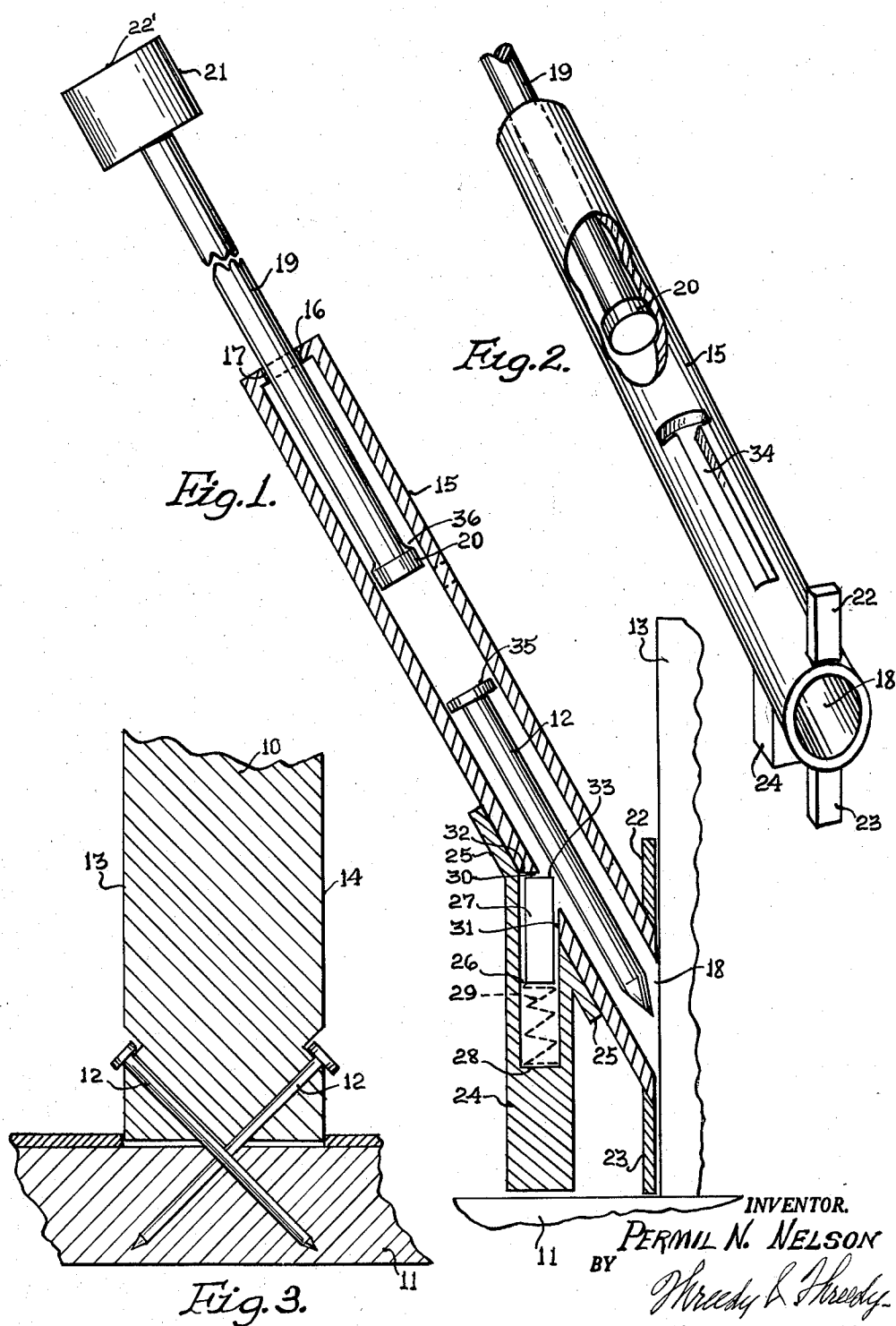


Sept. 8, 1964

P. N. NELSON
TOE NAILING DEVICE
Filed May 28, 1962

3,147,484



INVENTOR.
PERMIL N. NELSON
BY
Meady & Meady
HIS ATTORNEYS.

1

2

3,147,484

TOE NAILING DEVICE

Permil N. Nelson, Galesburg, Ill., assignor to Lynn H. Ewing, doing business as Blackhawk Company, Rock Island, Ill.

Filed May 28, 1962, Ser. No. 198,375

4 Claims. (Cl. 1—47)

My invention relates to a new and useful improvement in a toe nailing device and more particularly to a device for positioning and driving a nail obliquely into a work piece in a manner known as "toe-nailing."

