Dec. 11, 1923. 1,476,756

H. JUNKERS

DEVICE FOR PRODUCING RIVET CONNECTIONS

Filed June 28, 1920

Fig. 1.

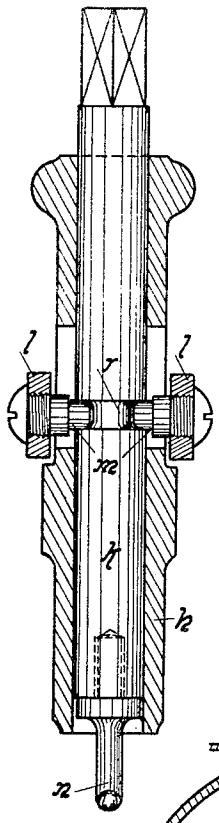


Fig. 2.

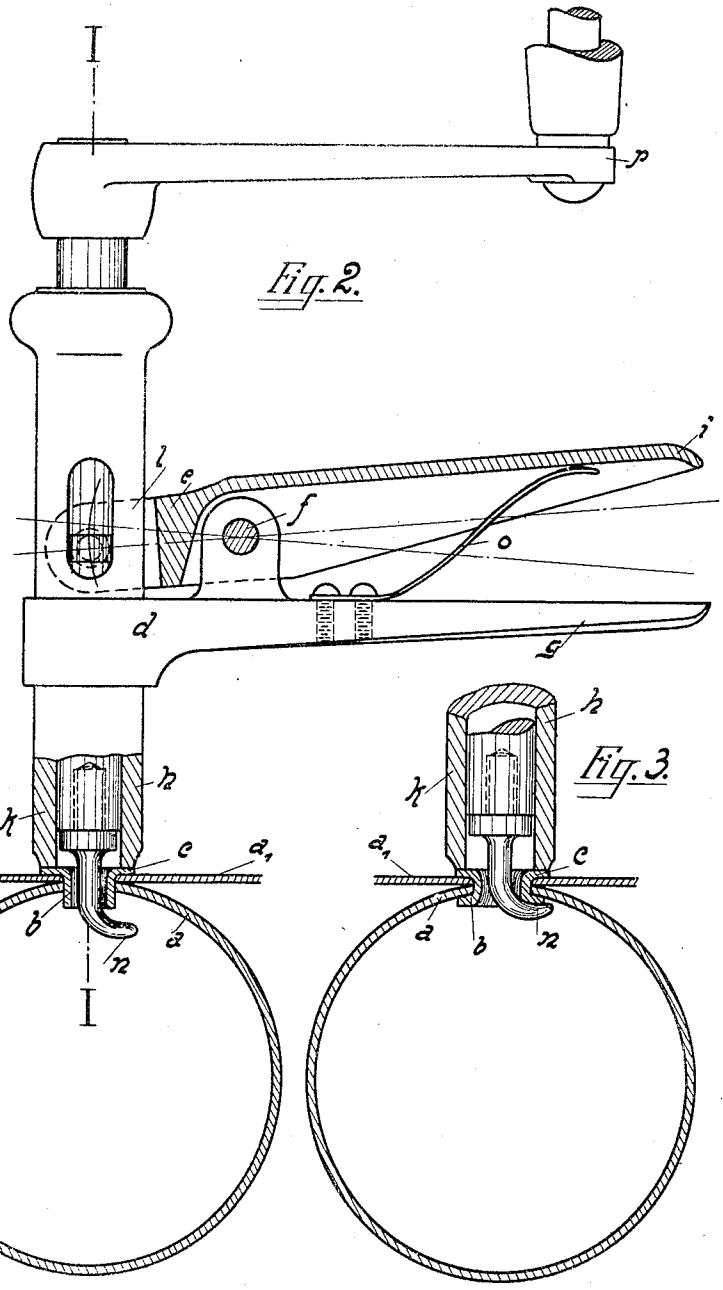


Fig. 3.

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UNITED STATES PATENT OFFICE.

HUGO JUNKERS, OF DESSAU, GERMANY.

DEVICE FOR PRODUCING RIVET CONNECTIONS.

Application filed June 28, 1920. Serial No. 392,588.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, HUGO JUNKERS, a citizen of the German Empire, residing at Dessau, Germany, have invented certain new and useful Improvements in Devices for Producing Rivet Connections (for which I have filed application in Germany, January 5, 1918, Patent No. 311,886; Holland, July 8, 1919; Sweden, December 6, 1919, Patent No. 47560; Denmark, December 19, 1919; Norway, December 31, 1919), of which the following is a specification.

