

(No Model.)

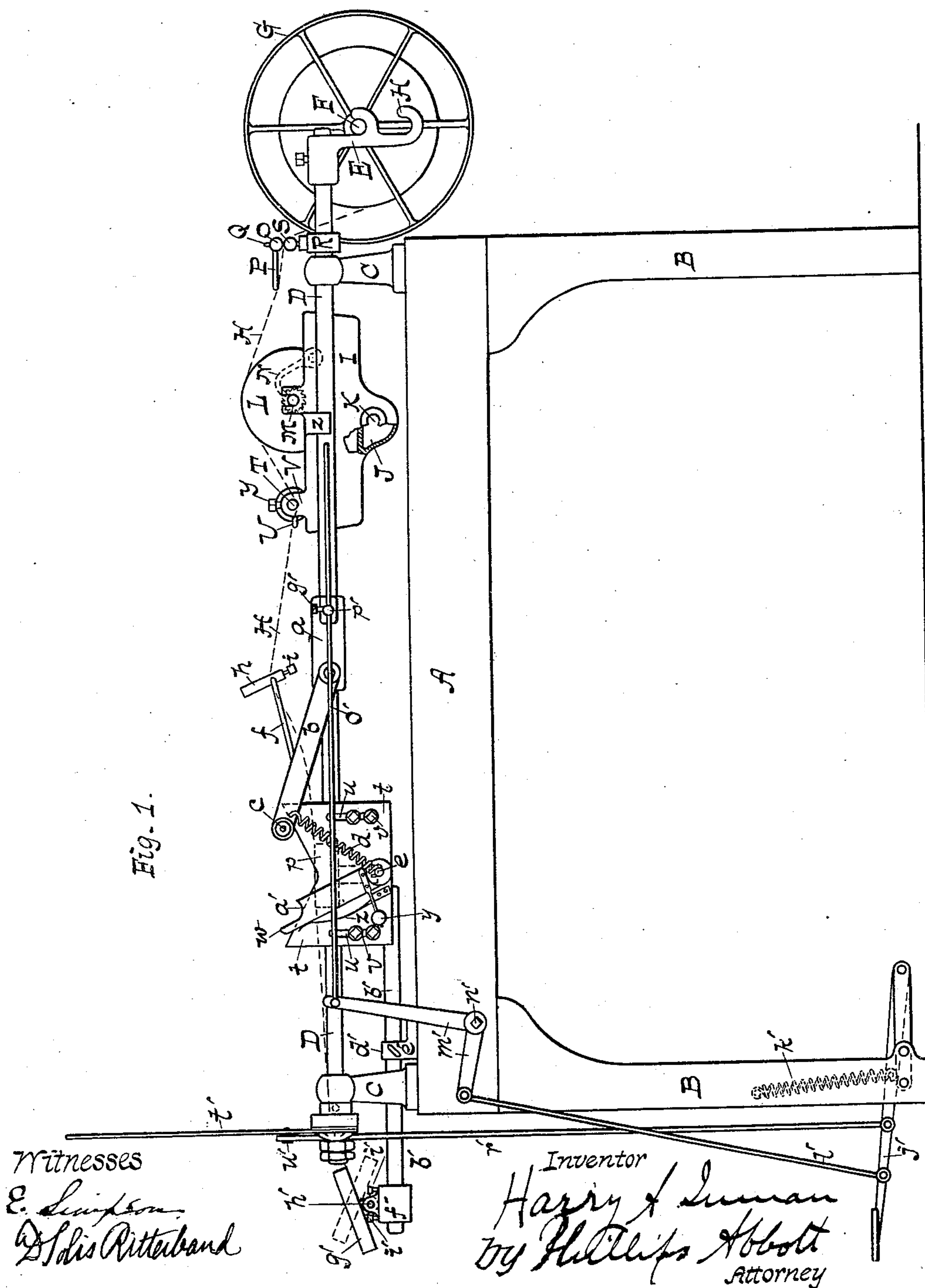
2 Sheets—Sheet 1.

