F. A. FAHLE.

BOX BLANK MACHINE.

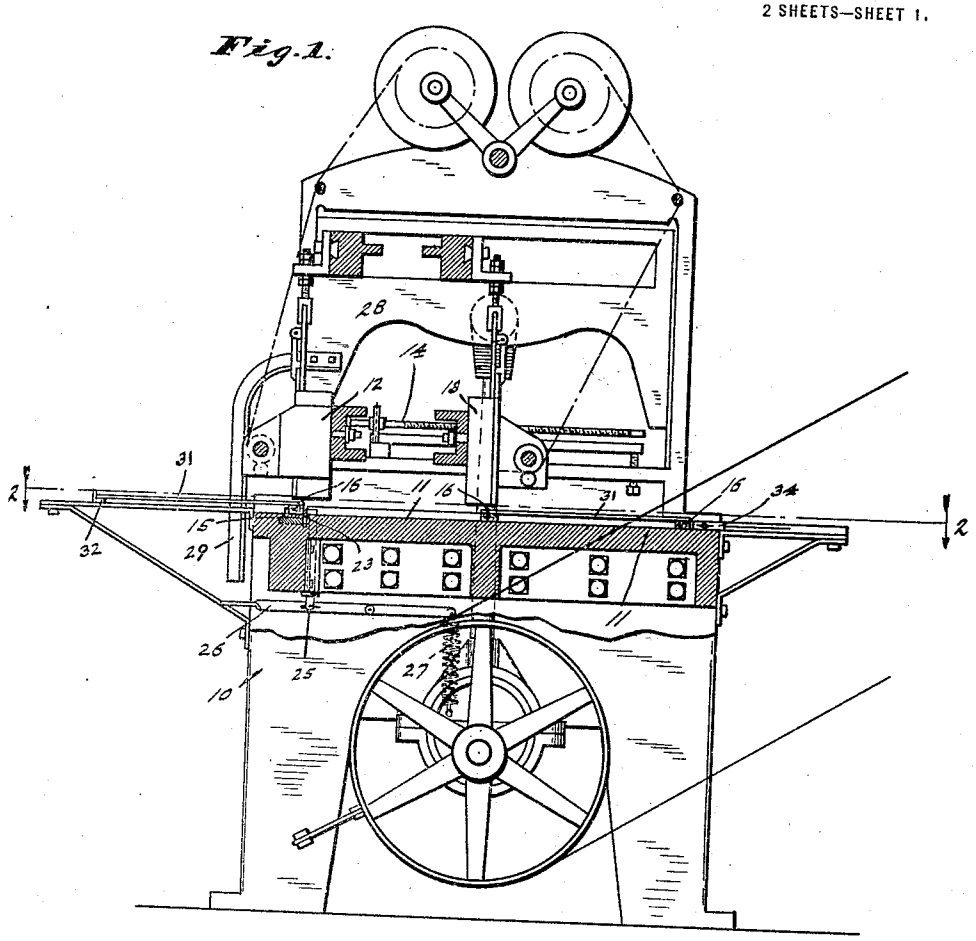
APPLICATION FILED DEC. 4, 1913.

1,200,476.

Patented Oct. 10, 1916.

2 SHEETS—SHEET 1.

Fig. 1.



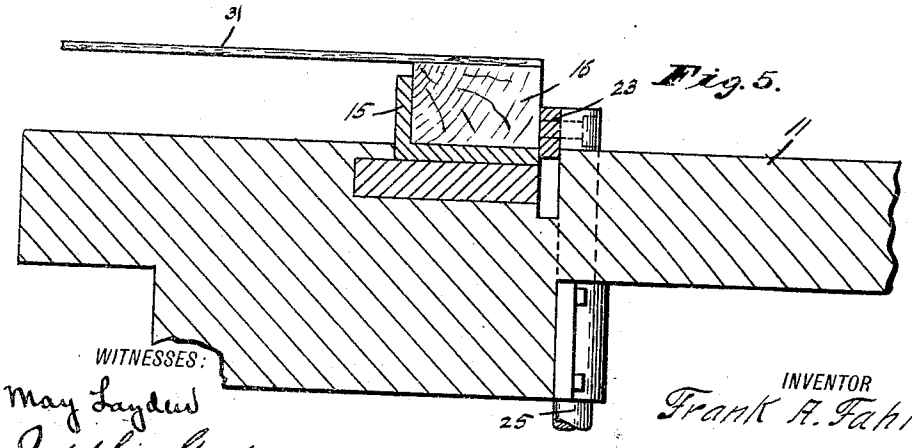


Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 2.

