

F. E. SLAYTER.
BOX MAKING MACHINE.
APPLICATION FILED MAR. 24, 1905.

932,503.

Patented Aug. 31, 1909.
2 SHEETS—SHEET 1.

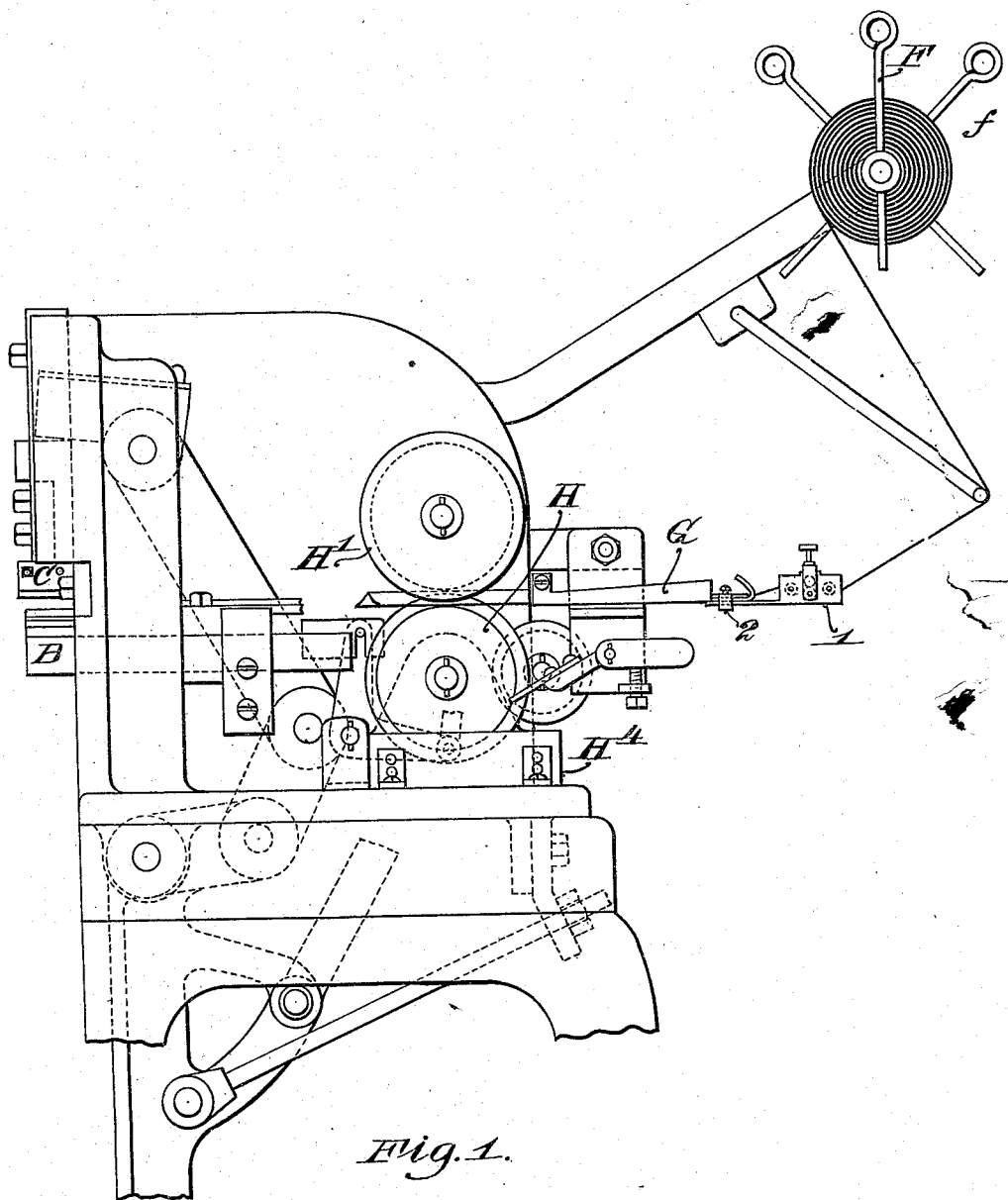


Fig. 1.

