Jan. 13, 1925. 1,523,359

W. T. LEGGETT

TOOL FOR ATTACHING FASTENER PARTS

Filed July 12, 1923 2 Sheets-Sheet 1

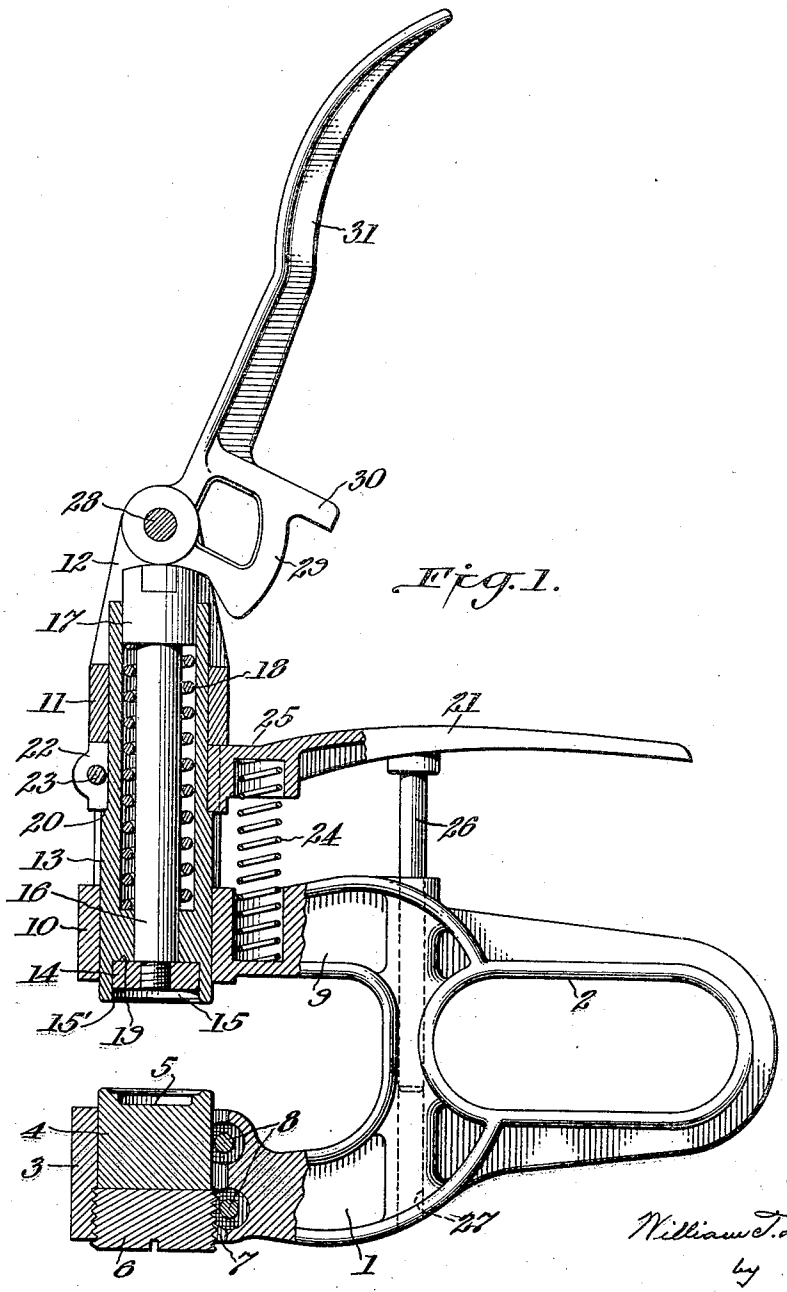


Fig. 1.

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Fig. 3.