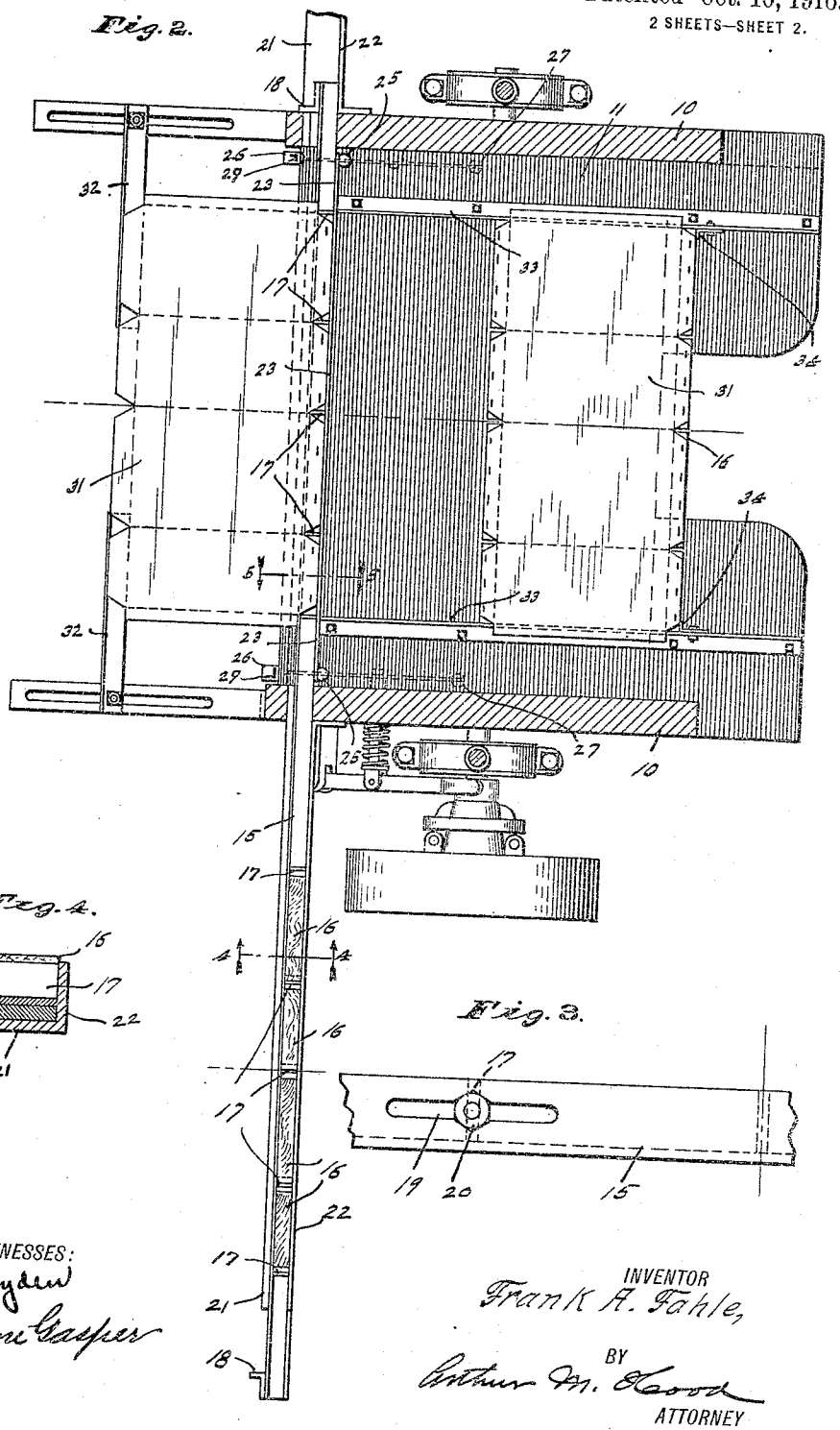


Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANK A. FAHLE, OF INDIANAPOLIS, INDIANA.

BOX-BLANK MACHINE.

1,200,476. Specification of Letters Patent. Patented Oct. 10, 1916.

Application filed December 4, 1913. Serial No. 804,553.

To all whom it may concern:

Be it known that I, FRANK A. FAHLE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Box-Blank Machine, of which the following is a specification.

The object of my invention is to produce a machine for making box blanks comprising cleats and sheet material, in which the blank forming material is fed through the stapling plane or planes transversely of the cleats.

The accompanying drawings illustrate my invention.

Figure 1 is a central vertical section of the machine; Fig. 2 a section on line 2—2 of Fig. 1; Fig. 3 a fragmentary detail of a portion of the cleat holder; Fig. 4 a section on line 4—4 of Fig. 2; and Fig. 5 an enlarged fragmentary sectional detail on line 5—5 of Fig. 2.

