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TOOL FOR REMOVING RIVETS AND BURRS

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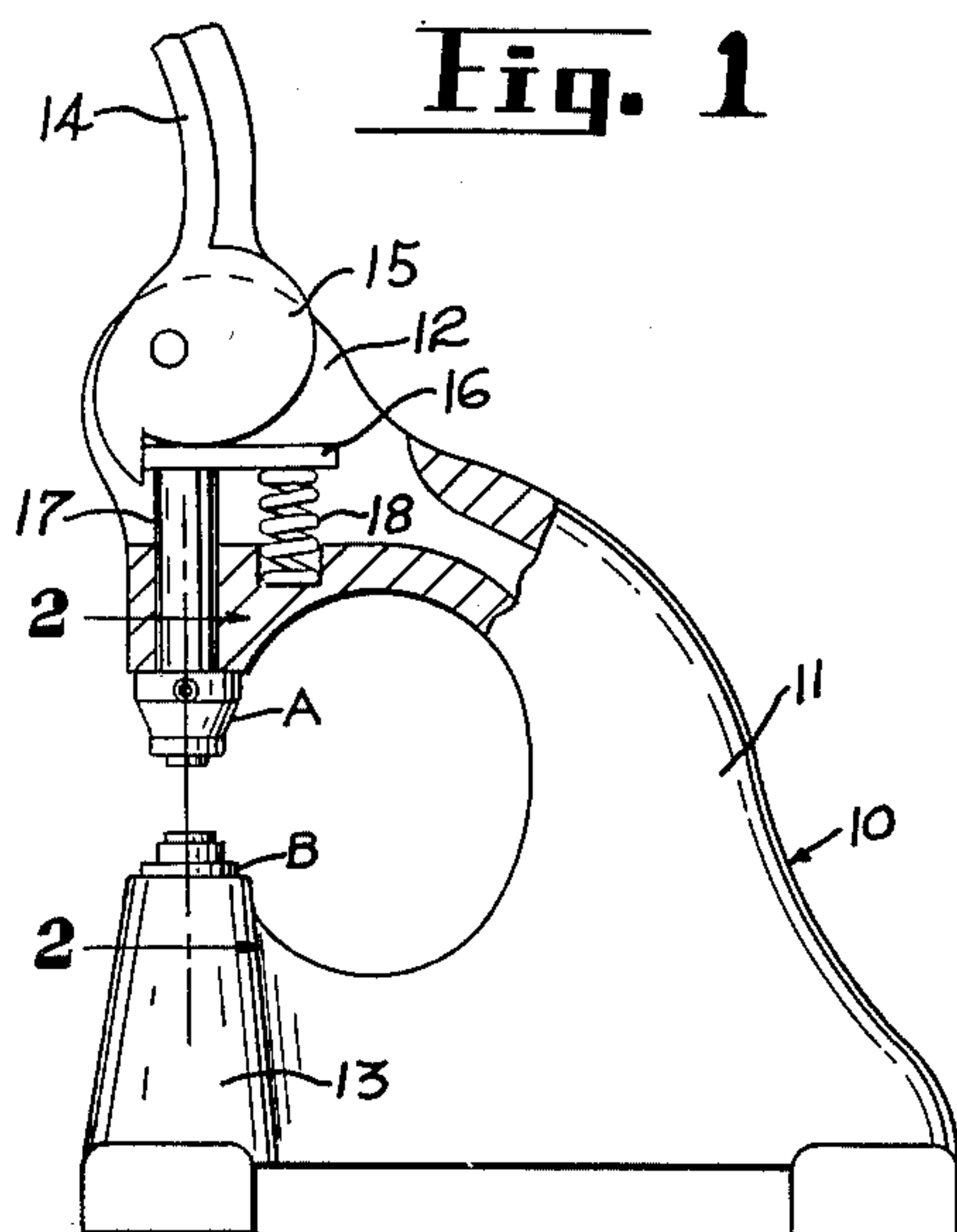


