April 8, 1958 G. R. HUMBERT 2,829,370

NAIL DRIVER

Filed Sept. 18, 1956

2 Sheets-Sheet 1

Fig. 1

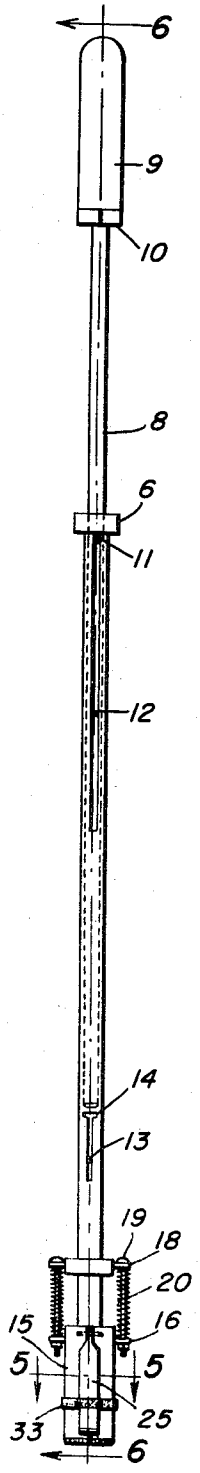


Fig. 2

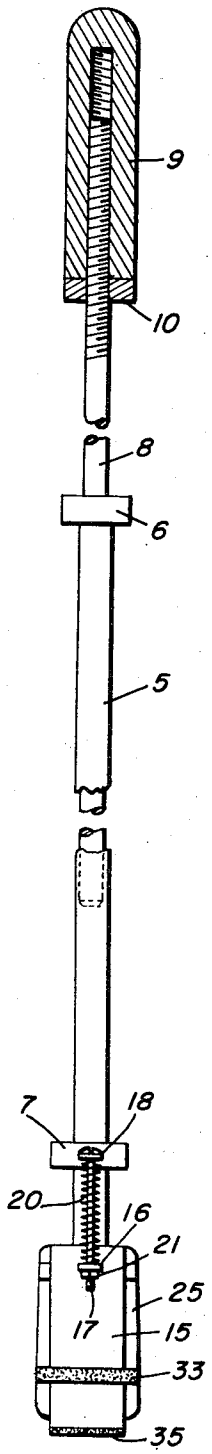


Fig. 3

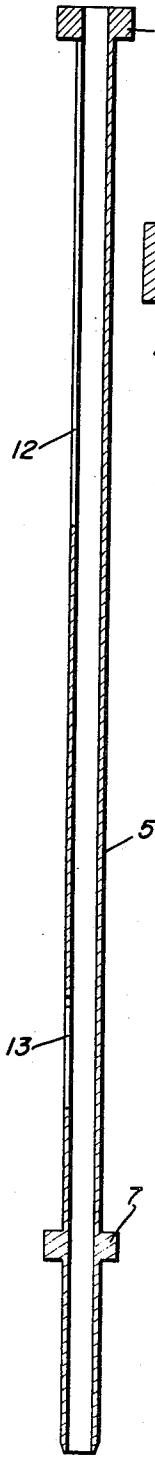


Fig. 11

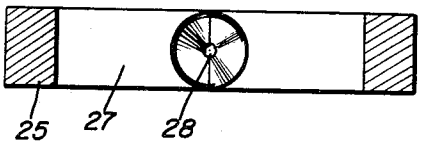


Fig. 4

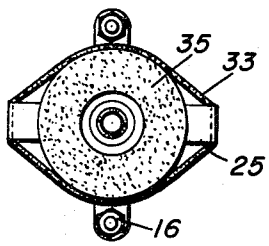
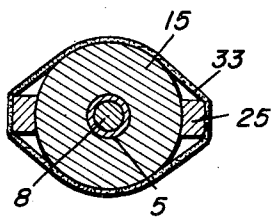


