

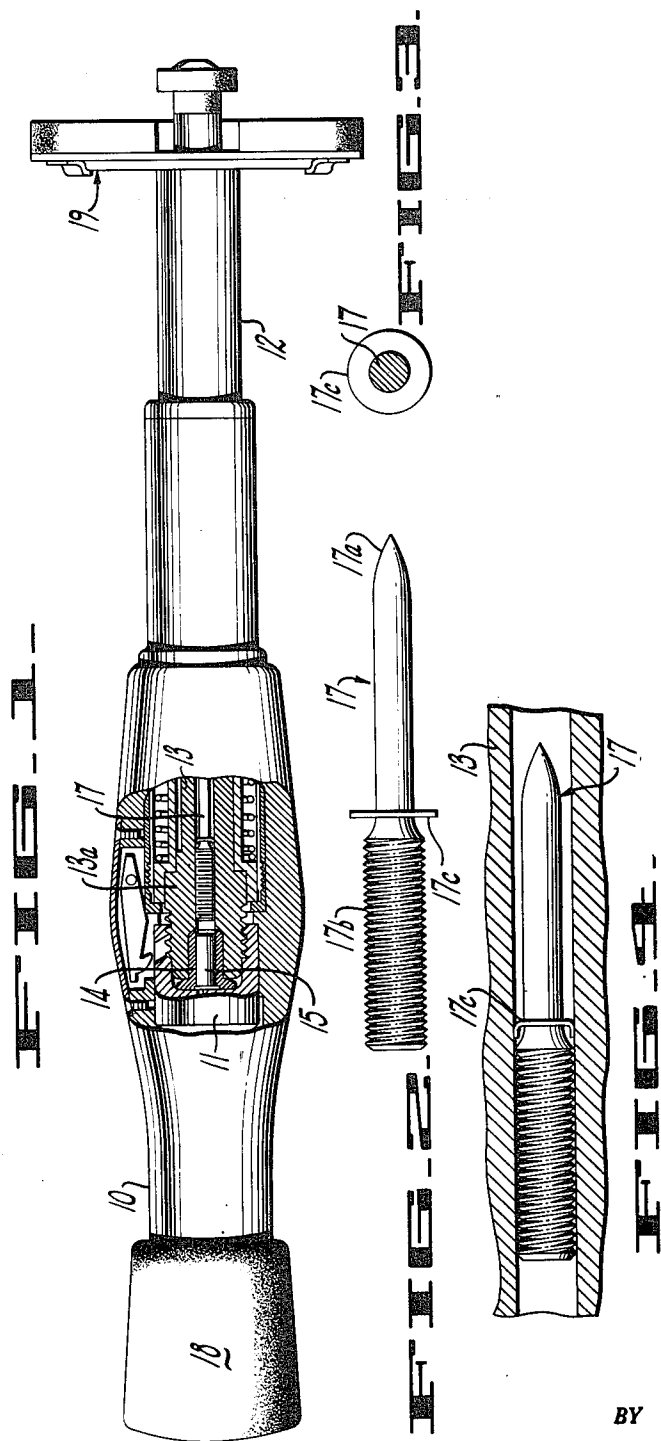
May 5, 1953

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2,637,241

STUD FOR EXPLOSIVE INSTALLATIONS

Filed Dec. 31, 1949



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2,637,241

STUD FOR EXPLOSIVE INSTALLATIONS

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Application December 31, 1949, Serial No. 136,186

2 Claims. (Cl. 85—10)

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The present invention relates to stud driving tools of the type employed for installing studs by explosive action in wall surfaces, such as concrete and steel, and is concerned more particularly with the provision of an improved stud facilitating such driving and which facilitates the controlling of the effective power or force applied to the stud from a standard explosive charge.

In accordance with the instant invention the stud is provided on its shank with a frictional portion or element preferably of a destructible material to hold the stud at a selected position along the barrel of the tool so that the desired effective force from a standard explosive charge will be applied to the stud. At the same time the frictional element being of a removable or destructible character, is readily destroyed so that it is no longer a part of the stud at the time the stud is installed in the wall surface.

The above and other objects of the invention are attained in a preferred embodiment of the invention as described in connection with the accompanying drawings, in which:

Figure 1 is an elevational view of a stud driving tool employing the invention, with a portion of the tool adjacent the combustion chamber broken away and shown in section to illustrate details of construction.

Figure 2 is a detailed enlarged view of a stud embodying the invention.

