(No Model.)

3 Sheets—Sheet 1.

C. E. POWELL.

PAPER BOX MACHINE.

No. 487,771. Patented Dec. 13, 1892.

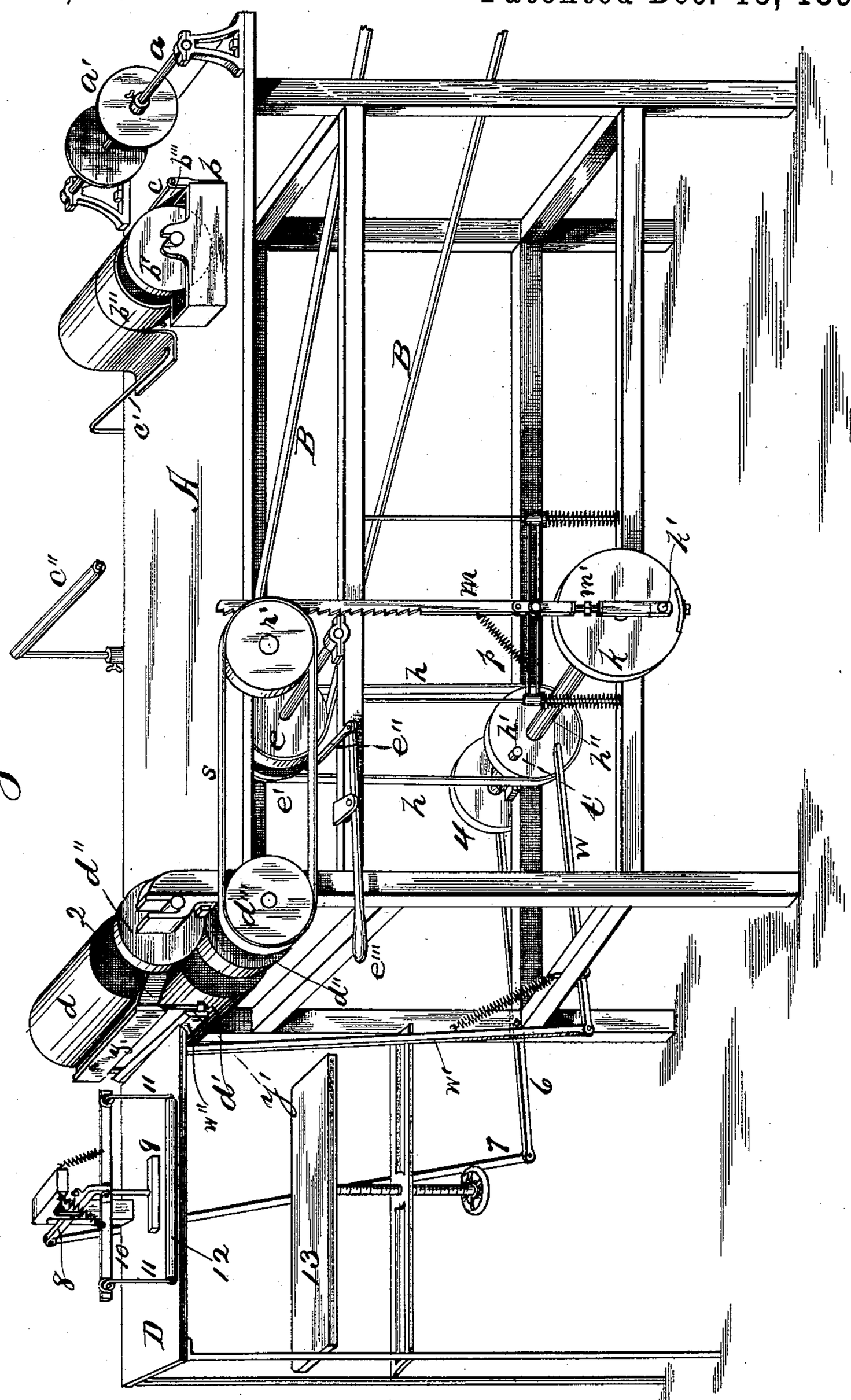

Fig. 1.

