

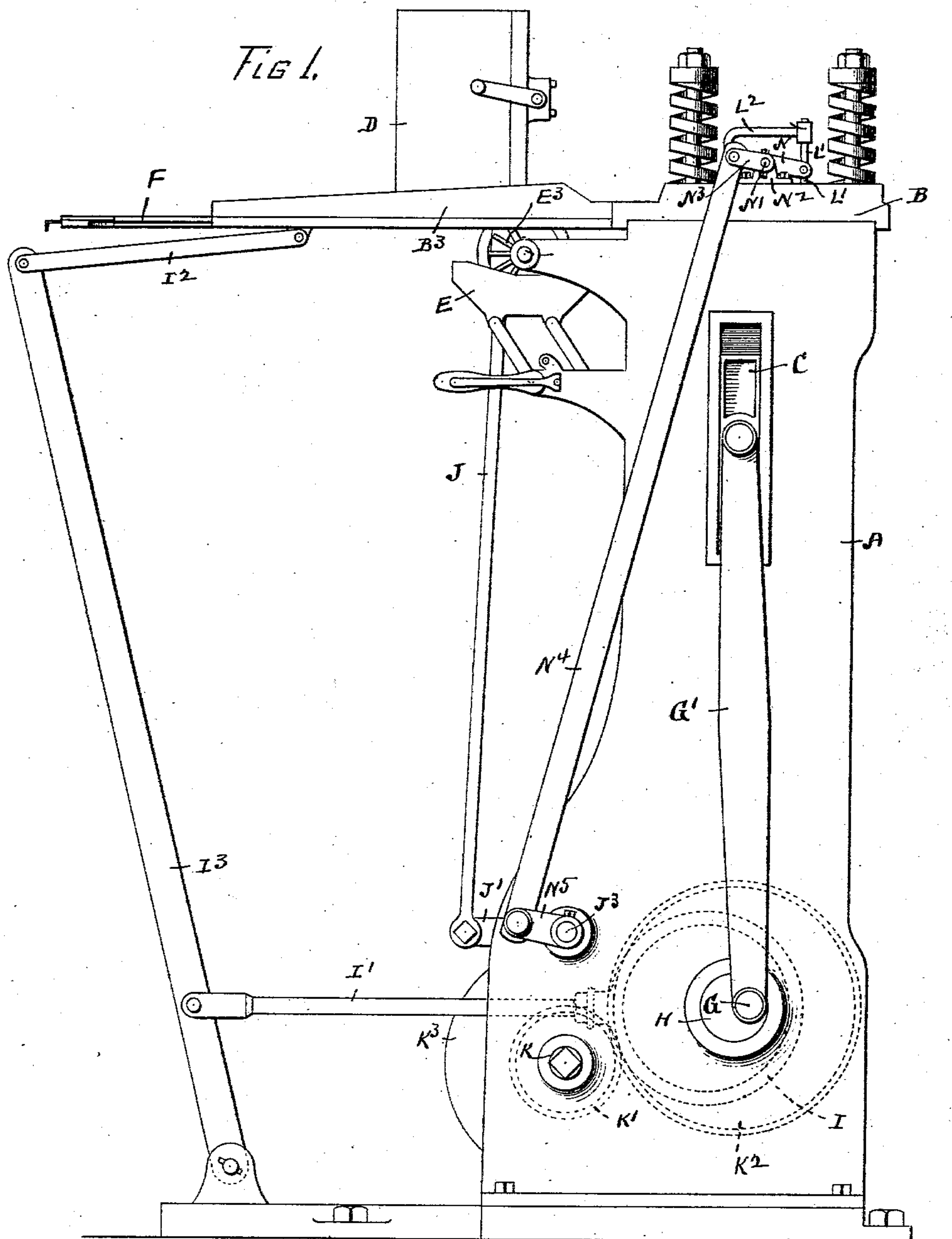
No. 743,642.

PATENTED NOV. 10, 1903.

C. W. HOBBS.
BOX ENDING MACHINE.
APPLICATION FILED FEB. 3, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES

H. M. Rugg.

M. M. Schurmann

INVENTOR

CLARENCE W. HOBBS.

