Dec. 15, 1931. M. VOGEL 1,836,944

STAPLING DEVICE

Filed June 20, 1929

Fig. 1.

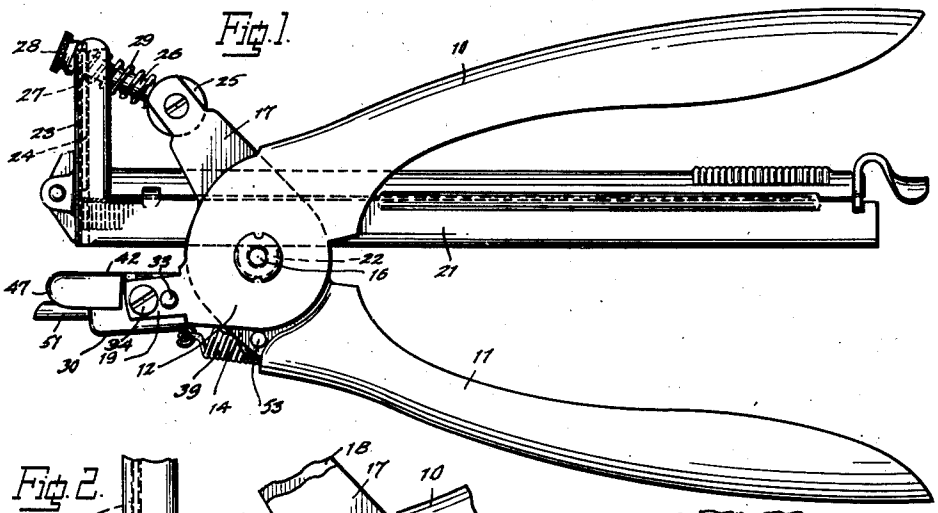

Fig. 2.

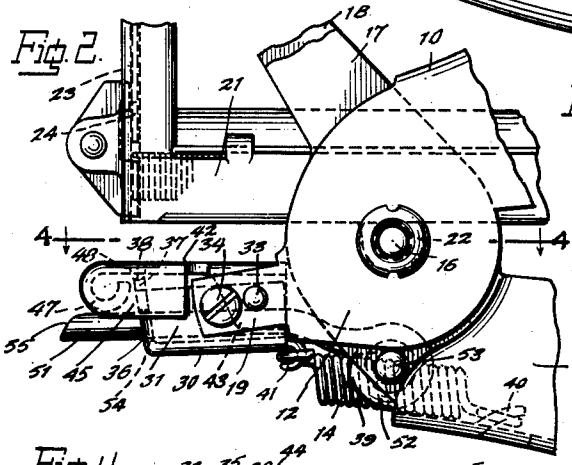

Fig. 3.

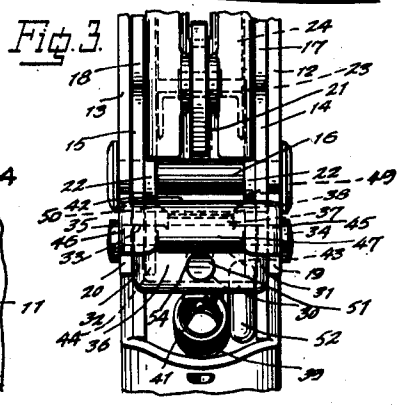

Fig. 4.

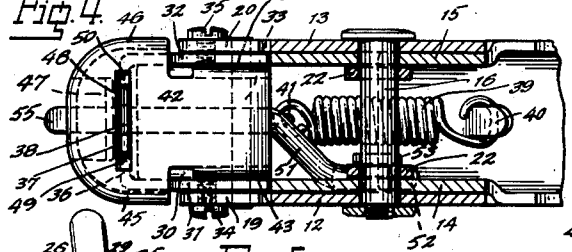

Fig. 5.

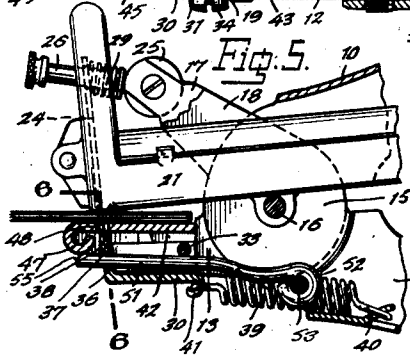

Fig. 6.

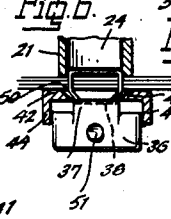

Fig. 7.

