E. T. ALLAN.

STAPLING MACHINE.

APPLICATION FILED DEC. 16, 1914.

1,173,697.

Patented Feb. 29, 1916.

2 SHEETS—SHEET 1.

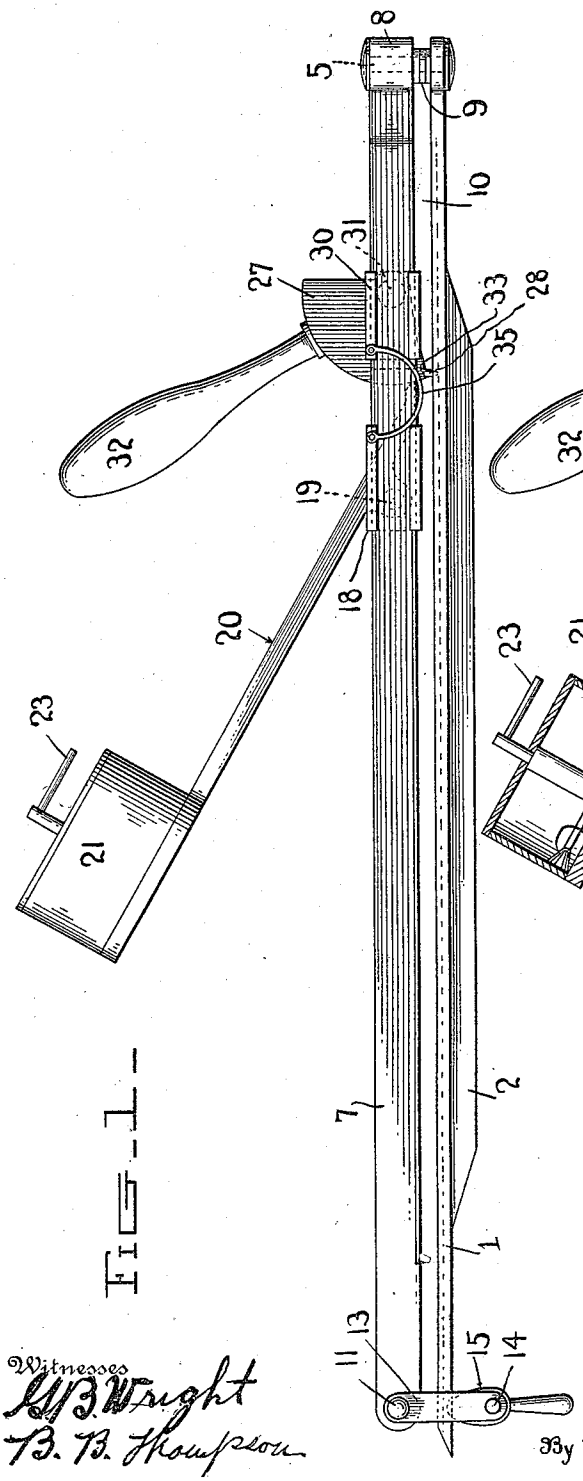


FIG. 1.