By Rufus B. Fowler
Attorney

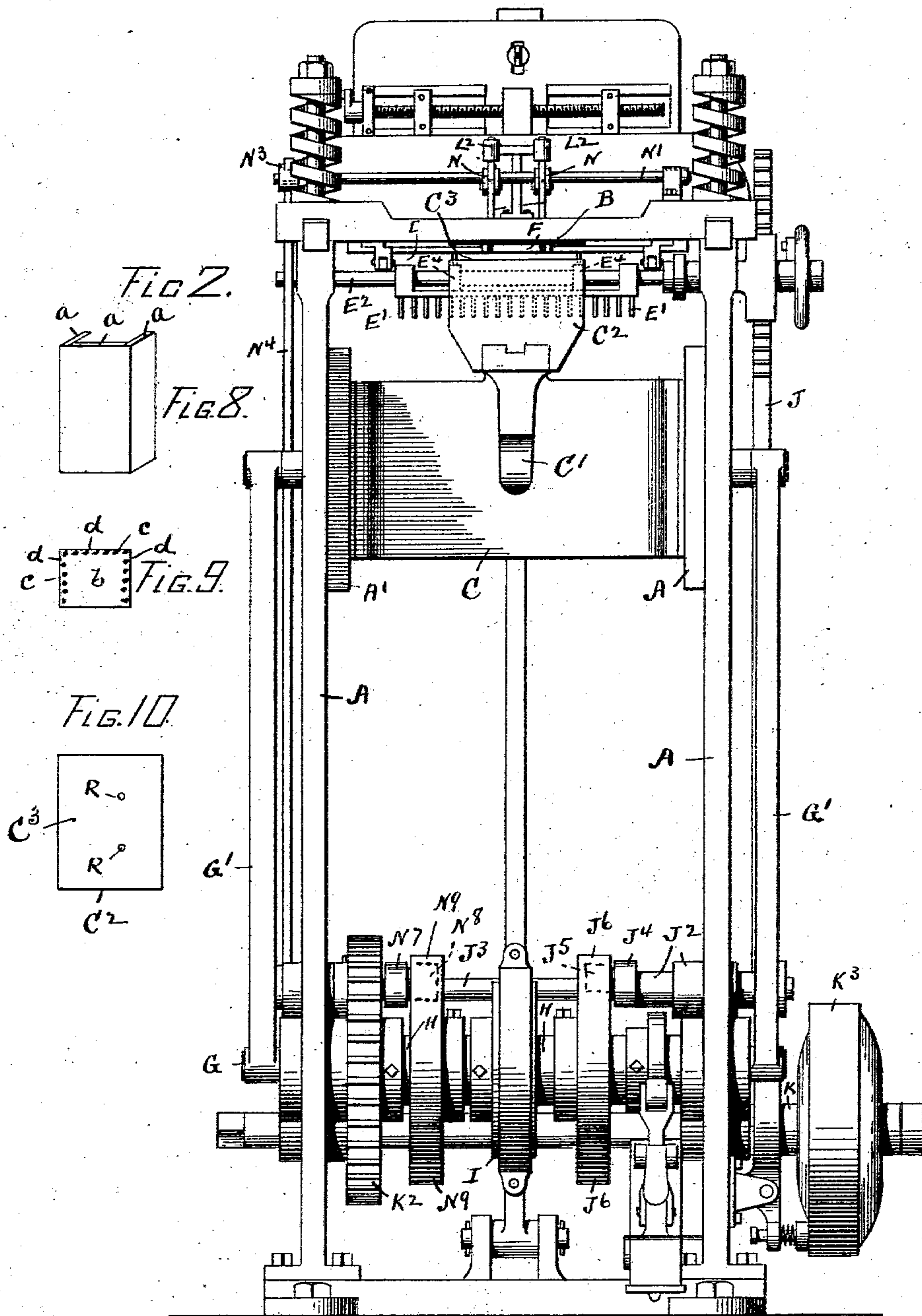
No. 743,642.

PATENTED NOV. 10, 1903.

C. W. HOBBS.
BOX ENDING MACHINE.
APPLICATION FILED FEB. 3, 1902.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:

H. M. Rugg.

M. M. Schuermann.

Inventor.

CLARENCE W. Hobbs.

