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Publication number:

0 108 835
A1

12

EUROPEAN PATENT APPLICATION

21 Application number: **82201337.1**

51 Int. Cl.³: **B 21 J 15/04**

22 Date of filing: **25.10.82**

30 Priority: **20.01.82 JP 6495/82 U**

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43 Date of publication of application: **23.05.84**
Bulletin 84/21

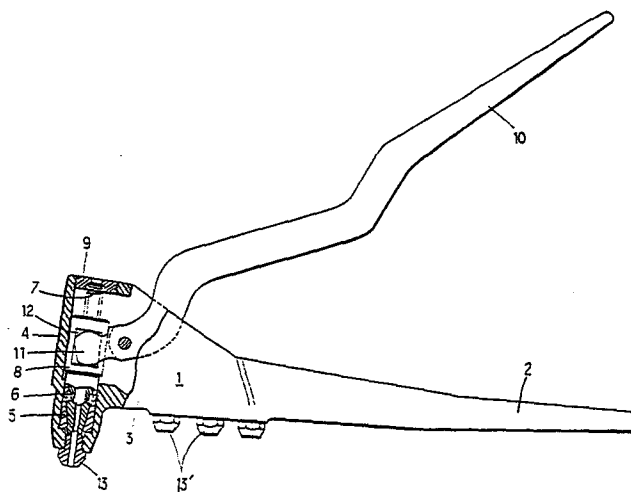
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84 Designated Contracting States: **AT BE CH DE FR GB IT LI LU NL SE**

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54 **Hand riveter.**

57 Hand riveter wherein a jaw case (8) is movable forward and backward by opening and closing handles (2, 10) for setting rivets as desired and in which a single spring (7) is used for both pressing a jaw pusher (6) accommodated in the jaw case and for opening the handles.



Hand riveter.

The present invention is related to a hand riveter which has a jaw case movable forward and backward by opening and closing handles for setting rivets as desired.

With conventional hand riveters of this type, a closure member
5 (such as a barrel) for holding the base end of a spring for pressing a jaw pusher accommodated in a jaw case is screwed in the upper end of the jaw case and thereby connected to the jaw case, with the spring enclosed in the jaw case along with other jaw members, so that the spring merely has the function of pressing the jaw members only. Such
10 hand riveters generally used are divided into two types: one which has another spring for opening the handles, and the other which is not provided with such an opening spring. In the case of the former type, the spring acting to open the handles to a full extent holds the forward end of the jaw case in bearing contact with the forward end
15 inner wall of a tubular jaw case housing, consequently maintaining the jaws in an opened position at all times, with their outer ends in contact with the inner end of the nose piece. Thus the riveter has the drawback that the rivet inserted through the jaws will slip off inadvertently when the jaws are directed downward. The riveter of the
20 latter type usually has its handles closed, and the jaws are therefore held closed at all times, so that the riveter requires the cumbersome procedure of opening the handles by hand to open the jaws every time a rivet is to be inserted through the jaws. This seriously reduces the efficiency of rivet setting operation.

25 The present invention, the main object of which is to overcome the drawbacks of the conventional devices, provides a hand riveter having a jaw case which is movable forward and backward by opening and closing its handles for setting rivets as desired, which riveter is characterized in that a closure member for holding the base end of
30 a spring for pressing a jaw pusher accommodated in the jaw case is attached to an upper portion of a tubular jaw case housing at a required distance from the jaw case, the handles being operable by the force of the pressing spring. In such a riveter a single spring is used for pressing a jaw pusher accommodated in the jaw case and also for opening

the handles to render the riveter simple in construction and inexpensive and to assure a very smooth and easy rivet setting operation.

The invention will be described below in detail with reference to the drawings showing an embodiment.