Fig. 1

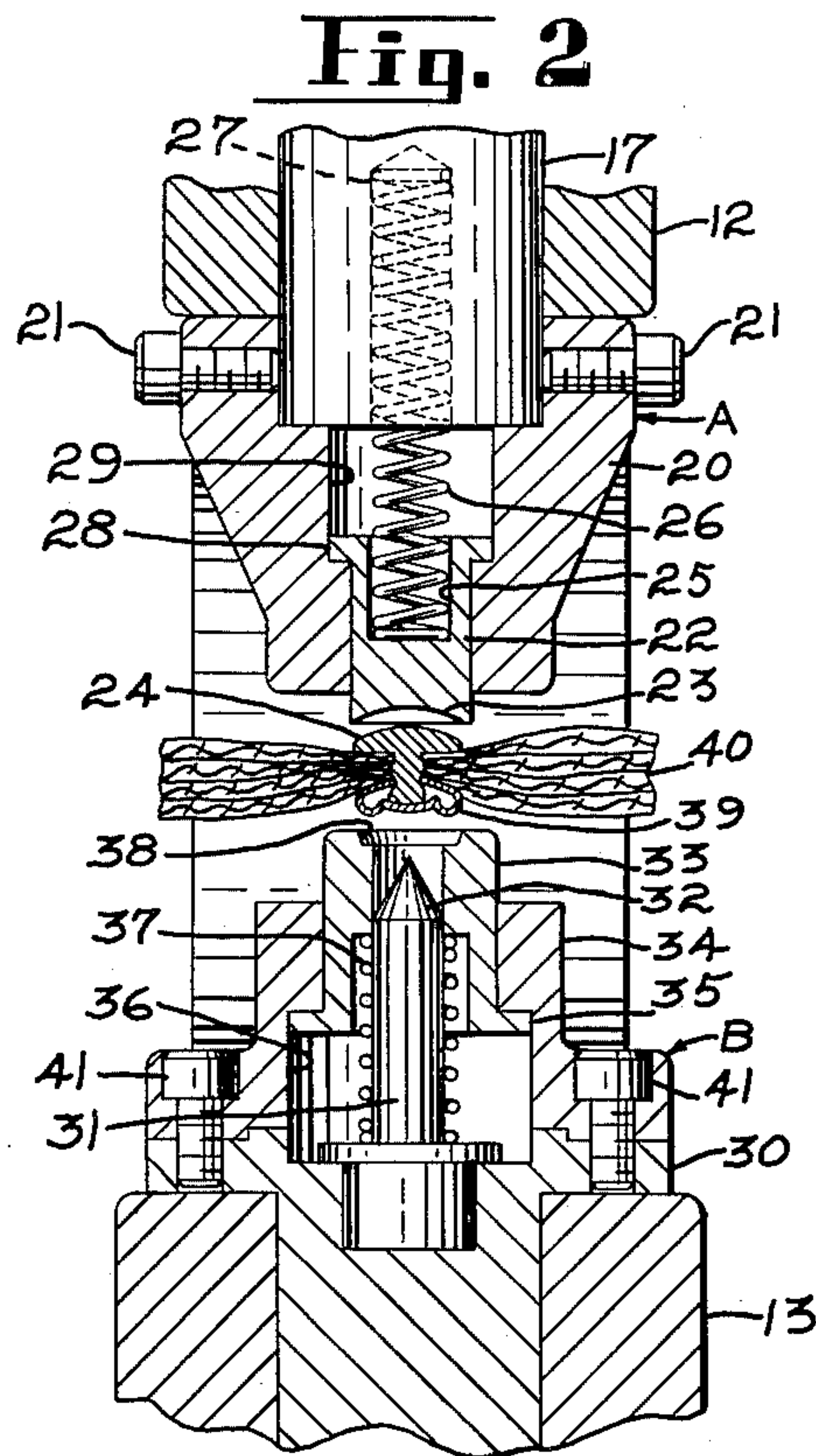


Fig. 2

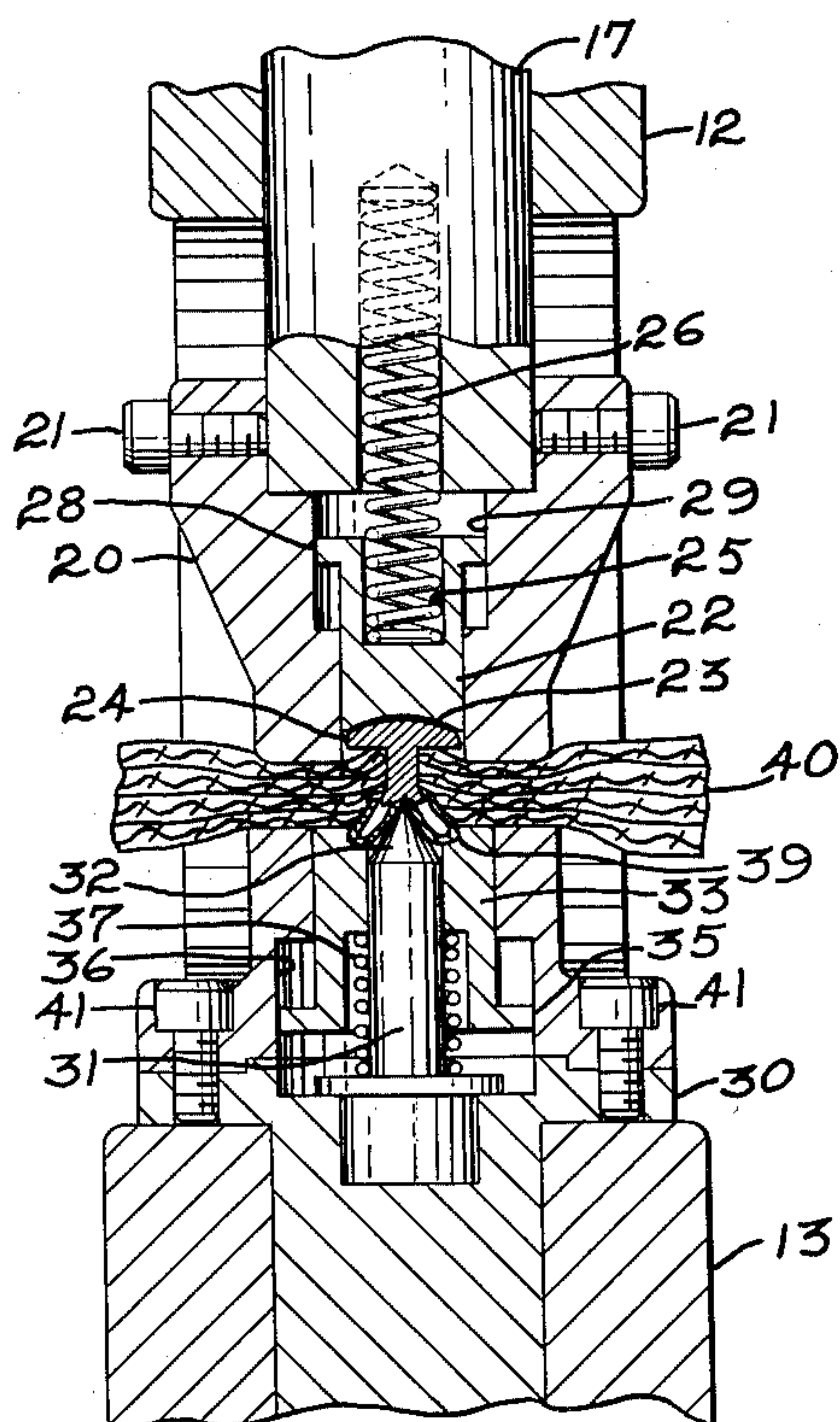


Fig. 3

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TOOL FOR REMOVING RIVETS AND BURRS

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1

This invention relates to tools for removing misplaced fasteners and particularly to a burr type of fastener of the kind that is applied to work garments.

