Jan. 16, 1923. 1,442,675.

C. LEMBCKE.

STATIONARY DIE FOR RIVET HEADS.

FILED JAN. 19, 1922. 2 SHEETS—SHEET 1.

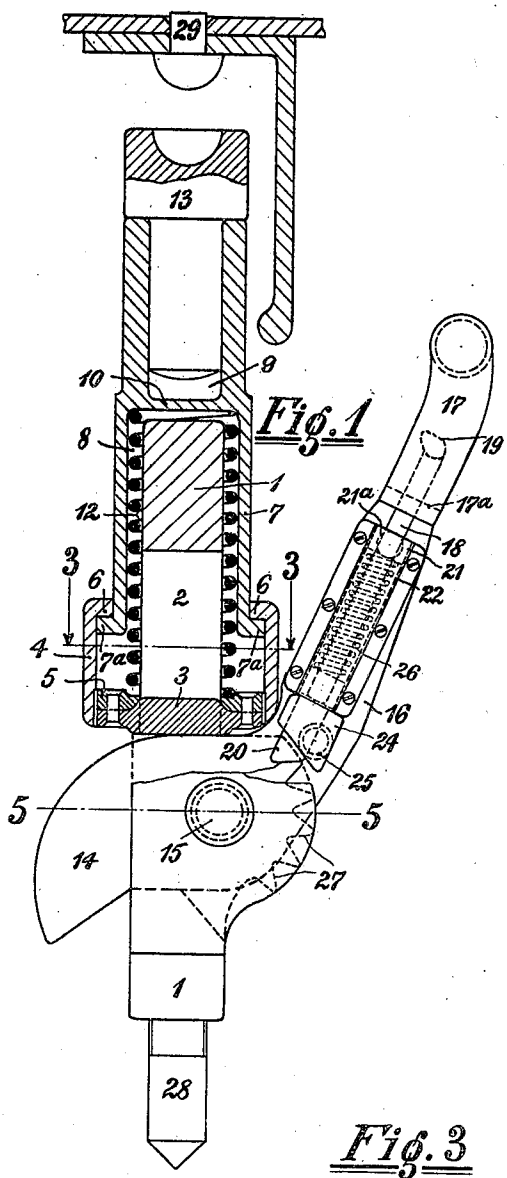


Fig. 1

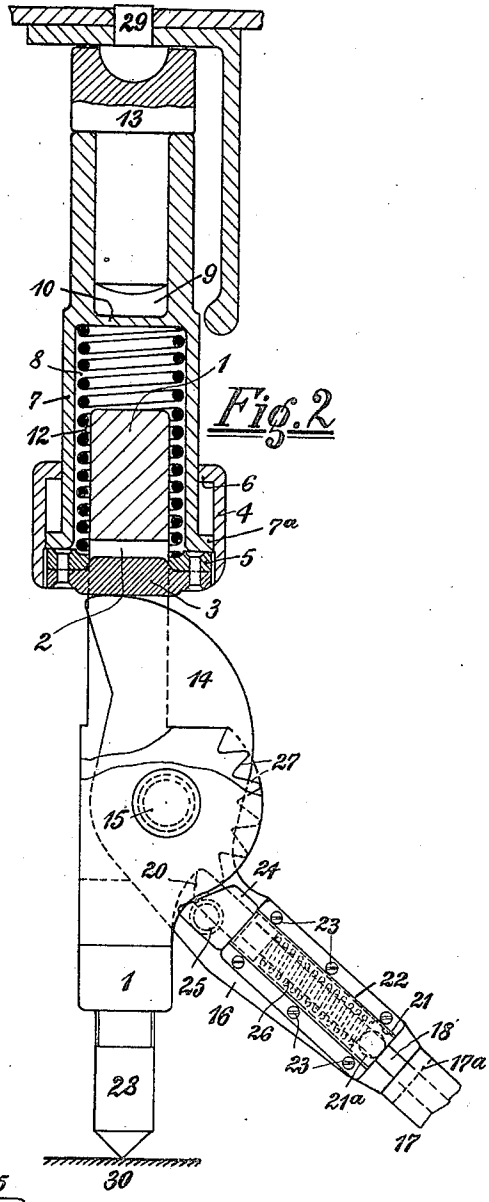
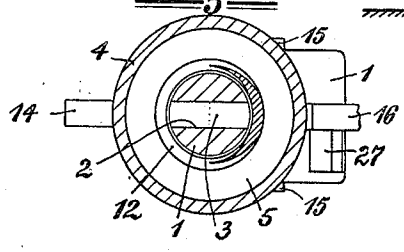