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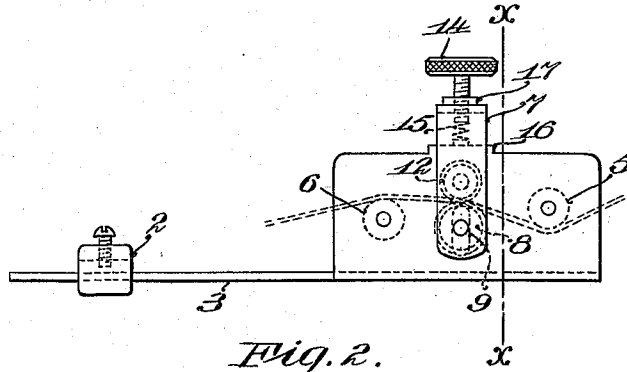


Fig. 2.

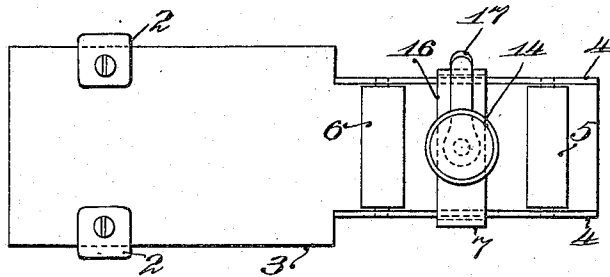


Fig. 3.

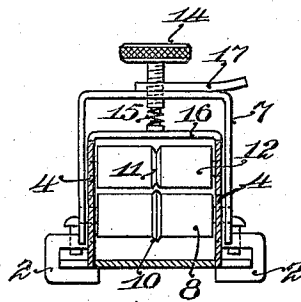


Fig. 4.



Fig. 5.

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UNITED STATES PATENT OFFICE.

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BOX-MAKING MACHINE.

932,503.

Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed March 24, 1905. Serial No. 251,807.

To all whom it may concern:

Be it known that I, FRANK E. SLAYTER, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Box-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to box making machines, and more particularly to that class of machines for applying an adhesive staying strip of paper or the like to the corners or edges of boxes. Heretofore with machines of this class it has been the practice to use a staying strip in the form of a coil of continuous material and to pass the strip through a folding or bending device which folds or bends the strip longitudinally, thus shaping it so that it may more readily be applied to the corner or edge of a box. These folding devices, however, when used with a plain or flat staying strip, are objectionable for the reason that not only is the line of the bend or fold irregular and uneven, but its position on the strip varies greatly in different portions of the same, especially if the strip be coated with a dry gum or other adhesive. Moreover, the folded strip tends to return to its original flat condition unless it is strongly creased in which case it is weakened along the line of the fold where strength is most desired. It has been found that if a slight longitudinal crease or groove or embossing be formed in the strip before it is acted upon by the folding device not only will the line of the fold follow the crease or groove, but a less sharp folding will be required as the folded strip will retain its shape much better.

The object of the present invention is to provide a creasing or grooving device which shall form a longitudinal crease or groove or embossing in the staying strip as it passes from the supply coil to the folder along the line where it is desired the fold shall be made.

With this object in view the present invention consists in the devices and combinations of devices hereinafter described and claimed.

In the accompanying drawings the creasing device is shown as applied to the box making machine illustrated in the patent

to Knowlton, No. 447,955, dated March 10, 1891, Figure 1 being a side elevation of the same. Fig. 2 is an enlarged side elevation of the creasing device detached; Fig. 3 is a top plan view of the same, and Fig. 4 is a vertical sectional view on line $x-x$, Fig. 2, looking to the left. Fig. 5 is a vertical sectional view of the staying strip with the crease or groove formed therein.

As shown in Fig. 1 of the drawings, the reel F upon which the coil of the staying strip f is supported, the folder G, the rollers H and H', the tank H⁴, the anvil block B, the reciprocating die C and actuating mechanism for the same are all substantially as shown in the Knowlton patent above referred to, and operate in substantially the same manner except that in the present invention a staying strip is preferably employed one side of which has been coated with a gum or other adhesive, the tank H⁴ containing water instead of paste and the roller H being a moistening roller instead of a pasting roller as in the Knowlton patent.

The creasing device which forms the longitudinal crease or groove to locate the line of the fold, is shown at 1 attached to the folder G by means of the screw clips 2. This creasing device, as shown more clearly in Figs. 2, 3 and 4, comprises a frame having a base 3, from which at one end rise the sides 4 which serve as lateral guides for the strip. Mounted in bearings in the sides 4 are the guide rolls 5 and 6, the former guiding the paper to the creasing mechanism and the latter supporting it as it is delivered therefrom. The inverted U-shaped carrier 7 is provided with bearings for the creasing roll 8, slots 9 being formed in the sides 4 for the passage therethrough of the ends of the creasing roll. This creasing roll is provided with a rib or flange 10 which coöperates with the groove 11 in the pressure roll 12 mounted in bearings in the sides 4 to form a longitudinal crease or groove 13 (see Fig. 5) in the staying strip as it passes between the rolls 8 and 12.

