

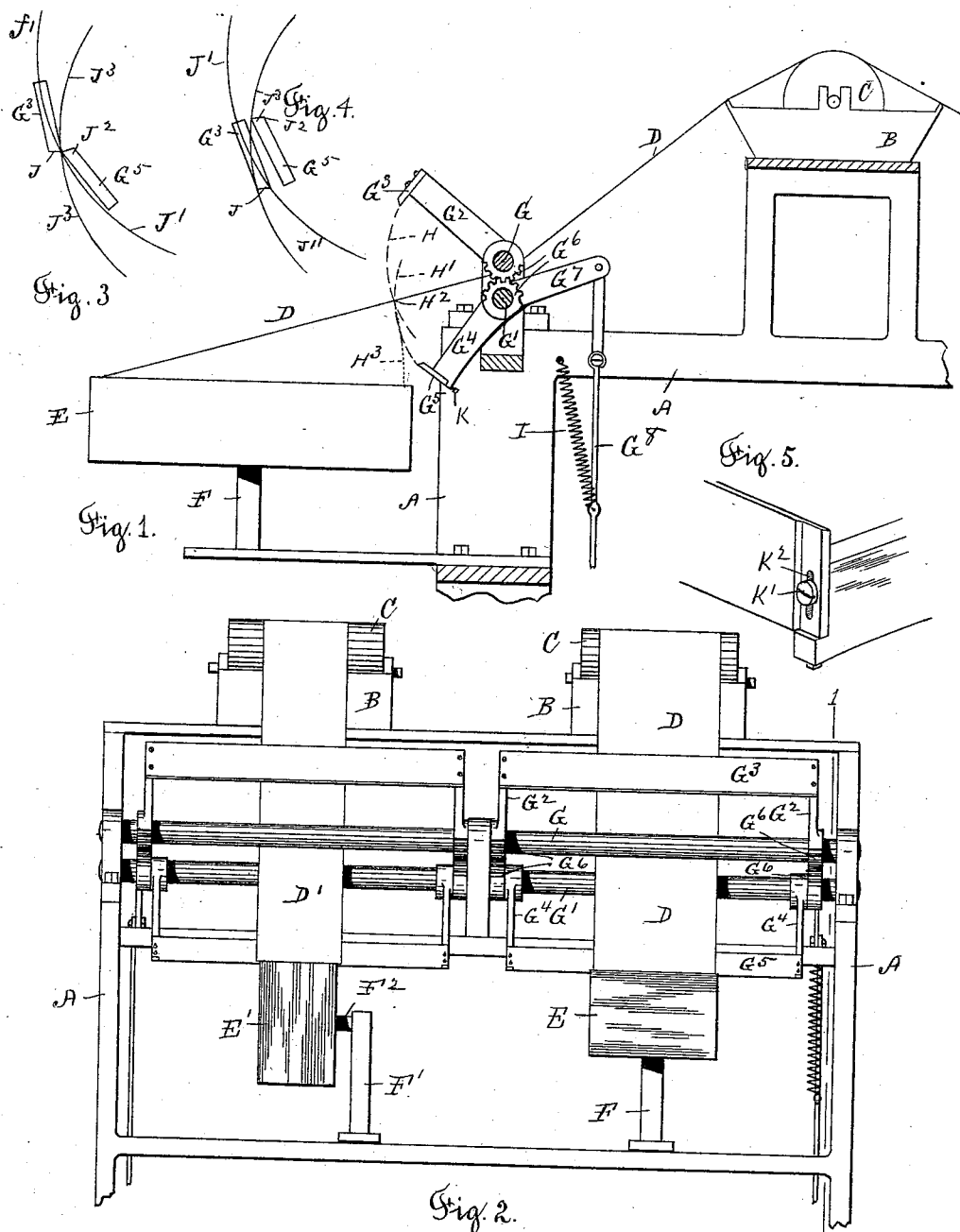
(No Model.)

C. W. HOBBS.

CUTTING MECHANISM FOR PAPER BOX MACHINES.

No. 542,385.

Patented July 9, 1895.



