July 14, 1942. M. R. HUTCHISON, JR. 2,289,785

MULTIPLE THREADED STUD STICK

Filed June 10, 1941

FIG. 1.

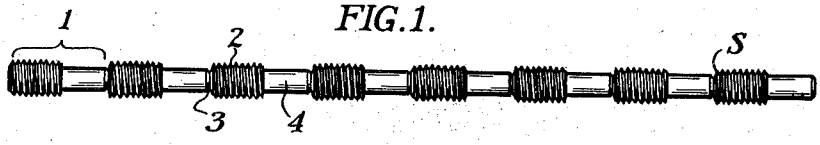


FIG. 2.

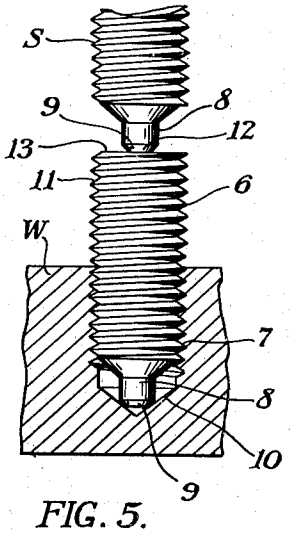


FIG. 3.

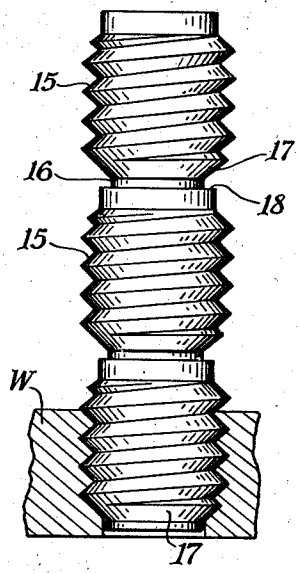


FIG. 4.

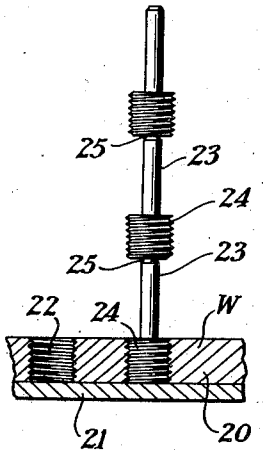


FIG. 5.

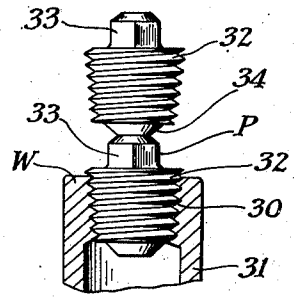
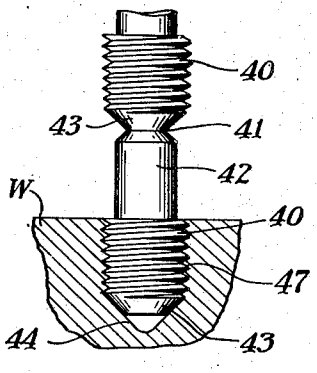


FIG. 6.



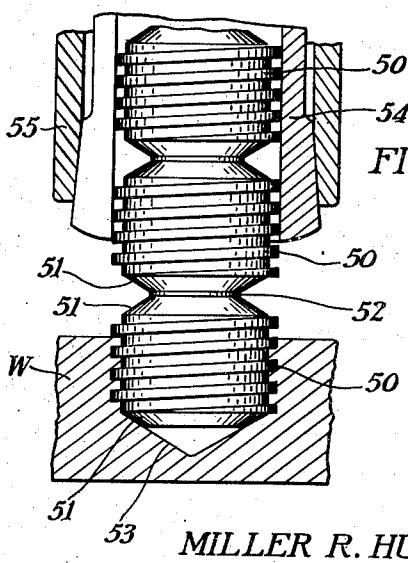


FIG. 7.

