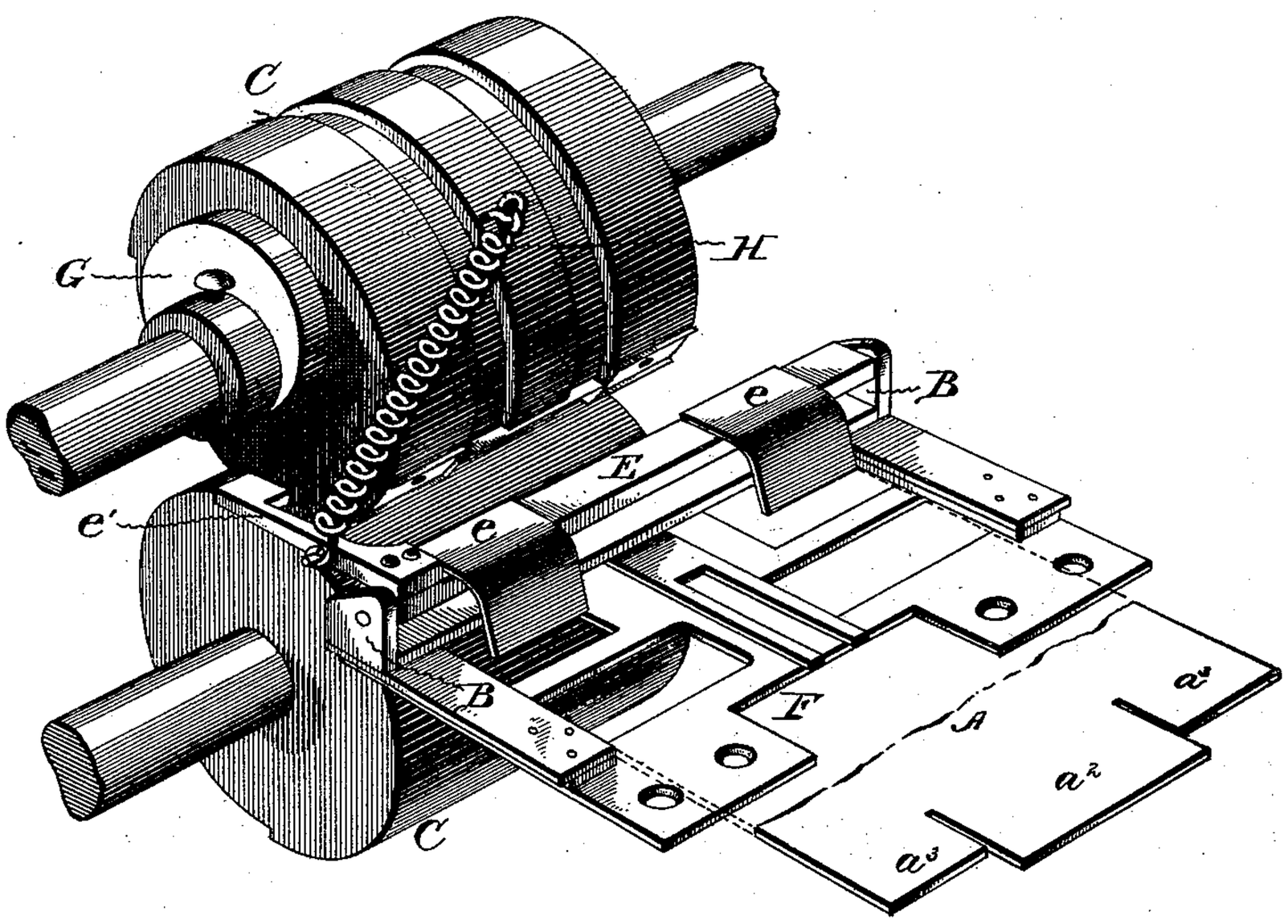
(No Model.) 3 Sheets—Sheet 1.

H. A. WILLARD.

MECHANISM FOR CONSTRUCTING PAPER BOXES.

No. 543,819. Patented July 30, 1895.