A principal object of my invention is in the provision in a device of this character of a means for receiving and holding a nail in an oblique position for toe nailing into a work piece.

Another object of my invention is in the provision in a device of this character of a yieldable guide means for maintaining the nail in the device so that it may be driven diagonally into a flat surface of a work piece or the like.

A further object of my invention is in the provision in a device of this character of a nail driving plunger slidably contained within the device.

Yet another object of this invention is in the provision in a device of this character of a support means which correctly and positively positions the device at an angle with respect to the work piece to be connected by "toe-nailing."

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

FIG. 1 is a fragmentary detailed sectional view of my improved toe nailing device.

FIG. 2 is a fragmentary perspective view of my toe nailing device, and

FIG. 3 is a fragmentary detailed sectional view of a work piece properly connected by means of "toe-nailing."

The device of this invention is designed to position and drive a nail angularly into a flat surface of a stud or brace for connecting the same to a supporting member such as is shown in FIG. 3. In such figure I show a vertically extending stud 10 or the like positioned upon and connected to a support 11, by nails 12 that have been driven angularly into the perpendicular surface 13 and 14 of the stud 10, or the like. The angular position of the nails 12 with respect to the stud 10 and support 11 is known in the trade as being toe nailed.

My device comprises a cylindrically shaped hollow body 15 provided at one end with an inwardly extending flange 16 having formed therethrough a circular passage 17. The opposite end 18 of the body 15 is open and unobstructed. Slidably positioned within the body 15 is a plunger 19 having a driving head 20 of a diameter greater than the diameter of the opening 17 formed in the flange 16 so that the plunger 19 together with the head 20 is not removable from within the body 15. The opposite free end of the plunger 19 is provided with a driving weight 21 which has an enlarged substantially flat exposed surface 22' which, if desired in the operation of my device, may be struck by a hammer or the like not shown for a purpose hereinafter made apparent.

Referring to FIG. 1, it is shown that the open end 18 of the body 15 terminates at a bias with respect to the long axis of the body 15. Adjacent this open end 18 I provide a vertically extending leg 22 which is in longitudinal alignment with a corresponding depending leg 23 carried by the body 15 as seen in FIGS. 1 and 2.

On the underside of the body 15 adjacent the open end 18 I provide a substantially hollow support means 24. This support means 24 extends in a parallel spaced apart relation with respect to the depending leg 23. The support 24 is connected to the body 15 by laterally extending flanges 25 which may be welded to the outer surface of the housing 15. The support 24 provides a hollow recess 26 into which slidably projects a pin 27. Disposed between the base 28 of the recess 25 and one end of the pin 27 is a coil spring 29 which normally urges the pin 27 upwardly of the recess 26. The recess 26 communicates with an opening 30 formed in the cylindrical wall of the housing 15. The opening 30 has one wall 31 thereof formed so as to be in alignment with one surface of the hollow recess 26. The other wall 32 defining the opening 30 is cut so as to present a stop shoulder which projects perpendicularly to the longitudinal axis of the recess 26 and into the path of the spring urged pin 27. Thus the pin 27 is prevented from being entirely displaced out of the recess 26 through the action of the spring 29. However, it will be noted that a corner 33 of the pin 27 will project inwardly a predetermined distance within the hollow core of the cylindrical body 15.

The upper surface of the cylindrical body 15 is provided with a substantially T-shaped slot 34. It is through this slot 34 that a nail 12 is positioned within the body 15 so as to be angularly positioned with respect to a stud 13 or the like. The nail 12 is inserted in the slot 34. The enlarged head 35 of such nail 12 will engage the cylindrical inner surface of the body 15. The shank of the nail 12 will ride upon the protruding corner 33 of the pin 27 so that the shank of the nail 12 lies in a substantial parallel plane with respect to the longitudinal length of the body 15.

The device is placed against the stud 13 to be nailed so that the outer faces of the legs 22 and 23 facially abut the corresponding surface of the stud 13. The leg 23 and the support 24 are placed upon the floor or supporting member 11 to which the stud 13 is to be nailed. The operator then may withdraw the plunger its full length from within the body 15 or until the enlarged driving head 20 thereof engages the inwardly extending flange 16 which closes one end of the body 15. The operator may then with a snap action push the plunger inwardly of the body 15. The weighted end 21 of the plunger 19 will normally create a force sufficient to drive the nail 12 into the stud 13. However, if a sufficient driving force is not created, the surface 22 of the enlarged weighted head 21 of the plunger 19 may be struck by a hammer or the like. As the nail is driven into the stud 13, the enlarged head 35 thereof will move into engagement with the supporting pin 27 and cam the same out of its path into the recess 26 against the action of the spring 29.