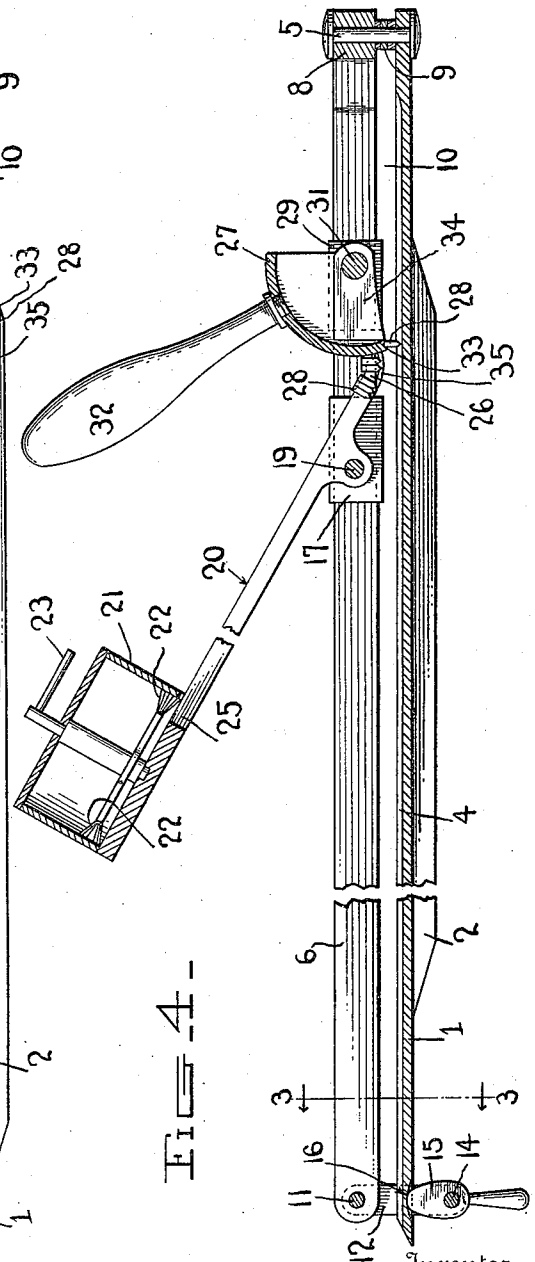


FIG. 4.

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2 SHEETS—SHEET 2.

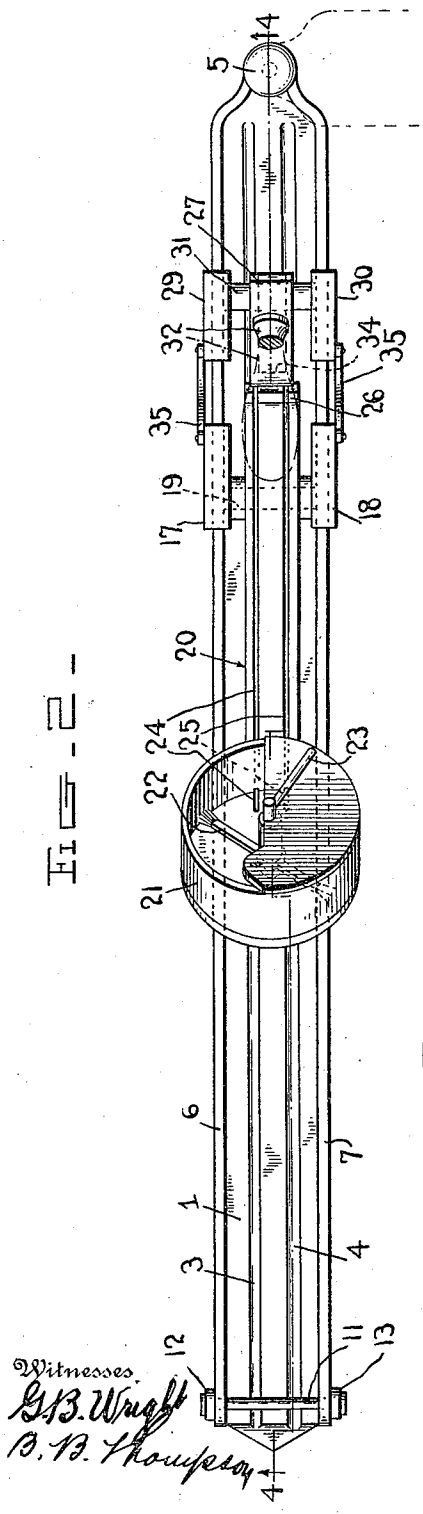


FIG. 2.

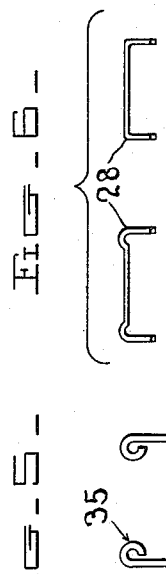


FIG. 6.

