May 17, 1949. R. F. HOLLIS 2,470,487

ADJUSTABLE ANVIL

Filed April 13, 1944

FIG. 1.

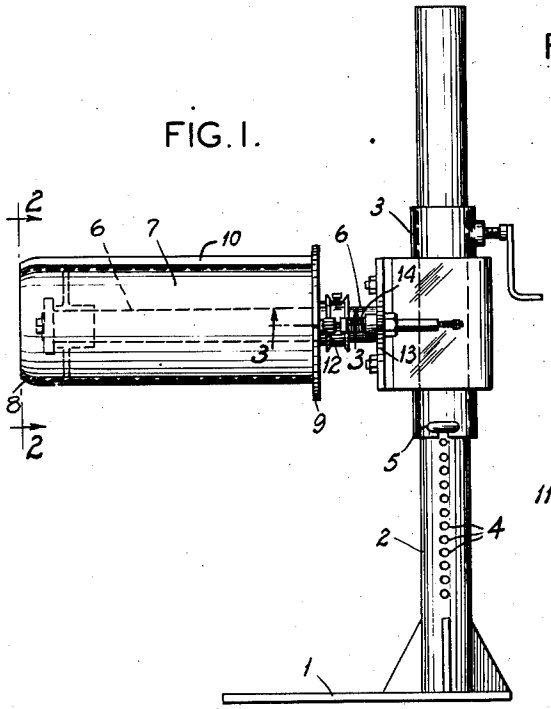


FIG. 2.

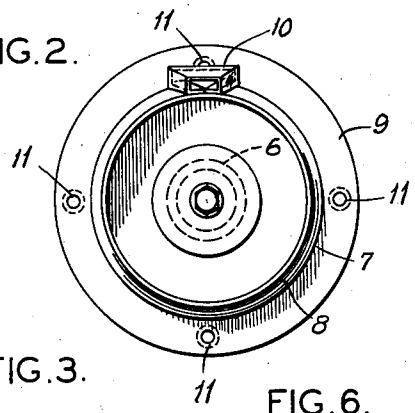


FIG. 3.

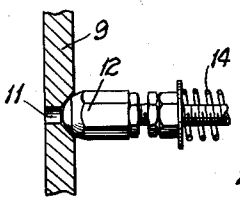


FIG. 6.

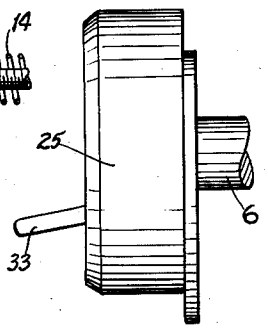


FIG. 4.

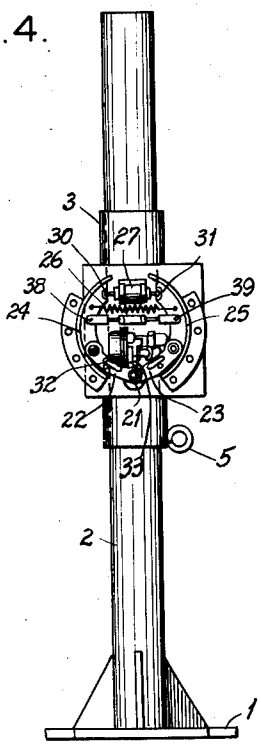
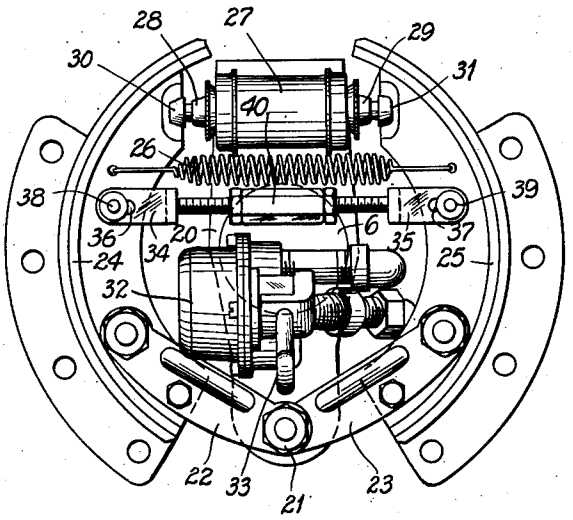


FIG. 5.



