Nov. 14, 1950 D. D. CORWIN 2,530,152

STAPLING MACHINE

Filed April 30, 1949

Fig. 1.

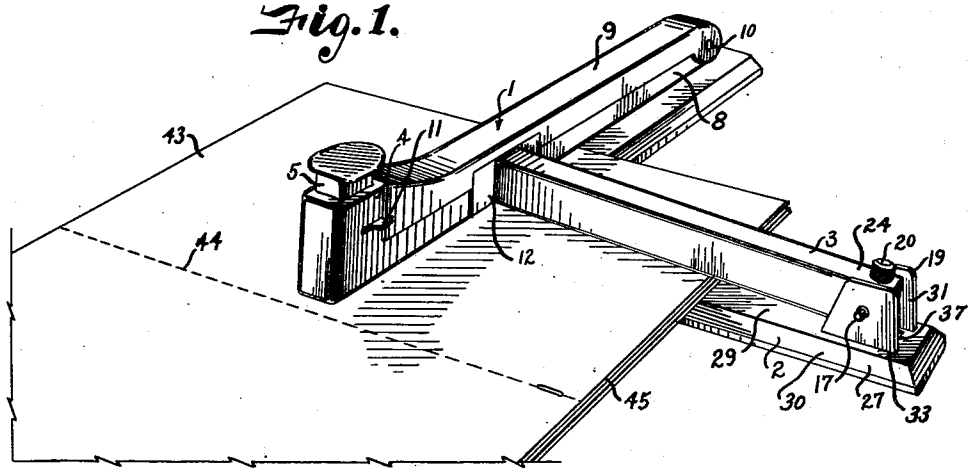


Fig. 2.

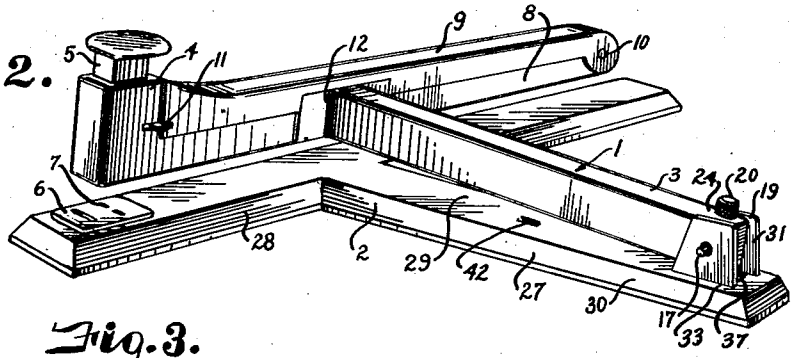


Fig. 3.

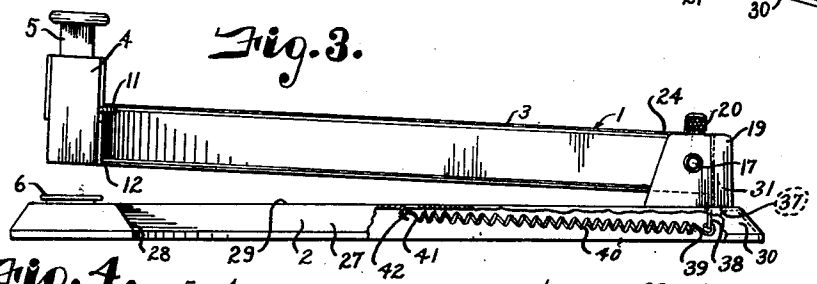


Fig. 4.