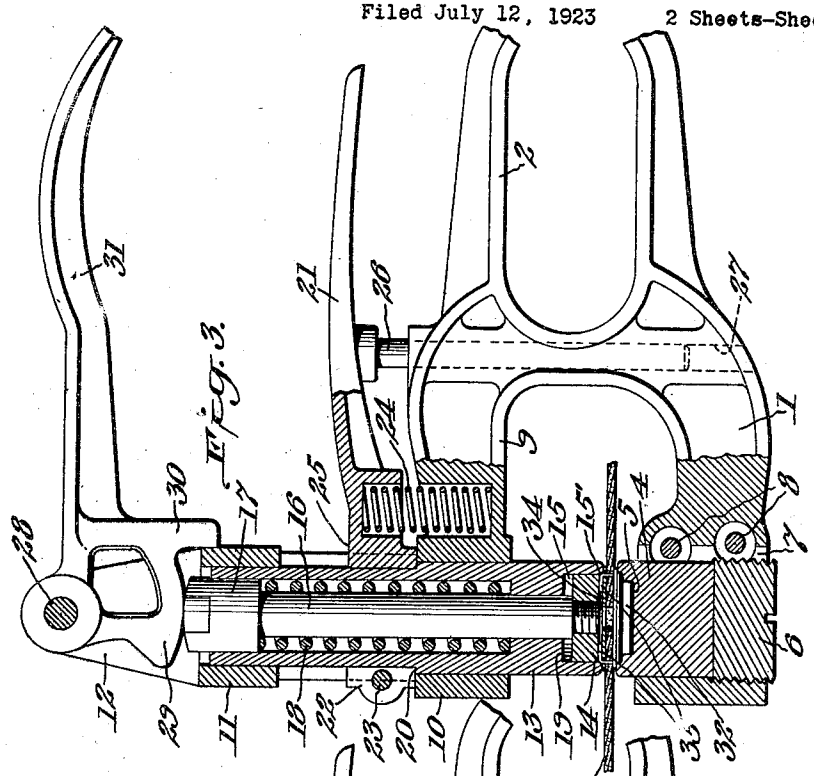
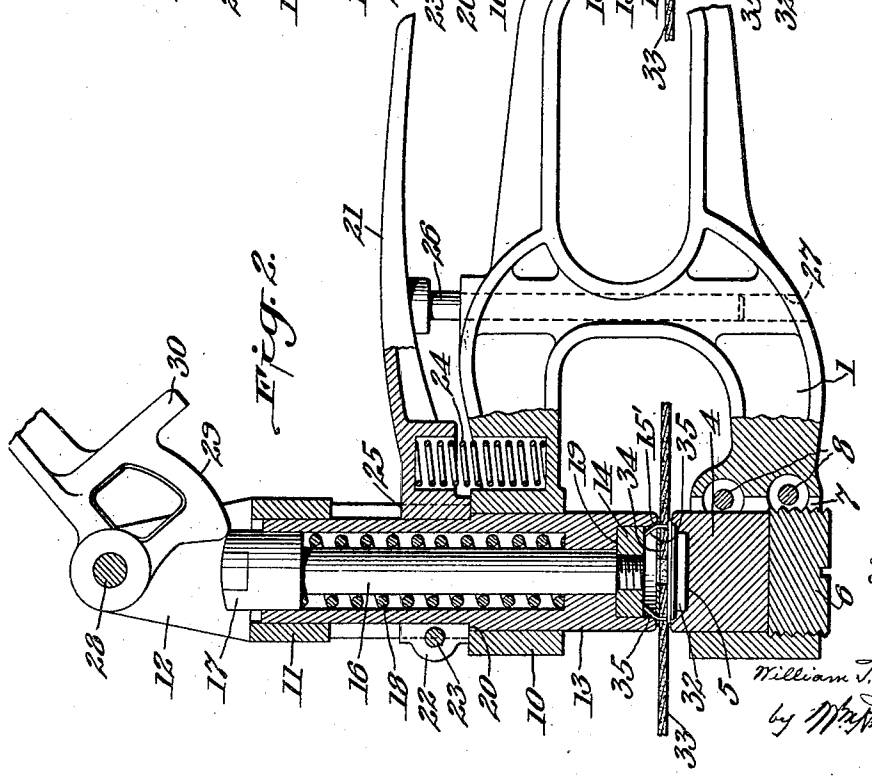


Fig. 2.



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Patented Jan. 13, 1925. 1,523,359

UNITED STATES PATENT OFFICE.

