No. 656,383. Patented Aug. 21, 1900.

J. F. AMES.

BOX PRINTING MACHINE.

(No Model.) (Application filed Mar. 4, 1899.)

Fig. 1.

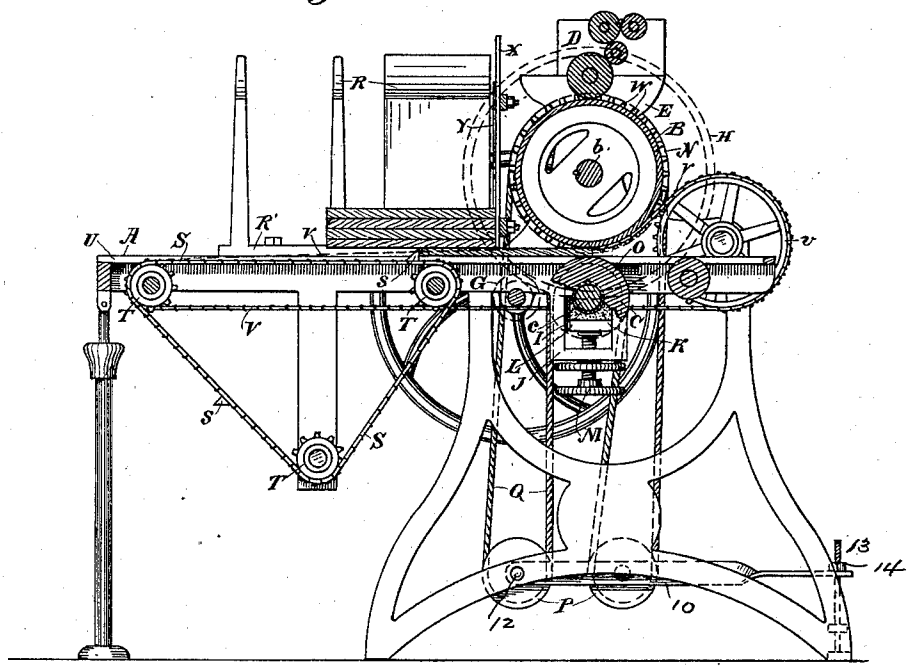


Fig. 2.

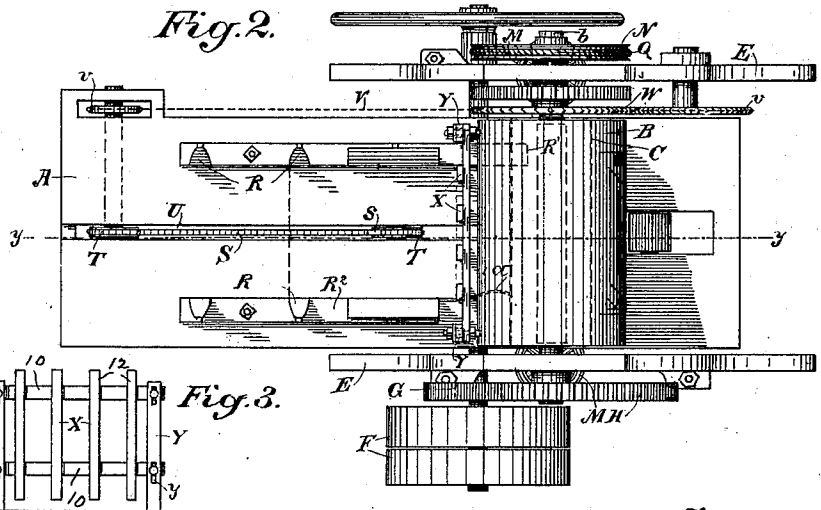


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN FREEMAN AMES, OF PORTLAND, OREGON.

BOX-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,383, dated August 21, 1900.

Application filed March 4, 1899. Serial No. 707,696. (No model.)

To all whom it may concern:

Be it known that I, JOHN FREEMAN AMES, a citizen of the United States, residing at Portland, county of Multnomah, State of Oregon, have invented an Improvement in Box-Printing Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in machines which are designed for printing the boards from which wooden boxes are made.

It consists, essentially, in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section on line *y y* of Fig. 2. Fig. 2 is a top view of the parts below the inking-rollers. Fig. 3 is a detail of stopping-grate.

The machine consists of a table A, upon which the boards to be printed are laid, rollers B and C between which the boards pass, the roller B carrying the engraved surface from which the print upon the board is made, the ink-well, and distributing-rollers shown at D, all of which are supported upon any suitably-disposed legs E and which are well known and form no part of my present invention.

F is the driving-pulley, through which power is transmitted, and a pinion G upon its shaft transmits power to the gear-wheel H, fixed upon the shaft *b* of the upper roller B, so that through this connection the printing-roller is driven.