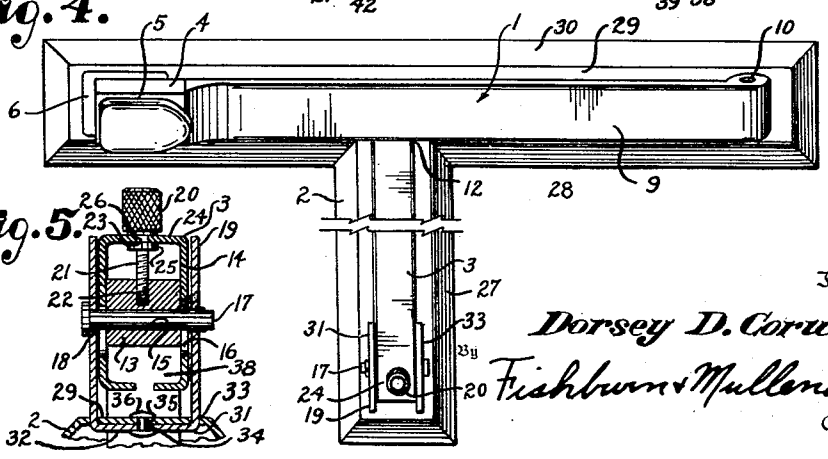
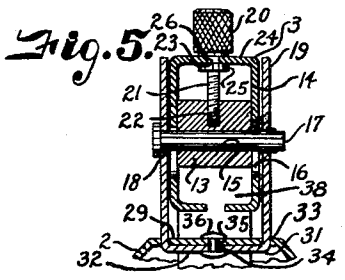


Fig. 5.



Inventor

Dorsey D. Corwin

By Fishburn & Mullendore

Attorneys

Patented Nov. 14, 1950

2,530,152

UNITED STATES PATENT OFFICE

2,530,152

STAPLING MACHINE

Dorsey D. Corwin, Kansas City, Mo.

Application April 30, 1949, Serial No. 90,720

6 Claims. (Cl. 1—3)

1

This invention relates to stapling machines and more particularly to portable or hand stapling machines, such as are used in offices for fastening together sheets of material.

There are many stapling machines manufactured and sold for use in offices for fastening one or more pieces of paper or other articles together at the edges or a short distance from the edge of the paper. The depth or reach of such machines is limited by the connection of the stapling arm to the base of the machine. There have been long reach machines which differ primarily in the length of the stapling arm and base from the hinge connecting the rear portions thereof. The long reach machines are large and awkward and usually are used only for special purposes. They are also very expensive.

The objects of the present invention are to provide a stapling machine adapted for stapling diversified sizes of sheets such as stapling the leaves of a book at the fold thereof without limitation as to the width of the leaves, yet be small enough for ordinary use in stapling the edges of sheets together; to provide a stapling machine in which the staple is driven on a line perpendicular to the axis of the hinge connecting the stapling arm and base; to provide a stapling machine having a T-shaped base and arm hingedly connected together; to provide a hinge adjustment for accommodating various thicknesses of papers to be stapled whereby the staple is driven vertically through the papers in alignment with the anvil on the base; and to provide a hand stapling machine involving few and simple parts so constructed and arranged that it is capable of operating in a more convenient and efficient manner upon a wide variety of sizes of work and having unlimited reach in a direction perpendicular to the staple.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a stapling machine embodying the features of the present invention and shown in position for stapling book leaves on the fold line thereof.

Fig. 2 is a perspective view of the stapling machine with the arm in raised position relative to the base.

Fig. 3 is a side elevation of the stapling machine with portions of the base broken away to illustrate the spring and its connection with the

2

arm for hinging same upwardly when not in use.

Fig. 4 is a plan view of the stapling machine.

Fig. 5 is a transverse sectional view through the hinge pin connection for the base and arm, particularly illustrating the adjustment of the hinge axis.

Referring more in detail to the drawings:

1 designates a stapling machine generally consisting of a base 2, an arm 3 and a conventional staple driving mechanism 4. The conventional staple driving mechanism 4 is illustrated as having a plunger 5 at one end thereof to drive the staples from within the machine through sheet materials for fastening such materials together or attaching one material to another, the staples being bent by the well-known anvil 6 carried by the base 2 and having grooves or indentations 7 to bend the legs of the staple into holding position. The staple driving mechanism illustrated includes an elongated body 8 having a cover member 9 pivoted as at 10, adjacent the opposite end, to the plunger 5, said cover enclosing the staples (not shown) which are slidably arranged in the body member with suitable spring tension to feed said staples under the plunger whereby each operation of said plunger drives a staple. The cover 9 is secured in closed position by a suitable latch 11.

