H. WEBER.

CLENCHING AND GUIDING MECHANISM FOR STAPLING MACHINES.

APPLICATION FILED OCT. 15, 1915.

1,181,276.

Patented May 2, 1916.

2 SHEETS—SHEET 1.

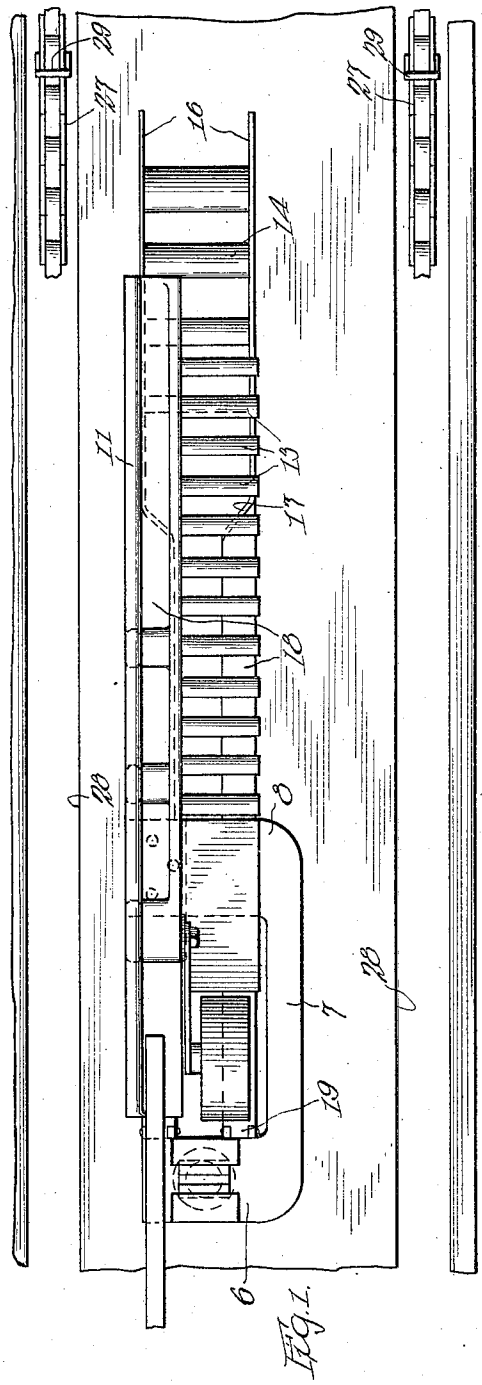


Fig. 1.

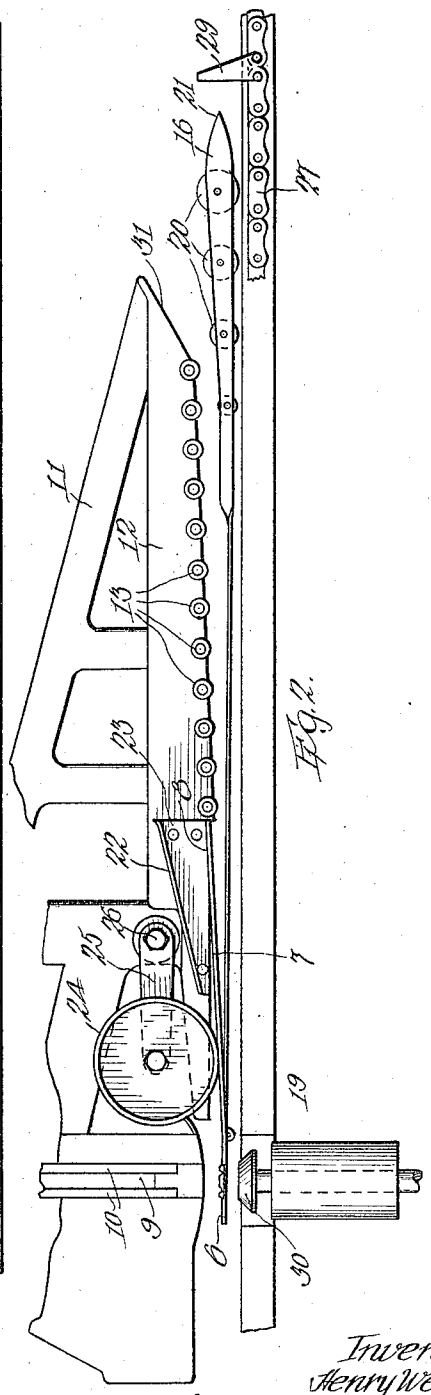


Fig. 2.