H. A. INMAN.
PAPER BOX COVERING MACHINE.

No. 550,974.

Patented Dec. 10, 1895.

Fig. 1.



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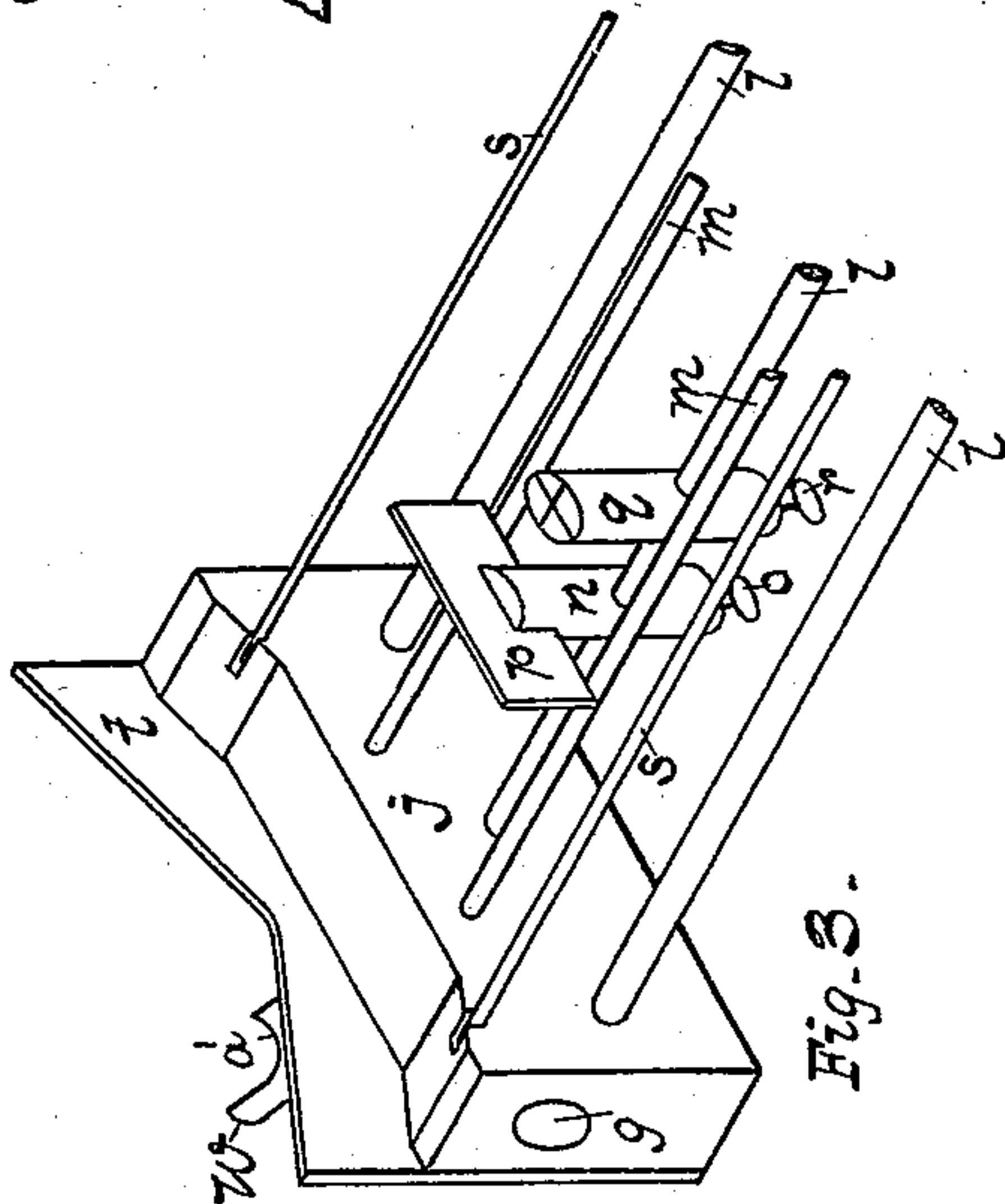