Fig. 1.



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his attorneys

(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

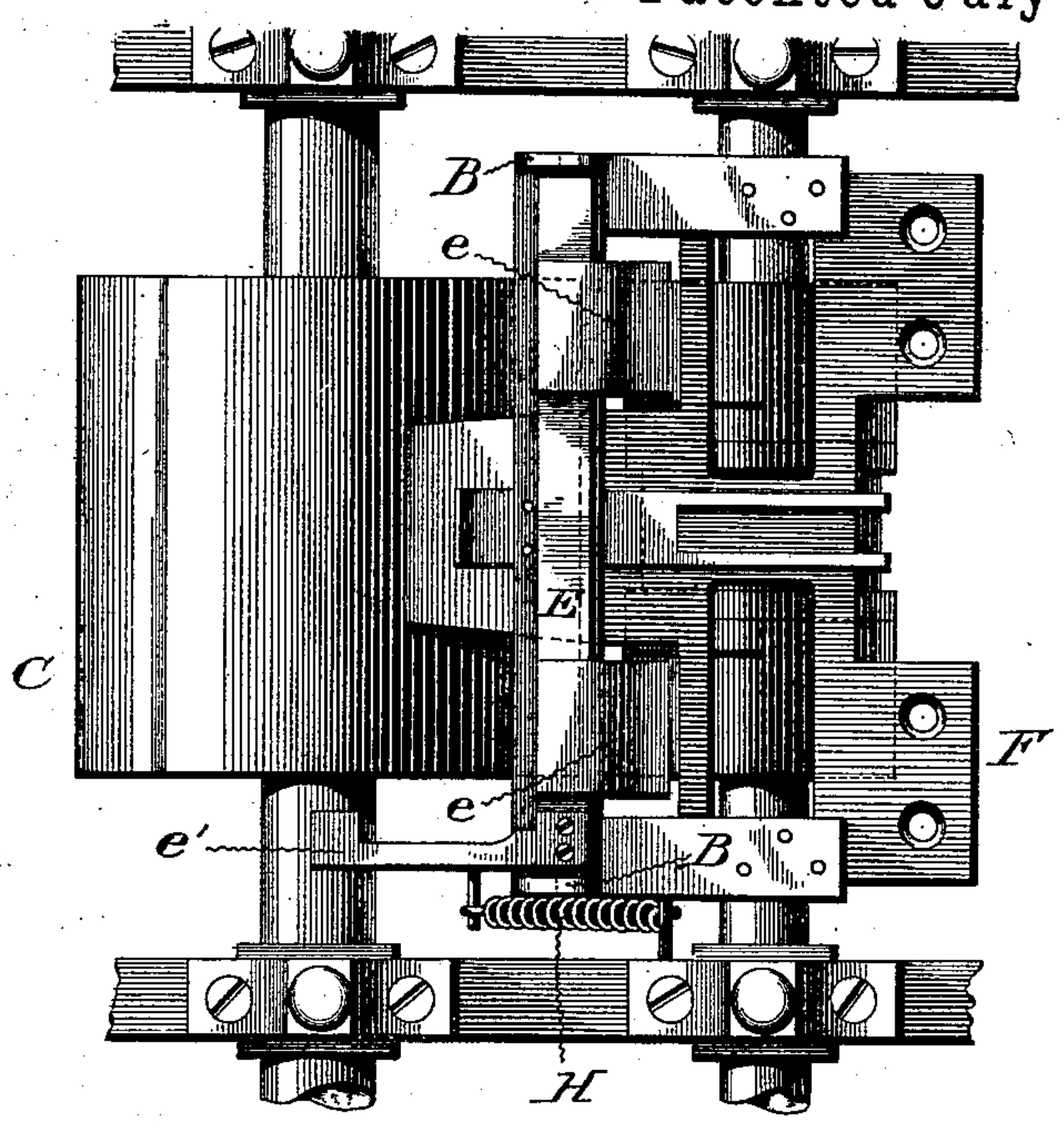
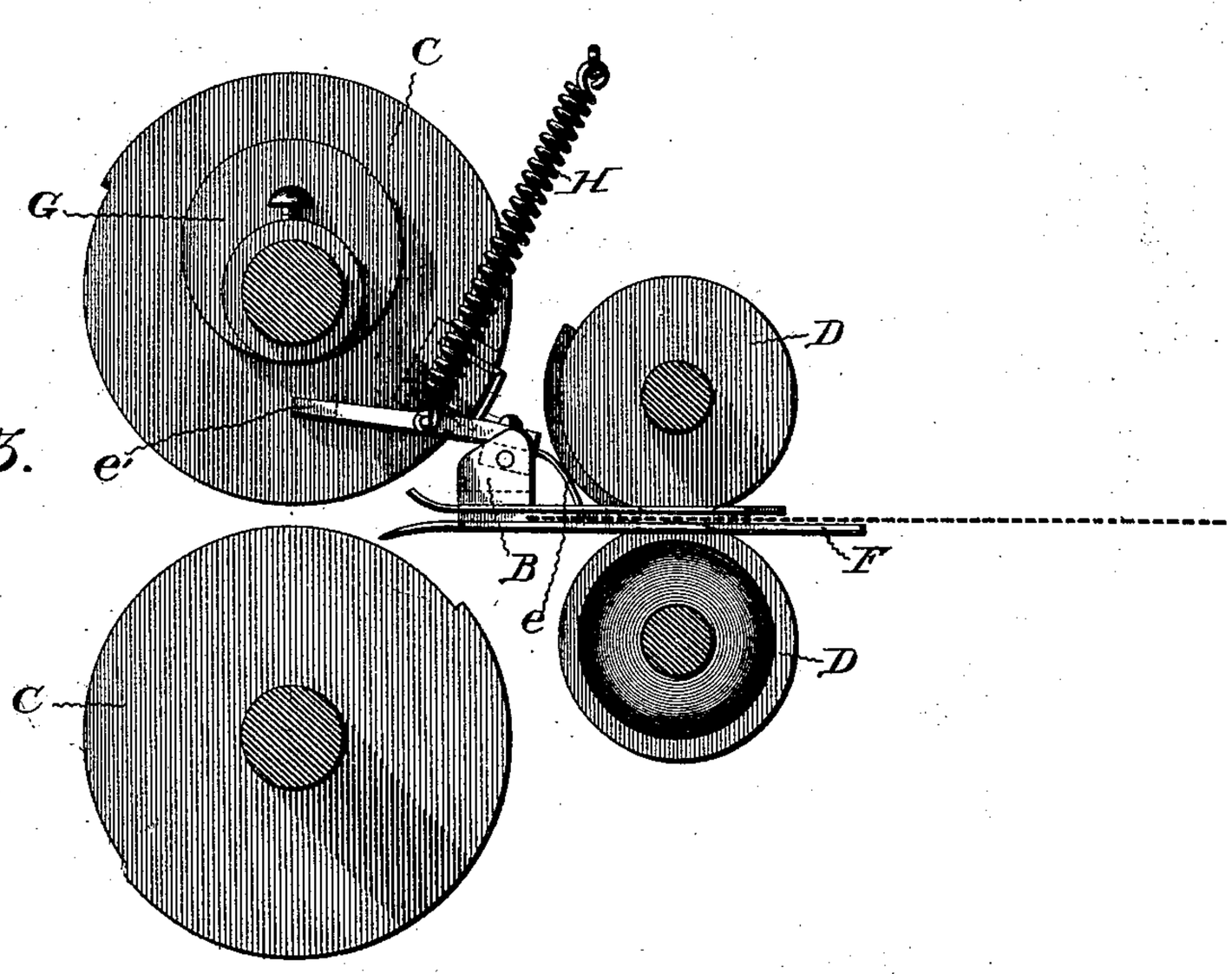