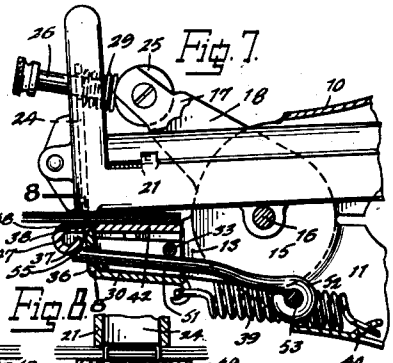

Fig. 8.

INVENTOR.
MAX VOGEL
BY.
ATTORNEY.

Patented Dec. 15, 1931 1,836,944

UNITED STATES PATENT OFFICE

MAX VOGEL, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO NEVA-CLOG PRODUCTS, INC., OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT

STAPLING DEVICE

Application filed June 20, 1929. Serial No. 372,433.

The present invention relates to an improved stapling device, particularly of the plier type, and has for an object to provide a construction which will so insert and clinch the staples that the clinched over ends will be in substantially flat parallel relation against the stapled material, thus obviating the objectionable characteristics of stapling devices heretofore known, with which the ends of the staples were so bent that they were curved and projected from the surface of the stapled material.

Another object is to provide a stapling device of this character which will grip the material to be stapled before the staple is driven therethrough.

Other objects are to provide a stapling device of simple construction, and which will be reliable and efficient in use.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation of a stapling device, according to the present embodiment of the invention;

Fig. 2 is an enlarged side elevation of the device, the handle portions being broken away;

Fig. 3 is a front elevation thereof;

Fig. 4 is a horizontal sectional view, taken along the line 4—4 of Fig. 2;

Fig. 5 is a vertical longitudinal sectional view of the jaws, showing the staple inserted through the material to be stapled; and the staple ends partially bent;

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 5;

Fig. 7 is a sectional view, similar to Fig. 5, and showing the final relation of the parts to clinch and flatten the staple ends; and

Fig. 8 is a sectional view taken along the line 8—8 of Fig. 7.

Simliar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings the stapling device according to the present embodiment of the invention comprises a pair of handle members 10 and 11 of channel shaped cross-section, each having opposed side portions 12, 13 and 14, 15 pivotally connected by a transverse pin 16, the side portions 14, 15 being disposed within the side portions 12, 13 and having upwardly projecting arms 17, 18, adapted in the open position to abut the forward transverse edge of the handle member 10. The side portions 12, 13 are provided with forwardly projecting arm portions 19, 20 adapted, as will presently more fully appear, to support the lower jaw parts of the device.

The staple casing 21 is of known construction, as shown for instance in my Patent #1,043,883 of November 12, 1912, being pivotally mounted upon the pin 16, as at 22, and provided at its forward end with a vertically arranged guide slot 23, in which the staple driver 24 moves.

A transverse spanner block 25 is rigidly secured between the ends of the arms 17, 18, and supports a bolt 26 having its end slidably engaged in an aperture 27 in the upper end of the staple driver, the end of said bolt being screw-threaded for the provision of a nut 28, against which the driver 24 is pressed by means of a spring 29, arranged between the block 25 and the driver.

Between the arms 19, 20 there is rigidly supported an anvil member consisting of a base portion 30, upwardly extending side portions 31, 32, engaged between said arm 19, 20, and secured thereto by a transverse pin 33 and set-screws 34, 35 at each side, and an upwardly extending forward end portion 36, provided at its upper edge with an anvil portion 37, having its ends spaced inwardly from the side portion 31, 32, and provided in its upper surface with a concave groove 38. A spring 39 is connected between a hook 40 formed on the handle 11 and a hook 41 on the base of the anvil member, and tends to keep the jaws of the device open.

A cheek member is movably and cooperatively supported above the anvil member and consists of a flat top portion 42, of reduced width at its inner portion and provided at

each edge of said reduced portion with downwardly extending ears 43, 44, disposed within the side portions 31, 32 of the anvil member and pivotally mounted on the pin 33. At each side of the forward end of the top portion 42 there are provided downwardly extending flanges 45, 46 disposed outwardly of the anvil member, and at the forward end a camming abutment portion 47 is curved downwardly and inwardly and then upwardly toward the forward end of the anvil. A slot 48 is formed in the upper portion 42 in registering relation with the anvil, so that upon relative movement of the cheek member toward the anvil the latter may move into said slot. The ends of the slot are beveled, as at 49, 50, to direct the ends of the staples inwardly, as will presently more fully appear.