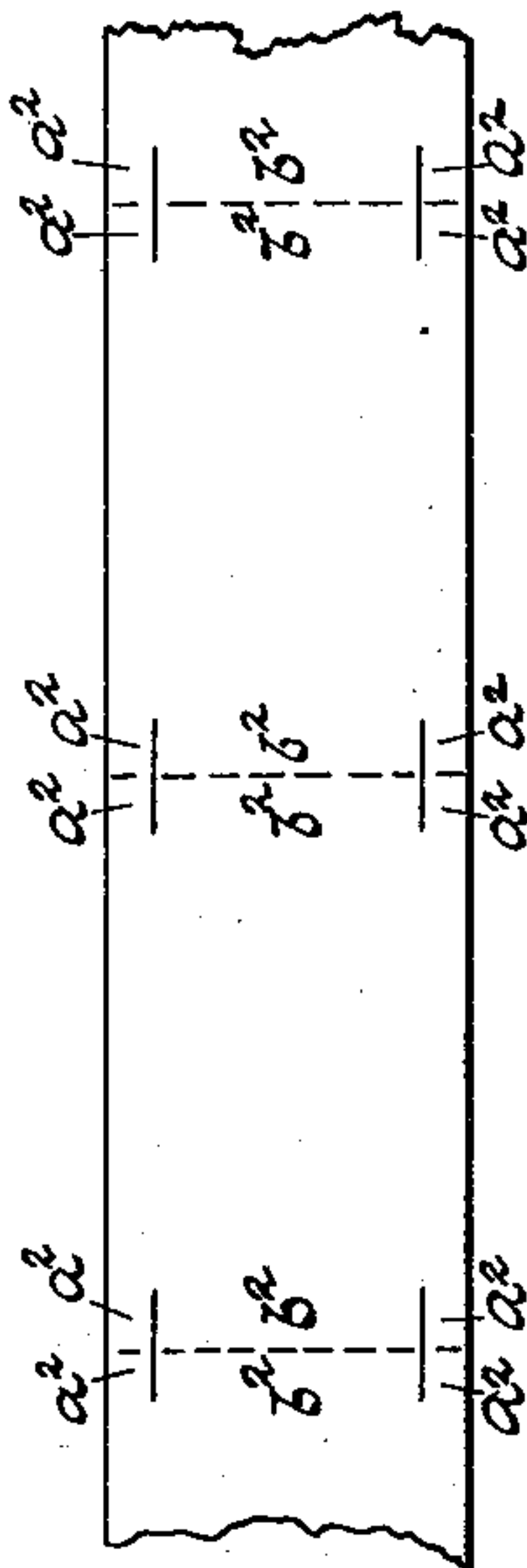
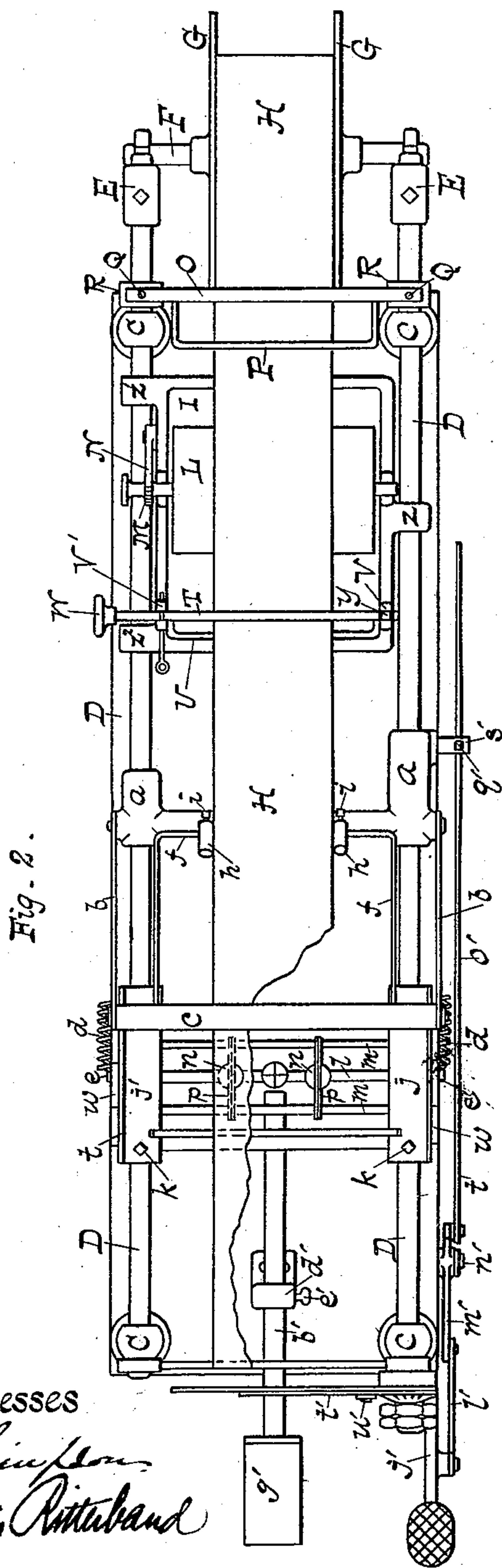
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HARRY A. INMAN, OF AMSTERDAM, NEW YORK.