5 In the drawings shows:

Fig. 1 a front view partly in vertical section and showing the same with its handles fully opened;

Fig. 2 a fragmentary sectional view partly broken away and showing the same with the upper handle slightly lowered by gravity, and

10 Fig. 3 and Fig. 4 are views illustrating a blind rivet as inserted in place.

Indicated at 1 is a hand riveter main body having a lower handle 2. A tubular jaw case housing 4, which is directed downward, is formed at the front end of a head frame 3 included in the main body. Jaws 5, a jaw pusher 6 and a spring 7 for pressing the jaw pusher are inserted in this order in a jaw case 8, which is fitted in the housing 4. The base end of the pressing spring 7 projecting outward from the upper end of the jaw case 8 bears against and is held by a closure member 9 in the form of a bored barrel and screwed in the upper end of the housing 4. 20 The closure member 9 is spaced from the upper end of the jaw case 8 by a required distance. An upper handle 10 is pivoted at a boss portion to the main body 1. The handle 10 is formed at its front end with a bifurcated portion 11 which is fittingly engaged in recesses 12 formed at an upper portion of the jaw case 8 on the opposite sides of its outer periphery so that the upper handle 10, when moved upward or downward, advances or retracts the jaw case 8 within the housing 4. With this arrangement, the upper handle 10 is biased by the force of the jaw pusher pressing spring 7 so that the handles 2 and 10 can usually be in an open state. The drawings show a nose piece 13 screwed in the forward end 30 of the housing 4, interchangeable nose pieces 13' which are different in bore diameter and length, a blind rivet 14 and workpieces 15 to be joined together.

When no consideration is given to the lowering of the upper handle 10 which occurs under gravity depending on the position of the hand riveter 35 of the above construction, the force of the spring 7 pressing the jaw pusher

6 fully acts on both the jaw members and the upper handle 10, advancing the jaw case 8 to cause the nose piece 13 to open the jaws 5 and also causing the jaw case to open the handles 2, 10 to the greatest extent by raising the upper handle 10 as seen in Fig. 1.

- 5 Further when the hand riveter is held in the position in which gravity lowers the upper handle 10, the upper handle 10 slightly lowers under gravity against the force of the pressing spring 7, retracting the jaw case 8 to close the jaws 5 as shown in Fig. 2.

Accordingly the hand riveter is first held in the position of
10 Fig. 1 so that the upper handle 10 will not lower under gravity. The blind rivet 14 can then be easily inserted through the jaw assembly because the jaws 5 are fully opened (see Fig. 3). When the hand riveter is subsequently so held that the upper handle 10, under gravity, suitably lowers against the force of the spring 7, the jaws 5 are closed to
15 reliably grip the blind rivet 14 as shown in Fig. 4. This eliminates the likelihood that the blind rivet will slip off the jaws, even when the riveter is used as directed downward for riveting, thus assuring the desired rivet setting operation.

As will be apparent from the above description, the present invention
20 in which the spring for pressing the jaw pusher is used also for opening the handles eliminates the use of a spring for opening the handles to render the riveter simple in construction and inexpensive to make while completely overcoming the drawbacks of the two types of hand riveters described. The invention therefore assures a very smooth and easy rivet
25 setting operation.

In embodying this invention, the force of the pusher pressing spring is so determined that when the riveter is used for riveting, the upper handle will slightly lower under gravity against the force of the spring.

C L A I M

A hand riveter wherein a jaw case is movable forward and backward by opening and closing handles for setting rivets as desired, the hand riveter being characterized in that a closure member (9) for holding the base end of a spring (7) for pressing a jaw
5 pusher (6) accommodated in the jaw case (8) is attached to an upper portion of a tubular jaw case housing (4) at a required distance from the jaw case (8), the handles being operable by the force of the pressing spring.