WITNESSES:
H. A. Earhart
C. B. Kinnie

INVENTOR,
Chas. E. Powell
BY
Smith & Dickson
ATTORNEYS

(No Model.) 3 Sheets—Sheet 2.

C. E. POWELL.

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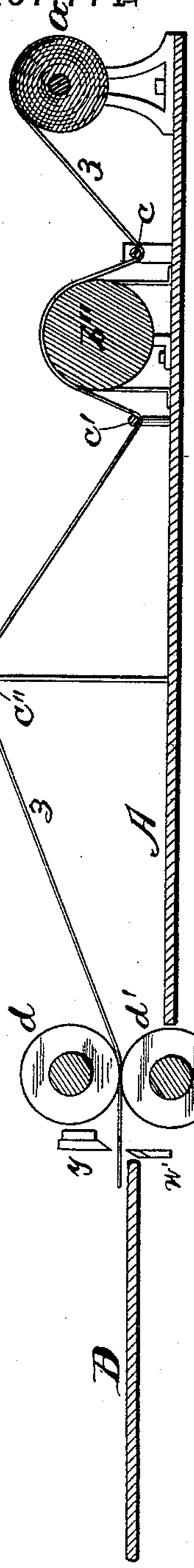

Fig. 2.

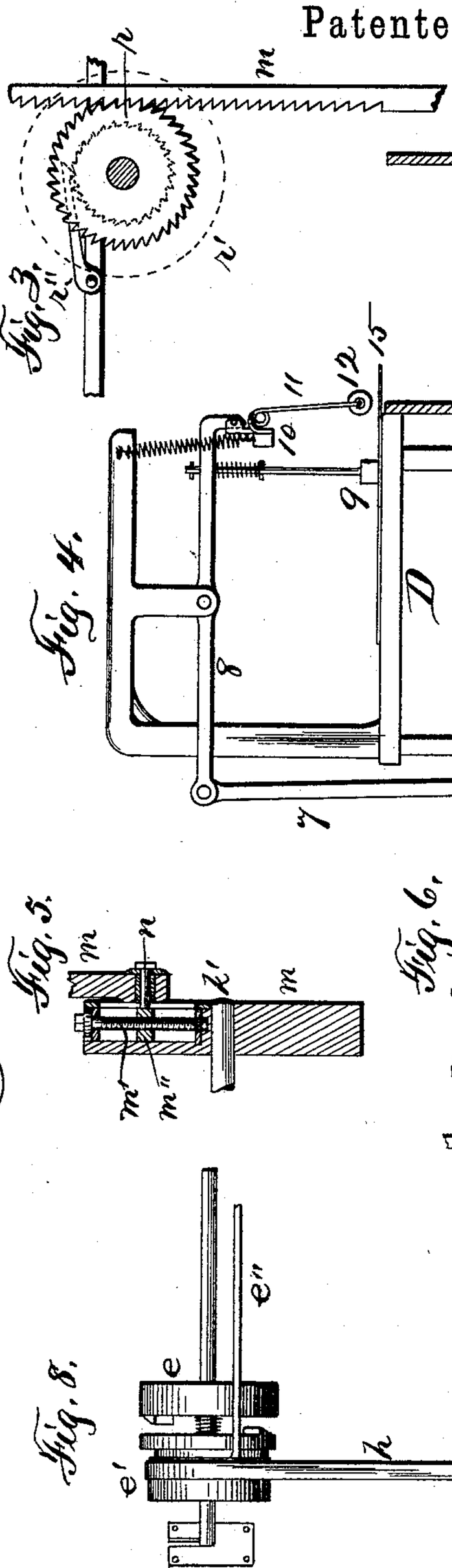

Fig. 3.

Fig. 4.

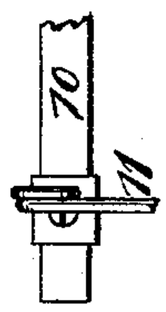

Fig. 7.

Fig. 5.