As the boards which are to be printed are liable to vary somewhat in thickness it is necessary to so mount the lower roller as to allow it to yield and adjust itself to varying thicknesses. The journals on the shaft *c* of this roller turn in boxes I, which are slidable in guides J, so that the boxes may move radially to and from the shaft of the roller B. These boxes are supported upon elastic cushions or springs, as shown at K, resting upon the adjusting-plates L, and these plates are adjusted by means of screws, as shown at M, so as to bring the rollers into proper relation with each other to print the thinnest boards which will be passed between them. If any boards having a greater thickness arrive, the elastic cushions K will yield sufficiently to allow them to pass. With this construction it is necessary to arrange for the transmission of power to drive the lower roller in such a manner that its movement, as above described, will not interfere with the transmission. I have therefore shown the following arrangement: Upon the end of the shaft *b* of the roller B which is opposite to the driving-gear H is a rope-pulley N. Upon the end of the shaft *c* of the lower roller C is a rope-pulley O, and near the bottom of the frame E are journaled the compensating pulleys P. The rope Q passes over the pulley N, thence down around the pulleys P, mounted in a frame 10, pivoted at one end 12 to the frame of the machine and having its opposite end connected with a threaded rod 13, supplied with a nut 14, by which the free end of the frame is adjusted, said frame carrying at its fixed end one of the pulleys P and carrying a second pulley P at a point between said first-named pulley and said free end, thence up over the pulley O upon the end of the shaft *c* of the roller C, and as this connection allows a certain yielding or movement to compensate for the movements of the journal-shaft of the roller C the tension upon the rope will always be maintained sufficiently to drive the rollers properly in unison.

The boards to be printed are placed in a frame consisting of upright standards R, between which the boards are retained, resting upon the table A. In order to move these boards forward in unison with the rotation of the printing-cylinder B, I have shown a centrally-disposed chain S, passing around sprocket-wheels, as shown at T, and through a central slot U, made longitudinally in the surface of the table A, so that the body of the chain passing through this slot is just below the surface of the table. At intervals upon the chain S are projecting lugs *s*, and these lugs are fixed at such intervals that one of them projecting above the surface of the table will engage the lowermost board of the pile and carry it forward between the rollers, so that each board will just meet the printing-surface of the roller B and have the impression made upon it. This carrying-chain is driven by a chain V at one side of the table A, passing around sprocket-wheels *v*, by

which it is guided and carried, and a driving-sprocket W is fixed upon the shaft *b* of the printing-roller B and engages the chain, as shown, so that it and the feed-chain are driven in unison with the movements of the printing-roller.

In order to properly guide the boards as they are moved out of the holding-frame R, I have shown one of the bottom side bars R′ extending a short distance beneath the printing-roller, and upon the opposite side I have shown a spring *a*, which extends from the front end of the opposite guide R^2, so that this spring stands opposite the extension of the guide R′, and the pressure of this spring against the contiguous edge of the board holds the opposite edge of the board in contact with the guide R′ until it is entered between the rollers, and thus insures its passing straight through while being printed.

In order to prevent more than one board from passing by reason of the friction between the surfaces, I have shown a gate or check device consisting of a rack X, including horizontal parallel bars 10 and vertical bars 12, carried thereby, said horizontal bars being adjustably mounted on the standards Y, the latter having slots *y*, by which said rack may be adjusted vertically, so that the lower ends of the vertical bars will just clear the upper edge of the lowermost board, while the remainder of the boards are prevented from moving forward by these bars. The feed-chain S being rotated the lugs *s* will engage the center of each lower board successively and advance it between the printing-rollers at such intervals that the surface of the board will be brought into contact with the printing-surface at each revolution of the roller.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a wood-printing machine, of a roller carrying the type or printing-surface, a means for applying ink thereto, a second roller having each end journaled and turnable in independent and elastic bearings whereby it is movable to and from the first-named roller, and one end is capable of a vertical yield independent of the other end to compensate for different thickness in the board from side to side, means for intermittently passing the boards to be printed between the rollers, and means for transmitting power to rotate the rollers in unison, consisting of a pulley mounted upon the shaft of the upper roller, a second pulley mounted upon the shaft of the lower roller, idler-pulleys journaled at a distance from both the pulleys and upon each side of a line passing through their axes, and a rope or belt passing around the idlers, thence returning to the pulley of the lower roller whereby its length allows it to yield sufficiently to permit the adjustment of the lower roller.

2. The combination in a wood-printing apparatus, of a roller, type or printing-surfaces fixed thereto, and mechanism by which the roller is rotated, a second roller having its journal-boxes supported upon independent elastic bearings whereby each end of the roller is capable of an independent yield and both ends are capable of yielding in unison so that the roller is automatically adjustable to and from the printing-surface to admit boards of varying thickness longitudinally and transversely, and a means for transmitting power from the type-carrying roller thereto, and allowing said adjustment, consisting of a rope, a pulley fixed upon the shaft of the printing-roller around which the rope passes, a second pulley fixed upon the shaft of the adjustable roller, and guide-pulleys situated at a distance beyond the second pulley and upon each side of a line drawn through the axis of the two pulleys over which the rope passes whereby the rope has a length sufficient to allow it to yield to permit of the adjustments of the lower roller.

3. The combination in a box or wood printing machine, of a revoluble roller carrying the type or printing-surface, an opposing roller having its journal-boxes supported by independent elastic bearings whereby the roller is movable to or from the impression-roller, and one end of the roller is capable of yielding independent of the other end to compensate for different thickness in the board from side to side, and a means for transmitting motion from one roller to the other, consisting of grooved pulleys fixed upon the shafts of said rollers, other pulleys journaled in the lower portion of the frame and disposed one upon each side of a line drawn through the axis of the first-named rollers, and a rope passing from the driver over said pulleys thence returning to the driven pulley.

In witness whereof I have hereunto set my hand.

JOHN FREEMAN AMES.

Witnesses:
H. B. TROUSON,
I. C. CLODFELTER.