PAPER-BOX-COVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 550,974, dated December 10, 1895.

Application filed June 18, 1895. Serial No. 553,174. (No model.)

To all whom it may concern:

Be it known that I, HARRY A. INMAN, a citizen of the United States, and a resident of Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Paper-Box-Covering Machines, of which the following is a specification.

My invention relates to improvements in paper-box-covering machines; and it consists, generally stated, in combining in the same machine devices for supporting a continuous roll or strip of paper, devices for continuously and automatically applying adhesive material to one side of the strip of paper, devices for automatically adjusting the amount of adhesive material remaining upon the paper, other devices for longitudinally and transversely cutting the strip of paper at such points as to properly adapt the paper to cover boxes or covers thereof of different sizes, and devices for supporting and adjusting the box or cover blank relative to the end of the machine. These several devices are all of them so arranged and combined that they automatically coact with each other and may be worked by a single operator, who at one and the same operation applies covering-paper both to the top of the cover or bottom of the box, as the case may be, and at the same time on the sides thereof in a continuous manner.

In the drawings hereof, Figure 1 illustrates an elevation of the machine. Fig. 2 illustrates a plan thereof. Fig. 3 illustrates a detail of the scoring devices, somewhat enlarged. Fig. 4 illustrates a diagrammatical view of a strip of paper as cut by the machine.

A is the bed of the machine, supported upon legs B. These parts may be of any preferred construction.

C C C are four posts located at the corners of the frame A, upon which two lateral bars D D are supported. They project rearwardly, as seen at the right hand, and hangers E E are supported upon the projecting ends, in which a shaft F is journaled, which supports a reel G, containing the endless band of paper H.

I is a glue-pan having a heating-box J, (see

Fig. 1,) which may be heated by steam entering at K, or otherwise.

L is a glue-roller revolving in the glue-tank, the lower arc of which dips in the adhesive material.

M is a toothed pinion, and N is a gravity-acting pawl coacting with it, whereby rotation of the glue-roller backwardly is avoided.

O is a cross-bar having a wire link P on one side of it, which presses against the paper. This bar O is supported upon two pins Q Q, which project upwardly from supports R, adapted to slide on the rods D. S (see Fig. 1) is another cross-rod directly beneath the rod O, likewise supported upon the pins Q Q.