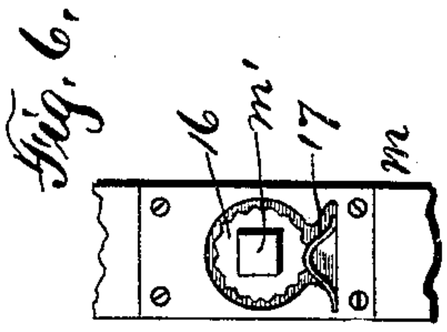

Fig. 6.

Fig. 8.

Fig. 9.

WITNESSES:

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Geo. H. Blowers

INVENTOR.

Chas. E. Powell

BY

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(No Model.) 3 Sheets—Sheet 3.

C. E. POWELL.

PAPER BOX MACHINE.

No. 487,771. Patented Dec. 13, 1892.

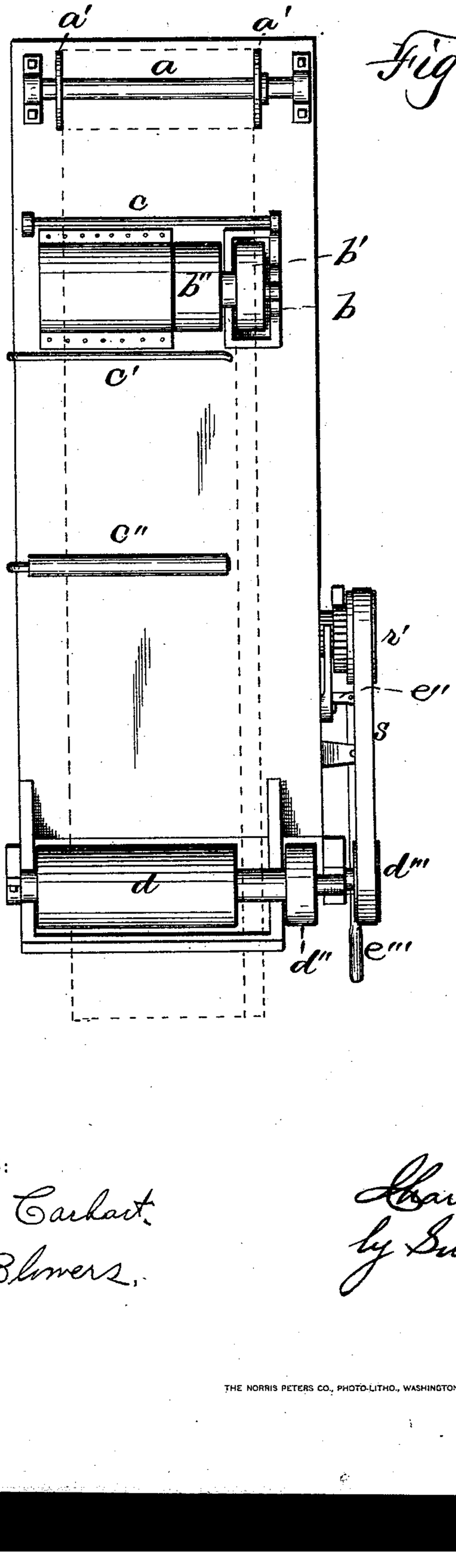

Fig. 10.

WITNESSES:
H. A. Carhart.
J. M. Blowers.

INVENTOR
Charles E. Powell
by Smith & Dewson
his ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES E. POWELL, OF GLOVERSVILLE, NEW YORK.

PAPER-BOX MACHINE.

SPECIFICATION forming part of Letters Patent No. 487,771, dated December 13, 1892.

Application filed May 18, 1892. Serial No. 433,430. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. POWELL, of Gloversville, in the county of Fulton, in the State of New York, have invented new and useful Improvements in Paper-Box Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to pasting-machines, and particularly to that class which are designed for pasting flaps or for pasting down one edge of a piece of cloth or paper, leaving the remainder unsecured, so that it can be folded over as a cover to the box or package.

