Dec. 17, 1929. M. VOGEL 1,740,322

STAPLING DEVICE

Filed Oct. 1, 1926 2 Sheets-Sheet 1

Fig. 1

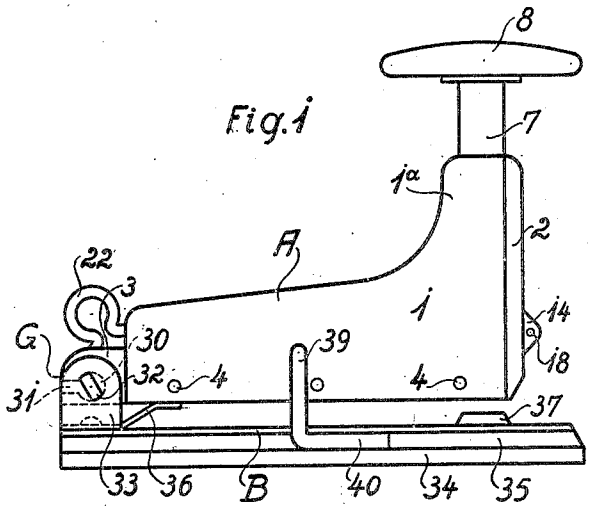


Fig. 2

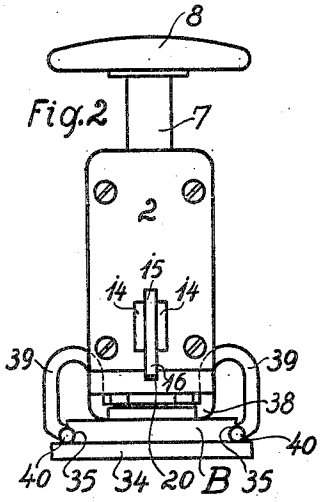


Fig. 3

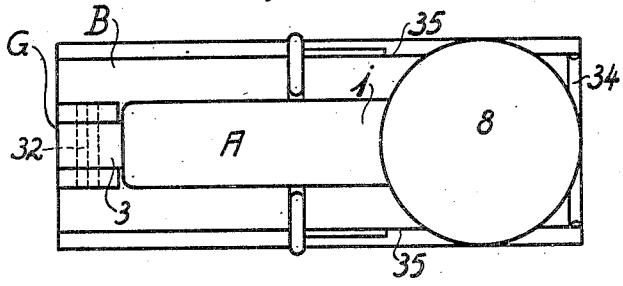


Fig. 4

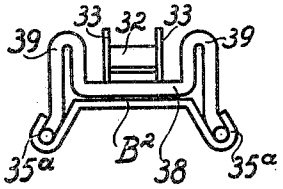
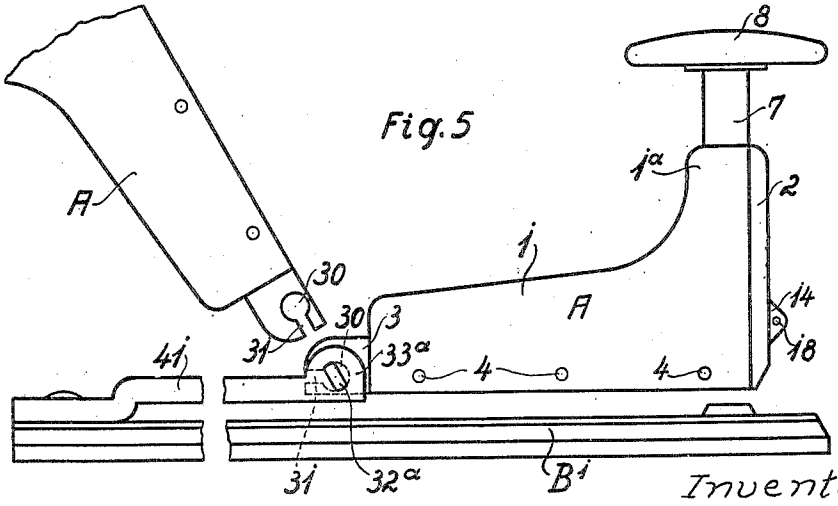