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TOOL FOR ATTACHING FASTENER PARTS.

Application filed July 12, 1923. Serial No. 651,189.

To all whom it may concern:

Be it known that I, WILLIAM T. LEGGETT, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Tools for Attaching Fastener Parts, of which the following is a full, clear, and exact description.

In attaching fastener parts of the type having prongs adapted to be passed through the material to which the fastener is attached, and through suitable openings in an attaching washer applied to the side of the fabric opposite to that upon which the fastener is placed, and upon which washer the prongs are thereafter clinched, such as the fasteners and grommets which are used upon carriage curtains and rugs, it is customary to clinch the prongs upon the washer by hammering them down upon the washer with an ordinary hammer. This method of clinching is expensive, in that it is time-consuming, and frequently subjects the fasteners to abuse which thereafter impairs their usefulness and sometimes renders them inoperative.

It has heretofore been found inexpedient to attach fasteners of this type by machine, for the reason that it is necessary first to upset the prongs, that is converge their points, and secondly to then flatten them down upon the washer, and inasmuch as the prongs project substantially at right angles from the washer when passed therethrough, any setting plunger which would upset or converge the prongs would have to be of such facial conformation as to preclude its ability to subsequently flatten the prongs down into complete intimate contact with the face of the washer.

The object of this invention is to provide a tool by which fastener parts of the type described may be attached, and which is capable of performing the two operations of upsetting or converging the prongs, and of thereafter flattening them down and clinching them into intimate contact with the face of the washer. Moreover, this tool may take the form of a hand-tool, and thereby afford all the facility for attaching these fasteners that is afforded by the expensive and uneconomical hammer method now in general use.

To this end the invention consists in a tool for attaching fastener parts, including essentially a fastener support, a slidable two-part plunger comprising an upsetting member and a clinching member relatively movable, means carried by the upsetting member for imparting sliding movement to it toward said support, the upsetting member carrying with it in such movement the clinching member, and means for imparting additional movement, in the same direction, to the clinching member independently of the upsetting member, and a suitable frame forming a handle and bearings for these parts, as I will proceed now to explain and finally claim.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a partial elevation and central vertical section of a tool embodying my invention. Figs. 2 and 3 are views similar to Fig. 1, showing the two stages in the operation of attaching a fastener with the tool of my invention.

The tool comprises a frame 1, formed to provide a hand-grip 2, and having a bearing at 3 to receive the fastener support or block 4 which is recessed at 5 to conform to the shape of the fastener to be attached, this support or block being mounted in the bearing 3 to rest upon a screwthreaded adjusting member 6. When the support or block has been properly adjusted the bearing 3 which is split as shown at 7, may be clamped upon the support or block and adjusting member, so as to prevent movement of same, by means of screws 8. Adjacent to the support or block 4 and extending thereover is an arm 9 carrying two slide bearings 10 and 11 in axial alinement with the support or block 4 and a pivot bearing 12. In the slide bearings 10 and 11 is mounted a two-part plunger composed of an upsetting member 13 of sleeve-like form and a clinching member having a head 14 mounted within a recess 15 in the upsetting member and carried on a shank 16 extending through the sleeve-like portion of the upsetting member and provided at its top with a cam follower 17 having an easy sliding fit within the sleeve-like portion of the member 13 and backed up by a spring 18 whereby the head 14 is normally retained

in contact with the bottom 19 of the recess 15. The leading end of the upsetting member is slightly beveled or rounded as at 15′ so as to provide for an upsetting or converging action upon the points of the fastener prongs upon contact with them. The member 13 is shouldered at 20 to support an operating handle 21 having a split collar 22 clamped upon the member 13 by means of a screw 23. The two-part plunger is held normally in the position shown in Fig. 1 by means of a spring 24 and its upward movement is limited by the slide bearing 11 which acts as a stop against which the portion 25 of the split collar 22 abuts. In order to prevent binding of the plunger in its slide bearings when depressed by means of the handle 21, I provide a guide-rod 26 which slides freely in a bore 27 in the frame 1.