FIG. 5.

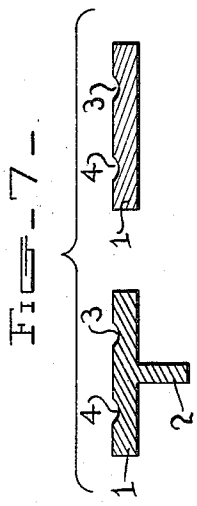


FIG. 7.

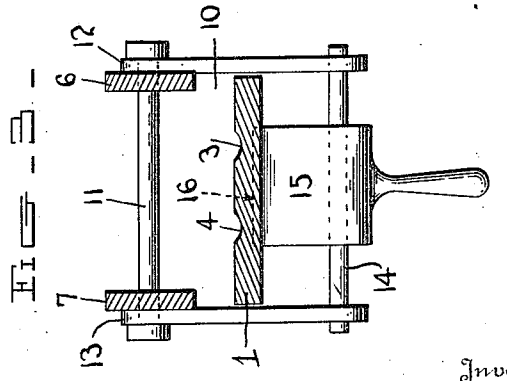


FIG. 3.

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UNITED STATES PATENT OFFICE.

EDWARD THOMAS ALLAN, OF CINCINNATI, OHIO.

STAPLING-MACHINE.

1,173,697. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed December 16, 1914. Serial No. 877,523.

To all whom it may concern:

Be it known that I, EDWARD T. ALLAN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Stapling-Machines, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

My invention relates to new and useful improvements in stapling machines for paper or fiber shipping cases.

The object of my invention is to provide a stapling machine of this character in which an anvil is employed to pass under the cover of a shipping case and upon which the staples are clenched to more securely fasten the case closed and at the same time to prevent injury to the contents of the case.

Another object of my invention is to provide an automatic staple feeding mechanism for the machine, whereby the staples are automatically brought into position to be clenched on the anvil.

A still further object of my invention is to provide a simple, cheap and effective machine of this character, in which the anvil is removably supported so that it can be readily inserted in the shipping case under the cover and yet provide a machine which is absolutely self-contained.

In the accompanying drawings:—Figure 1 is a side elevation of my improved stapling machine; Fig. 2 is a top plan view of Fig. 1, showing the anvil, in dotted lines, swung around; Fig. 3 is a transverse vertical sectional view taken on the line 3—3 of Fig. 4; Fig. 4 is a longitudinal sectional view taken on the line 4—4 of Fig. 2; Fig. 5 is an end view of the U-shaped spring used for holding the hammer carrying block and the staple carrying block together; Fig. 6 is an end view of two different forms of staples used; and Fig. 7 is a sectional view of the two forms of anvils employed.

Referring now to the drawings, 1 represents the anvil, which, as shown, is provided on its lower face with strengthening ribs 2, and having in its upper face the grooves 3 and 4 for the purpose of turning the staple, which will be hereinafter more fully described.

The forward end of the anvil 1 is provided with an upwardly extending stud or bolt 5, upon which is mounted the side rails 6 and 7, which are formed of a single piece having an eye 8 surrounding the bolt. In order to support the side rails 6 and 7 above the anvil, a series of washers 9 are placed upon the anvil surrounding the bolt and the space 10 formed by these washers between the anvil 1 and the side rails 6 and 7 allows for the cover of the shipping case, as will be later described.

In order to hold the side rails 6 and 7 in a position parallel with the anvil and firmly clamped thereto, the side rails are provided with a bolt 11, upon each end of which, outside of the side rails 6 and 7, are mounted links 12 and 13, which are free to swing on the bolt 11. Pivotally mounted near the lower end of the links 12 and 13 is a shaft 14, carrying the cam 15, which is adapted to enter the recess 16 in the lower face of the anvil and clamp the side rails in their proper position in respect to the anvil.

