April 5, 1938. W. G. PANKONIN 2,112,926

ANVIL FOR STAPLING DEVICES

Original Filed June 21, 1934

Fig.1

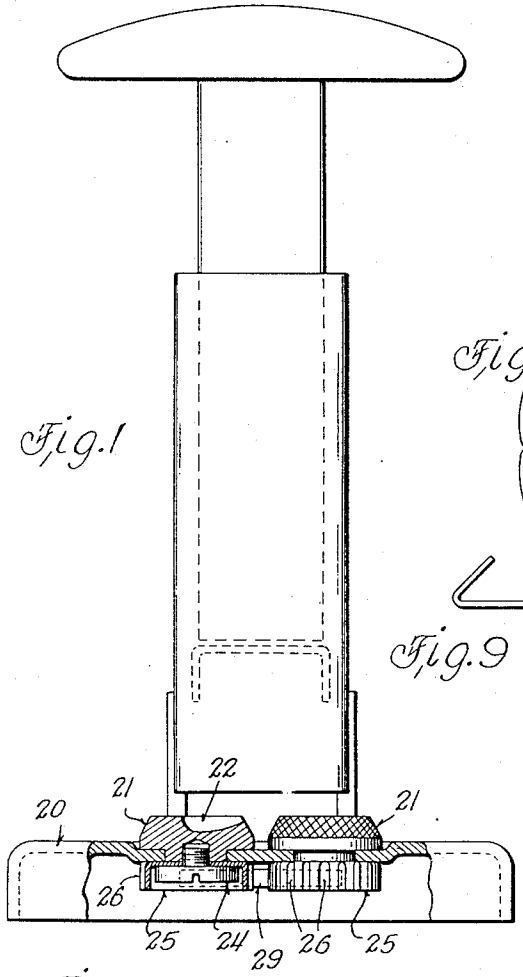


Fig.2

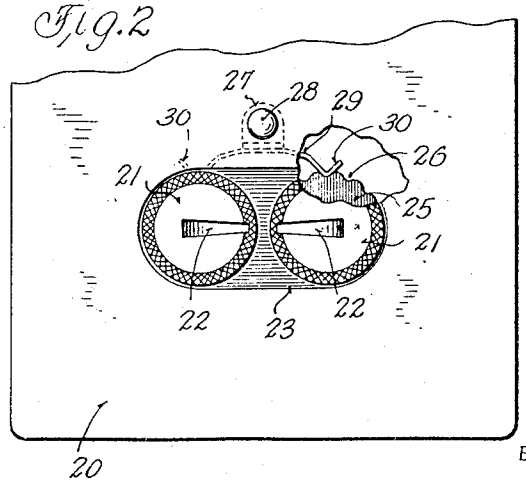


Fig.3

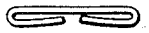


Fig.4

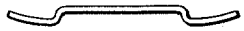


Fig.5

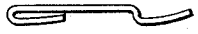


Fig.7



Fig.6

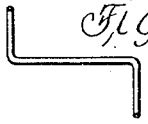


Fig.9

Fig.8

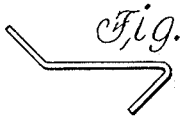


Fig.10

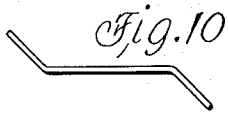


Fig.11

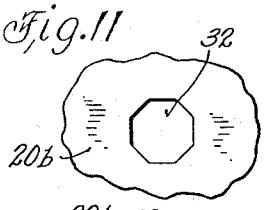


Fig.12

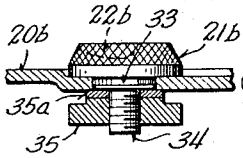
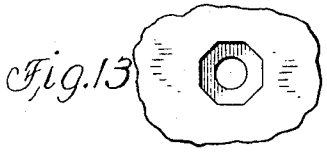


Fig.13



INVENTOR.
WILLIAM G. PANKONIN

BY John W. Michael
ATTORNEY.

Patented Apr. 5, 1938 2,112,926

UNITED STATES PATENT OFFICE

2,112,926

ANVIL FOR STAPLING DEVICES

William G. Pankonin, Chicago, Ill.

Original application June 21, 1934, Serial No. 731,609. Divided and this application October 5, 1936, Serial No. 103,981

6 Claims. (Cl. 1—3)

This invention relates to an improvement in staple deforming anvils for stapling devices.

The present application is a division of the copending application of William G. Pankonin, applicant herein, Serial No. 731,609, filed June 21, 1934, for Stapling device.

One of the objects of this invention is to provide an anvil which may be used with a stapling device to deform staples as they are driven in a variety of different deformations.

Another object is to provide a device of this character wherein relatively and independently movable staple deforming dies are provided for each leg of the staple, and wherein there is means for separately locking said dies in selected positions.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawing forming a part of this specification, and in which:

Figure 1 is a view partly in front elevation and partly in section with parts broken away for sake of clarity and illustrating a stapling device incorporating a staple deforming anvil embodying the present invention;

Figure 2 is a detail in plan view of the anvil shown in Figure 1;

Figures 3, 4 and 5 are side views illustrating staples deformed in said anvil when in different selected positions;

Figures 6 and 7 are top and end views, respectively, illustrating a staple deformed by said anvil when in another position;

Figures 8, 9 and 10 are top views illustrating other deformations of the staple possible with an anvil embodying the present invention;

Figure 11 is a plan view in fragmentary detail illustrating a modification of the supporting and locking means for the anvil dies;

Figure 12 is a detail view in transverse section showing the locking means for use in the modification shown in Figure 11; and

Figure 13 is a plan view in fragmentary detail showing a further modification of the supporting and locking means for the anvil dies.