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CUTTING MECHANISM FOR PAPER-BOX MACHINES.

SPECIFICATION forming part of Letters Patent No. 542,385, dated July 9, 1895.

Application filed October 10, 1892. Serial No. 448,320. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE W. HOBBS, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Cutting Mechanism for Paper-Box Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 represents a portion of the framework and such part of the operating mechanism as relates to my present invention, the same being shown in sectional view on line 1 1, Fig. 2. Fig. 2 is a front view of that portion of the framework and operating mechanism represented in Fig. 1. Fig. 3 is a diagram representing the paths of the cutting-blades and showing the relative position of the cutting-blades when their cutting-edges are brought into contact. Fig. 4 is a diagram representing the paths of the cutting-blades and showing the relative position of the cutting-blades after the cutting-edges have passed each other, and Fig. 5 shows one end of the lower cutting-blade and its method of adjustment.

Similar letters refer to similar parts in the different figures.

My invention relates to that class of paper-box machines by which the outer surfaces of the box are covered with paper, and particularly to the cutting or shearing mechanism by which the continuous strip of paper, as presented by the machine, is cut into suitable lengths to be applied to the outer surface of the box.

Paper-box-covering machines of the class referred to are now in common use, and the construction and operation of such a machine will be fully understood by those conversant with the art of making paper boxes without the aid of a detailed description; but in the accompanying drawings I have represented so much of the machine as will be necessary to fully illustrate the nature of my present invention.

In paper-box machines of the class referred to a continuous strip of paper is conducted over the top of a roll partially immersed in a

solution of gum or paste, which is supplied to the surface of the paper strip in contact with the roll. The continuous strip is cut transversely by a shear or cutting mechanism into suitable lengths to be applied to the outer surface of the box, and this shearing or cutting mechanism is the subject of my present invention.

In the accompanying drawings, A denotes a portion of the framework of the machine; B, the gum-trough containing the adhesive material; C, the gum-roll partially immersed in the adhesive material and rotated by the contact of the strip of paper D as it is drawn forward to be applied to the box E, which is held in the usual manner upon a block or "former," fitting the inside of the box, and which in the accompanying drawings is represented as being supported upon a post F. The continuous strip of paper D, after it leaves the gum-roll C, passes between the parallel rocking-shafts G G' journaled in bearings supported by the framework A. To the shaft G are attached arms G² G³, carrying the cutting-blade G³, and to the shaft G' are attached the arms G⁴ G⁵, carrying the cutting-blade G⁵. The hubs of the arms G² and G⁴ are provided with gear-teeth G⁶, by which the shafts G and G' are geared together.

From the hub of one of the arms G⁴ extends a radial arm G⁷, to the free end of which a rod G⁸ is connected, extending downward to the floor and being connected with an ordinary foot-treadle, and by the downward motion of the rod G⁸ a simultaneous rocking motion is imparted to the two shafts G and G', causing the cutting-blade G³ to move in the circular path indicated by the broken line H and the cutting-blade G⁵ to move in the circular path indicated by the broken line H', the two paths of the cutting-blades intersecting each other at H² in the plane of the paper strip D and in such relation to the paper box E, when the severed strip is to be applied to the bottom or the cover of the box, that the end of the severed piece of paper in falling upon the box will fall a short distance within the end of the box, as indicated by broken line H³.

The former upon which the paper-box is

placed is located in such relationship to the vibrating knives that the rear end of the former shall lie vertically under the point of intersection of the arcs H and H', so that when the knives are brought together the cutting-point or meeting-place of the knives will be at the intersection of the arcs H H' in the plane of the paper strip D and within an arc H³, described by the severed strip of paper as it falls upon the surface of the box held upon the former, and the former is located so the arc H³ will fall a short distance from the end of the box. As the cutting-blades are separated the lower blade is drawn back of the vertical plane of the rear end of the box and the upper blade is raised away from the plane of the paper strip D as it is drawn forward to be applied to the box, thereby allowing a clear space for the manipulation of the paper strip and also allowing the box to be lifted from the former. The angular motion of the upper cutting-blade allows the paper strip to be drawn forward out of contact with the cutting-edge of the blade, and the movement of both cutting-blades allows the former to be brought vertically beneath the cutting-point of the blades when they are brought together and forward of the blades when they are separated. The two shafts G G' serve as guide-rods between which the paper strip D is conducted, and the arms G² and G⁴ rotate about axes coincident with the axes of the shafts G G', and as the two arms are made to move with an equal and conjoint movement, the cutting of the paper strip will occur midway between the normal positions of the cutting-blades G³ and G⁵.