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MULTIPLE THREADED STUD STICK

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Application June 10, 1941, Serial No. 397,420

6 Claims. (Cl. 85—41)

This invention relates to a stud stick for use in rapidly applying studs from the stick to work. One object of my invention is to provide as an integral unit a stick of studs which may be accurately and rapidly applied to work. Another object of my invention is to provide a means for eliminating the individual handling of studs by an operator. Another object of my invention is to provide a stud stick, the use of which will insure that each stud may be applied to work and seated with exactly the same degree of firmness. Another object of my invention is to provide an article of the class described which will eliminate the usual difficulties which occur in rapidly mounting studs due to the individual workmen employed for mounting the studs. Still another object of my invention is to provide a stud stick as an article of manufacture with a means included in the article itself for insuring uniform mating of threaded surfaces and other objects will appear from the following specification, the novel features being particularly pointed out in the claims at the end thereof.

Coming now to the drawing wherein like reference characters denote like parts throughout:

Fig. 1 is a fragmentary side elevation of a stick of threaded studs constructed in accordance with and embodying a preferred form of my invention;

Fig. 2 is a fragmentary side elevation of a somewhat different type threaded stud, one of the studs being shown mounted in work;

Fig. 3 is a view similar to Fig. 2 but of a different type of stud;

Fig. 4 is still another embodiment of my invention showing one stud mounted in work and showing the integral studs in the position they assume in seating the end stud in work;

Fig. 5 is a fragmentary view partially in section showing a pipe cap which may be provided in stick form in accordance with my invention;

Fig. 6 is a view similar to Fig. 2 but with a somewhat different shaped threaded stud; and

Fig. 7 is a fragmentary view of a buttress-type of threaded stud being applied to work.

In my copending application for screw stick, Serial No. 306,504, filed November 28, 1939, (resulting in Patent No. 2,247,499, granted July 1, 1941) I have illustrated and described various types of screw sticks in which a plurality of screws are joined together, these screws having torsional driving screwheads by which an end screw of the stick is applied to work. In Fig. 6 of the drawing of this application, I have illustrated a stud of the type specifically covered in the present application which is directed to applying threaded members formed in integral sticks, the threaded members being connected by narrow frangible neck portions which may be readily ruptured by driving an end threaded member into work by means of a torque applied solely through the narrow neck until the neck is ruptured. According to this invention the torsional driving head of my application above referred to is not employed, the driving force being applied either directly to one or more of the threaded areas of the threaded members or to any other available portion of the stud by frictional driving means diagrammatically shown in the present application.

Referring to Fig. 1, my invention comprises broadly providing as an integral unit a series of threaded members each of which is indicated broadly as 1, and these threaded members may take various different forms as will be hereinafter more fully described. The stick of threaded members S may consist of any number of integral units found convenient for the particular work in hand. I have usually found for some purposes that twenty-five units are frequently a handy number to take care of, although I have actually manufactured sticks containing several hundred units in one piece.

Each unit 1, which may for convenience be called a stud, may consist of a threaded area 2 which may be applied to work and a narrow neck 3 which may be ruptured by driving an end unit 1 into work by a torque applied solely through the narrow neck from other units adjacent the end unit being applied to work. In Fig. 1, I have shown a familiar type of stud which carries a smooth, round area 4, such as is commonly used for supporting various machine elements. In the form of the invention shown in Fig. 1 it will be noted that the narrow neck 3 is of less diameter than the smooth area 4 and that the smooth area 4 is of somewhat less diameter than the root diameter of the threaded area 2.

The reason for this is that since the threaded area 2 is to be applied to a mating tapped aperture by a torque applied to adjacent units, the narrow neck 3 is of a size which will permit it to turn, twist or break off by the torque applied through the narrow neck. Consequently, when I refer to a narrow neck, I mean a frangible confined area which is of smaller cross-section than the remaining portion of the stud or unit and which will be the first portion to break under a torque applied to the stick. This is important because by regulating the size or diameter of the narrow neck the amount of torque which is ap-

plied to the unit being threaded in the work can be readily adjusted. By this adjustment it is possible to eliminate the usual inaccuracies of assembling parts which result from different workmen. For instance, one workman, in applying a normal type of stud to work, may apply such force that threads will be stripped and, on the other hand, others will not seat a threaded member firmly enough, but where units of the type shown in the present application are utilized, since it is necessary to rupture the narrow neck and since this neck can be designed to rupture upon the application of a known torque, absolute uniformity can readily be obtained regardless of the particular operator applying the threaded members to work.