FIG. 1

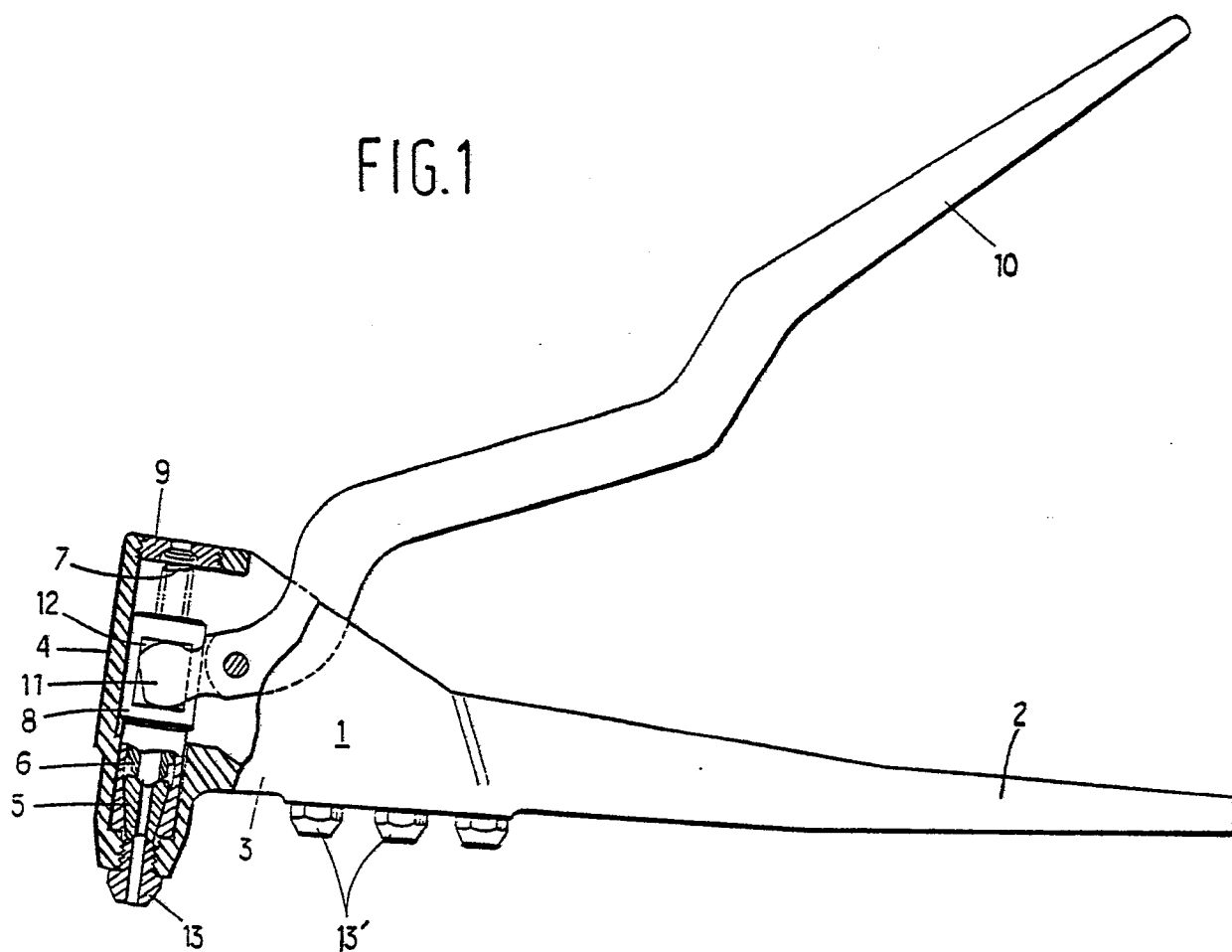


FIG.2

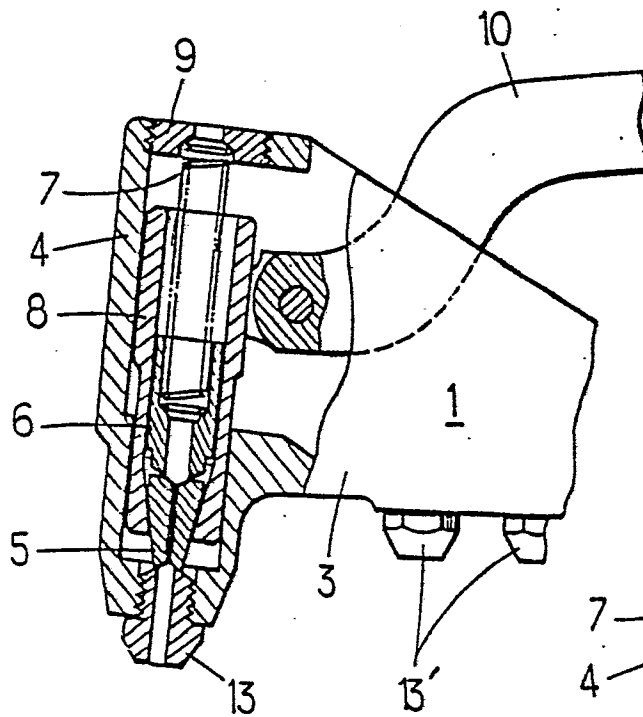


FIG.3

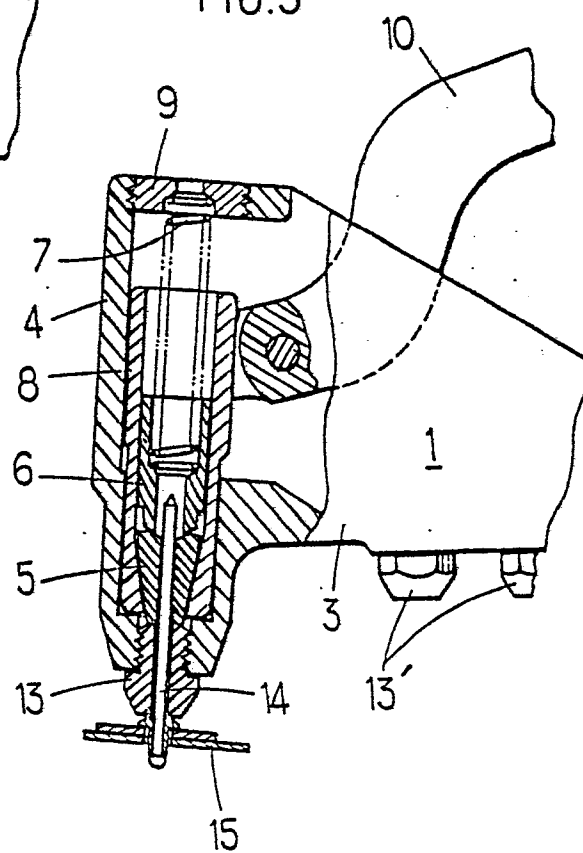
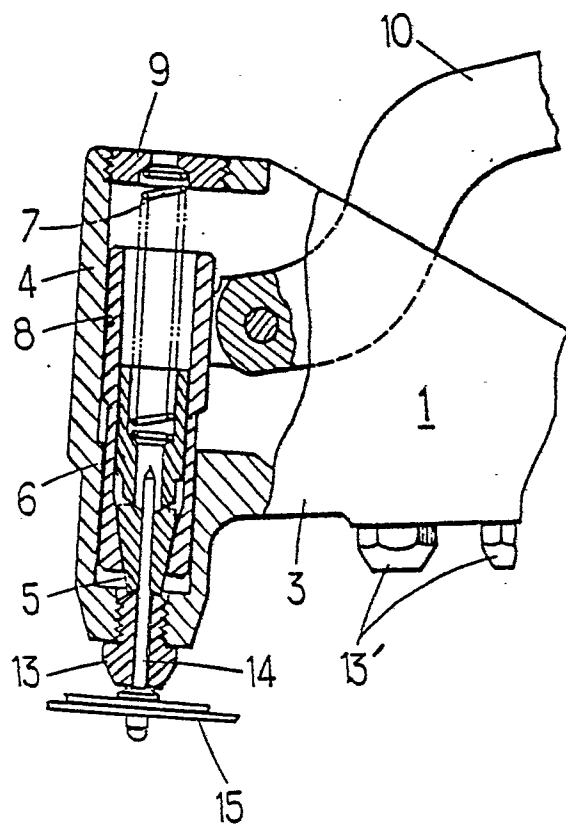


FIG.4





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Y	DE-C- 707 582 (G. SACHSENBERG ZENTRALGESELLSCHAFT) * Figure 1 *	1	B 21 J 15/04
Y	FR-A-1 074 497 (DE SWART) * Figure 2 *	1	
Y	US-A-3 426 572 (LAHNSTON) * Figure 3 *	1	
A	US-A-3 760 627 (RICHARDSON et al.)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			B 21 J 15/04
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 11-01-1984	Examiner ZAPP E
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			