The driving head 20 of the plunger 19 is provided with a tapered shoulder 36. This shoulder 36 will cam the supporting pin 27 in a like manner as the head 20 is withdrawn away from the stud 13 after it has driven the nail 12 therein as shown in FIG. 3.

By the foregoing, it is apparent that I have provided a toe nailing device which receives and positions a nail in an angular relation with respect to a work piece or the like which angular position is maintained throughout the entire driving of the nail into the work piece.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such varia-

3

tions and modifications as come within the scope of the appended claims.

Having thus described my invention, which I claim as new and desire to protect by Letters Patent is:

1. A toe nailing device comprising an elongated cylindrically hollow body,
 - (a) said body providing a nail feeding slot through which a nail to be driven by said device is placed within the hollow body,
 - (b) a nail driving means extending out of one end of said body and slidable longitudinally therethrough,
 - (c) the opposite end of said body providing an angularly disposed opening through which the nail is to be driven,
 - (d) positioning means on said opposite end of said body for engaging a vertically disposed work piece which is to be nailed to a corresponding horizontally extending support member for angularly positioning said body relative thereto,
 - (e) a body support means extending in a vertical parallel spaced relation to said positioning means for supporting said body in an angularly nail driving position, and
 - (f) means carried by said body support means for yieldably engaging the shank of the nail within said body for guiding the same for movement there-through angularly with respect to the vertically disposed work piece.
2. A toe nailing device comprising an elongated cylindrically hollow body,
 - (a) said body providing a nail feeding slot through which a nail to be driven by said device is placed within the hollow body,
 - (b) a nail driving means extending out of one end of said body and slidable longitudinally therethrough,
 - (c) the opposite end of said body providing an angularly disposed opening through which the nail is to be driven,
 - (d) positioning means on said opposite end of said body for engaging a vertically disposed work piece which is to be nailed to a corresponding horizontally extending support member for angularly positioning said body relative thereto,
 - (e) a body support means extending in a vertical parallel spaced relation to said positioning means for supporting said body in an angularly nail driving position, and
 - (f) a spring urged pin carried within said body support means and projecting into said hollow body for yieldably engaging the shank of the nail therein for guiding the same for movement therethrough angularly with respect to the vertically disposed work piece.
3. A toe nailing device comprising an elongated cylindrically hollow body,
 - (a) said body providing a nail feeding slot through which a nail to be driven by said device is placed within the hollow body,

4

- (b) a nail driving means extending out of one end of said body and slidable longitudinally therethrough,
 - (c) the opposite end of said body providing an angularly disposed opening through which the nail is to be driven,
 - (d) oppositely extending longitudinally aligned legs carried on said opposite end of said body for engaging a vertically disposed work piece which is to be nailed to a corresponding horizontally extending support member for angularly positioning said one end of said body relative thereto,
 - (e) a body support means extending from one side of said body in a vertical parallel spaced relation to said legs for supporting said body in an angularly nail driving position, and
 - (f) means carried by said body support means for yieldably engaging the shank of the nail within said body for guiding the same for movement there-through angularly with respect to the vertically disposed work piece.
4. A toe nailing device comprising an elongated cylindrically hollow body,
 - (a) said body providing a nail feeding slot through which a nail to be driven by said device is placed within the hollow body,
 - (b) a nail driving means extending out of one end of said body and slidable longitudinally therethrough,
 - (c) the opposite end of said body providing an angularly disposed opening through which the nail is to be driven,
 - (d) oppositely extending longitudinally aligned legs carried on said opposite end of said body for engaging a vertically disposed work piece which is to be nailed to a corresponding horizontally extending support member for angularly positioning said one end of said body relative thereto,
 - (e) a body support means extending from one side of said body in a vertical parallel spaced relation to said legs for supporting said body in an angularly nail driving position, and
 - (f) a spring urged pin carried within said body support means and projecting into said hollow body for yieldably engaging the shank of the nail therein for guiding the same for movement therethrough angularly with respect to the vertically disposed work piece.

References Cited in the file of this patent

UNITED STATES PATENTS

1,604,675	Bernard	Oct. 26, 1926
2,199,833	Fleischman	May 7, 1940
2,994,878	Abrahamsen	Aug. 1, 1961
3,036,482	Kenworthy et al.	May 29, 1962

FOREIGN PATENTS

840,454	Great Britain	July 6, 1960
---------	---------------	--------------