Referring to the drawing, the anvil structure is positioned on the base **20** near its front end and in substantial vertical alignment with the path of staples as they are ejected by the staple driving mechanism. The anvil comprises two rotatable anvil dies **21**, the axis of rotation of each die being concentric with the axis of the leg of a staple which is discharged thereagainst for deformation. Each die **21** has a radially disposed clinching seat **22**, a clip section of which is axial of the staple leg to be deformed thereby. The seat **22** is slightly longer than the radius of the die **21**.

Each rotatable anvil die **21** may be adjusted to a plurality of positions. For example, the elongated radial seats **22** in the two dies may be arranged in alignment. Either seat may be rotated relatively to the other so that the two seats may be positioned in a plurality of angles. Both seats **22** may be shifted with equal facility. The positions obtained by such adjustments provide a variety of staple deformations such as are illustrated in the drawing.

If the seats **22** are in alignment and pointed inwardly, the staple is deformed by turning both legs under the bridge (Figure 3); if one seat **22** points to the front and the other seat **22** points to the rear of the machine, the result will be a Z-shaped staple such as is shown in Figures 6 and 7; if the seats are in alignment but pointed outwardly the result will be an elongated member which may be readily withdrawn from the stapled papers in either direction as is illustrated in Figure 4; if one seat **22** is pointed inwardly and the other outwardly while the two are in alignment, then a hook ended staple such as is shown in Figure 5 is obtained; two other deformations intermediate the form shown in Figures 6 and 10 are shown in Figures 9 and 10; and when both seats are pointed outwardly and in parallelism but not in alignment, the result will be a readily removable staple of sinuous configuration such as is shown in Figure 10. Other results may be obtained by adjustments different from those hereinabove suggested.

Several manners of mounting the anvil dies **21** on the base **20** are shown. In one of these, Figures 1 and 2, the dies **21** rotate in seats **23** in which they are pivoted. Each anvil **22** is keyed to a flanged sleeve **25** having a notched periphery **26**. A screw **24** extends through the sleeve **25** into the bottom of the anvil **22** and provides a necessary connection between these parts to lock the anvil at the top and the sleeve **25** at the bottom of the base in a readily rotatable manner. The screw **24** is forced home only so far as is necessary to maintain the parts in assembly without undue frictional binding of the anvil and sleeve upon the base **20**.

To the rear of each notched sleeve **25** and between said two sleeves, as is illustrated in Figures 1 and 2, there is an L-shaped anchor **27** which is

pivoted to the underside of the base 20 by a rivet 28 or the like. Secured to the anchor 27 and extending to each side of the longitudinal center line of the base 22 is a spring 29 which has two V-shaped ends 30, each end 30 engaging in a notch 26 in sleeve 25 to hold the sleeve 25 and the anvil 21 keyed thereto against accidental rotation.

When desired, the relative positions of the two anvils 21, or either of them, may be modified first by gripping the anvils 21 at their edges which are knurled for this purpose or by gripping the sleeves and then rotating such part or parts.

A second method of attaching an anvil die and a different attaching means are shown in Figures 11 and 12. In the base 20*b* shown, there is an octagonal aperture 32. Depending from the anvil 21*b* is an octagonal shank 33 formed as an integral part of the base of the anvil die or suitably attached thereto. The shank 32 terminates in a threaded section 34. The aperture 32 in the base 20*b* to receive the octagonal shank 33 and threaded portion 34 may be wholly octagonal as shown in Figure 11 or it may be modified to have a circular section for the threaded member and an octagonal seat for the octagonal member. (See Figure 13.)

At the end of the threaded section 34 there is a wing nut 35 and intermediate the engaging face of the wing nut 35 and the base 20*b* there may be a washer 35*a* of suitable character. The washer 35*a* may be omitted when the aperture 32 is modified as shown in Figure 13. The anvil 21*b* is disposed in the octagonal aperture 32 with the staple deforming seat 22*b* in the anvil 21*b* in a selected position. Tightening of the wing nut 35 on the threaded section 34 firmly seats the anvil 21*b* against rotation or displacement until a change in adjustment is desired.

While constructions in which this invention may be embodied have been shown and described, it is to be understood that these constructions have been selected merely for the purpose of illustration and that various changes in the size, shape and arangement of parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

The invention claimed is:

1. An anvil for a stapling device, comprising a plurality of dies each provided with a clinching seat, said seats being radially disposed with respect to the leg of a staple to be driven thereagainst, and means for individually adjusting said seats in a variety of selected positions.

2. Staple deforming anvils, said anvils each being rotatable on an axis coincident with the axis of the leg of a staple to be driven thereagainst, and means for mounting said staple deforming anvils for relative movement about their respective axes.

3. An anvil for use with a stapling device, comprising a plurality of die members each provided with a staple clinching seat, separate mounting means for each of said members, said members being adjustable in their respective mounting means whereby they may be placed in a plurality of positions to obtain different setting of each clinching seat relative to other clinching seats.

4. In a stapling machine, a base member, a plurality of hexagonal apertures in said base, and die members for said apertures, each of said die members having a staple clinching seat adapted to engage and deform one leg of a staple to be driven thereagainst, each of said members having an octagonal shaft fittable within said aperture.

5. In a stapling machine, a base member, a plurality of seats in said base, die members rotatable in said seats, each of said die members having a staple clinching seat adapted to engage and deform one leg of a staple to be driven thereagainst, each of said members having a notched periphery, and spring means engageable with said notched periphery.

6. An anvil for deforming the legs of a preformed staple as it is driven thereagainst, comprising a die member for each leg of said staple, each die member having a clinching seat to engage and deform the respective leg of the staple, and means for mounting the die members to permit each clinching seat to be separately adjustable whereby different settings of the legs of the staple relative to their bridge portion is obtained.

WILLIAM G. PANKONIN.