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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MECHANISM FOR CONSTRUCTING PAPER BOXES.

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Fig. 4.

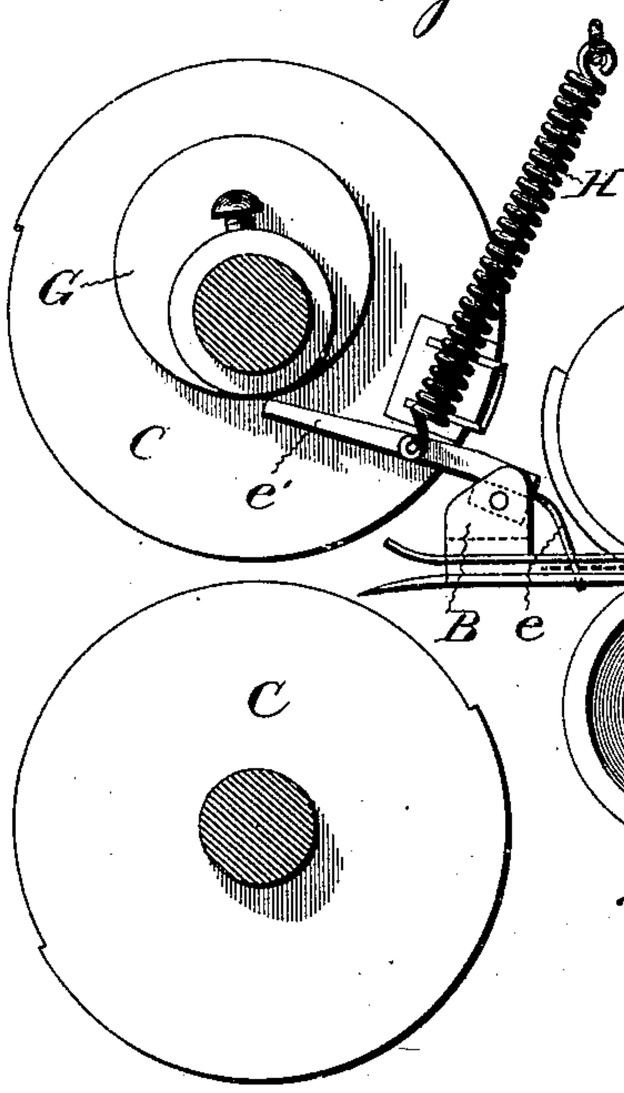


Fig. 5.