In the drawings, 10 indicates the main body of the machine provided with a work table (or series of anvils) 11 over which are arranged stapling mechanisms 12 and 13 which, in the form of machine shown in the drawings, are arranged in two parallel series in order that the staples may be driven closer together than the lateral dimension of a single stapling mechanism. These stapling mechanisms 12 and 13 may be of any desired and well-known form and one series is laterally adjustable relatively to the other by means of a suitable adjusting screw or screws 14.

Arranged beneath the stapling mechanisms 12 and slidable laterally relative to the work table, and thus slidable in the stapling plane of the series of stapling mechanisms 12, is a cleat holder 15 which is preferably an L-shaped member, so far as its cleat-receiving portion is concerned, comprising a horizontal and forwardly projecting portion and a vertical portion erected at the rear edge of its horizontal portion, as is clearly shown in Fig. 5, thus forming a crotch within which the cleats 16 may be arranged. The cleat holder 15 has a length equal to fully twice the width of the machine and at opposite ends I arrange within the cleat holder a series of cleat spacers 17. There are thus two groups of spacers 17 and the middle one is preferably a fixed member so located with relation to a stop 18 arranged at each end of the holder that when the holder is fully projected to one side or the other so that one of the stops engages the main frame of the machine, this middle spacer 17 of one of the groups will stand at the middle of the machine. The other spacers 17 of each group are adjustable lengthwise of the cleat holder by any suitable means, such, for instance, as slot 19 and nut 20 (Fig. 3).

The projected ends of the cleat holder are supported by a support 21 which is conveniently an L-shaped support presented rearwardly so that its vertical flange 22 will complement the open front end of the holder so as to form a channel in which the cleats 16 will lie without possibility of accidental displacement.

Projectable up through the work table 11 is a guard bar 23 (Fig. 5) which is arranged just in front of the cleat holder so as to practically bridge the space between the inner ends of the two guard flanges 22, 22. This guard bar 23 is carried by pins 25, 25 which are projected down through the table and attached to their lower ends to levers 26, 26 upon which springs 27, 27 act to normally project the bar 23 upwardly to the position shown in Fig. 5. Fingers 29 carried by the reciprocating head 28 which reciprocates the reciprocating members of the staple forming and driving mechanism, engage levers 26 to withdraw bar 23 from in front of the cleats 16 and thus hold the guard bar 23 down long enough to permit the staple blank to be moved forwardly through the machine.

The machine shown in the drawings is intended to be controlled by four operators. Two of these operators will stand upon opposite sides of the machine in position to place cleats 16 in the holder 22 as it is alternately projected from one side or the other of the machine and, in due season, to project the cleat holder to the opposite side so as to bring the cleats placed in the cleat holder to position to receive the staples. The other two operators stand one at the receiving end of the machine and the other at the delivering end of the machine and as soon as cleats are projected to stapling position, the operator at the initial end of the machine places the sheet material 31 in position, its forward edge resting upon the cleats which have just been projected to place and its rear edge resting upon the gage supports 32 which are so supported as to be adjustable toward and from the stapling plane, as

clearly indicated in Fig. 2. Thereupon, staples are driven through the sheet material into the cleats and, as the bar 23 is retained in position below the surface of the work table until shortly after the stapling mechanism begins to rise, this operator at the initial end of the machine may shove the blank material forwardly toward the other operator who stands upon the opposite side of the machine, this forward movement continuing until the rear edge of the blank material is brought up to the next set of cleats, which, in the meantime, has been projected into the machine by the cleat spacer at the opposite side of the machine. The stapling operation is again repeated and at this time the stapling mechanisms 13 also operate upon the initial set of cleats to place another set of staples therein. The blank is guided, as it is moved through the machine, by the laterally adjustable guides 33 which are mounted upon the upper face of the work table 11. At the next operation the operator at the delivery end of the machine draws the blank forwardly until its initial series of cleats come into engagement with the gages 34, at which time the rear set of cleats of the blank lie beneath the stapling mechanisms 13 to receive their final staples, whereupon the operator by lifting the initial edge of the completed blank enough to clear the gages 34, may withdraw the completed blank from the machine. The gages 34 are, of course, adjustable toward and from the stapling plane so as to make it possible to set the machine for box blanks of any desired width.