Mounted on the pivot bearing 12 by means of a pin 28 is a cam 29 arranged for cooperation with the follower 17 and provided with a stop 30 adapted to abut against the side of the slide bearing 11 and having an operating lever 31.

As hereinabove stated, it is necessary, when attaching fasteners of the type described, to provide for two substantially separate and distinct setting operations for clinching the fastener prongs upon the washer, and these two steps are illustrated in Figs. 2 and 3 as carried out by my tool.

In Fig. 2 I show a fastener 32 of ordinary form positioned bottom up in the recess 5 of the fastener supporting block 4, and upon the upturned bottom of this fastener I have shown a piece of material 33 and the ordinary flat attaching washer 34 with the prongs 35 of the fastener extending therethrough. In this figure I have shown the handle 21 depressed as by grasping the hand-grip 2 with the fingers and pressing down upon the handle with the palm of the hand, whereby the two-part plunger is completely lowered and the prongs 35 upset or converged by having contacted with the slightly beveled inner circumference of the edge 15′ of the recess 15. This is the first step in the setting operation.

Referring now to Fig. 3, it will be seen that I have shown all of the parts 32, 33, 34 and 35, shown in Fig. 2, but in this figure, as distinguished from Fig. 2, I have shown the cam 29 as having been brought into play by actuation of the lever 31 to lower the clinching member so that its head 14 has forced the prongs into fully clinched or flattened position against the washer. This is the second step and completes the attaching operation. The material 33 with the fastener attached thereto may be removed from the tool by simply returning the cam to the position shown in Fig. 1, whereupon the spring 24 will return the two-part plunger to the position shown in Fig. 1 and the material with the fastener attached may be lifted off of the support.

I have described my invention as embodied in a hand-tool, and it is in such a tool that it has great utility, but it is obvious that the parts might be actuated by mechanically, rather than by manually operated means, in an automatic machine, with the same facility and with equally advantageous effect, and it is therefore to be understood that I do not consider the invention as limited to the specific construction herein shown and described except as pointed out in the claims, nor do I consider it as limited to a hand-tool, and the following claims should be read with this understanding.

What I claim is:—

1. In a tool for attaching fastener parts, a frame, a fastener support fixedly mounted therein, a two-part plunger comprising an upsetting member and a clinching member mounted in said frame for sliding movement in line with said support, means carried by said upsetting member for depressing same and with it the clinching member toward said support, and means carried by said frame and cooperating with said clinching member for further depressing the clinching member independently of the upsetting member.

2. In a tool for attaching fastener parts, a frame, a fastener support fixed therein, a two-part plunger slidable in said frame in line with said support and comprising an upsetting member and a clinching member, means carried by said upsetting member for depressing same and with it said clinching member, and a cam carried by said frame and provided with operating means, said cam cooperating with said clinching member for further depressing the same independently of the upsetting member.

3. In a tool for attaching fastener parts, a frame, a fastener support fixedly mounted therein, a two-part plunger slidable in said frame in line with said support and comprising an upsetting member and a clinching member, a handle carried by said upsetting member whereby said upsetting member and with it the clinching member may be simultaneously depressed toward said support, and a lever-operated cam carried by said frame and adapted upon actuation to further depress said clinching member independently of said upsetting member.

4. In a tool for attaching fastener parts, a frame, a fastener support fixedly mounted therein, a two-part plunger slidable in said frame in line with said support and including an upsetting member provided

with a recess, a clinching member comprising a head a shank and a cam follower, said head lying normally against the bottom of said recess and said shank sleeved in said upsetting member, resilient means carried by said upsetting member and cooperating with said clinching member to hold the head thereof normally against the bottom of said recess, operating means carried by said upsetting member for depressing same and with it said clinching member toward said support, a cam cooperating with said cam follower for depressing said clinching member independently of said upsetting member subsequently to the depression of the latter, and resilient means for returning the two-part plunger to normal position upon disengagement of said cam from said follower.

In testimony whereof I have hereunto set my hand this 11 day of July A. D. 1923.

WILLIAM T. LEGGETT.

Witnesses:
N. B. Riggs,
E. N. Levick.