Fig. 5



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STAPLING DEVICE

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Fig. 6

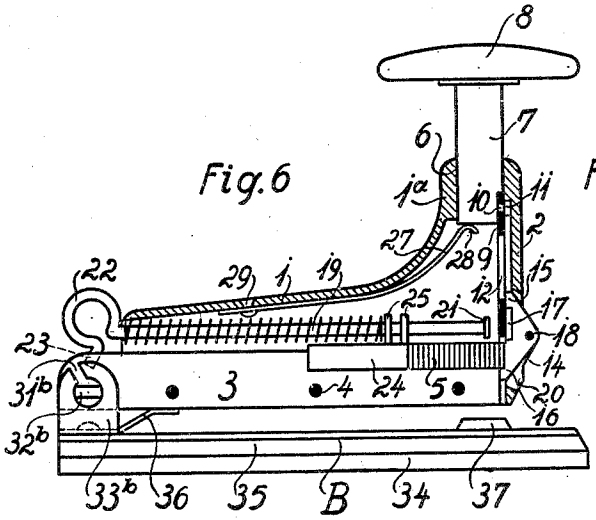


Fig. 7

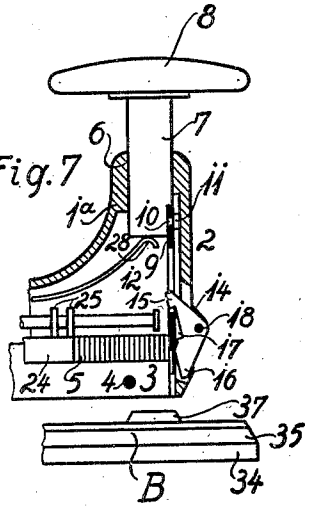


Fig. 8

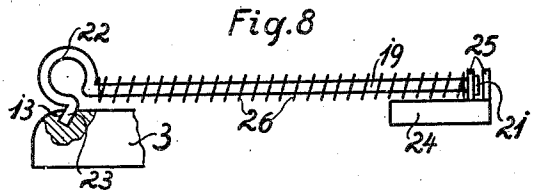


Fig. 9

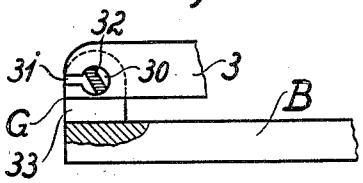


Fig. 11

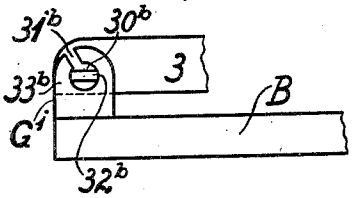


Fig. 10

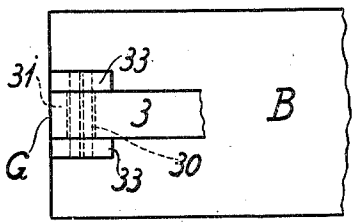
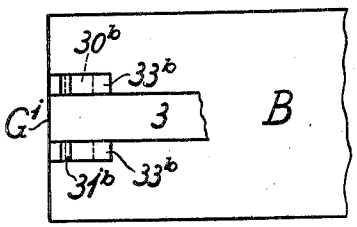


Fig. 12



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Patented Dec. 17, 1929 1,740,322

UNITED STATES PATENT OFFICE

MAX VOGEL, OF FRANKFORT-ON-THE-MAIN, GERMANY

STAPLING DEVICE

Application filed October 1, 1926, Serial No. 138,928, and in Germany July 26, 1926.

The invention relates to a stapling device for setting staples or the like in thicknesses of paper or cloth by means of a punch adapted to be depressed manually against the action of a spring, which punch on each downward movement ejects one of the staples from a bar or from a row, and on its upward movement, the next staple under the action of a feeding device is fed into position for the following operation.