The particular operating structure of the staple driving mechanism 4 is not illustrated or described as any suitable conventional structure would be satisfactory.

The body member 8 is suitably secured as at 12 to the end of the arm 3, said arm preferably being perpendicular to the body member in spaced relation to the plunger 5. The arm 3 extends from the body member 8 and is preferably bent from sheet metal or other suitable material to form a hollow structure of light weight, the free end of the arm having a bearing block 13 slidably mounted between the sides 14 of said arm, said bearing block having a bore 15 which aligns with slots 16 in the side walls 14 to rotatably receive a pin 17 extending through and suitably held in apertures 18 of upstanding ears 19 on the base 2. The bearing block 13 is adjustable in the arm 3 by means of an adjusting screw 20 having a threaded shank 24 threaded into a bore 22 of the block 13, said screw extending through an aperture 23 in the top wall 24 of the arm and having a collar 25 engaging the inner surface and a head 26 engaging the outer surface of the top wall 24, whereby said screw is rotatably mounted in said wall and rotation of said screw

threads the shank 21 into or out of the threaded bore 22 to move the bearing block toward or away from the upper wall 24 and adjust the relative spacing of the base and arm.

The base 2 is illustrated as being formed of metal but may be of any other suitable material, said base being substantially T-shaped, having a leg 27 under and in vertical alignment with the arm 3 and a cross portion 28 of the T under the staple driving mechanism 4. The base preferably has an upper wall 29 and downwardly and outwardly sloping side walls 30 whereby the bottom is hollow to reduce the weight of the machine. The upstanding ears 19 are arranged adjacent the free end of the leg 27 and are shown as being on a U-shaped member 31 having a bar portion 32 positioned under the upper wall 29 of the base with the ears extending through slots 33 in said wall. The base portion 32 has an aperture 34 aligning with an aperture 35 in said wall 29 to receive a rivet 36 which secures the U-shaped member to the base. The wall 29 of the base is slotted as at 37 between the ears 19 adjacent the end of the arm 3 whereby a portion of said arm is turned downwardly to form a tab 38 extending into the hollowed out portion of the base. One end 39 of a spring 40 is secured to said tab with the other end 41 of said spring suitably secured to the base in spaced relation to the tab as on a hook 42 pressed from the upper wall 29 of the base whereby the tension of the spring 40 exerts pressure on the tab 38 tending to move same toward the cross of the T, thereby pivoting the arm 3 upwardly to raise the staple driving mechanism 4 from the cross portion 28 of the base member.

The anvil 6 is preferably slidably mounted on the base adjacent one end of the cross portion 28, whereby said anvil may be moved to align different shaped grooves 7 with the legs of the staple driven by the plunger 5.

In operating a stapling machine constructed as described, the latch 11 is released to permit raising of the cover 9 and insertion of a conventional clip of staples into the body portion 8. The cover 9 is then closed and latched in position, the spring 40 holds the arm 3 at the upper limit of its movement whereby the bottom of the body portion 8 is spaced above the upper wall 29 of the base. Sheets of material, for example a sheaf of book leaves 43, is inserted between the body member 8 and the base with the fold line 44 of said leaves in alignment with the staple under the plunger 5. As illustrated in Fig. 1, the width of the leaves may be unlimited as there is no projection or other obstruction between the body 8 and the base. The arm 3 is then pivoted downwardly on the pin 17 to engage the bottom of the body member 8 with the upper surface of the book leaves, then by striking the plunger 5 with the hand to move said plunger downwardly, the staple is driven into the fold line of the leaves whereby the legs of the staple are driven through the leaves and the ends bent by the grooves 7 in the anvil 6. The staple may be spaced from the ends 45 of the sheets, the only limitation of said distance being the length of the arm 3 whereby the greatest distance from the end edges is when said edges 45 are engaged with the ears 19. Obviously the staples may be driven adjacent an edge of paper or as otherwise usually positioned by arranging said edges under the plunger portion as desired.