My object is to produce such a machine adapted to do its work rapidly and well, taking the paper (for illustration) from a roll, pasting it along one edge in the strip as it is unrolled, giving time for the glue, paste, or cement to partially set, cutting off the pieces of a certain length, feeding the cut pieces in succession onto a work-table, holding the piece, and rolling the pasted edge down onto the surface to which it is to be secured, all being automatic except the placing in position of the article to which the strip is to be pasted and its removal after such pasting.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a plan perspective of the machine complete. Fig. 2 is a vertical longitudinal section of the same except the work-table. Fig. 3 is a detail of the rack-feed mechanism. Fig. 4 is a side elevation of the work-table, showing a box in section and in the position for the strip to be pasted thereon. Fig. 5 is a sectional detail of the means for adjusting the length of the rack-bar to vary the feed. Fig. 6 is a top plan of the lower section of said rack-bar, showing the head of the adjusting-bolt and the holding-ratchet and spring-pawl. Fig. 7 is a detail of the spring-arm carrying one end of the roller. Fig. 8 is a front elevation of the shafts, pulleys, and clutch mechanism for driving the machine. Fig. 9 is a view of the paste-box and roller, showing a dog bearing frictionally upon the periphery of said roller. Fig. 10 is a top plan of part of the machine, showing the feeding and pasting mechanisms, the paper being shown by lines, the parallel lines on the right indicating the width of the pasted portion.

A is the bed, supported by standards and the framework between them, all substantially as shown. Upon the bed at one end in suitable bearings erected thereon I mount the shaft *a*, which carries the adjustable reel-disks *a'* or the roll of paper. In front of the reel I mount the paste-box *b*, and in suitable bearings thereon and upon the bed I mount the shaft carrying paste-roller *b'* and the paper-supporting roller *b''*, detached from the paste-roller.

b''' is a dog bearing upon the roller and serves to scrape off the surplus paste before the stock reaches it. These rollers can be secured to or loose upon the shaft. I also mount tension-rods *c* and *c'* upon suitable supports on either side of the paste-box, the one *c'* being shortened, as shown, as hereinafter explained. Another paper-tension bar *c''* is mounted adjustably, as shown, so that its arm projects over the bed. At the opposite end of the bed in suitable bearings I mount the feed-rollers *d* and *d'*, each consisting of a pair of detached rollers, substantially as shown, both of said feed-rollers and the sectional parts thereof being in frictional contact, in the sections *d''* being merely idlers, in that they do not engage with the paper. Upon the shaft of the roller *d'*, exterior to its bearing, I secure the pulley *d'''*.

B is the driving-belt, leading to a source of power and passing over the drive-pulley *e*, mounted below the bed upon a suitably-journaled shaft. A loose pulley *e'* is mounted upon said shaft, and the inner faces of these pulleys *e* and *e'* are adapted to engage as a clutch when the loose pulley is drawn into such engagement by the rod *e''*, operated by the hand-lever *e'''*. A belt *h* leads from the loose pulley over the pulley *h'*, secured upon the shaft *h''*, suitably journaled upon the lower framework. Upon the front of said

shaft I secure a pulley k, provided with a crank-pin k', and m is a sectional rack-bar mounted upon said crank-pin. The sections of this rack-bar are adjustably connected by a threaded bolt m', a nut m'', inserted into a slotway in the end of the lower section, and a pin n, connected to said nut, upon which the upper section is pivoted, said nut being adapted to move vertically in its seat when said bolt is turned. A spring p operates to support said rack-bar in a vertical position and hold its teeth in engagement with the rack-gear r, secured upon the side of the pulley r or upon the shaft upon which it is mounted, and a dog r'', engaging with a supplemental rack upon said shaft, as shown in Fig. 3 by the dotted lines, operates to prevent backward rotation of the pulley r'. A belt s passes over this pulley and the pulley d''' and drives the feed-rolls to feed the paper, the rotation of the crank-pulley and the lifting of the rack-bar rotating said rack, gear, and the pulley r' so long as it is rising, thus creating an intermittent feed. A stud t upon the pulley h' engages with each revolution of the pulley with a lever w, pivotally mounted, and raises an arm w' upon said lever and a knife w'' upon the top of said bar, said knife being provided with eyes which fit loosely over the pins y', secured to the shear-plate y, so that said knife is vertically guided thereby, and its operation is such that it cuts off the paper strip intermittently and at regular intervals into pieces of the desired length and according to the set of the feed mechanism. This shear-plate is supported by arms 2, one secured to the standard (not shown, but behind the end of the feed-roller in Fig. 1) and the other arm fitting loosely around the upper feed-roller shaft.