In accordance with my present invention the threaded units may take various different forms, some of which are illustrated in the drawing.

For instance, in Fig. 2 where a threaded type of stud is desired, it may take the form shown in this figure of a threaded area 6 adapted to screw into a mating threaded portion 7 in work W. In this instance I prefer to provide an unthreaded area 8 terminating in a beveled wall 9 because it is desirable to provide a stop which will come up against a wall 10 in the work which is arranged at such depth that the proper area 11 of the threaded member will project from the work. In this form of the invention the narrow neck 12 is shown as consisting of the tapering annular wall 9 intersecting with the flat annular wall 13 so that, as a torque is applied to other units of the stick S, these intersecting walls will define a line of break between the unit being applied to the work and the rest of the stick.

In Fig. 3 I have shown still another type of unit being applied to work W. In this case each unit consists of a threaded area 15 which is connected to the threaded area 15 of the next adjacent unit by means of a narrow neck 16. In this instance the narrow neck 16 consists of an annular narrow area formed between the beveled annular wall 17 and the annular wall 18. In this instance the scale of the units is greatly exaggerated and I find it convenient to make the annular wall 16 of only a few thousandths of an inch in length. This is desirable because it is difficult to provide a V-shaped groove in large scale manufacture because it is difficult to keep a tool sharply pointed. It is much easier to provide a small flat wall, such as the annular wall 16 above described, and such an area definitely provides a line or area which will always fracture when the end threaded member is being applied to the work.

In Fig. 4 the work W may consist of a plate 20 backed up by a second plate 21, these plates having a series of tapped openings 22. This work is to receive a series of upstanding pins 23 which may be carried by integral threaded members 24, there being a narrow neck 25 between each pin 23 and its next adjacent threaded area 24. Thus, by turning a threaded member 24 of an end unit into the tapped opening 22 as soon as the threaded member is seated on the bottom plate 21, the narrow neck 25 is twisted off. This permits the extremely accurate and rapid mounting of the pins 23 in the work.

In Fig. 5 I have shown another application of my invention. In this case, plugs designated broadly as "P" are provided for the threaded end 30 of pipes 31. In this instance, the threaded areas 32 may have a standard pipe thread and, if desirable, a squared head 33 may be provided between one threaded area 32 and a narrow neck 34 connecting the squared head 33 with the next adjacent threaded area 32. As in the previous examples of my invention, I provide a stick including a series of integrally connected plugs which can be applied to work by rapidly rotating an end plug through the narrow neck 34 until this neck ruptures.

The Fig. 6 example of my invention is another stud-type in which a threaded area 40 is connected by a narrow neck 41 to a cylindrical bearing member 42 so that, when the threaded area 40 of the end unit is seated in the tapped opening 47, the beveled wall 43 may be seated in the end 44 of the aperture in the work W.

In Fig. 7 I show a series of threaded members 50 having a thread of the buttress type, each of these members having pairs 51 of walls of annular tapered shape leading to a narrow annular wall 52 which defines the line of fracture between the end stud and the next adjacent stud as the threaded member is being applied to work W. As before, I find it convenient to provide a tapered end-wall 53 in the work against which a tapered wall 51 on the threaded unit may contact when the threaded member is properly seated in the work W.

In this view I have diagrammatically shown a frictional driving element 54 carried by the tubular member 55 which may be used to grip the outside of the buttress threads 50 of one or more units adjacent the end unit being driven into the work. From the position shown in Fig. 7, continued rotative movement of the friction drive member 54 will rupture the narrow neck 52 leaving the end unit seated in the work W.