The motion of the cutting-blades is reversed by the action of a spiral spring I, having one end attached to the arm G⁷ and the opposite end attached to the floor or to a fixed point upon the framework of the machine.

In the diagram shown in Fig. 3 the cutting-edges J and J² are shown in contact, and the circular paths of the edges J J² are indicated by the curved lines J' and J³. The lower edge of the cutting-blade G⁵ is placed inside the curved lines J', so the cutting-edge J in its downward movement will clear the side of the cutting-blade G⁵ as soon as the cutting-edge has been passed. The cutting-edge J² in its upward movement follows the circular path indicated by the curved line J³, constantly moving away from the inner side of the cutting-blade G³, the two blades at the end of their movement assuming the positions represented by the diagram in Fig. 4, with a space or clearance between the cutting-blades. This arrangement of the cutting-blades, by which a clearance is secured between the blades immediately after the passage of their cutting-edges, is an advantage, for the reason that the cutting-blade, coming in contact with the under or gummed surface of the paper strip, is liable to become covered with gum or paste,

which would clog the free action of the cutting-blades if they were continued in contact during their movement by each other. The reversed motion of the cutting-blades, as actuated by the spring I, will throw the blades apart into the position shown in Fig. 1, allowing the free end of the paper strip D to be readily reached by the operator and drawn forward for the next succeeding box. The circular movement of the lower blade G⁵ brings the cutting-point forward over the end of the box, as already described, and also carries the lower cutting-blade back far enough to allow the box to be raised or the former removed without coming in contact with the blade.

In Fig. 2 the framework of the machine is represented as embracing a duplicate set of cutting-blades for cutting a second strip of paper D', but their construction and operation is exactly the same as those already described. The use of two strips D and D' is common in machines of this class, the strip D being applied to the bottom of the box and the top of the cover, the box having been previously held in the position shown at E' upon the former, capable of being rotated about an axis F², supported upon the post F', by which the paper strip D' is wound upon the sides of the box.

As the cutting-edges of the blades G³ and G⁵ are worn away by continued use, the lower blade is raised by adjusting-screws held in the ends of the arms G⁴, one of which is shown at K, the blade being clamped in position by screws K' passing through slots K² in the ends of the blades.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a paper box machine, the combination of a "former" upon which the box is supported, a pair of parallel shafts G and G' serving as guide-rods between which a paper strip is conducted to a box held on said "former," a pair of vibrating arms capable of an angular motion about axes coincident with the axes of said shafts, cutting blades carried by the free ends of said arms and means by which said arms are simultaneously moved to bring the cutting edges of said knives into contact, substantially as described.

2. In a paper box machine, the combination of the parallel shafts G, G' serving as guides for a paper strip, arms capable of an angular motion about axes coincident with the axes of said shafts, cutting blades carried by the free ends of said arms and a "former" arranged to support a box with its rear end in advance of said cutting blades when separated and beneath said cutting blades when brought together, whereby the paper strip when severed will fall entirely upon the surface of a paper box held upon said former, substantially as described.

3. In a paper box machine, the combination

of a pair of parallel shafts G, G' serving as
guide rods for a paper strip as it is conducted
from the gum box to the former, a "former"
upon which the box is supported, a pair of
5 vibrating arms G² and G⁴, cutting blades G³
and G⁵ carried by the free ends of said arms,
gears G⁶ by which said arms are given a con-

joint action, arm G⁷, connecting rod G⁸ and
retractile spring I, substantially as described.

Dated this 30th day of September, 1892.

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Witnesses:

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