In the heavier type of work garments such as overalls, dungarees, jumpers and the like, it is customary to reenforce the seams at any juncture point in the garment by the assembly of an eyelet burr and rivet tack. It frequently happens that a reenforcing burr setting may accidentally be set in a wrong position on the garment which requires that the misplaced burr be removed and another one set in the proper location. Heretofore, when such misplaced burrs were removed by pliers or other tools available, the burr and rivet was not separated but rather was pulled out from the garment as a unit which consequently would leave a large unsightly hole in the cloth at the point from where the burr setting was removed.

It is the principal object of this invention to produce a simple mechanism for removing such misplaced burrs from a garment construction without mutilating the garment beyond the piercing caused by the original burr setting.

Another object of the invention is to devise a tool of the above character which will axially force the upset rivet tack out of the burr setting so that the misplaced burr and upset tack can be easily removed from the opposite sides of the garment material without danger of mutilating the garment.

With these and other objects in view, the invention consists of certain novel arrangements and combination of parts, as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawings showing a preferred embodiment of the invention,

Fig. 1 illustrates a side view of a conventional hand operated rivet press with portions broken away to show the operating mechanism.

Fig. 2 is a vertical sectional view taken along the line 2—2 of Fig. 1 and showing the tools in open position, and,

Fig. 3 is a similar view of Fig. 2 showing the tools at the end of their work stroke.

Referring now to the specification, the numeral 10 designates a conventional hand operated rivet press consisting of a cast frame 11 having the usual head end 12 and anvil base 13. Operating from the head is a handle 14 having a cam end 15 which is pivotally mounted within the head 12. The cam 15 operates against a tappet plate 16 for axially moving a plunger 17 within the head

2

12 against the influence of a compression spring 18.

The tools for removing a misplaced burr or the like for convenience sake are referred to as a plunger set of tools A and an anvil set of tools B.

The plunger set of tools consists of a die housing 20 that is secured to the end of the plunger 17 as by means of set screws 21. A retractable die 22 is mounted within the housing 20 and is formed at its outer end with a recess 23 conformable to the head of a tack 24 against which it is adapted to engage in the act of removing a misplaced burr setting. The opposite end of the die is provided with a recess 25 within which is positioned a compression spring 26 that also extends up into a recess 27 in plunger 17, the spring serving normally to urge the die 22 outwardly to a position where a flange 28 on the inner end of said die rests against the base of a recess 29 in the die housing 20 as a stop.

The anvil set of tools B consists of an anvil member 30 that is positioned and supported on the anvil base 13. Seated within the anvil 30 is a punch 31 having a pointed end 32 at its upper extremity. Surrounding the punch is a slidable sleeve 33 that reciprocates within a sleeve housing 34. The slidable sleeve 33 is provided with a flange 35 on its inner end that operates a cylindrical cavity 36 in housing 34 and is urged outwardly by a compression spring 37 to a stop position where the flange 35 abuts the upper end of the cavity 36. In Fig. 2 it is to be noted that the slidable sleeve 33 in its normal inactive position has its upper end positioned a certain distance above the pointed end 32 of the punch 31 as well as above the upper surface of the sleeve housing 34. The upper end of the sleeve 33 is provided with a recess 38 formed to accommodate a burr 39 that is to be removed from its misplaced position on a garment 40. All the parts of the anvil set of tools B may be held together as a unit as by means of screws 41 that connects the sleeve housing 34 to the anvil member 30.

In the operation of the device, the garment 40 with the misplaced burr setting (24—39) will first be positioned between the spaced tools A and B as shown in Fig. 2 with the burr 39 positioned in the burr recess 38. With the burr 39 so located, the operator may swing the handle 14 around in a clockwise direction as viewed in Fig. 1 whereupon the tools A and B will be axially moved toward each other. During the plunger stroke the burr and tack assembly will first be firmly but yieldingly gripped and held centered in the recess 23 of the die 22 and the recess 38 in

3

the sleeve 23. Then the garment material 40 will be gripped tightly between the adjacent ends of the die housing 20 and the slidable sleeve 33. As the sleeve 33 travels downwardly the pointed end 32 of the punch 31 will penetrate the center part of the burr 39, and continued movement of the plunger 31 will cause the punch to force the upset end of the tack out of the burr to a position as seen in Fig. 3.