I have illustrated my invention in conjunction with a machine embodying two sets of stapling mechanisms so arranged as to place staples in the cleats closer together than would be possible by the use of a single series of stapling mechanisms, but it will be readily understood that if the staples need not be as closely spaced, it would then be not only feasible but advisable to mount beneath the stapling mechanisms 13 a cleat holder like the cleat holder 15 and its associated parts, in which case the two cleat holders 15 will be simultaneously filled at one end and projected into the machine and the sheet material then laid upon both sets of cleats and a single reciprocation of the machine would result in a completion of the blank. As a matter of fact, however, this arrangement would not increase the capacity of the machine because in the form shown a single reciprocation of the stapling mechanisms drives a full set of staples.

I claim as my invention:

1. In a box blank forming machine, the combinaton with means for connecting sheets and cleats, of a cleat holder arranged to receive a longitudinal series of cleats for a box blank, and means for supporting and guiding said cleat holder for movement longitudinally of the cleats and laterally of the movement of the blank-forming material, whereby it may be shifted longitudinally of the cleats and laterally of the movement of the blank forming material through the machine from a position where the cleats may be inserted in the cleat holder to a position in conjunction with the connecting mechanism.

2. In a box blank forming machine, the combination with a work table, of stapling mechanism arranged above the table to drive a plurality of staples, a cleat holder laterally movable relatively to the table, said cleat holder having at its opposite ends means for receiving, and holding in spaced relation, a series of cleats arranged end to end therein, said cleat holder being so arranged that cleats charged into said cleat holder may be projected beneath the stapling mechanism and the opposite end of the cleat holder presented for reception of new cleats, a guard projectable into and out of position in front of the cleats beneath the stapling mechanism, and means for moving said guard into and out of position in front of the cleats.

3. In a box blank forming machine, the combination with a work table, of stapling mechanism arranged above the table, to drive a plurality of staples, and a cleat holder laterally movable relatively to the table, said cleat holder having at its opposite ends means for receiving, and holding in spaced relation, a series of cleats arranged end to end therein, said cleat holder being so arranged that cleats charged into said cleat holder may be projected beneath the stapling mechanism and the opposite end of the cleat holder presented for reception of new cleats.

4. In a box blank machine, the combination of means for connecting elements of a box blank, a holder for receiving and holding a series of box blank elements in spaced relationship, and means for supporting and guiding said holder for movement longitudinally of the cleats and laterally of the movement of the blank-forming material, whereby it may be projected longitudinally in said series of box blank elements and transversely of the line of travel of blank forming material through the machine so as to bring the said series of spaced material into coöperative relation with the fastening means.

5. In a box blank machine, the combination with a work table, of a series of stapling mechanisms arranged above said work table, and a cleat holder slidably mounted on said table in the plane of the stapling mechanism and guided for movement in said plane, whereby a series of cleats charged into said holder may be shifted longitudinally of said series of cleats and transversely of the line

of travel of the blank material through the machine into coöperative relation with the stapling mechanism.

6. In a box blank machine, the combination with a work table, of a series of stapling mechanisms arranged above said work table, a cleat holder mounted on said table in the plane of the stapling mechanism and slidable in said plane, said cleat holder being open at its forward edge, and a guard movable into position to block travel of the cleats transversely of the movement of the cleat holder.

7. In a box blank machine, the combination with a work table, of a series of stapling mechanisms arranged above said work table, and a cleat holder mounted on said table and slidable in the plane of the stapling mechanism, said cleat holder being open at its forward edge.

8. In a box blank forming machine, the combination of a work table, a series of stapling mechanisms arranged above said table, an L-shaped cleat holder slidably mounted on the table and movable horizontally to and from position beneath the stapling mechanism, two sets of cleat spacers arranged in said cleat holder at opposite ends thereof, and a guard plate vertically projectable to a position to guard the open edge of said cleat holder.

9. In a box blank forming machine, the combination of a work table, a series of stapling mechanisms arranged above said table, an L-shaped cleat holder slidably mounted on the table and movable horizontally to and from alined position beneath the stapling mechanism, and cleat spacers arranged in said cleat holder.

10. In a box blank forming machine, the combination of a work table, a series of stapling mechanisms arranged above said table, an L-shaped cleat holder slidably mounted on the table and movable horizontally to and from alined position beneath the stapling mechanism with its open side faced in the direction of movement of the blank through the machine, and two sets of cleat spacers arranged in said cleat holder at opposite ends thereof.

11. In a box blank forming machine, the combination of a work table, a series of stapling mechanisms arranged above said table, an L-shaped cleat holder slidably mounted on the table and movable horizontally into a position beneath the stapling mechanism, cleat spacers arranged in said cleat holder, and a guard plate vertically projectable to and from position to guard the open edge of said cleat holder.

In witness whereof, I, have hereunto set my hand at Indianapolis, Indiana, this second day of December, A. D. one thousand nine hundred and thirteen.

FRANK A. FAHLE.

Witnesses:
G. B. SCHLEY,
MAY LAYDEN.

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