In all of the above embodiments of my invention, it will be noted that there is a narrow neck connecting the units which has a smaller cross-sectional area than any other part of the unit, and this cross-sectional area is so selected that it may be ruptured by a turning movement after the end unit is seated into the work. Thus, the firmness with which the end unit can be seated is entirely under the control of the designer who provides the narrow neck with the proper strength to accomplish his purpose. This narrow neck may fracture through a plane, if this is found desirable, by having the narrow neck composed of annular intersecting walls which meet sharply as illustrated in Figs. 2 and 4, for instance, or the narrow neck may be a narrow cylindrical wall lying between a pair of tapering walls or a tapering wall and a wall at right angles to the axis of the stick of units as indicated in Figs. 3 and 7, for instance. In all cases the narrow neck is of a diameter less than the root diameter of the thread so that the narrow neck will always rupture without damaging any of the threads of the threaded units.

I claim:

1. A threaded stick of studs for use as a unit for applying an end stud to work through a force applied to another stud of the stick of studs and comprising a plurality of coaxially arranged integrally connected studs, each stud comprising a threaded area of selected size and pitch, a neck of smaller size than the threaded area connecting the threaded area of one stud to the threaded area of another stud, said narrow neck providing a weakened area transversely of the stud stick adapted to break when a stud is forcibly turned into work solely through said narrow neck, whereby the size of the narrow neck may

determine the torque adapted to be transmitted to the stud being driven into the work.

2. A threaded stick of studs for use as a unit for applying an end stud to work through a force applied to another stud of the stick of studs and comprising a plurality of coaxially arranged integrally connected studs, each stud comprising a threaded area of selected size and pitch, a neck of smaller size than the threaded area connecting the threaded area of one stud to the threaded area of another stud, said narrow neck providing a weakened area transversely of the stud stick adapted to break when a stud is forcibly turned into work solely through said narrow neck, said narrow neck having a diameter of less than the root diameter of the selected thread of the threaded area whereby said narrow neck may break after the threaded area of a stud is seated in the work.

3. A threaded stick of studs for use as a unit for applying an end stud to work through a force applied to another stud of the stick of studs and comprising a plurality of integrally connected threaded studs each comprising a threaded area and an unthreaded area, said unthreaded area connecting the threaded area of one stud to a threaded area of another stud, and a narrow frangible neck between an unthreaded area of one stud and a threaded area of another stud adapted to be broken when one stud is seated by turning the next adjacent stud, said narrow frangible neck including an annular notch, narrow at the bottom in cross section, for defining the break between the driving studs and the driven stud.

4. A stick of studs for use as a unit for applying an end stud to work by a force applied to another stud of the stick of studs and comprising a plurality of integrally connected and coaxially arranged studs, each stud including a threaded area, an unthreaded area of less diameter than the threaded area and adjacent the threaded area, and a neck of less diameter than the diameter of the unthreaded area whereby the threaded area may be turned into an aperture by a torque applied to the unthreaded area until the narrow neck is broken.

5. A stick of studs for use as a unit for applying an end stud to work by a force applied to another stud of the stick of studs and comprising a plurality of integrally connected and coaxially arranged studs, each stud including a threaded area, an unthreaded area of less diameter than the threaded area and adjacent the threaded area, and a neck of less diameter than the diameter of the unthreaded area whereby the threaded area may be turned into an aperture by a torque applied to the unthreaded area until the narrow neck is broken, said narrow neck being included in the unthreaded area and including intersecting annular walls establishing a fracture line, said fracture line lying adjacent a threaded area of a stud.

6. A stick of studs for use as a unit for applying an end stud of the stick to work by a force applied to another stud of the stick of studs and comprising a plurality of integrally connected and coaxially arranged studs, each stud including a threaded area and an unthreaded area of a diameter materially less than the pitch diameter of the threads of the threaded area and connecting one stud to the next adjacent stud, said unthreaded area of a materially less diameter than the pitch diameter of the threads of the threaded area constituting a narrow frangible neck of predetermined strength adapted to break upon the application of a predetermined torque to the stud adjacent the stud being applied to work whereby the stick of studs may include integrally with the studs a means for determining the firmness with which an end stud may be applied to work.

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