In order to permit a heavy or light crease to be formed in the staying strip at the will of the operator, and also to adapt the device for use with strips of different thickness, means have been provided for adjusting the rolls 8 and 12 relatively to each other.

Means have also been provided which permit the rolls 8 and 12 to yield relatively when variations occur in the thickness of the

staying strip, sufficient yielding being provided for so that splices in the staying strip may pass through the creasing device. In the drawings these means are shown as consisting of the thumb screw 14 which passes through the top of the carrier 7 and engages one end of the coiled spring 15, the other end of which engages the cross piece 16. By adjusting the screw 14 the spring 15 may be compressed to a greater or less extent and the creasing roll 8 be pressed toward the pressure roll 12 with a correspondingly greater or less force, imparting a heavier or lighter crease to the staying strip. At the same time the creasing roll 8 may yield to compensate for a splice or other variation in the thickness of the strip. A locking lever 17 is provided to lock the thumb screw 14 in its adjusted position.

The operation of the machine is as follows:—The staying strip *f* is led from the reel *F*, under the roll 5, between the creasing roll 8 and the pressure roll 12, over the roll 6 to the folder *G*, thence to the moistening roll *H*, and finally between the anvil *B* and pressing die *C*. As the strip passes between the creasing roll 8 and pressure roll 12, an initial longitudinal crease or groove 13 is formed in the strip by the rib 10 and groove 11, so that when the strip is subsequently bent or folded by the folder *G*, the line of the fold will be along the crease or groove. The operation of the machine after the strip leaves the rolls *H H'* is the same as in the Knowlton patent above referred to, and need not be here described.

While the creasing device is particularly advantageous where a gummed staying strip is used, it may be employed to advantage with an ungummed strip, in which case the paste or other adhesive would be applied by what is here called the moistening roller *H* as in the Knowlton patent above referred to. Moreover, although the creasing device is shown as an attachment which may be placed upon or removed from a box making machine at will, it is apparent that it may be made integral with the folder if desired.

Having thus described the present invention, what is claimed is:—

1. An attachment for box-making-machines, comprising a base adapted to be secured to the machine, sides rising from the base and acting to guide the staying strip laterally, supporting rolls mounted in bearings in the sides, a pair of cooperating creasing rolls, one having a flange and the other a groove, bearings in the sides for one

of said rolls, a carrier having bearings for the other of said rolls, and a screw and spring for adjusting the carrier, substantially as described.

2. A box-making machine, having, in combination, a creasing device for forming an initial longitudinal crease or groove in the stay strip to locate the line of the fold, said device consisting of a base, sides rising from the base to guide the strip laterally, a creasing roll having a rib or flange on its working face, a pressure roll located opposite the creasing roll and having a groove in its working face opposite the flange of the creasing roll, yielding means acting normally to press one of said rolls toward the other, and guide rolls, a folder for folding the creased strip and means for pressing the strip upon the corner of a box, substantially as described.

3. An attachment for box making machines comprising a base adapted to be secured to the machine, sides rising from the base and provided with vertical slots, a creasing roll and a pressure roll, one of said rolls being mounted in the sides, a U-shaped carrier for the other of said rolls, the axle of which passes through the slots in the sides, and a screw and a spring for adjusting the carrier to regulate the pressure between the creasing and pressure rolls, substantially as described.

4. A box making machine for applying a staying strip to the corners of boxes having, in combination, means for supplying the staying strip, a creasing device for forming an initial longitudinal crease or groove in the staying strip to locate the line of the fold, said device comprising a base, sides rising from the base, a carrier, a creasing roll having a rib or flange on its working face, a pressure roll located opposite the creasing roll and having a groove in its working face opposite the flange of the creasing roll one of said rolls being mounted in the sides and the other in the carrier, and pressure devices for the carrier acting normally to press one of said rolls toward the other, a folder for folding the creased strip, and means for pressing the strip upon the corner of a box, substantially as described.

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

FRANK E. SLAYTER.

Witnesses:

ALFRED H. HILDRETH,
FARNUM F. DORSEY.