Witness:
Leo. L. DuMais.

Inventor.
Henry Weber.
by
Brown Kiesel & Sprague
Attys.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

H. WEBER.

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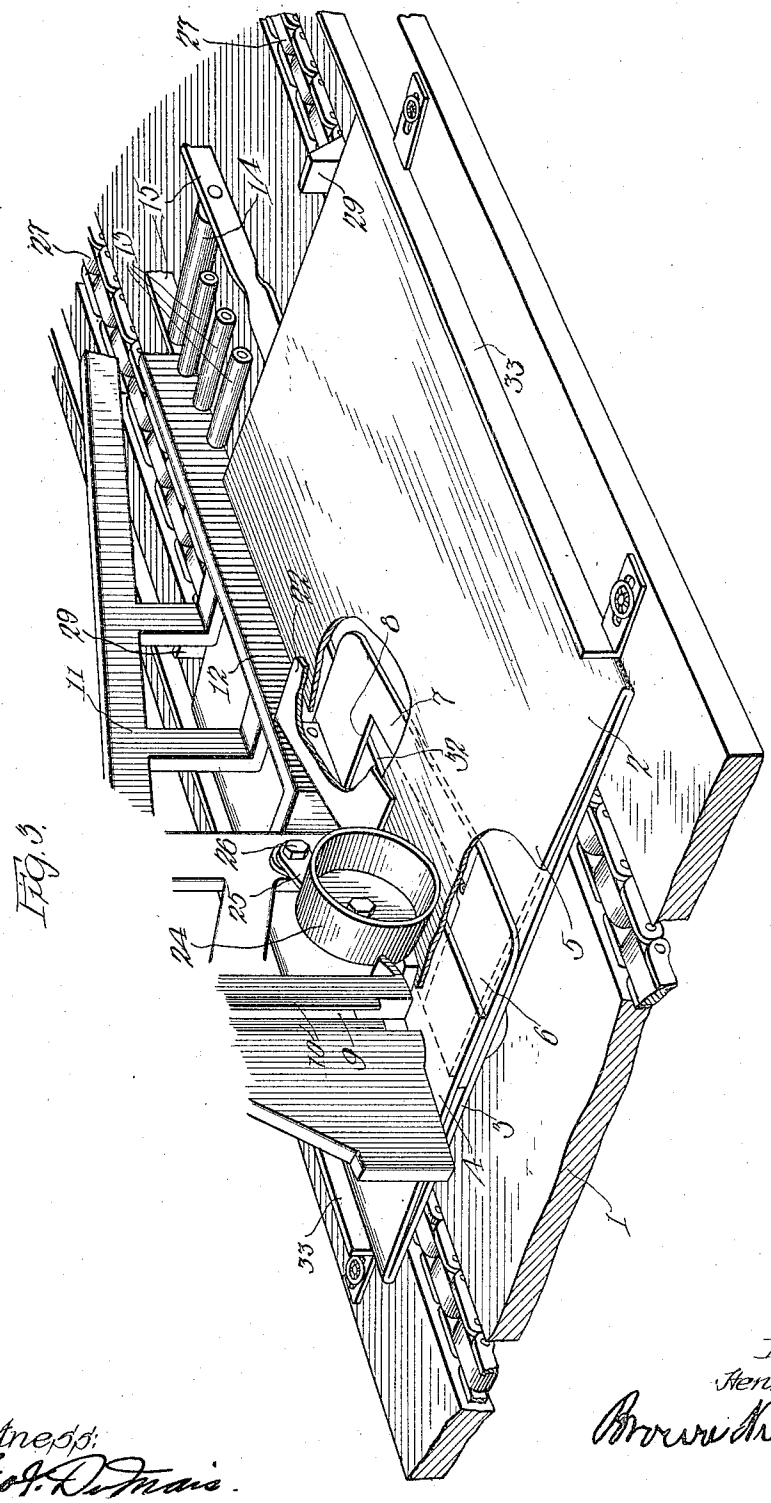


Fig. 5.