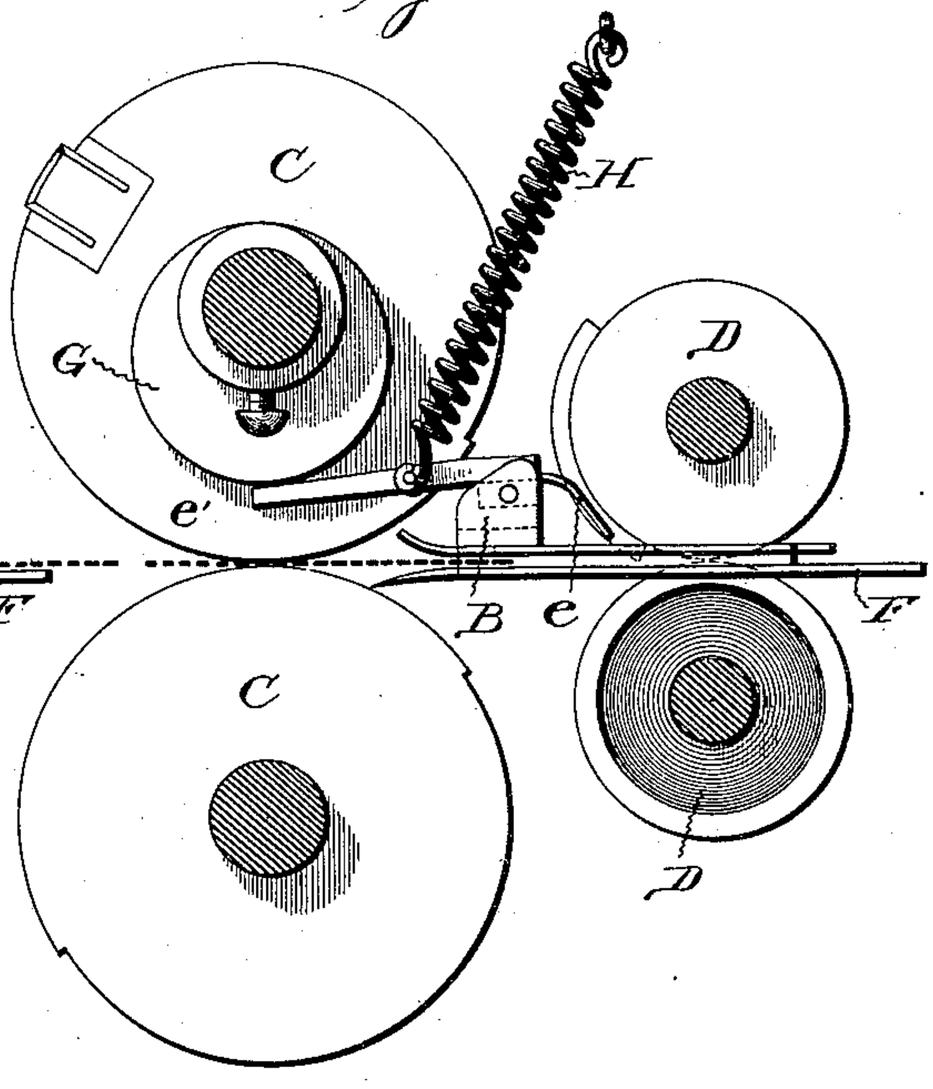


Fig. 6.

