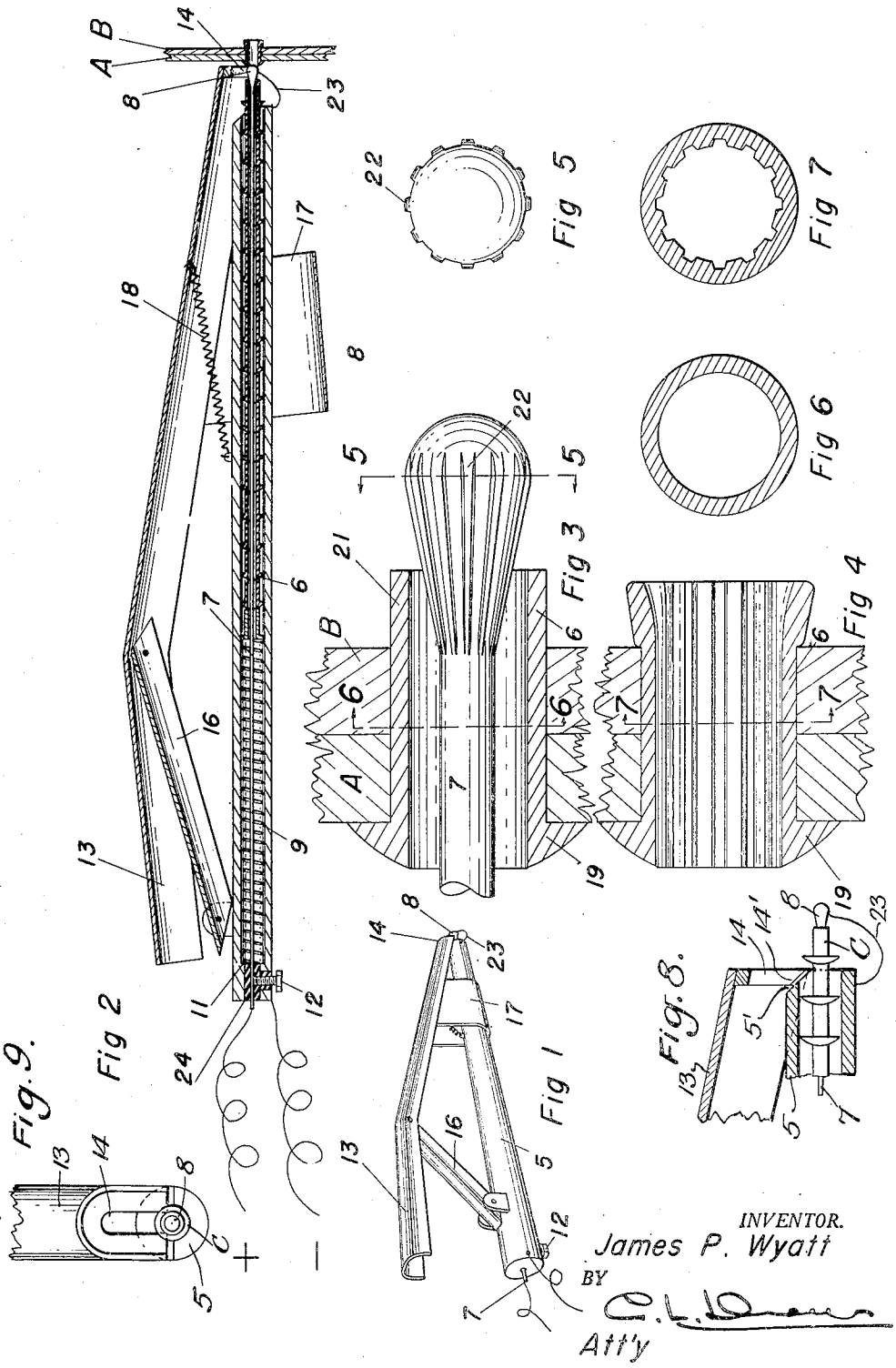
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BLIND RIVET EXPANDER

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BLIND RIVET EXPANDER

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2 Claims. (Cl. 218—19)

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This invention relates to improvements in blind rivet expanders and has particular reference to a gun for blind riveting, that is, securing a rivet in an opening and to then upset the rivet from the side of the work at which the operator is positioned.

A further object is to provide means for accommodating for excessive material in the riveting which must flow at the time of upsetting.

A further object is to produce a tool which is simple to operate, economical to manufacture and one which is easy to load.

A further object is to provide means whereby plastic rivets may be heated so that the material thereof will flow more readily.

A further object is to produce a riveting tool wherein the feeding of the rivets will be automatically accomplished at each operation of the tool.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a perspective view of my tool.

Fig. 2 is a vertical cross-section of my tool on an enlarged scale with the elements thereof in the relationship they occupy just after the completion of the upsetting of the rivet shown in the plates and before release of the handle 13.

Fig. 3 is a diagrammatic view on an enlarged scale showing the manner in which the upsetting head is positioned previous to the upsetting operation.

Fig. 4 is a view similar to Fig. 3 showing the rivet after being upset.

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 3.

Fig. 6 is a cross-sectional view taken on the line 6—6 of Fig. 3.