The end of the punch 31 preferably has a relatively sharp point so that when it engages the burr, any tendency of the burr to shift sideways will be avoided. It is desirable that the action of the punch 31 put as little pressure as possible on the burr 39 before acting on the tack 24 so as to avoid pushing the burr through the garment material. The sharp pointed end will easily pierce the burr and directly engage the tack to separate it from the burr. The downward stroke of the plunger is more or less determined by the thickness of the material 40 which will finally be firmly compressed between the adjacent ends of the die housing 20 and the sleeve housing 34 and consequently the more the material is compressed the farther will the tack 24 be forced out of the garment material.

After the tools A and B have been retracted the burr and the rivet may be easily removed from the opposite sides of the garment leaving no more than the hole that was initially caused by the tack as it penetrated the garment in the burr setting operation.

While the illustration here shows the die unit A operating with the plunger 17 and the punch unit B supported on the anvil base 13, the units may be reversed wherein the punch unit B will be carried by the plunger 17 and the die unit will be secured in the anvil, it being necessary only to invert the garment support when lining the burr setting up with the tools. It is further understood that these plunger and anvil sets of tools could equally as well be operated in a foot press or a power driven press if there is enough work to warrant it.

I claim:

1. A tool for removing a rivet tack and burr setting from a garment support, said tool comprising a punch unit and a die unit adapted to be mounted in a press so that one unit can be moved toward the other unit, said die unit comprising a die housing and a die retractable within said housing against the influence of a spring member, said die having a work face for receiving the head of the rivet tack, said punch unit comprising an anvil in vertical alignment with said die housing, a pointed punch and a sleeve surrounding said punch and axially slidable within said anvil, spring means normally urging said sleeve outwardly to a position where its outer end is extended beyond the adjacent face of said anvil and the pointed end of said punch, said punch being held rigid in said anvil with a portion of its pointed end extended above the upper face of said sleeve housing, and said sleeve having a recess for receiving said burr for holding it in alignment with said punch, whereby when one of said units is moved toward the other

4

unit said sleeve will recede within said anvil to a position where its upper face will lie substantially flush with said housing and the extended pointed end of said punch above said housing will pierce said burr and separate said tack from said burr sufficiently to permit said burr and tack to be removed from opposite sides of the garment support upon removal of the latter from the tool.

2. A tool for removing a rivet tack and a burr setting from a garment support, said tool comprising a punch unit and a die unit adapted to be mounted in a press so that one unit can be moved toward the other unit, said die unit comprising a die housing and a die retractable within said housing, said die having a work face for receiving the head of said tack, a spring means for normally urging said die outwardly of said housing to a position where its work face is beyond the adjacent end of said housing, said punch unit comprising an anvil, pointed punch and a sleeve surrounding said punch and axially slidable within said anvil, said anvil being mounted in vertical alignment with said die housing, spring means normally urging said sleeve outwardly to a position where its outer end is extended beyond the adjacent face of said anvil and the pointed end of said punch, said punch being held rigid in said anvil with a portion of its pointed end extended above the upper face of said sleeve housing, said sleeve having a recess for receiving said burr for holding it in alignment with said punch, said units upon one being moved toward the other first causing the die housing and slidable sleeve to compress the garment material around said burr setting and carry this latter into contact with the pointed punch, and further movement compressing the garment material between the adjacent ends of said die housing and sleeve housing and causing that portion of the pointed end of said punch extended above said anvil to penetrate said burr and axially force the upset shank of this rivet partially outwardly from said burr with the rivet head being received within said die housing by reason of the retractable die and whereby the burr and rivet may be removed from opposite sides of the garment support upon removal of the latter from said tool.

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