Fig. 2

Fig. 3



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2 SHEETS—SHEET 2.

Fig. 10

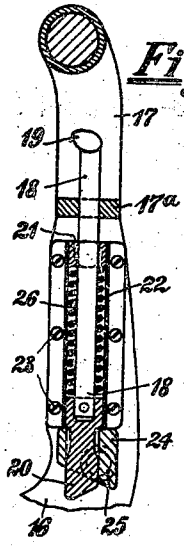


Fig. 4

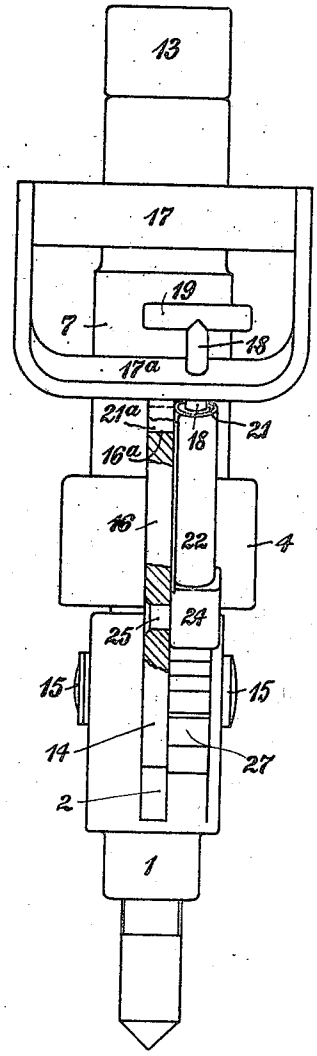
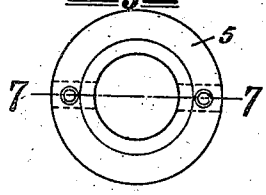


Fig. 6



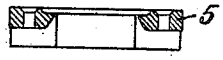


Fig. 7

Fig. 8



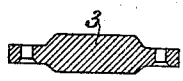


Fig. 9

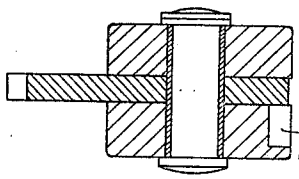


Fig. 5

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Patented Jan. 16, 1923. 1,442,675

UNITED STATES PATENT OFFICE.

CARL LEMBCKE, OF ALTONA, GERMANY.

STATIONARY DIE FOR RIVET HEADS.

Application filed January 19, 1922. Serial No. 530,399.

To all whom it may concern:

Be it known that I, CARL LEMBCKE, a citizen of the German Republic, residing at Altona, Germany, have invented certain new and useful Improvements in a Stationary Die for Rivet Heads (for which I have filed an application in Germany, September 27, 1920), of which the following is a specification.

This invention relates to a stationary die for rivet heads which consists of a bolt designed to receive the rivet head and elastically supported by an abutment adapted to be displaced in the direction of the axis of the bolt, in such a manner that at the riveting the counter action takes place at first rigidly without the spring-like action by the corresponding adjustment of the abutment whereupon, in consequence of the shrinking of the mass of the rivet head when the same is cooling, the counter action becomes buffer-like owing to the insertion of the spring action.

In order that the invention may be clearly understood, I shall proceed to describe the same with reference to the form of construction shown by way of example on the accompanying drawing, wherein:—

Fig. 1 is a side elevation partly in section showing the device in the position of rest.