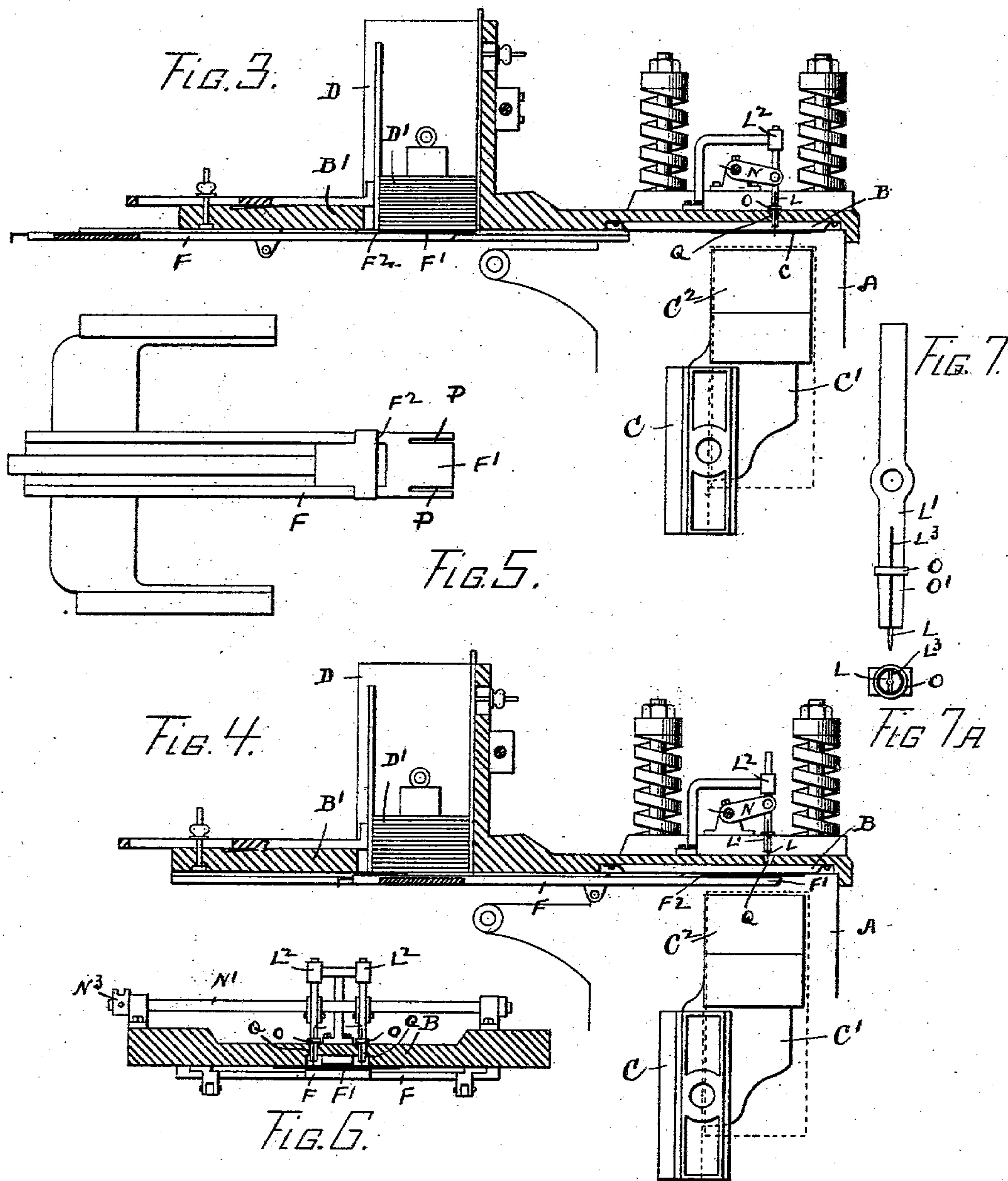
By Rufus B. Fowler

Attorney

C. W. HOBBS.
BOX ENDING MACHINE.
APPLICATION FILED FEB. 3, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses
H. M. Rugg.
M. M. Schwermann.

Inventor
CLARENCE W. HOBBS
By Rufus B. Sewley
Attorney

UNITED STATES PATENT OFFICE.

CLARENCE W. HOBBS, OF WORCESTER, MASSACHUSETTS.

BOX-ENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 743,642, dated November 10, 1903.

Application filed February 3, 1902. Serial No. 92,299. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE W. HOBBS, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Box-Ending Machines, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a side view of a box-
ending machine embodying my invention. Fig. 2 is a front view of the same. Fig. 3 represents the upper portion of the machine with the platen shown in vertical sectional view and with a horizontally-reciprocating box-end carrier at the rearward end of its movement. Fig. 4 represents the same with the carrier at the forward end of its movement. Fig. 5 is a top view of the carrier. Fig. 6 is a sectional view through the platen on the plane of the vertically-reciprocating needles for supporting the box end. Fig. 7 is a view, on a larger scale, of one of the needle-holders. Fig. 7^a is an end view of the same. Fig. 8 is a perspective view of a box-body provided with flanged ends to receive the pasted box end. Fig. 9 represents the under side of a box end, showing the pasted margins; and Fig. 10 represents a top view of the box-form for supporting the flanged end of the box-body.