D is the work-table, suitably supported in such position that each piece of paper as it is cut off is deposited thereon.

As the strip of paper 3 passes over the pasting-roller a part thereof equal in width to the roller b' is pasted, first, however, passing under the tension-bar c, which extends the whole width of the paper, and after being pasted passes under the tension-bar c', which is shorter than the width of the paper, so that it does not reach out to the pasted portion, and thence passes over the bar c'', of substantially the same length as the bar c', and thence to the feed-rollers d, the pasted portion passing between the sections d d'' of said rollers. During the passage of the paper from the pasting-roller to the knife the paste, glue, or other cement has enough time to partially set.

Upon the shaft h'' I secure a disk 4, provided with a side stud 5, and as said shaft and disk are rotated said stud intermittently engages with a lever 6, raising a bar 7, which is connected to a lever 8, supported above the table and provided with a presser-foot 9, adapted to yield vertically, and also provided with a cross-arm 10, to which the spring-arms 11 are connected and which carry the roller 12 between their lower ends.

A table 13 is mounted below the work-table and adjustable vertically, upon which the box 14 is placed, so that its upper edge is substantially flush with said table. Then as a piece of paper is cut off and falls upon the table the stud on the disk 4 strikes the lever, brings the presser-foot down on the paper to hold it against slipping, and then as the movement continues the roller is brought down upon the paper, bending it over into the box, and, following down the inside, rolls the glued edge down and secures the paper to the box. Then as the lever and stud become disengaged the springs 15 raise the roller and presser-foot and release the paper and the box can be removed.

When I adjust the rack-bar, the ratchet 16 on the bolt m and the spring 17, engaging therewith, hold said bolt from accidentally turning and thus varying the length of the strip of paper cut off.

It will be seen that the spring-arms 11, which carry the roller 12, are adapted to permit the roller to be swung outward, so that it will follow down over the edge of the box and inside of it, and the tension of the springs will hold it tightly against the inner wall of said box and so roll the paper down tightly, and said spring-arms also permit said roller to accommodate itself to boxes of varying thickness, whereby it can be operated in different vertical planes, according to the variation in the distance the roller is forced forward out of its normal position when at rest.

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

1. The combination, with the paper-reel, of a paste-box, a shaft mounted transverse thereto, a sectional roller upon said shaft, one section being within said box, and a long tension-rod on one side of the roller and a shorter one on the opposite side.

2. The combination, with the paper-reel, of a paste-box, a shaft mounted transverse thereto, a sectional roller upon said shaft, one section being within said box, a long tension-rod on one side of the roller and a shorter one on the opposite side, and a vertically-adjustable tension-rod over which the paper passes.

3. The combination, with a paper-reel, of a paste-box, a shaft mounted transverse thereto, a sectional roller upon said shaft, one section being within said box, a long tension-rod on one side of the roller and a shorter one on the opposite side, and a vertically-adjustable tension-rod over which the paper passes, and the feed-rollers between which the paper passes.

4. The combination, with the work-table and the box-table below it, of a pressure-roller and means to operate it vertically.

5. The combination, with the work-table

and the box-table below it, of a pressure-roller and means to operate it vertically in different planes.

6. The combination, with the work-table and the box-table below it, of a pressure-roller movable vertically and means to spring it out of one vertical plane into another.

7. The combination, with the work-table and the box-table below it, of a presser-foot holding the paper upon the work-table and a vertically-movable pressure-roller engaging with the projecting edge of the paper to fold it downward.

In witness whereof I have hereunto set my hand this 25th day of April, 1892.

CHAS. E. POWELL.

In presence of—
C. W. SMITH,
HOWARD P. DENISON.