Figure 3 is a transverse sectional view of the stud taken as indicated by the view 3—3 in Figure 2.

Figure 4 is an enlarged view of the stud as mounted in the barrel of the tool.

Referring to Figure 1, there is shown a stud driving tool of the character described and claimed in the co-pending applications of Smith & Daugherty, Serial No. 124,078, filed October 28, 1949, for Stud Driving Tool, and Erickson and Bullwinkle, Serial No. 130,818, filed December 2, 1949, for Stud Driving Tool. In general, stud driving tools of this character are adapted to be separated or broken into two halves including a rear half 10 which contains the various firing control parts including, for example, a firing pin carrier 11, and a front or barrel half 12 of the tool in which the barrel 13 is included. The barrel 13 is provided with an enlarged rear end 13a which has a threaded connection within the end of the firing pin carrier 11 to connect the two halves of the tool. The barrel 13 is also provided with an enlarged bore to receive a removable breech plug 14 in which the explosive

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cartridge 15 is mounted for impact by the firing pin or the firing mechanism. With the parts disassembled, the breech plug 14 is removed and the selected stud 17 is installed in the barrel, the cartridge 15 is placed in the breech plug 14, and the parts are reassembled as shown in Figure 1 for a firing operation. Firing is accomplished by placing the end of the barrel 13 against the surface into which the stud is to be driven and pressing or telescoping the barrel assembly 12 and the firing pin carrier 11 back into the other portions of the tool until a firing position is reached, as disclosed in said applications, and then effecting relative turning movement of the central housing and the end grip 18 to fire the tool. At this time the deflector pad structure 19, yieldably mounted about the barrel 13, is engaged with the surface about the area of engagement of the end of the barrel so as to provide protection from flying particles of the wall surface upon explosive installation of the stud.

Referring in particular to Figures 1, 2 and 3, the stud 17 is of special construction and carries with it a frictional portion or element which is used to frictionally hold or secure the stud in a selected adjusted position in the barrel in accordance with the disclosure of the co-pending application of Virginius R. Erickson and Benjamin B. Bullwinkle, Serial No. 135,744, filed December 29, 1949, for Stud Driving Tool and Method of Power Control.

The stud 17 includes the usual sharpened hardened point 17a and the head, which in this case is threaded as indicated at 17b. Immediately adjacent its head the stud is provided with a frictionally mounted plastic ring 17c whose internal diameter is such to fit snugly on the shank of the stud and whose external diameter is such as to be deformed as shown in Figure 4 when installed in the barrel of the gun. This ring 17c not only serves as a frictional retainer for the stud but also serves initially as a seal against which the explosive gases impinge upon trying to pass between the threaded portion of the stud and the barrel. The plastic ring 17c may be constructed of any suitable material such as paper, plastic, rubber or the like, to be readily removable or destructible, but is preferably of resilient sheet plastic material such as cellulose acetate which is readily combustible so that the ring will be destroyed by burning during the expelling of the stud from the tool.

The material of the functional retainer is preferably such that it is either completely con-

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sumed by the heat of the explosion, or is charred or carbonized sufficiently thereby as to be friable and easy to remove from the stud.

While we have shown and described a preferred embodiment of the invention it will be apparent that the invention is capable of both modification and variation from the form shown so that the scope thereof should be limited only by the scope of the claims appended hereto.

We claim:

1. A stud for insertion into the surface of a work piece by its ejection through the bore of an explosively actuated driving tool; said stud comprising a body having a cylindrical head at one end and a surface penetrating shank at its other end, the head providing a shoulder to limit the penetration of the shank, and a deformable resilient frictional retainer on said shank and extending outwardly and around the perimeter of the shank, whereby said retainer when the stud is inserted in the bore of said explosively actuated tool will be deformed to frictionally retain said stud in any selected position along the bore and act as a seal for the explosive charge used to eject the stud.

2. A stud for insertion into the surface of a work piece by its ejection through the bore of an explosively actuated driving tool; said stud comprising a body having a cylindrical head at one end and a surface penetrating shank at its

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other end, the head providing a shoulder to limit the penetration of the shank, and a deformable resilient frictional retainer on said shank and extending outwardly of and substantially around the perimeter of the shank, whereby said retainer when the stud is inserted in the bore of said explosively actuated tool will be deformed to frictionally retain said stud in any selected position along the bore and having a sealing effect on the explosive charge used to eject the stud.

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