My invention relates to devices for producing rivet connections and more particularly to those used in forming connections in the walls of hollow bodies.

The method usually employed in riveting smaller workpieces and which consists in placing the work piece upon a solid abutment or anvil, and then forming the closing head by hitting or pressing the projecting end of the rivet, cannot be employed in those cases where the rivet holes are accessible only with difficulty from one side, as is the case for instance with narrow tubes. In order to connect such work pieces by riveting, one can introduce in the tube a slide provided with means for inserting the rivet into the hole, from the inside of the tube, said slide forming at the same time an abutment for the rivet in forming the closing head. Now this method cannot be employed in the case, where long tubes or tubes closed at both ends have to be riveted.

My invention therefore further relates to a device by which well known hollow rivets inserted in rivet holes from the outside with the ends to be flanged projecting into inaccessible tubes or the like may be flanged.

The device consists of the riveting tool proper serving to form the flange on the end of the rivet, of an abutment and of means for varying the distance between these two elements during the riveting operation. The tool serving to form the flange on the end of the rivet preferably has the form of a substantially rectangular hook adapted to be passed through the hollow rivet from the outside, so that the free end projects laterally across the free edge of the rivet in the interior of the tube. The abutment cooperating with said hook is placed on the original head of the rivet and the abutment and the hook are then drawn towards each other, whereby the hook is caused to flange the free end of the rivet outwardly and to press it firmly against the work piece. For the purpose of flanging the free end of the rivet all around, the hook can be turned and retightened repeatedly, but I prefer continuously turning the hook while tightening it until the end of the rivet as a whole is firmly applied against the workpiece. For the purpose of drawing the abutment support and the hook together suitably a tongue-like tool is employed having one arm connected to the abutment and the other arm to the hook.

In the drawings affixed to this specification and forming part thereof the preferred form of a riveting device according to the present invention is illustrated. In the drawings

Fig. 1 is a vertical longitudinal section on line I—I in Fig. 2.

Fig. 2 is a side elevation, partly in section, showing the parts in position before the riveting operation is started and

Fig. 3 is a like view of the lower portion at the end of the riveting operation.

Referring to the drawings, a is a tube and a^1 is a plate to be connected therewith. The hollow rivet b is passed through superposed holes managed in the plate and tube, the flange c resting on the plate a^1. The riveting tool consists of the hookshaped member n secured to the spindle k guided in the sleeve h serving as abutment and resting with its lower end on the head of the rivets b. Sleeve h has an arm d fixed to it, while the spindle k is connected to another arm e. The two arms are pivotally connected by means of the pin f and have handles g and i formed at their ends, a spring o tending to spread the two arms apart. The spindle k is provided with a circular groove r, pins m secured to the forked end l of the arm engaging in said groove. The spindle is rotated by means of a hand crank p or rotation may be imparted to it by suitable power driven means.

The operation of this device is the following: The hook n having been introduced from the outside in the hollow rivet b, after this latter has been inserted in the rivet holes of the work pieces a, a^1, the sleeve h is placed upon the rivet head c, as shown in

Fig. 2. Now the handles g and i are pressed toward each other, the spindle k and hook n being raised thereby, so that the sleeve h is pressed against the rivet head and the hook n against the free end of the rivet, so as to force it outwards. While the tong-arms are being pressed together, the spindle k is rotated by means of the crank p so that the hook n flanges the free end of the rivet all around until it has assumed the form illustrated in Fig. 3. By loosening the handle g and i the hook n is released and can now easily be removed.

I claim:—

1. In a device of the kind described in combination, a sleeve, a spindle with hook shaped end loosely mounted in and projecting from said sleeve and means for axially displacing said spindle and for rotating the same.

2. In a device of the kind described in combination, a sleeve adapted to serve as an abutment for a rivet flange, a spindle with a hook shaped end loosely mounted in and projecting from said sleeve and means for pulling said spindle farther into said sleeve and for rotating said spindle.

3. In a machine of the character described an eyelet presenting set, a spindle rotatably mounted within said set, said spindle being provided with an offset portion for engagement with the barrel of the eyelet to be clenched, and means for causing relative axial movement of said set and spindle to bring said rotating offset portion into engagement with the barrel of the eyelet to spin it against the work.

4. In a machine of the character described, a spinning tool and an annular anvil arranged to execute relative rotation and relative coaxial movement to upset a tubular article seated on the anvil, said tool having a shank portion, a working extremity of relatively small diameter extending laterally therefrom, and a curved tapering portion connecting said extremity with the shank portion.

In testimony whereof I affix my signature.

HUGO JUNKERS.