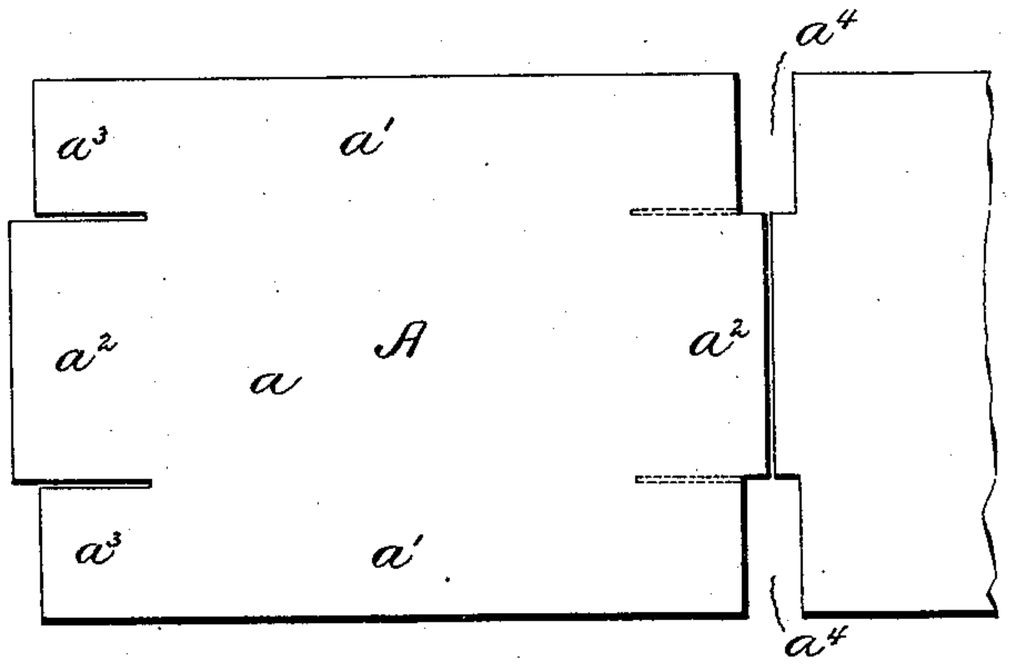
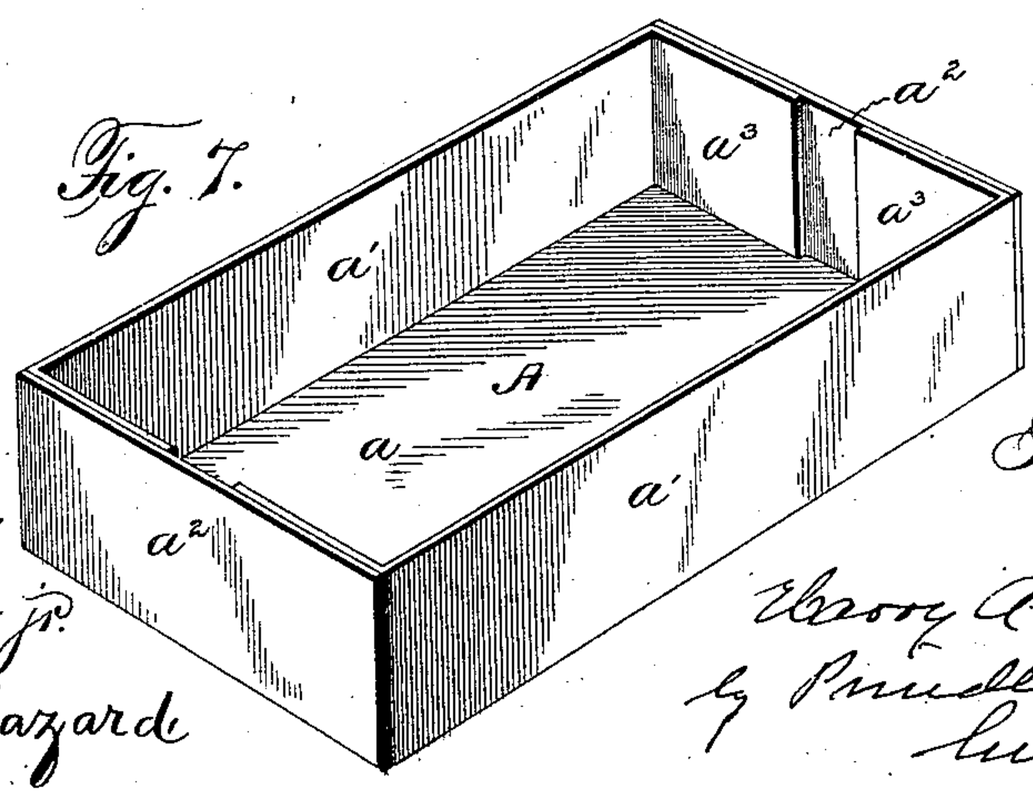


Fig. 7.



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UNITED STATES PATENT OFFICE.

HARRY A. WILLARD, OF OSWEGO, NEW YORK, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS.

MECHANISM FOR CONSTRUCTING PAPER BOXES.

SPECIFICATION forming part of Letters Patent No. 543,819, dated July 30, 1895.

Application filed March 11, 1895. Serial No. 541,319. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. WILLARD, a citizen of the United States, residing at Oswego, in the county of Oswego, and in the State of New York, have invented certain new and useful Improvements in Mechanism for Constructing Paper Boxes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my device as applied to and combined with the feeding and cutting rollers and bridge-plate of a box-making machine. Fig. 2 is a plan view of the same, the upper feed-roller being removed to show more clearly the construction and relative arrangement of parts. Fig. 3 is a side elevation, partly in section, showing the relative positions of parts immediately before the action of the wiper. Fig. 4 is a like view of the same after such wiper has expelled the waste pieces of paper board. Fig. 5 is a similar view of the said parts after said wiper has been raised to permit of the passage of a new box-blank. Fig. 6 is a plan view of two of such blanks with intervening waste pieces, and Fig. 7 is a perspective view of a completed box.

Letters of like name and kind refer to like parts in each of the figures.

My invention is an improvement in mechanism for constructing paper boxes; and it consists in the construction and operation of parts, substantially as and for the purpose hereinafter specified.