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ADJUSTABLE ANVIL

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2 Claims. (Cl. 93—55.1)

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This invention relates generally to adjustable anvils and particularly to anvils adapted for use in connection with work pieces which are generally annular in configuration.

Protective rings for bombs, barrels, pipe and the like are being made of convolutions of paper. In a preliminary stage in the manufacture of such protective rings a complete annulus is provided. Such an annulus is required to be severed so as to provide for adjustment in the circumference thereof and suitable closure means must be applied to the ring. In the manufacture of such a ring considerable difficulty was experienced in adequately supporting and sustaining the structure thereof so that it might be worked on with a hammer at various points in its circumference, without, however, fracturing or distorting the ring.

The object of the present invention, generally stated, is to provide an adjustable anvil adapted to enter the interior of a ringlike work piece.

Another object of the invention is to provide such an anvil which is capable of radial adjustment.

Other objects will become apparent to those skilled in the art when the following description is read in connection with the accompanying drawings, in which:

Fig. 1 is a view in side elevation of a stand provided with one form of anvil constructed in accordance with the present invention.

Fig. 2 is an end view taken along line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken along line 3—3 of Fig. 1.

Fig. 4 is a front elevation of the stand shown in Fig. 1 provided with a different form of anvil.

Fig. 5 is a detail view showing the radial adjustment mechanism of the anvil shown in Fig. 4.

Fig. 6 is a side view of the anvil shown in Figs. 4 and 5.

In accordance with the present invention, generally stated, a stand is provided with an anvil supporting member which is adjustable vertically. On the anvil supporting member a suitable anvil is provided. Such an anvil may consist of a cylindrical body, which may be mounted for rotation upon the anvil supporting member or may be fixed relative thereto. The exterior configuration of the anvil is in each case such as to substantially conform to the interior configuration of the work piece to be operated upon and it is desirable to provide a positioning means on the anvil whereby the work pieces may be uniformly oriented upon the anvil. When the anvil

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is mounted for rotation it is also desirable to provide means for selectively locking the anvil at various positions.

In another form of the anvil according to the present invention a plurality of anvil surfaces are provided which are radially adjustable relative to each other. Any suitable means for expanding and contracting the anvil members may be provided; and it is also desirable to provide means for limiting the relative movement of the anvil members to certain predetermined positions.

Referring now to Figs. 1, 2 and 3 of the drawings, a stand is provided having a base 1 connected to which is an upstanding tube or shaft 2 suitably braced to the base 1. Mounted on the shaft 2 and arranged for rotation thereabout, as well as for adjustment lengthwise of the shaft 2, is a fitting 3 consisting of a tubular member whose inside configuration and size substantially conforms to the exterior configuration and size of the shaft 2. In the embodiment shown, a plurality of holes 4 extend through the shaft 2 and, in order to position the fitting 3 vertically relative to the shaft 2, a suitable pin 5 may be inserted in any selected one of the holes 4. If it is also desired to restrain the fitting 3 against rotational movement about shaft 2, a series of suitable indentations may be provided in the lower surface of the fitting 3.

Suitably secured to the fitting 3 is a shaft 6 extending laterally outward from the shaft 2. Arranged upon the shaft 6 for rotation thereon is an anvil member 7 which, in the embodiment shown, consists of a cylinder having its outer end tapered as shown at 8 and having a flange 9 provided at the opposite extremity. The cylindrical surface of the anvil member 7 is interrupted with an abutment 10, which it will be understood may be of any desired size or shape, conforming to an irregularity on the interior surface of the work piece to be operated upon, thus to orient the work pieces upon the anvil 7.

On the interior of anvil 7 suitable plates or spiders may be provided extending to and forming a bearing surface for cooperation with shaft 6 and any suitable means may be provided on the outer end of shaft 6 for holding the anvil 7 in position thereon, it being preferable to provide a holding means which is easily released to permit the replacement of the anvil 7 with one of a different size or shape, such as to accommodate different work pieces.