Witnesses:
Leo. J. DuMais.

Inventor:
Henry Weber:
by Brown Brosseau Sprinkle
Attys.

UNITED STATES PATENT OFFICE.

HENRY WEBER, OF CHICAGO, ILLINOIS, ASSIGNOR TO LATHAM MACHINERY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CLENCHING AND GUIDING MECHANISM FOR STAPLING-MACHINES.

1,181,276. Specification of Letters Patent. Patented May 2, 1916.

Application filed October 15, 1915. Serial No. 55,915.

To all whom it may concern:

Be it known that I, HENRY WEBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Clenching and Guiding Mechanism for Stapling-Machines, of which the following is a specification.

This invention relates to stapling machines such as are used for forming heavy paper cartons and other devices, and is especially adapted for fastening together the over-lapping flaps of a carton blank to form continuous side walls for a carton.

The invention consists of a novel combination and arrangement of parts set forth in the following specification, shown in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings—Figure 1 is a fragmentary plan view of a portion of a carton-forming machine with the present invention applied thereto. Fig. 2 is a fragmentary side elevation of a portion of a carton-forming machine showing the present invention attached thereto; and Fig. 3 is a fragmentary perspective of the mechanism shown in Figs. 1 and 2.

Referring to the above figures, the numeral 1 represents the table top of a carton-forming machine.

The numeral 2 represents a carton in the process of formation. The carton is folded as shown in Fig. 3 of the drawings, and the lower continuous fold 3 is placed flat upon the table top and the upper flaps 4 and 5 are folded over on top of the lower fold 3 with portions of the margins of the flaps over-lapping each other. To form a carton these over-lapping margins must be fastened together so that the complete device, when removed from the machine and expanded, will form continuous side walls for the carton.

The margins are secured together by driving staples inwardly through the over-lapping portions of the flaps and in order to prevent these staples from piercing the lower fold 3 of the carton, and to clench them on the inner side of the lower flap 4, it is necessary to support a clencher plate 6 within the carton as it is being formed. This clencher plate must be so supported that it will not interfere with the continuous passage of cartons through the machine. To permit this free passage of the cartons, the plate 6 should have its lateral edges and its upper and lower surfaces entirely free from obstruction. To accomplish this result in the present invention, the clencher comprises a supporting strip 7 made of a comparatively thin sheet of metal and extending longitudinally of the stapling machines. The clencher plate 6 is an integral portion with the strip 7 and extends laterally from the rear end of the extends laterally from the strip at the forward end thereof. A second portion 8 extends laterally from the rear end of the strip 7 in the same direction as the plate 6. The complete clenching device therefore, as shown in Fig. 1, consists of an elongated plate with the central portion largely removed, leaving a connecting strip only along one side of the plate.

In the drawing, the lower portion only of the stapling head is shown. The stapling head itself may be of any approved construction and in the form represented in the drawing, a reciprocating plunger 9 is carried in guides 10 and is arranged to force staples downwardly into the work directly beneath, in a manner well-known in the art. Secured to the stapling head, and extending therefrom in a direction longitudinally of the table, and toward the end of the table from which cartons are fed to the machine, is a bracket 11 which has a lower longitudinal bar 12 carrying laterally projecting rollers 13. Near the end of the bracket 11 adjacent the stapling head, is secured to the under side thereof, the laterally projecting portion 8 of the clencher. As shown in Fig. 2, the lower portion of the bracket is cut out to form a slightly inclined supporting surface, so that when the clencher is secured in place the strip 7 will be slightly inclined downwardly toward the clenching end thereof. At the end of the strip 7 where it joins the clencher plate 6, a slight bend is formed in the strip to compensate for its inclination and to bring the plate 6 into horizontal position beneath the clencher head.