Fig. 7 is a cross-sectional ivew taken on the line 7—7 of Fig. 4.

Fig. 8 is a vertical longitudinal section of the nose portion of the device.

Fig. 9 is an elevation taken from the right hand side of Fig. 8.

It is often desirable to fasten two parts together by using rivets passing through openings in the two parts. It is also a frequent occurrence that it is impossible to reach the back portion of the two parts in order to do the upsetting of the rivet; therefore, it is necessary to perform what is known as blind riveting, wherein a hollow rivet is placed through the two parts to be secured and the same

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heated to cause an explosion of powder located in the hollow to expand the rivet, or by pulling through the rivet a stud of greater diameter than that of the bore in the rivet.

Both of these arrangements are expensive in that special rivets must be provided and the studs are wasted after being pulled from the rivet.

I have, therefore, devised an arrangement whereby a plurality of rivets are threaded upon a rod which is secured within the tool, which rod has an enlarged grooved head which is pulled through the rivets to cause an upsetting thereof.

In the accompanying drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates a tubular magazine within which is positioned a plurality of rivets 6 arranged in end to end relation and threaded upon a rod 7 which has an enlarged head 8.

A spring 9 surrounds the rod 7 and pushes against the closed end 11 of the magazine and against the head of one of the rivets.

The rod 7 is held in position by a setscrew 12.

In order to move the rivets out of the magazine I provide a handle 13 which has a bifurcated nose 14 adapted to engage the head of the rivet C abutting the enlarged head 8 of the rod 7. This handle 13 is pivoted to the magazine 5 by a link 16 and is held in alignment by a U-shaped guide 17.

A spring 18 tends to keep the parts in the position of Fig. 1. The bottom edge of the nose 14 is chamfered upwardly as at 5^1 and from this chamfer an extension 14^1 forming a cam extends forwardly and downwardly. Therefore, when the spring 18 retracts the handle, the nose 14, cams over the head of the first rivet adjacent the head 8 and drops in behind the end rivet head, so that, at the next depression of the handle 13, the nose will push the rivet off of the head 8. In reality, the head 8, is pulled through the rivet for the reason that the nose 14 remains stationary while the tubular magazine moves rearwardly.

Referring now to Figs. 3 and 4, it will be noted that the rivet 6 has a head 19 which is adapted to abut the outermost portion A of the material to be secured to the portion B and has a shank portion 21 which extends through the portion B. It is this shank portion 21 that is to be expanded or upset, as shown in Fig. 4.

Assuming that the tool has been moved against the material the contact wire 23 (the use of which will be hereinafter explained) will move out of the way, due to its resiliency, during the insertion of the rivet to be secured and the shank of the first rivet, extending from the tool, together

with the head 8 of the rod 7, has been pushed through the hole in the material, then by moving the handle 13 toward the magazine 5, the nose 14 will be pushed against the back of the rivet, and consequently the magazine 5 will move rearwardly, pulling the head 8 of the rod 7 through the shank of the rivet, the result being that the first portion of the movement will expand the unsupported portion of the shank 21 outwardly so as to overlap the material B, as shown in Fig. 4, and further movement of the head through the shank will push the material of the shank into very intimate contact with material A and B and any excess material in the shank will flow into the spaces between ribs 22 formed on the outer surface of the head 8, thus permitting the head to pass through a bore of less diameter than the overall diameter of the head, the result being that the inside of the rivet is rifled, as shown in Fig. 7.

When it is desired to use plastic rivets a single contact wire 23 extends from the side of the magazine and normally resiliently contacts the head 8.

An electrical connection is made to the rod 7, which is insulated as at 24 from the magazine, and also electrical connection is made to the magazine; consequently, as the current flows through the rod 7 to the head 8 and through the wire 23, back through the magazine to the opposite side of the line, this will cause heating of the rod 7 and head 8 and consequently the plastic rivets in the magazine, the heating, of course, being only sufficient to permit softening of the rivets so that they may be readily upset when desired. The wire 23 is fixed to the magazine but, being resilient, merely contacts the head 8 so that it moves away from the head as the latter moves through the rivets.

It will thus be seen that I have produced a riveting tool which will perform all of the objects above set forth.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A riveting tool comprising a hollow magazine having a rod extending therethrough, said rod having an enlarged head, means for securing said rod in said magazine, means for forcing rivets positioned on said rod toward said enlarged head, a handle pivoted to said magazine, said handle having a nose for engaging the rear face of the head of the rivet positioned adjacent said enlarged head, whereby when said rivet is in riveting position movement of said handle toward said magazine forces said magazine away from said rivet while maintaining said nose against the rivet head, causing said enlarged head to be pulled therethrough.

2. A riveting tool comprising a hollow magazine having a rod extending therethrough, said rod having an enlarged head, means for securing said rod in said magazine, means for forcing rivets positioned on said rod toward said enlarged head, a handle pivoted to said magazine, said handle having a nose for engaging the rear face of the head of the rivet positioned adjacent said enlarged head, whereby when said rivet is in riveting position movement of said handle toward said magazine forces said magazine away from said rivet while maintaining said nose against the rivet head, causing said enlarged head to be pulled therethrough, and electrical means connected to said rod and said enlarged head whereby the rivets positioned on said rod will be heated.

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