Slidably mounted upon the side rails 6 and 7 are blocks 17 and 18 connected together by a transverse bolt 19, upon which is mounted the run-way 20 for the staples. This run-way is adapted to oscillate upon the bolt 19, so as to cause the proper feeding of the staples to the proper point, which will be hereinafter described. Carried by the upper end of the staple run-way 20 is a circular box 21, having a rotary brush 22 therein and operated by the handle 23, by means of which the staples are agitated for the purpose of causing them to enter the two slots 24 and 25 in the bottom of the box or hopper 21 and travel down through the run-way, as fully shown in Fig. 2 of the drawings. The lower end of the run-way 20 is provided with a horizontally arranged portion 26 which causes the staple to assume a vertical position against the hammer 27. The staple 28, as shown in Fig. 6, is made of flat metal of a thickness slightly less than the slots 24 and 25, so as to easily slide down through the slots by gravity and travel down the run-way, but are of such a width that they can not twist therein and thus prevent them binding against the sides of the slots during their downward movement.

Mounted upon the side rails 6 and 7 are the blocks 29 and 30 connected by the bolt or shaft 31, upon which the hammer 27 is adapted to oscillate. The hammer 27 is provided with a handle 32, by means of

which it is rocked upon the shaft 31. The inner and lower end of the handle is provided with a circular groove 33 adapted to receive the upper end of the staple and hold it in a vertical position while it is being forced through the material of which the shipping case is formed. Between the blocks 29 and 30, and carried thereby, is arranged a stop block 34, against which the staple rests while being forced downwardly by the hammer 27.

In order to hold the blocks 17 and 18, carrying the staple feeding mechanism and the blocks 29 and 30, carrying the hammer, in their spaced relation, on the side rails 6 and 7, I employ a U-shaped spring 35, which provides for the proper elasticity between the blocks to permit the forcing through of the staple. The end of the anvil opposite that carrying the vertically disposed bolt, is sharpened in order that it may be forced through the shipping case in the event that the shipping case is not provided with the openings for this purpose.

The operation is as follows: The box 21 is filled, or partially filled, with staples and the cam 15 is swung downwardly, so as to release the two links 12 and 13 carried by the side rails 6 and 7, and then swung upwardly around the pointed end of the anvil. The anvil is then swung to one side, as shown in dotted lines in Fig. 2, and is forced through the sides of the shipping case, and preferably through the openings formed therein; but if the shipping case is not provided with such openings, the pointed end of the anvil is forced through the material of the case. When this has been done, the top of the box rests upon the upper face of the anvil and the side rails are then swung around parallel with and above the anvil, as shown in full lines in Fig. 2 of the drawings. In this position the outer pointed end of the anvil is beyond one side wall of the shipping case and the pivot carried thereby is on the outside of the other side wall of the shipping case.

The links 12 and 13 are swung downwardly, bringing the cam 15 below the anvil opposite the circular groove or cut-away portion 16. The cam 15 is then swung downwardly, which draws the side rails 6 and 7 through the medium of the links 12 and 13 downwardly and clamps the side rails upon the cover of the box, the said cover filling the space 10 between the anvil and the side rails.

The hammer 27 is moved upon the side rails, carrying with it, through the medium of the spring 35, the blocks 17 and 18 of the staple filling mechanism to a position adjacent the vertical bolt, or adjacent the side wall of the shipping case. By rocking the hammer 27 and turning the handle 23, the staples are caused to travel downwardly through the slots 24 and 25 to the foot 26 and assume a vertical position against the hammer 27. By a slight rocking of the hammer 27, through the handle 32, the staple is caused to move horizontally against the block 34 and by swinging the handle forward in the direction of the arrow in Fig. 1, the groove 33, at the lower end of the hammer, engages the staple and forces it downwardly through the top of the box, the prongs of the staple entering the grooves 3 and 4 in the anvil and being turned outwardly and firmly clenched.

In the drawings, I have shown the anvil 1 having a strengthening rib 2 on its lower face, but it will be understood that an anvil having a perfectly flat lower face, such as shown in Fig. 6 of the drawings, could be employed. In inserting the anvil, as heretofore described, it is inserted below the cover of the box but above the contents thereof on which it rests during the stapling operation.