Fig. 5



George R. Humbert
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Fig. 6

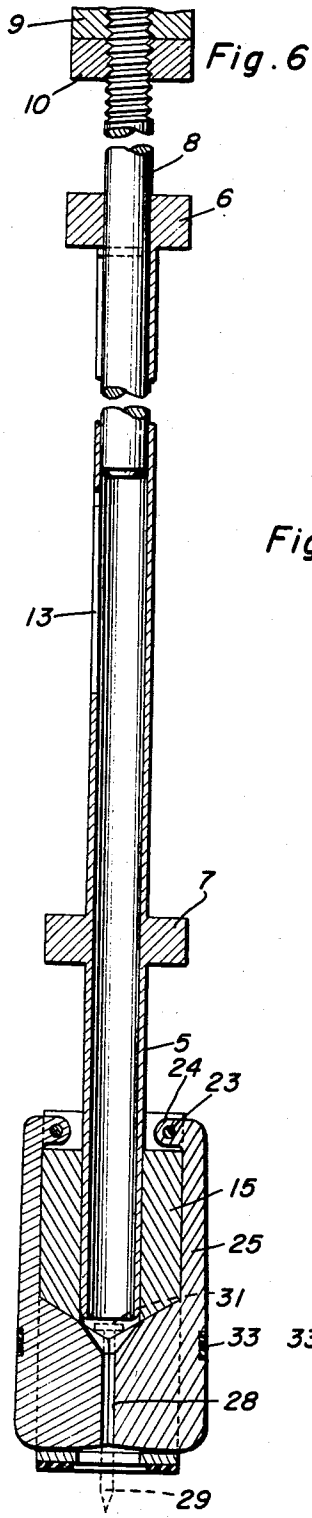


Fig. 9

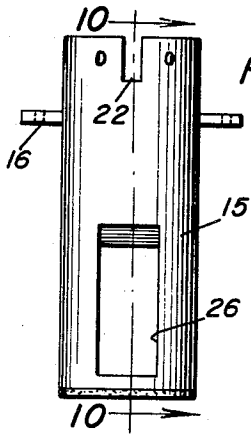


Fig. 10

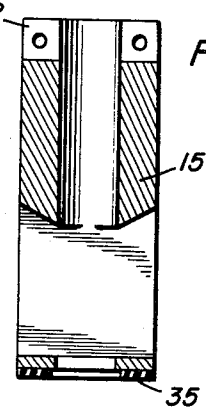


Fig. 7

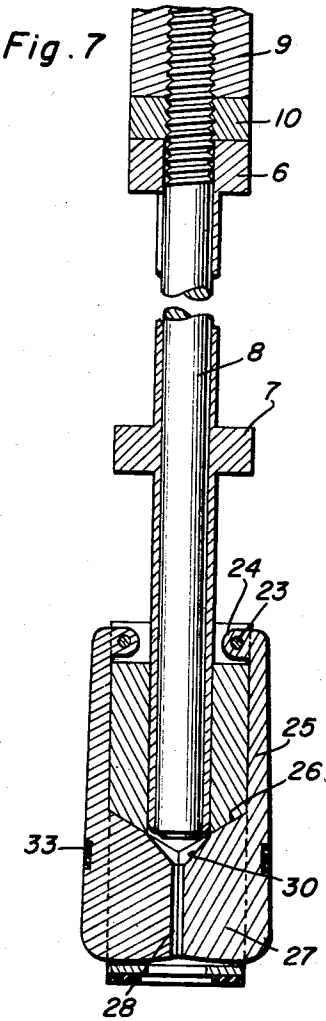
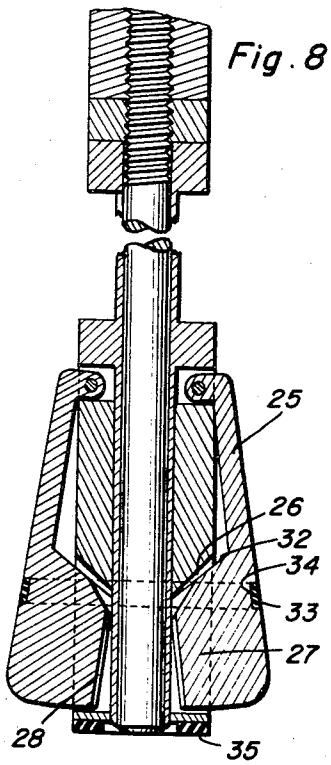


Fig. 8



George R. Humbert
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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NAIL DRIVER

George R. Humbert, North Bend, Oreg.

Application September 18, 1956, Serial No. 610,519

3 Claims. (Cl. 1—47)

The present invention relates to new and useful improvements in nail drivers embodying a construction for holding and driving a nail in ceilings or other overhead positions, or in other normally inaccessible places.

An important object of the invention is to provide a nail driving plunger working in a tube by means of which the tool is held in a desired position and connecting a pair of pivoted nail gripping jaws at the outer end of the tube into which nails are fed from the tube and held in a position in the path of the plunger to deliver hammer blows to the nail.

Another object is to provide a barrel at the outer end of the tube and in which both the tube and plunger or hammer are slidable and which also serves as a pivotal support for the pair of nail gripping jaws whereby the jaws will hold the nail in driving position during its initial driving operation and the tube will open the jaws to release the jaws from the nail during a subsequent driving operation of the plunger or hammer.

A still further object is to provide a tool of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purpose for which the same is intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view;

Figure 2 is an enlarged side elevational view with parts broken away and shown in section;

Figure 3 is an enlarged longitudinal sectional view of the tube;

Figure 4 is a bottom plan view;

Figure 5 is an enlarged transverse sectional view taken on a line 5—5 of Figure 1;

Figure 6 is an enlarged longitudinal section view taken on a line 6—6 of Figure 1 and showing the jaws in nail holding position;

Figure 7 is an enlarged fragmentary longitudinal sectional view showing the plunger or hammer in its initial nail driving position;

Figure 8 is a similar view showing the plunger or hammer at the completion of the nail driving operation;

Figure 9 is an enlarged side elevational view of the barrel;

Figure 10 is a longitudinal sectional view thereof taken on a line 10—10 of Figure 9; and

Figure 11 is an enlarged transverse sectional view of the nail gripping jaws.