To assist in properly guiding the flaps of the carton into position to be secured together, an automatic flap separator 14 is provided, which comprises a pair of metal straps 15 having the rear portions 16 thereof lying in vertical planes and being twisted through an angle of 90°, (as shown at 17 in Fig. 1) to bring the forward portions 18 into a horizontal plane. These straps are spaced apart and have their forward ends hinged at 19 to the rear edge of the clencher plate 6. The rear portions 16 of the straps 15 have a series of rollers 20 extending from one of the straps to the other and journaled for rotation therein. The extreme rear ends of the straps 15 are pointed, as shown at 21, to enable them readily to enter between the lower fold 3 of the carton and the over-lying flaps.

A guide plate 22 is secured to the bar 12 of the bracket 11 and extends outwardly therefrom as shown in Figs. 2 and 3, over the portion 8 of the clencher. This guide plate 22 has an angular portion 23 which is secured to the side of the bar 12, by any suitable means, for holding the plate in position. The plate is inclined downwardly toward the front of the machine in order to direct the uppermost flap of the carton downwardly into position beneath the stapling head. A roll 24 is carried by an arm 25 pivoted to the bracket 11 by a pivot bolt 26. The roll 24 is connected by mechanism not shown, with the starting clutch for the stapling head, in order that the stapling head may be automatically thrown into operation whenever a carton is fed beneath this roll.

The cartons are fed to the stapling mechanism by endless chains 27 traveling in grooves 28 in the top of the stapling machine table. The chains 27 are provided with a series of upstanding lugs 29 arranged to bear against the rear portions of the cartons as they are fed to the machine. The table also carried adjustable guides 33 to position the cartons beneath the stapling head. A suitable support 30 for the staple clenching portions of the machine is provided.

The operation of the device is as follows: A carton folded, as shown in Fig. 3, is placed on the portion of the table top back of the automatic flap separator 14, and between lateral guides, not shown. As soon as the chains 27 have traveled a sufficient distance to bring a pair of stops 29 into contact with the rear edge of the carton, it is carried forwardly with the chains into position to be operated upon. As the carton is moved forwardly it is first met by the pointed portions 21 of the automatic flap separator 14. These portions enter between the lower fold 3 and the upper over-lapping flaps 4 and 5. In this way the flaps are moved forwardly on top of the separator 14. When the forward edge of the flap 4 reaches the end of the bracket 11, the beveled portion 31 of this bracket presses the front edge of this flap downwardly beneath the lower surface of the bar 12. The flap 5, however, does not extend as far as the bracket 11, and hence it is not pressed downwardly, but this flap takes its position on top of the rollers 13. The carton continues to move in this position until the forward edge of the flap 5 contacts with the guide plate 22, when it is presed downwardly and directed beneath the wheel 24. In this position, the flap 5 raises the wheel 24 and automatically starts the stapling mechanism to operating in a manner well-known in the art. The margin of the flap 4 is guided beneath the supporting portion 8 of the clencher plate by the lower edge of the bracket 11 beneath which the flap is traveling. As shown in Fig. 3, the extreme edge 32 of the flap 4 does not extend far enough to reach the strip 7 of the clencher. As the carton is moved forwardly, therefore, the front portion of the flap 4 is free to be guided on to the upper surface of the clencher plate 6 by the forward portions 18 of the automatic flap separator 14, which are hinged to the rear edge of the plate 6 and which support the flap 4 on their upper surfaces. In this way the overlapping portions of both flaps 4 and 5 are brought together on the upper surface of the clencher plate 6 in a position directly beneath the stapling head where they are secured together by staples forced downwardly from the stapling head and firmly clenched on the inner surface of the flap 4 by the clencher plate 6.

It will be seen that the construction described provides a simple means for supporting a clencher plate within the interior of the carton blank and that there are no upwardly or downwardly projecting portions secured to the clencher plate, which is thus left with both its upper and lower surfaces and all of its lateral edges entirely unobstructed, so that the cartons may be fed continuously through the machine.

What I claim as new, and desire to secure by Letters Patent of the United States, is:—

1. A clencher for a stapling machine, comprising a relatively long narrow strip of sheet material having projecting plates at each end thereof, extending laterally from the same edge of said strip and substantially in the same plane therewith and means secured to one of said projecting plates for supporting said strip and the other projecting plate.

2. A clencher for a stapling machine, comprising a strip of sheet material having projecting plates at each end thereof extending laterally from the same edge of said strip substantially in the same plane therewith,

and means secured to the upper surface of one of said lateral projections for supporting said clencher plate.