T is an adjustable scraper. It comprises a cross-shaft, as shown, and a link U, fastened to it, the whole being adapted to rotate in bearings V V', being turned by a thumb-nut W, and provided with a set-screw Y, whereby the scraper can be set when once adjusted.

The entire gluing device, as shown, is supported upon brackets Z, Z', and Z², which are hollowed out on their under sides so as to fit over and slide upon the rods D D.

a a are two blocks adapted to slide upon the bars D D, and to them are pivoted two arms b b, which have a soft-metal roller c, pivoted in their upper ends.

d d are two springs connecting the upper ends of the arms b with studs e, as shown.

f is a wire, the ends of which are attached to the blocks j j' of the cutter-frame hereinafter to be explained, and upon this wire f are arranged two adjustable guides h h, which are adapted to move laterally on the wire f and to be set by set-screws i i.

j j' are two blocks adapted to slide longitudinally upon the bars D D, said blocks being bored, as at g, (see Fig. 3,) for that purpose and to be set in any desired position by set-nuts k k, and these blocks are rigidly fastened together by a series of bars l l l, firmly attached to them, so as to make a rigid frame. m m are two additional rods located somewhat above the rods l l l.

n n are two blocks or posts adapted to slide laterally upon the central rod l and to be set thereon by set-screws o, (see Fig. 3,) and p p are two knives having their cutting-edges presented upwardly and fastened in the up-

per ends of the posts *n n* and so adjusted as to lightly rest upon the cross-rods *m m* and to be supported by them.

q is another post supported upon the central cross-bar *l*, which is ordinarily stationary and which normally maintains a fixed position in the medial line of the machine; but in order to secure accuracy in adjustment and lateral movement of it at any desired time I provide it also with a set-nut *r*. (See Fig. 3.) Its purpose is to serve as a guide or measuring-point for the adjustment of the guides *h h* and certain other parts of the machine, all of which are preferably adjusted from the crossing lines on the top of this post, as seen in Figs. 2 and 3.

s s are two light rods or wires, which cross from side to side of the cutter-frame and serve as supports for the paper when severed at the box or cover, so that it cannot drop upon the machine and adhere to or smear the same with the adhesive material.

t t are vertically-adjustable side plates, slotted, as at *u*, and provided with set-nuts *v v*, whereby their vertical position can be adjusted.

w w are two light strips of metal pivoted at *e* and provided with counterpoises *y* and springs *z*. Near their upper ends these plates are hollowed out into a cup-shaped form, as at *a'*.

b' is a longitudinally-sliding bar or rod supported in a stud *d'*, furnished with a set-screw *e'*, and on the end of it is a hub *f'*, which supports a box-form *g'*, which is adapted to rock upon this hub by a pivotal bearing *h'*, provided with two set-nuts *i' i'*, so that the degree of oscillation or tip of the box-form *g'* can be regulated.

j' is a treadle-bar provided with a retractile spring *k'*.

l' is a rod connecting with a bell-crank lever *m'*, pivoted at *n'* to the side of the frame and pivotally connected at its upper end with a longitudinally-sliding bar *o'*, which engages at *p'* by means of a set-screw *q'* with a stud *s'*, attached to the sliding block *a*. (See Fig. 2.) Another rod *r'* connects with the movable blade *t'* of a pair of shears at *u'*. (See Fig. 2.)

The operation of the apparatus is as follows: An endless roll or strip of paper is placed upon the spool or shaft *F G*. The end of the paper is thence pulled forwardly between the cross-bars *O S*, under the link *P*, over the glue-roller *L*, through the scraper *T U*, over the wire *f*, between the guides *h*, which are properly adjusted for the purpose beneath the roller *c*, over the cutters *p p*, and thence between the blades of the shears to the box-form. The operator putting a box-blank upon the box-form *g'* when it is in its forwardly-tipped position, as shown in dotted lines in Fig. 1, takes hold of the end of the paper and pulls it forwardly until it properly registers with the cover. He then applies his foot to the treadle, whereupon the movable blade of the shears *t'* is brought down and cross-cuts