In order to limit the relative rotational movement of anvil 7 about shaft 6 a series of aper-

tures or indentations 11 is provided about flange 9, and a detent member 12 mounted in a flange 13 on the fitting 3 is provided for selective engagement with any one of the indentations 11. The detent member may be of any suitable spring biased construction such as that shown in Fig. 3, where the tendency of the spring is to urge the detent member 12 into firm engagement with the indentation 11 but the engagement may nevertheless be released by the application of a force which compresses spring 14.

Referring now to Figs. 4 and 5, the stand with its adjunct fitting 3 and shaft 6 are as shown in Fig. 1, the anvil 7, however, having been replaced by a radially expansible anvil now to be described and as shown in detail in Fig. 5.

Mounted upon shaft 6 and preferably secured against rotation thereon is a bracket 20. The lower end of the bracket 20 is provided with a hinge pin 21 upon which are mounted supporting arms 22 and 23 respectively connected to anvil members 24 and 25. As is clearly shown in Fig. 5 the anvil members 24 and 25 are provided with incomplete cylindrical work surfaces. While the configuration and size of such work surfaces depend upon the interior configuration and size of the work piece, it will be understood that the exterior work surfaces of anvil members 24 and 25 are substantially complemental and arranged for relative movement about hinge pin 21. In the embodiment shown in the drawing the anvil members 24 and 25 are biased toward each other by spring 26. In order to force the anvil members 24 and 25 apart against the action of spring 26 any suitable power means such as the air pressure cylinder 27 may be provided. The cylinder 27 may be of the dual piston type, wherein air under pressure is admitted between the pistons to force them apart, and the pistons are each provided with a rod 28, 29, which in turn engage the respective anvil members as shown at 30 and 31 so as to push the same apart when air under pressure is admitted to cylinder 27. Between the cylinder 27 and any suitable source of compressed air is a control valve 32 having a hand lever 33 arranged to extend in a position convenient for manipulation. It will be understood that the hand lever 33 in the embodiment shown extends out of the face of the mechanism, and when in one position admits air to cylinder 27 while in another position air is released from cylinder 27.

In order to limit the relative movement of the anvil members 24 and 25 a strut extends between the same having a lost motion connection with one or both of the anvil members. In the embodiment shown such a strut consists of a pair of clevises 34 and 35 provided respectively with slots 36 and 37. Said slots accommodate pins 38 and 39 mounted respectively in the anvil members 24 and 25. Extending between clevises 34 and 35 is a turnbuckle 40 with its co-operating screws. With this arrangement when the pins 38 and 39 engage the outermost ends of the slots 36 and 37 the anvil members 24 and 25 can move no farther apart. Conversely, when the pins 38 and 39 engage the inner extremities of the slots 36 and 37 the anvil is completely contracted. In

the operation of the device beginning with the completely contracted position, the hand lever 33 may be thrown to the position whereat air under pressure is admitted to cylinder 27. Thereupon the rods 28 and 29 move outwardly and force the anvil members 24 and 25 away from each other, each rotating about pin 21 as a pivot. When it is desired to contract the anvil member the hand lever 33 may be thrown to the position whereat air under pressure is released, and thereupon the tension exerted by spring 26 pulls the anvil members 24 and 25 together until further movement in that direction is obstructed by the strut 34, 40, 35.

From the foregoing description it is apparent that those skilled in the art will readily understand the construction and operation of the apparatus of the present invention and appreciate the advantages thereof.

While a complete disclosure of two forms of anvil is herein given it must be understood that the invention is not limited to the precise details of such disclosure but it is contemplated that those skilled in the art may make modifications and variations therein without departing from the spirit of the invention or the scope thereof, as defined in the appended claims.

The invention having thus been described, I claim:

1. A device of the kind described comprising, a standard, a fitting adjustable vertically on said standard, a shaft extending radially from said fitting, said fitting comprising a tubular portion telescopically arranged on the standard whereby the shaft is capable of being adjusted circumferentially about the standard, an expansible anvil member mounted on said shaft, and means for expanding said anvil and maintaining the same expanded.

2. A device of the kind described comprising, a standard, a fitting adjustable vertically on said standard, a shaft extending radially from said fitting and adjustable circumferentially about said standard, a plurality of arcuate anvil members to substantially complement each other, floating connections between said anvil members and said shaft, power means for spreading said anvil members apart, and means for limiting the relative movement of said anvil members to less than the full stroke of said power means.

ROBERT F. HOLLIS.

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