Fig. 2 is a similar view as Fig. 1 showing the device in the working position.

Fig. 3 is a cross section on line 3—3 of Fig. 1.

Fig. 4 is the front elevation of Fig. 1.

Fig. 5 is a cross section on line 5—5 of Fig. 1.

Fig. 6 shows in plan view and Fig. 7 in cross section on line 7—7 of Fig. 6 the bottom of the abutment for the bolt designed to receive the matrix of the rivet head.

Fig. 8 shows in plan view and Fig. 9 in longitudinal section on line 9—9 of Fig. 8 the web rigidly connected with the bottom of the abutment adapted to be adjusted within determined limits upon the rod together with said abutment.

Fig. 10 shows in longitudinal section the lock for locking the stationary die in the lifted position.

In the longitudinal slot 2 of a shaft 1 the web 3 of a sleeve 4 is guided. The bottom of this sleeve consists of a ring which is riveted or rigidly connected in any other manner with the web 3 and screwed into the sleeve 4 or secured against accidental rotation in any other manner. Between the inner edge 6 and the bottom 5 of sleeve 4 the flange 7^a of a bolt 7 is located. This flange 7^a has play between the bottom plate 5 and the inner edge 6 of sleeve 4. The bolt 7 has two longitudinal borings 8 and 9 which are separated by a partition 10. The boring 8 serves to take up the upper end of shaft 1 and a spring 12 which is inserted with a determined tension. The one end of the spring 12 rests upon the bottom plate 5 of sleeve 4 and its other end against the wall 10 of bolt 7. The boring 9 is designed to take up the exchangeable stationary die 13 for the rivet head.

In the longitudinal slot 2 of shaft 1 a cam 14 is mounted pivotable around a pivot pin 15. This cam 14 has an arm 16 with a handle 17 at the outer end. A rod 18 guided upon the arm 16 terminates in the handle 17 of arm 16 with its outer end which has the shape of a handle 19. A pawl 20 is pivotably mounted upon the inner end of rod 18. Rod 18 is guided in the cross part 17^a of the handle 17 and in an eye 21 which is mounted in an opening 16^a of arm 16 by means of a stud 21^a and located in one end of a sleeve or of a bow-shaped cup 22 which is connected with arm 16 by screws 23. In the other end of this cup 22 the pawl 20 is guided which is pivotally connected with rod 18 by a pivot pin or in any other convenient manner. A spring 26 arranged between the pawl 20 and the eye 21 presses the pawl 20 against a bracket 24 fixed by a stud 25 in the arm 16 and forming a further guide for the pawl 20.

Laterally of the slot 2 of shaft 1 in which the cam 14 is located teeth 27 are arranged in shaft 1 in an arc the center of which is situated in the longitudinal axis of the bolt 15 around which the cam 14 can pivot freely. The pawl 20, the movement of which with regard to teeth 27 is limited by the bracket 24 of arm 16 is held in engagement with

one of the gaps between the teeth by the action of spring 26 so that the cam 14 is secured in a determined position.

If the pawl 20 is pulled away from the teeth 27 of shaft 1 by a pull exerted upon the handle 19 of rod 18 in opposition to the action of spring 26, the arm 16 and the cam 14 can be pivoted around stud 15 to move from the position of rest (Fig. 1) into the working position (Fig. 2), the cam 14 acting upon the web 3 and effecting the displacement of the parts 4, 7, 13 upon the shaft 1.

If the shaft 1 bears upon a fixed support 30 (Fig. 2) and the displacement is effected for such an amount that the matrix 13 takes up the head of the rivet 29 which has been inserted in the meantime, only the sleeve 4 will be moved further whereby the spring 12, which had already been under tension will be tensioned further. If now the inner end 7^a of bolt 7 comes in contact with the bottom plate 5 of sleeve 4, the parts 4, 7, 13 cannot be displaced further, the released pawl 24 locks the cam 14 in its position and the riveting can begin, a strong resistance being opposed to the riveting at first.