The relative position of the cheek member is controlled by means of a slide rod 51, having an eyelet 52 at its inner end pivotally mounted upon a stud 53 secured to the side portion 14 of the handle member 11, and extending at its forward end through an aperture 54 in the forward end portion 36 of the anvil member, where it engages beneath the camming abutment 47. The forward end of the rod is beveled, as at 55, for cooperation with the inwardly extending camming portion of said abutment to permit the cheek member to move toward the anvil member as the rod is drawn inwardly through closing of the jaws.

In operation the papers to be fastened together, as documents or the like, are placed between the jaws of the device, whereupon by actuating the handles said papers are firmly gripped by the jaw. Continued movement of the handles causes the staple driver 24 to descend in its guide-slot, pushing the staple through the material. The points of the staple thereupon engage the beveled ends 49, 50 of the slot 48 so that they bend toward each other, being guided as they leave said beveled ends by engagement in the curved groove of the anvil. Up to this point the cheek member is supported by the rod 51 in its raised position with respect to the anvil, and as indicated in Figs. 2 to 6. As the handles are further drawn together the rod 51 is drawn inwardly to a point where the beveled end 54 engages the inwardly extending camming surface of the camming abutment 47, whereupon the anvil member moves upwardly toward the check member, clinching the staple ends upon the under side of the material, and finally as the anvil portion 87 moves completely into the slot 48, as shown in Figs. 7 and 8, pressing said staple ends in tight flat relation against the under side of the stapled papers. In releasing the pressure upon the handles the springs 29 and 39 will bring the device into its initial position, in which the material can be drawn from the jaw, the rod 51 being projected during this operation to raise the cheek member to its normal spaced relation above the anvil.

I have illustrated and described a preferred and satisfactory embodiment of the invention but it will be obvious that changes may be made therein, within the spirit and scope thereof, as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, a slotted support for the material to be stapled, staple clinching means fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means adapted to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

2. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, a slotted support for the material to be stapled, staple clinching means fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means cooperatively related to said staple driving means adapted at a predetermined point in the stapling operation to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

3. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, anvil means comprising a slotted support for the material to be stapled, staple clinching means having a straight grooved anvil surface fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means adapted to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched in relatively straight relation against the under surface of the stapled material.

4. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, anvil means comprising a slotted support for

the material to be stapled, the ends of said slot being shaped to constitute staple-end bending-in surfaces, staple clinching means fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means adapted to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

5. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, anvil means comprising a slotted support for the material to be stapled, the ends of said slot being shaped to constitute staple-end bending-in surfaces, staple clinching means having a straight grooved anvil surface fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means adapted to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched in relatively straight relation against the under surface of the stapled material.

6. In a stapling device, a pair of operating members one movable with respect to the other, staple driving means operatively connected to one of said operating members, anvil means comprising a slotted support for the material to be stapled, the ends of said slot being beveled to constitute staple-end bending-in surfaces, staple clinching means fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means adapted to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

7. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, a slotted support for the material to be stapled, staple clinching means fixedly connected to the other of said operating members, a movable support for said clinching means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means for moving said movable support upon operation of said staple driving means to affect relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

8. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means operatively connected to one of said operating members, a slotted support for the material to be stapled including a camming abutment portion, staple clinching means fixedly connected to the other of said operating members, a movable support engaging said clinching means and engaged in supporting relation with said camming abutment to normally position said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means for moving said movable support upon operation of said staple driving means to permit relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

9. In a stapling device, a pair of relatively movable manually operable members pivotally connected together, staple driving means adapted to be operated through relative movement of said members, a slotted support for the material to be stapled carried by one of said members, staple clinching means also carried by said member and movable relatively to said slotted support, movable means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and a connection between said movable means and said other member whereby upon relative movement of said members, said movable means is moved to permit relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

10. In a stapling device, a pair of operating members, one movable with respect to the other, staple driving means connected to one of said operating members, staple guiding means, a slotted support for the material to be stapled movable toward and away from said stapled guiding means to grip the material between them, staple clinching means fixedly connected to the other of said operating members, means normally positioning said clinching means at a predetermined spaced point with respect to the material supporting surface of said slotted support, and means adapted to cause relative movement between said slotted support and said clinching means whereby the staple ends are clinched against the under surface of the stapled material.

Signed at New York, county of New York, and State of New York, this 17th day of June, 1929.

MAX VOGEL.