Similar reference letters refer to similar parts in the different views.

My invention relates to that class of machines for applying rectangular pieces of cardboard or box ends to the flanged ends of the box-body and known as a "box-ending" machine. Machines of this class are now in common use in the manufacture of paper boxes, and they comprise the following instrumentalities: first, means for supporting a stack or pile of rectangular box ends above a pasting mechanism; second, a pasting mechanism for applying paste to the under side of the lower box end in the stack; third, means for moving the pasted box end from the stack forward between the opposing surfaces of a pressing mechanism; fourth, means for holding a box-body in proper registration with the box end; fifth, a pressing mechanism by which the pasted box end is pressed firmly against the flanged ends of the box-body, and,

sixth, means for supporting the box end above the box-body while the pressing-surfaces are coming together.

My present invention relates particularly to the sixth or last instrumentality—viz., means for maintaining the box end above the box-body while the pressing-surfaces are coming together; and it consists, broadly, in the employment of perforating-needles arranged to pierce the box end and support it during the time the pressing-surfaces are coming together; and it consists in the construction and arrangement of parts, as hereinafter described, and pointed out in the annexed claims, by which this result is accomplished.

For the better understanding of the character and operation of my present invention I have shown in the accompanying drawings a side and front view of an entire box-ending machine with the instrumentalities for supporting the stack of box ends, pasting and feeding the same, and pressing the pasted box end upon the flanged end of the box-body.

A A represent vertical sides, forming a part of the framework of the machine and supporting at their upper ends a platen B, which forms the upper member of the pressing mechanism. The sides A A are provided with vertical ways A' A' for a vertically-reciprocating bar C, provided with an overhanging bracket C', upon which is supported a box-form C², which forms the lower member of the pressing mechanism, and is provided with a rectangular upper surface C³, upon which the flanges *a* of the box-body rest during the operation of pressing the box-body and the pasted box end together. The platen B has a rearward extension B', upon which are supported vertical guide-plates D, which inclose the stack or pile of box ends D', each of said box ends consisting of a rectangular piece of cardboard *b*, Fig. 9, adapted to have its pasted margins applied to the flanges *a* of the box end, and thereby form the end of the box. Beneath the stack of box ends D' is a paste-box E and oscillating fingers E' and E³, carried upon an oscillating shaft E² and arranged to have their tips immersed in the paste held in the paste-box E at one oscillating movement and upon the reverse oscillating movement to have their pasted tips carried into contact with the front

and side margins of the lower box end in the stack D', thereby applying paste in spots *c*, as shown in Fig. 9. The pasted box end is carried forward from the stack D to a position between the platen B and box-form C² by a horizontally-reciprocating carrier F, provided with a box-end-supporting surface F' and a shoulder F², engaging the rear edge of the box end, by which the box end is pushed forward beneath the under surface of the platen B and into proper position over the box-form C² to register accurately with the flanges *a* of the box supported upon the box-form and in position to have its pasted margins attached to the flanges of the box-body by the upward movement of the box-form. The vertically-reciprocating movement of the box-form C² is produced by means of cranks G G upon the ends of a cam-shaft H, said cranks being connected by links G' G' with the vertically-reciprocating bar C. The carrier F is moved by an eccentric I on the cam-shaft H through an intermediate mechanism consisting of links I' I² and swinging lever I³. The pasting-fingers are oscillated by a rack-and-pinion mechanism comprising a rack J, to which a reciprocating movement is given by means of an arm J', extending from a sleeve J², capable of oscillating upon the rocking shaft J³. The sleeve J² has a second arm J⁴, carrying a cam-roll J⁵, which runs in a suitably-shaped groove in a cam J⁶ on the cam-shaft H. Rotary motion is imparted to the cam-shaft H from a driving-shaft K by means of a pinion K' on the shaft K and a gear K² on the cam-shaft H. Motion is imparted to the driving-shaft K by means of a belt-pulley K³, having a belt connection with a main or counter shaft.

The pasting-fingers E' are arranged in a row, as shown in Fig. 2, adapted as the fingers are oscillated to apply paste to the forward margin of the box end. The pasting-fingers E³ project radially from collars (shown by broken lines E⁴, Fig. 2) adjustably attached to the oscillating shaft E² and arranged to apply paste to the side margins of the box end. The ends of the radially-projecting fingers E³ for pasting the side margins of the box end are concentric with the axis of the oscillating shaft E², and their oscillating movement is synchronous with and corresponds to the forward movement of the box end over the pasting-fingers, so that spots *c* of paste will be successively applied to the side margins *d d* of the box end, Fig. 9.