Such devices are known. The new characteristic of the present device resides in such an arrangement of its parts that, in spite of the small dimensions and neatness of the whole device—permitting its use even on an ordinary writing table—its parts are easily detachable and adjustable so that it may be operated by any person without special instructions, can be filled with a new set of staples on the others being exhausted and can be adjusted for varying distances of the staple or fastener from the edge of the sheets to be united, while faulty stapling is avoided.

The accompanying drawing illustrates various embodiments of the new stapling device.

In the drawings, Figs. 1 to 3 are side elevation, end elevation and plan of one embodiment.

Fig. 4 is a view corresponding to Fig. 2 with the setting positions varied.

Fig. 5 is a side elevation of the device in a form suitable for inserting staples in the folds of double sheets.

Figs. 6 and 7 are longitudinal sections through the device in inoperative and in operative positions of the punch, respectively.

Fig. 8 shows the feed mechanism and its engagement with the staple carrying bar.

Figs. 9 and 10 show in side elevation, partly in longitudinal section and in plan the pivot of the upper part and the base.

Figs. 11 and 12 are corresponding views of a modification of this pivot.

As shown, the device consists in known manner of an upper part A forming the housing for the staples, with the punch and feeding device, and a lower part or base B, to which the upper part is secured by means of a pivot G permitting of its being tilted for the insertion of the papers or the like to be fastened together.

The upper part A consists of a housing 1 of U-shaped section in the form of a horn having an inwardly curved solid back with a front plate 2 and open only at the rear and at its lower side. In the lower portion of the housing 1 is fitted a bar 3 held at the desired distance from the side walls by rivets 4, such bar 3 serving as a support for the staples 5 arranged in a row thereon. In an opening 6 of the head 1^a of the housing is fitted a punch 7 fitted with a handle 8 which carries a flat die 9. The head 11 of a screw 10 securing the die 9 to the punch bears against the closing plate 2 and forms a guide for the punch. The die is formed with a slot 12. Between cheeks 14 on the closing plate and in a slot 20 therein is mounted a triangular locking member, 15, 16, 17, pivoting about a pivot 18. The lower arm 16 of the locking member always bears against the foremost staple or against the forward end of the staple support 3, while the upper arm 15, with its lug, bears on the solid portion of the slide or die 9, Fig. 6.

Above the staple support 3 is a feeding device for the staples 5. Such device consists of a rod 19 formed with a flange 21 at one end of a bail portion 22 serving as a handle at the other end which terminates in a tail 23. The rod 19 supports by means of lugs 25 a U-shaped slide 24 which is guided on the back of the bar 3. The rod 19 is surrounded by a spring 26 and due to the tension of the spring engages by its tail 23 an inclined opening 13 in the bar 3, Fig. 8. The slide 24 is under the pressure of the spring 26 and is located behind the staples 5, a portion of the rod 19 extending through the lugs 25 (Figs. 6 and 7). Since the casing 1 is closed, pre-