Since the pivoted movement of the arm tends to tilt the staple driving mechanism 4 relative to the base it is desirable to move the pivot of the arm 3 relative to the base whereby the bottom of the body member 8 is parallel to the surface 29 to accommodate the particular thicknesses of materials being stapled. This is accomplished by turning the screw 20 to move the arm 3 relative to the block 13, for example, to raise said arm for stapling a body of sheets having considerable thickness. The raising of the arm relative to the block, in effect, raises the bottom of the arm and body member from the upper surface 29 of the base whereby the bottom of the body member 8 will lie flat on the sheets being stapled.

It is believed obvious that I have provided a stapling machine which may be used for stapling various sized articles, for example leaves of a book along fold lines thereof whereby the leaves may be of unlimited width.

What I claim and desire to secure by Letters Patent is:

1. In a stapling device, a substantially T-shaped base, an anvil adjacent one end of the cross of the T-shaped base, a staple driving mechanism spaced above and in alignment with the cross of the T-shaped base, the discharge of said staple driving mechanism being in alignment with the anvil, and means on the staple driving mechanism extending laterally thereof and having a free end pivoted to the base.

2. In a stapling device, a substantially T-shaped base, an anvil adjacent one end of the cross of the T-shaped base, a staple driving mechanism spaced above and in alignment with the cross of the T-shaped base, the discharge of said staple driving mechanism being in alignment with the anvil, and means on the staple driving mechanism extending laterally thereof and having a free end pivoted to the base, the axis of the pivot being parallel to the staple driving mechanism.

3. In combination with a staple driving mechanism, an arm rigidly attached to said staple driving mechanism and extending laterally thereof, a substantially T-shaped base member, the cross and leg thereof underlying the staple driving mechanism and arm respectively, an anvil mounted on the base in position to receive ends of staples driven from the staple driving mechanism, and means adjacent the free end of the leg of the base member for pivotally mounting the free end of the arm.

4. In combination with a staple driving mechanism, an arm rigidly attached to said staple driving mechanism and extending laterally thereof, a substantially T-shaped base member, the cross and leg portions thereof underlying the staple driving mechanism and arm respectively, an anvil mounted on the base and positioned to receive ends of the staples driven from the staple driving mechanism, means for pivotally mounting the free end of the arm adjacent the end of the leg of the base, and resilient means having connection with the base and arm for pivoting the arm upwardly relative to the base.

5. In combination with a staple driving mechanism, an arm rigidly attached to said staple driving mechanism and extending laterally thereof, a substantially T-shaped base member, the cross and leg portions thereof underlying the staple driving mechanism and arm respectively, an anvil mounted on the base and positioned to receive ends of the staples driven from the staple driving mechanism, a pivot pin on the base ad-

jacent the end of the leg thereof, said pin being parallel to the cross portion of the base member, a bearing mounted in the free end of the arm for pivotally mounting said arm on the pivot pin, and resilient means having connection with the base and arm for pivoting the arm upwardly relative to the base.

6. In combination with a staple driving mechanism, an arm rigidly attached to said staple driving mechanism and extending laterally thereof, a substantially T-shaped base member, the cross and leg thereof underlying the staple driving mechanism and arm respectively, an anvil mounted on the base in position to receive ends of staples driven from the staple driving mechanism, a pivot pin on the base adjacent the free end of the leg thereof, said pin being parallel to the cross portion of the base member, a bearing adjustably mounted in the free end of the arm for pivotally mounting said arm on the pivot pin, means for adjusting the position of the bearing

in the arm for changing the spacing between the staple driving mechanism and anvil when in parallel relation, and resilient means having connection with the base and arm for pivoting the arm upwardly relative to the base.

DORSEY D. CORWIN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
389,922	Delagneau	Sept. 25, 1888
2,033,049	Pankonin	Mar. 3, 1936

FOREIGN PATENTS

Number	Country	Date
280,058	Great Britain	Nov. 10, 1927
375,205	Italy	Sept. 27, 1939