If the mass of the rivet head cools and shrinks consequently some play is produced between the end 7^a of the bolt 7 and the bottom plate 5 of sleeve 4, wherefrom results that, if the rivet is being struck the bolt 7 pushes strongly against the bottom plate 5 of sleeve 4, so that the sleeve 4 recoils against the bolt 7 followed directly by the action of spring 12. A perfect riveting is thus ensured which means that the rivet head does tightly fit upon the riveted part.

The lower end of shaft 1 is preferably arranged so that it can take up a supporting stud 28 adapted to receive a tubular extension, wherefrom results the possibility to lengthen the stationary die according to requirement.

The initial or first positioning of the die member to hold a rivet which is usually red hot, is such that a stationary and rigid support for the rivet is formed, but as the rivet cools before the riveting operation is completed, the head shrinks and leaves a play between the head and the die from the initial position, which is compensated for by providing the spring between the bolt and the shaft, which forces the bolt outwardly as the rivet head shrinks.

I claim:

1. A stationary die for rivet heads comprising in combination a tubular bolt having means adapted to fit a rivet head and having an outwardly flanged lower end, an abutment for said bolt consisting of a sleeve having an inwardly flanged upper end, a shaft upon which said sleeve-shaped abutment is guided mounted in said tubular bolt, a spiral spring inserted between said bolt and said abutment, and a device for raising said sleeve upon said shaft and for locking the same in the raised position.

2. A stationary die for rivet heads comprising in combination a tubular bolt having means serving as matrix for the rivet head, and having an outwardly flanged lower end, an abutment for said bolt consisting of a sleeve having an inwardly flanged upper end, a shaft upon which said sleeve-shaped abutment is guided mounted in said tubular bolt and having a longitudinal transverse slot, a cam mounted in the longitudinal slot of said shaft, a handle for said cam, a pawl pivotally mounted in the inner end of said handle, and ratchet teeth for said shaft with which said pawl engages.

3. A stationary die for rivet heads comprising in combination a tubular bolt having means serving as matrix for the rivet head and having an outwardly flanged lower end, an abutment for said bolt consisting of a sleeve having an inwardly flanged upper end, a shaft upon which said sleeve-shaped abutment is guided mounted in said tubular bolt and having a longitudinal transverse slot, a cam mounted in the longitudinal slot of said shaft, a laterally extending arm for said cam, a pawl pivotably fixed at the inner end of said arm, a spring acting upon said pawl, and ratchet teeth on said shaft with which said pawl engages under the action of said spring.

4. A stationary die for rivet heads comprising in combination a tubular bolt having means serving as matrix for the rivet head and having an outwardly flanged lower end, an abutment for said bolt consisting of a sleeve having an inwardly flanged upper end, a shaft upon which said sleeve-shaped abutment is guided mounted in said tubular bolt and having a longitudinal transverse slot, a cross bar in the bottom end of said sleeve-shaped abutment traversing the longitudinal slot of said shaft, a cam mounted in the longitudinal slot of said shaft, designed to act upon said cross bar of the sleeve-shaped abutment, means for oscillating said cam so that it raises the said abutment and means for locking said cam in the raised position.

5. A stationary die for rivet heads, comprising a bolt formed at one end to receive a rivet head, a fixed abutment for said bolt having adjustable means adapted to engage the bolt in any one of its adjusted positions and hold it in fixed initial position, and means adapted to engage the bolt for holding it against the rivet head in a position beyond the initial position.

6. A stationary die for rivet heads, comprising a bolt formed at one end to receive a rivet head, a fixed abutment for said bolt, means carried by the abutment for engaging

the bolt, resilient means between the said means and the bolt, and cam operated means carried by the abutment and adapted to operate said means for engaging the bolt and holding it in fixed initial position, and tensioning the resilient means for holding the bolt in engagement with a rivet head subsequent to the initial position.

In testimony whereof I affix my signature in presence of two witnesses.

CARL LEMBCKE. [L. S.]

Witnesses:
FRIEDRICH JULIUS TOTHS,
E. KASPAREK.