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

1. A stapling machine of the character described comprising an anvil having one end pointed, a staple driving mechanism pivotally mounted on the opposite end of the anvil and adapted to be swung around out of alinement therewith, and means for clamping the anvil in alinement with the staple driving mechanism.

2. A stapling machine of the character described comprising an anvil having a pointed end, a vertically disposed bolt carried by the opposite end, a staple driving mechanism pivotally mounted upon said bolt and adapted to be swung out of alinement with the anvil, and means for clamping the anvil to the staple driving mechanism in alinement therewith.

3. A stapling machine of the character described comprising an anvil having a vertically disposed bolt at one end, side rails pivotally mounted upon said bolt, means for clamping the side rails to the opposite end of the anvil, a staple feeding mechanism carried by the side rails and movable thereon, and a hammer carried by the side rails and movable thereon, substantially as shown and described.

4. A stapling machine of the character described comprising an anvil, a bolt carried by one end of the anvil, side rails pivotally mounted upon the said bolt, a mechanism slidably carried by the side rails and having means for automatically feeding the staples to a point between the side rails, and a hammer movable on the side rails adjacent the staple feeding means and adapted to drive the staples downwardly, substantially as shown and described.

5. A stapling machine comprising an an-

vil, a bolt carried by one end of the anvil, side rails pivotally mounted upon the bolt, links carried by the opposite ends of the side rails and having a cam adapted to engage the lower face of the anvil for clamping the anvil and side rails together, a movable member carried by the side rails and having an upwardly inclined run-way carrying a staple receptacle at its upper end, to guide the staples down between the side rails, and a hammer carried by said movable member and adapted to force the staples downwardly as they leave the run-way.

6. A stapling machine comprising an anvil having a bolt at one end, side rails pivotally mounted upon the bolt and adapted to be swung out of alinement with the anvil, links pivotally carried by the opposite ends of the side rails, a sliding member longitudinally movable on the side rails, a cam carried by the lower end of the links adapted to pass under the anvil and lock the side rails to the anvil in alinement with the sliding member longitudinally movable on the side rails, an upwardly extending run-way carried by the sliding member, a staple receptacle carried by the upper end of the run-way, said run-way having in its upper face parallel slots adapted to receive the staples from the receptacle and convey them downwardly between the side rails, a block movable on the side rails adjacent the lower end of the run-way and flexibly connected to the sliding member supporting the run-way, and a hammer carried by the block and having a recess adapted to receive the upper end of the staples and force the same downwardly as it leaves the run-way.

7. A stapling machine of the character described comprising an anvil, side rails pivotally mounted upon one end of the anvil, means for locking the opposite ends of the side rails to the anvil, a member slidable on the side rails and having an upwardly inclined run-way, a staple receptacle carried by the upper end of the run-way, an agitator within the receptacle, the lower end of the run-way having a horizontally arranged portion adapted to support the staple in a vertical position, a block supported by the side rails and flexibly connected to the member sliding on the run-way, and a hammer carried by the block and having a recess adapted to receive the upper end of the staple for forcing it downwardly as it leaves the run-way.

8. A stapling machine of the character described comprising an anvil provided with clenching grooves, side rails pivotally mounted upon one end of the anvil, means for clamping the side rails to said anvil, a sliding member carried by the side rails and having a run-way provided with parallel slots adapted to feed the staples downwardly, said run-way having a horizontal portion adapted to support the staples in a vertical position, a block carried by the side rails and flexibly connected to the member carrying the run-way, a stop carried by the block, and a hammer pivoted within the block and having a recess beyond the stop and adapted to receive the upper end of the staple as it is held in a vertical position against the stop and force it downwardly causing the ends thereof to enter the grooves in the anvil to clench the same, substantially as shown and described.

In testimony whereof, I affix my signature, in the presence of two witnesses.

EDWARD THOMAS ALLAN.

Witnesses:
CHAS. J. BELL,
F. E. BURNETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."