venting ingress of dust and the like, and has an inwardly curved back, it is possible to form a return spring for the punch 7 as a blade spring 27, and to secure it to the back by means of a rivet 29. Its free bent end 28 engages beneath the punch 7. The staple support has at its end projecting beyond the casing 1—in the embodiment shown in Figs. 1 to 5—a circular opening 30 which extends into a horizontal slot 31. Through this opening extends a flat pin 32 disposed at an inclination, which pin is fastened in a bearing 33 in the base B. The base B, consisting of a plate 34 with lateral semi-circular grooves 35, is fitted with a Z-shaped spring 36, which serves to hold the upper part A at a distance from its upper face, and from the anvil 37. In the grooves 35 engage the horizontal arms 40 of a wire bail-shaped member 39, formed with a central band 38. The distance apart of the arms 39 is so selected that they must be spread somewhat to allow the arms 40 to be inserted in the grooves 35, so that the bail is clamped to the base. The otherwise usual guide slot in the base, for limiting the extent to which the papers or the like can be inserted is thus dispensed with. The bail serves as a limit of the extent to which the papers to be fastened together can be inserted, and its distance from the front edge of the housing determines the distance of the fastening from the edge of the sheets. Thus, if papers or the like are to be fastened in the fold of double sheets, as a result of which the sheets must be introduced very much below the upper part, there is used a very long base B′, with a rod-like extension 41 secured to one end, which extension is forked at 33^a at its opposite end. The arms of the fork carry the inclined flat pin 32^a, Fig. 5. The upper part A, which is adapted to pivot about the pin 32 with its circular opening 30 in the staple support 3, in order that it may be passed over the base B′, is moved into the inclined position shown in Fig. 5, so that the slot 31 extends in the direction of the pin 32 and can be withdrawn therefrom. In the reverse manner it can be fitted over the pin 32^a of the extension 41 of the base B′.

Instead of forming the base of a solid plate it can be formed of a hollow pressed sheet metal strip B^2 and the grooves 35^a formed as lateral extensions, Fig. 4. As a result the device, the casing 1, 1^2 of which preferably consists of light metal, will be lighter in weight—a particular advantage of the present invention.

While in the embodiment shown in Figs. 1 to 5 of the drawings the pin of the pivot G is rigidly mounted in bearings 33 on the base B, or in the fork-shaped arms 32^a of the projecting rod 41, and the upper part A with its opening 30 in the staple support can pivot about the pin 32 and because of the slot 31 can be withdrawn therefrom in a particular inclined position (see in particuular also Figs. 9 and 10), the pivot G′ may be mounted on the staple support. In these circumstances the flat pin 32^b is arranged horizontally and the bearings 33^b on the base B are provided with a circular opening 30^b, and a slot 31^b extending at an inclination thereto and of a width equal to the thickness of the pivot pin 32^b (Figs. 6, 11 and 12).

To prevent faulty stapling the above-mentioned locking device consisting of a double-armed lever 15, 16, is provided. The arm 16, with the die in raised position, bears against the foremost staple, while the other arm 15, with its lug, bears against the solid part of the die. If the die is depressed then the projecting staple tilts the double-armed lever 15, 16, about its pivot, so that the arm 15 engages in the slot 12 in the die. In this position the double-armed lever 15, 16, holds the die until the staple, now in the delivery channel, is completely ejected. If the punch be only partly depressed, then, since the arm 15 engages with its lug in the slot 12, the punch cannot return under the action of the spring 27. Only when the foremost staple or fastener is ejected can the die carry the arm 15 with it and rotate it in such manner that the arm 16 again lies in front of the succeeding staple.

I claim:—

1. A stapling device comprising a base, a horn-shaped body part hinged to the base, a staple support located in said body part, staple feeding means and staple setting means located within said body part, and locking means for locking the staple setting means, said locking means comprising a double-armed lever pivotally mounted on the body part and having one arm extending towards the staples and its other arm adapted to engage the staple setting means.

2. A stapling device comprising a base part, a horn-shaped body part, a staple support, and staple feeding means located within said body part and staple setting means located within said body part, one of said parts being formed with a key hole slot and the other having a flattened bar forming a hinge pivoted within the larger part of said key-hole slot, said bar being capable of passing through the narrow part of said key hole slot in one relative angular position of said body part, but incapable of passing through said narrow part of said slot in another relative angular position of said body part.

3. A stapling device comprising a base, a horn-shaped body part hinged to the base, a staple support in said body part, staple feeding means located within said body part, said staple feeding means consisting of a rod, one end of which engages said staple support, the other end being free, a spring on said rod,

and a follower on said rod urged by said spring toward the free end thereof for pushing staples mounted on said support to operative position with respect to staple setting means, the latter means being located within said body part.

In testimony whereof I have signed my name to this specification.

MAX VOGEL.