said strip and the longitudinally extending sides of said strip positioned laterally outwardly from the periphery of said disc-like head portion, so that when one of said nails is driven by explosive force from the setting device, its head portion strikes said strip with such a force that the section of said strip surrounding the

10 nail hole and extending between adjacent said slot-like openings separates from the remainder of said strip and forms a disc or washer on the shank of said nail abutting said head portion which disc has an area considerably larger than the area of said nail disc-like head portion.

15 2. A nail holder assembly, as set forth in claim 1 wherein said slot-like openings extend across approximately 90 percent of the width of said strip and the ends of each said slot are spaced inwardly from the longitudinally extending edges of said strip.

20 3. A nail holder assembly, as set forth in claim 1, wherein longitudinally spaced recesses are formed in the longitudinally extending edges of said strip for receiving feeding members for moving said strip through the setting device.

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