In the construction of paper boxes—more especially those used for matches—the blanks are cut from a continuous strip of paper, and, as shown in Fig. 6, consist of a rectangular sheet A, which has the necessary width to form the bottom a and sides a' and a' of the box, and a length sufficient to form at each end of such box-bottom an end a^2, that corresponds in width to the width of said side strips, so that when both are turned upward to place, their edges will be of equal height, as seen in Fig. 7. When the side and end strips a' and a^2 are turned upward to place, there is left at each corner a projecting portion a^3 of the side strip a', which is then folded laterally inward and pasted upon the inner face of the adjacent end strip a^2 and operates to confine said parts in position so as to complete the box. If the width and depth of the box are properly proportioned, the ends of the parts a^3 will be upon a line with the edges of the end strips a^2, and when folded inward their said ends will either meet or will fall short of meeting; but should the depth of the box be increased, then said parts a^3 and a^3 must be cut shorter than the ends of the blank to prevent them from overlapping when folded to place. Such facts usually render necessary the cutting of two rectangular pieces a^4 from between the contiguous ends of two blanks, and such waste pieces frequently pass into and obstruct the operative parts of the machine and require to be removed before the work can proceed. To prevent such difficulty, I journal within suitable bearings B and B, between the combined cutting and feed rollers C and C and the feeding-rollers D and D, a shaft E, which at suitable points is provided with two arms or wipers e and e, that correspond in lateral positions to the positions of the side strips a' of the blank A as it passes from between the rollers C and C upon the bridge-plate F, and are adapted to have their ends simultaneously impinge upon the upper faces of the same.

To one end of the shaft E is secured an arm e', which from thence extends rearward and at its rear end engages with a cam G, that is secured to or formed upon the upper one of the rollers C. A spring H, having one end attached to said arm and its opposite end attached to a fixed support above the same, operates to draw such arm upward, and to cause the wipers e and e to be held with a yielding pressure downward upon the blank A when not prevented from so doing.

The throw of the cam G is sufficient so that when in one position it will permit the wiper-arms to press freely upon a blank A, while when occupying an opposite position said cam will raise said wiper-arms until a new blank can pass freely beneath, and its movements are so timed as to cause said wiper-arms to be raised and held in such position until a blank has nearly passed beneath, and then to per-

mit them to impinge upon such blank until, by the action of the feed-rollers C and C, said blank has been drawn beyond their engagement. As the side strips a' and a' of the blank pass from beneath said wiper-arms the action of the spring H causes them to quickly move downward and rearward, and engaging with the waste pieces a^4 and a^4 will instantly "flip" the same rearward out of the way. After such action of the wipers they are promptly raised out of the way of the incoming blank, and the operation described is repeated.

Having thus described my invention, what I claim is—

1. In a box making machine, the combination of mechanism to cut pieces from the stock from which the boxes are to be made, and an arm reciprocable to and from the path of the stock as it comes from the cutting mechanism, that impinges upon the side of the piece cut from the stock and presses the same therefrom substantially as and for the purpose specified.

2. In a box making machine, the combination of mechanism to cut pieces from the stock from which the boxes are to be made, a rock shaft, arms carried by the latter adapted each to engage at its free end the upper side of a piece cut from the stock to press the same downward to expel it from the machine, and means to actuate the rock shaft, substantially as and for the purpose shown.

3. In a box making machine, the combination of mechanism to cut pieces from the stock from which the boxes are to be made, a vertically movable part to engage the upper side of each piece cut from the stock, means for raising said part that leave the same free to act upon said piece before it reaches such part, and means to feed the stock from the cutting mechanism, substantially as and for the purpose described.

4. In a box making machine, the combination of blank forming mechanism composed in part of a roller having knives that are adapted to cut waste pieces from the blank, a bridge over which the blank passes, a rock shaft journaled above said bridge, arms carried by such shaft to engage and expel said waste pieces from the machine, a cam carried by one of the rollers, for moving said arms in one direction, and a spring for moving them in the opposite direction, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of February, A. D. 1895.

HARRY A. WILLARD.

Witnesses:
E. B. POWELL,
F. F. GUMAER.