Referring now to the drawings in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 5 designates a tube which constitutes a handle for the tool and which is formed with a diametrically enlarged anvil 6 at its upper or inner end. A diametrically enlarged collar 7 is integrally formed or otherwise suitably secured to the tube adjacent its opposite or outer end.

A plunger or reciprocating hammer 8 is slidably mounted in the tube 5 and to the rear end of which a handle 9 is secured and retained in threadedly adjusted position on the plunger by a lock nut 10 threaded on the plunger. A pin 11 projects outwardly at one side of the plunger or hammer 8 for sliding in a longitudinal slot 12 in the tube 5 to limit reciprocating movement of the plunger or hammer in the tube. A second longitudinal slot 13 is formed in the tube 5 adjacent the front or outer end of the latter and the slot 13 is constructed in the shape of a nail and includes a transverse slot 14 at the rear end of the slot 13 to accommodate the head of a nail for inserting the nail in the tube through the side thereof.

A barrel 15 is slidably received on the front or outer end of the tube 5 and outwardly with respect to the collar 7 and a pair of apertured ears 16 project outwardly at diametrically opposite sides of the barrel to slidably receive a pair of rods 17. Apertured ears 18 also project outwardly at diametrically opposite sides of the collar 7 in which the rods 17 are also received and the rods are provided with heads 19 at their rear ends to retain the rods in the ears 18. Coil springs 20 are positioned on the rods between the ears 16 and 18 and a nut 21 is threaded on the front ends of the rods to retain the rods in the ears 16. The springs 20 are compressed by an outward sliding movement of the tube 5 in the barrel 15 to retract the tube when released.

Notches 22 (Figs. 6, 7 and 9) are formed in the barrel 15 at diametrically opposite sides thereof and at the rear ends of the barrel and in which pivot pins 23 are transversely positioned for swingably supporting apertured inwardly projecting ears 24 at the rear ends of a pair of jaws 25 which extend longitudinally at diametrically opposite sides of the barrel 15. Openings 26 (Fig. 9) are formed in diametrically opposite sides of the barrel 15 to receive the opposed jaw faces 27 of the jaws 25. The opposing jaw faces 27 of the jaws 25 are formed with longitudinal grooves 28 to accommodate the shank 29 of a nail when inserted in the nail receiving slot 13 of tube 5 and the inner ends of the grooves 28 terminate in a flared seat 30 to accommodate the head 31 of the nail. The rear ends of the jaw faces 27 are inclined as shown at 32 to facilitate opening of the jaws by contact thereof with the front end of tube 5 and plunger or hammer 8.

The jaws are retained in closed position by means of an elastic band 33 embracing the jaws as well as the barrel 15 and with the elastic band seated in a groove 34 in the outer surface of the jaws.

An annular resilient pad or cushion 35 is cemented or otherwise suitably secured to the front end of the barrel 15 to prevent marring the work when the tool is placed against the same.

In the operation of the device, nails are fed singly into the nail receiving slot 13 of tube 5 after the plunger or hammer 8 has been retracted and the nails will drop into the grooves 28 in the opposing jaw faces 27 and the nail will be held in a position with the pointed end thereof projecting outwardly beyond the barrel by the closing of the jaws by the elastic band 33, as shown in Figure 6 of the drawings. The plunger or hammer 8 is then moved forwardly in the barrel 5 to deliver a hammer blow against the head 31 of the nail for driving the nail into the work.

Following the setting of the nail by the initial driving action of the plunger or hammer 8 the continued driving operation of the plunger or hammer will force the jaws 25 open and forward pressure on the tube or handle 5 will also force the latter forwardly in the barrel 15 to

maintain the nail centered in the tube as the reciprocating driving action of the plunger or hammer **8** continues until the nail has been completely driven outwardly of the barrel into the work, as shown in Figure 8 of the drawings. When forward pressure on the tube or handle **5** has been released the springs **20** will retract the tube or handle **5** in the barrel **15** and the elastic band **33** will then close the jaws to repeat the driving of subsequent nails fed into the slot **13**.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A nail driver comprising a tubular handle having a front end and a side slot for introducing nails into the handle for discharge out of said front end, a plunger slidable in said handle for driving the discharged nails, a pair of opposed jaws at the front end of the handle for receiving therebetween the shank of a nail discharged from said handle, a barrel on the front end of the handle for positioning against an object into which nails are to be driven, and means pivotally mounting said jaws on said barrel for movement toward each other to grip a nail shank and for separative movement to release said shank, said jaws being resiliently connected for movement toward each other, said handle being slidable forwardly in said barrel between said jaws to separate said jaws.

2. The combination of claim 1, and spring means connected to said handle and barrel for returning said handle from forwardly slid position in the barrel.

3. The combination of claim 1, the resilient connection for said jaws encircling the jaws.

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