Feb. 13, 1951 N. R. ANDERSON 2,541,455

RIVETING TOOL

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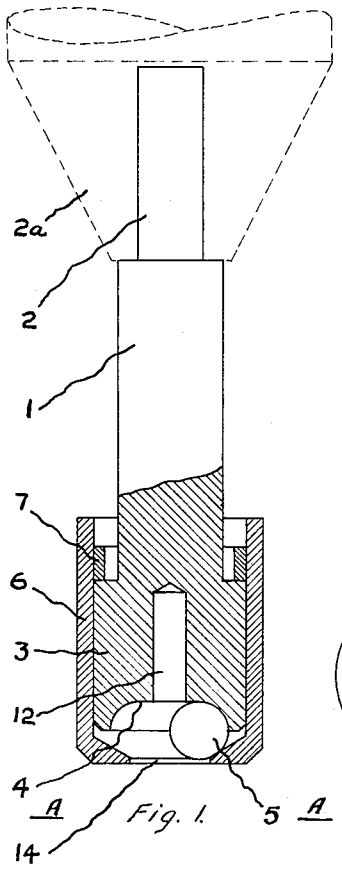


Fig. 1.

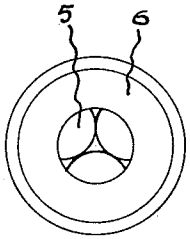


Fig. 2.

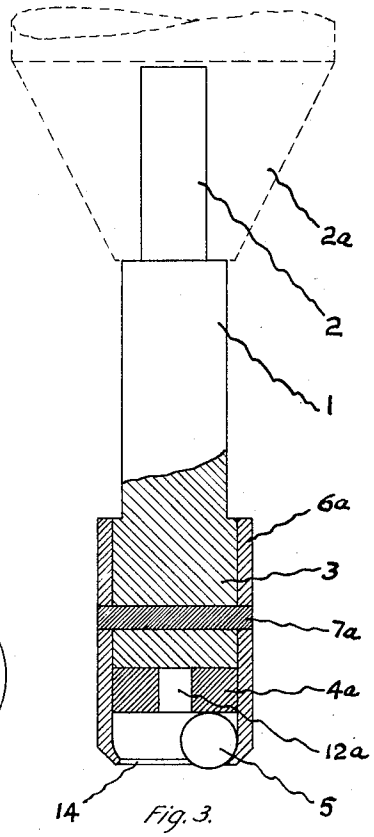


Fig. 3.

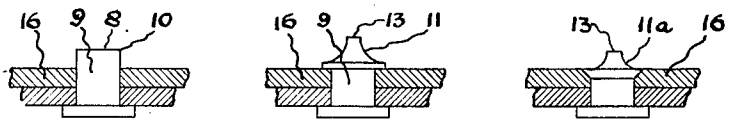


Fig. 4.

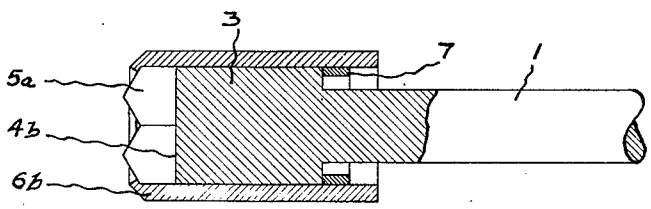


Fig. 5.

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RIVETING TOOL

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2 Claims. (Cl. 78—53)

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The present invention relates to riveting or like forming tools and provides a mandrel adapted to be rotated by any suitable means, such as for instance, an electric motor or drilling machine, the outer or free end of the mandrel containing a race having rolling members in the form of balls or rollers retained in place by a sleeve or cage.

Preferably three balls only are used so that, when the free end of the rotating mandrel is pressed against the headless end of a rivet, the balls run around the periphery of the said end, the combined thrust and rotation of the mandrel causing the balls to peen or spin out the rivet metal. The rivet head thus formed contains the frustrum of a circular cone having concave sides corresponding to the path of the balls, and, under some circumstances, the top of the rivet head may be drawn out with a hollow in the centre.

In the accompanying drawings which illustrate several forms of the invention:

Fig. 1 is a longitudinal sectional elevation of one form of tool.

Fig. 2 is an inverted plan on the line A—A.

Fig. 3 is a longitudinal sectional elevation of another form of tool.

Fig. 4 represents similar sectional elevations of untreated and treated rivets.

Fig. 5 is a longitudinal sectional elevation of portion of another form of tool.

Referring to Fig. 1, the mandrel 1 has an upper portion 2 adapted, for instance, to be gripped by the jaws of a drilling machine chuck 2*a*. The free end 3 has a ball race 4 formed therein to accommodate three balls 5, the said balls being retained in place by a sleeve 6, which is secured in position on the mandrel 1 by an expanding ring 7.

Referring to Fig. 4, when the rotating mandrel 1 is pressed against the headless end 8 of a rivet 9, the balls run around the periphery 10 of the said end, the combined thrust and rotation of the mandrel causing the balls to peen or spin out the metal, as for instance, shown by the rivet head 11.

A hole 12 is provided in the free end 3 of the tool to accommodate surplus metal 13, which may be drawn out in the form of a hollow point.

When the lip 14 of the sleeve 6 extends a preselected distance below the balls 5, as in Fig. 1, the said lip may contact the work 16, so that the sleeve 6 ceases to rotate and thus gives a visible indication to the operator when the desired size of rivet head 11 has been formed.

Referring to Fig. 3, the balls in this form of tool

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project below the level of the lip 14, so that the periphery of the rivet 10 may be blended into the work 16, as is more especially desirable when forming countersunk rivet heads 11*a*, see Fig. 4.

In Fig. 3, the race 4*a* is shown as a separate renewable part and the sleeve 6*a* is secured in position on the mandrel 1 by a pin 7*a*. It will be understood that, instead of being secured by a pin 7*a*, the sleeve 6*a* may be left free to move relatively to the mandrel 1.

In Fig. 5 the balls are shown replaced by rollers 5*a* accommodated in a race 4*b* and retained in place by a sleeve 6*b*.

I claim:

1. A riveting tool comprising a mandrel clampable at one end by a rotatable chuck or the like, and having in its other end an open race, riveting balls in said race, and on said mandrel a sleeve surrounding said balls and having an inwardly projecting circumferential lip retaining said balls in said race, said sleeve being rotatable with respect to said mandrel.

2. A riveting tool comprising a mandrel clampable at one end by a rotatable chuck or the like, and having in its other end an open race, riveting balls in said race, and on said mandrel a sleeve surrounding said balls and having an inwardly projecting circumferential lip retaining said balls in said race, there being in the body of said mandrel a cavity open to said race to receive a reduced end of a rivet.

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