The construction and operation of the machine as above described are common in box-ending machines now in general use. My present invention relates to the device hereinafter described for maintaining the box end in proper position to register with the flanged end of the box-body, which is held on the box-form while the box-form is moving upwardly to carry the box-body into contact with the box end and press the two firmly together in order to allow the horizontally-re-

ciprocating carrier F to be withdrawn from between the box-form and the platen. I accomplish this result by means of a pair of needles L, held in a pair of needle-carriers L', capable of a vertically-reciprocating movement in the guideways of a framework L², supported upon the platen B. The needle-carriers L' are pivotally connected to the free ends of radial arms N, carried upon a rock-shaft N', journaled in brackets N² upon the platen B. The rock-shaft N', journaled in brackets N², has an arm N³, which is connected by a link N⁴ with the arm N⁵ of a rock-shaft J³, journaled in the sides A A of the machine and carrying an arm N⁷, provided with a cam-roll N⁸, running in the groove of a cam N⁹ on the cam-shaft H.

The needle-carriers L' consist of a pair of rods, each of which is hollow at its lower end to receive a needle L and is provided with a diametrical slit L³ to allow the carrier to be pinched against the needle by means of a ring O, fitting a tapered surface O' upon the needle-carrier. One of the needle-carriers is shown on a larger scale in Fig. 7, and an end view is shown in Fig. 7^a. The needles L project a short distance below the lower ends of the needle-carriers L', and the needle-carriers are depressed by the action of the cam N⁹ during the period of rest or at the forward dwell of the horizontally-reciprocating carrier F at the end of its forward movement, causing the projecting needles to pierce the box end as it is supported upon the forward end of the carrier. The forward or supporting end of the carrier F extends beneath the reciprocating needle-carriers in order to support the box end against the downward pressure exerted by the needles as they are forced through the box end, and the carrier is provided with grooves P P, which are open at their forward ends to allow the needles to enter the grooves and enable the carrier to be withdrawn from between the box-form and the platen, leaving the box end supported upon the needles L, as shown in Fig. 4. As the box-form C² approaches the platen the cam N⁹ lifts the needle-carriers L' and withdraws the needles from the box end, leaving the box end free to descend with the box-body. The withdrawal of the needles L from the box end occurs during the time the box end is being pressed upon the flanges of the box-body and while the box end is still in contact with the platen, so that the platen serves to strip the box end from the needles as they are raised. After the removal of the horizontally-reciprocating box-end carrier F the box end is supported above the box-body by its frictional contact with the needles L, and as the needles L are held from lateral movement by the insertion of the lower ends of the needle-carriers in the holes Q of the platen as well as by the framework L² the box end is maintained in accurate registration with the box-body held upon the box-form C². I prefer to lift the needles out of the box end before the latter comes in

contact with the box-body, and the needles may be short enough to allow the flanges of the box-body to be brought very near to the pasted margins of the box end without hitting the points of the needles; but longer needles may be used and the upward movement of the needle-carriers delayed until the box-body is actually brought into contact with the box end by forming small recesses or openings R in the upper surface of the box-form C².

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

1. In a box-ending machine, comprising a pair of pressing members and a horizontally-reciprocating carrier for carrying a box end between said pressing members, the combination of means for holding the box end to permit the withdrawal of the carrier, and comprising two or more vertically-reciprocating needles adapted to puncture a box end and support the same by its frictional contact with said needles, substantially as described.

2. In a box-ending machine comprising a pair of pressing members, the combination with means for supporting the box end from

beneath and between the pressing members, of a pair of vertically-reciprocating needles arranged to puncture a box end by a downward movement of said needles, substantially as described.

3. The combination in a box-ending machine of a pair of vertically-reciprocating needles arranged to puncture a box end as it is supported from beneath, and means for reciprocating said needles, substantially as described.

4. The combination with a carrier for transferring a box end to the pressing members of a box-ending machine and provided with grooves of reciprocating needles adapted to enter said grooves, substantially as described.

5. The combination with a box-form provided with recesses for box-end-holding needles of reciprocating needles for puncturing and holding a box end over said box-form, substantially as described.

CLARENCE W. HOBBS.

Witnesses:

M. M. SCHUERMANN,
RUFUS B. FOWLER.