3. A clencher for a stapling machine, comprising a strip of sheet material having projecting plates at each end thereof extending laterally from the same edge of said strip and substantially in the same plane therewith, and means for supporting said clencher plate from one of said lateral projections in a slightly inclined position to bring the other lateral projection out of horizontal alinement with said first-mentioned projection.

4. In combination, staple driving mechanism, a clencher plate, means for supporting said clencher plate beneath said staple driving mechanism, and a guide member hinged to said clencher plate at the end thereof adjacent said staple-driving mechanism.

5. In combination, a stapling head, a bracket secured to said head, a clencher plate supported by said bracket and positioned beneath said stapling head, and a pair of bars hinged to said clencher plate and adapted to guide work to be stapled onto said clencher plate.

6. In combination, a stapling head, means for feeding carton blanks having over-lapping flaps to said stapling head, a clencher plate, and a guide hinged to said clencher plate and arranged to automatically separate said over-lapping flaps from the other portion of said carton and to direct one of said over-lapping flaps onto said clencher plate.

7. In combination, a stapling head, a bracket secured to said stapling head, a lateral extension projecting from said bracket, a support carried at the outer edge of said extension and extending parallel to the said bracket toward said stapling head, and inclined downwardly toward said head, and a clencher plate secured to said support at the end thereof opposite said lateral extension and on the same side of said support as said extension and positioned beneath said clencher head.

8. In combination, a stapling head, means for feeding cartons to said head, a bracket secured to said head and extending parallel with the direction of travel of said cartons, a clencher plate supported by said bracket, rollers secured to said bracket for guiding one flap of a carton over the support for said clencher plate, and means hinged to said clencher plate for guiding another flap of said carton beneath the support for said clencher plate, said guiding means being arranged to bring both flaps of said carton together on top of said clencher plate and beneath said stapling head.

9. In a stapling machine, a stapling head, means for feeding cartons to said stapling head, a bracket extending from said stapling head in a direction parallel with the direction of movement of said cartons, a clencher plate, a support for said clencher plate secured to said bracket and offset therefrom, rollers carried by said bracket for directing a flap of said carton over the support for said clencher plate, a supplemental guide for directing said flap downwardly to a position on top of said clencher plate, and means for directing another flap of said carton beneath a portion of the support for said clencher plate and at one side of another portion thereof, and onto the upper surface of said clencher plate.

10. In a stapling machine, a clencher plate and an automatic flap separator hinged to said clencher plate and comprising a pair of bars having the portions thereof adjacent said plate in a horizontal plane and having the remaining portions thereof turned to lie in vertical planes, and rollers journaled between the portions of said bars lying in vertical planes.

11. In combination, a stapling head, means for feeding cartons to said head, a support for said cartons, a clencher plate positioned between said head and said support, a bracket extending from said head in a direction parallel with the direction of movement of said cartons, a supporting plate secured to the lower side of said bracket, and a narrow plate offset from said bracket and connecting said clencher plate with said support, leaving an open space between the adjacent edges of said support and said clencher plate, whereby an edge of a carton flap may pass beneath said support and over said clencher plate.

12. In a stapling machine, a clencher comprising a continuous elongated plate having a part cut away at one of the elongated sides thereof, the arrangement being such that a marginal portion of material to be operated upon may be fed continuously beneath a part of said plate and above another part thereof and means for supporting said plate in a manner to hold the unremoved portions of said side on opposite sides of the path of movement of the said marginal portion of the material.

13. In a stapling machine, a clencher comprising a continuous elongated plate having a part cut away from the intermediate portion of one of the elongated sides thereof to form a notch in said plate extending longitudinally of said side, and means for supporting said plate from the uncut portion at one end of the plate, leaving the uncut portion at the opposite end unobstructed.

14. In a stapling machine, a clencher comprising a continuous plate having a part cut away from the intermediate portion of one side thereof, to form a notch, and means for supporting said clencher in an inclined posi-

tion by the uncut portion at one end of said plate and from above said portion, leaving the uncut portion at the opposite end of said plate unobstructed and lower than the supporting portion.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of October A. D. 1915.

HENRY WEBER.

Witnesses:
THOS. COLSON,
KENT W. WONNELL.

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