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FASTENER APPLYING TOOL

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2 Claims. (Cl. 29—270)

This invention relates to tools particularly for use in connection with the application of sheet fasteners or so-called skin clamps to the work, fasteners of this type being widely used in the aircraft industry.

Heretofore in the application of skin clamps, danger has been encountered due to the fact that the fasteners, after being partially compressed, sometimes slip loose from the tool. The springs of these fasteners are of such strength that, when they come loose from the applying tool, the partially or fully compressed springs cause them to be thrown with the force of a bullet, thereby creating a very dangerous hazard.

An object is to produce a tool of the above character by which the actuating plunger is retained in alignment with the fastener thereby to insure the efficient and proper operation of the fastener while it is being applied to the work.

Another object is to produce a tool of the above character which has the safety feature above mentioned and also is adapted to accommodate fasteners of the type in which the head of the fastener is substantially enclosed except for a relatively small opening by which access is afforded to the spring tensioned pin or plunger.

Other objects and advantages of the invention will hereinafter appear, and for purposes of illustration but not of limitation, embodiments of the invention are shown in the accompanying drawing in which

Figure 1 is a side elevation of a fastener applying tool particularly adapted for skin clamps in which the end of the plunger is enclosed; and

Figure 2 is a sectional view of the tool shown in Figure 1 with the fastener or skin clamp in place and the tool plunger advanced preparatory to applying the fastener to the work.

As shown on Figures 1 and 2, the fastener applying tool is particularly designed for use with a fastener or skin clamp in which the inner end of the plunger is partially enclosed. Reference is made to my co-pending application Serial No. 497,319, filed August 4, 1943, and entitled "Temporary rivet." In this fastener, a hood L is fixed at its outer end to the body of the fastener above described, the plunger M has a reduced extension terminating in a shouldered portion A' which is slidable relative to a nozzle N'. In order to apply the fastener to the work, the plunger M is first depressed to a position substantially as shown on Figure 2.

The fastener applying tool illustrated comprises a plunger 30 which is of a size to pass through the aperture in the inner end of the fastener hood L. The plunger 30 is slidable relative to a guide 31 which is formed with a reduced rearward extension 32 and a coil spring 33 fits the extension 32 at one end and bears at its inner end against the plunger part 34 which is in sliding contact with the nose portion of the tool.

The forward end of the guide 31 is substantially cup-shaped as indicated at 35 to receive the inner end of the hood L. The portion 35 of the guide 31 is so formed as substantially to embrace a portion of the peripheral surface of the fastener hood L, thereby to militate against lateral displacement of the tool.

It will be manifest that by operating the trigger 13', the tool plunger 30 is advanced through the apertured end of the fastener hood L thereby to compress the fastener plunger M to apply the fastener to the work. The coil spring 33 establishes a resilient pressure against the inner end of the fastener, which pressure increases as the plunger is advanced, thus insuring the retention of the fastener in the desired position.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. A tool for applying a fastener provided with a spring tensioned pin reciprocable in a housing having an external shoulder, said tool comprising a frame providing a guideway, one end of said frame providing a trough-like portion, a plunger reciprocable in said guideway, means for actuating said plunger, said plunger having a pin-like projection, a cup-shaped fastener engaging member having a central aperture through which said pin-like projection is slidable, a spring between said plunger and said cup-shaped member, and a shoulder in the region of said trough-like portion against which the shoulder on the fastener is adapted to abut with the spring-tensioned pin of the fastener facing the plunger whereby the pin is advanced against the spring tension upon advancing movement of the plunger.

2. A tool for applying a fastener provided with a spring tensioned pin reciprocable in a housing having an external shoulder, said tool comprising a frame providing a guideway, one end of said frame providing a trough-like portion, a plunger reciprocable in said guideway, means for actuating said plunger, a socketed fastener engaging member shaped snugly to fit the adjacent end of the fastener, said member having an axial opening, an extension on said plunger slidable through said opening, and being movable relatively to said member, a coil spring interposed between said plunger and said member and fitting over said extension, and a shoulder in the region of said trough-like portion against which the shoulder on the fastener is adapted to abut with the pin of the fastener facing the plunger whereby the pin is advanced against the spring tension upon advancing movement of the plunger.

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