the paper, and at the same time the rod *l'*, acting through the bell-crank *m'* and rod *o'*, slides forward the blocks *a a*, whereupon the roller *c* slides down the inclined edges of the plates *t* until the roller comes in contact with the upper edges of the knives *p p* and the vertical position of the plates *t* is adjusted to the desired length of longitudinal cut on the paper. If the box or cover is a deep one, this longitudinal cut will be increased; if shallow, decreased. The roller rolls across the upper edges of the knives until it comes in contact with the reverse or oppositely-inclined surface of the side plates *t*, and then it rises, leaving the cutters, and soon comes in contact with the edge of the plates *w* and presses them backwardly, overcoming the stress of the springs *z z*. When the roller has passed above the edge of the cup-shaped notch or recess in the side plates *w*, then the springs *z* press these plates forwardly and the roller rests in the cup-shaped notch or recess, and upon the return movement these side plates travel with the roller *c* and cause it to describe an upward arc and not come in contact with the cutters at all, until finally it is again engaged with the primarily inclined surface of the upper edge of the plates *t t*, and thereupon, as it continues its upper movement, the plates *w w* are released and, under the action of the counterpoises *y y*, are returned to their normal position, resting against the light springs *z z*, ready for a second operation. The springs *d d* hold the roller *c* in close contact with the inclined surface of the plates *t t* or on the upper edges of the cutters *p p*, as the case may be, and it will be observed that all of the parts are adapted to longitudinal adjustment, so that the paper will be scored or cut in such manner as to fit any sized box or cover. These adjustments are secured by reason of the fact that the devices which apply the adhesive material are adapted to slide longitudinally upon the bars *D D*, thus allowing a greater or less amount of coated paper between the said device and the box; also the cutter-frame with the roller *c* and all its appliances are likewise longitudinally adjustable upon the rods *D D*, and also the box-form supported upon the rod *b'* is longitudinally adjusted, and it will be further observed that the adjustment may be such that a single piece of paper only will be longitudinally slit and cross-cut, or, if the boxes or covers are small, there may be a plurality of longitudinal slits made in the web before the cross-cut of the shears takes place.

The box-form *g'*, as already stated, is so made as to oscillate or tip upon its pivotal support *h'*, so that after the operator has applied the paper to the end of the box or cover which is nearest him, the box-form being tipped, the end or side which is farthest from him may be more conveniently manipulated, and, as shown in the diagrammatical sketch, Fig. 4, the end pieces *a² a²* will be bent around the corners of the box or cover first, and then

the flap $b^2 b^2$, &c., of each piece will be turned down over the end or side of the box or cover covering the turned-in ends $a^2 a^2$, and the adjustment may be such that there will be sufficient paper to turn in on the inside of the box or cover, if desired.

The scraper T U is an adjustable one, as will be readily understood by inspection of Fig. 2—that is to say, the paper passes between the cross-bar T and the link U, and consequently upon turning the cross-bar T by the hand-wheel W the link U is brought with greater or less force against the under or base side of the web of paper. Thus surplus of the adhesive material and all bubbles or coagulated portions of it are removed and they drop back again into the glue tank or trough. The set-screw Y clamps the scraper in the desired position. Thus differences in the adhesive material or different kinds of adhesive material may be employed and the proper amount and its proper application and spreading upon the web will be regulated. Adjustable scrapers or other forms may be employed, if preferred.

It will be apparent to those who are familiar with this art that modifications may be made in the details of construction of the parts of my improved machine and still its essentials be employed. I therefore do not limit myself to such details of construction, although those illustrated and described by me have been found very effective for the purposes stated.

I claim—

1. The combination of a support for a roll of paper, a glue roller and tank, an adjustable scraper, knives set in the line of the paper, a sliding roller adapted to move longitudinally in contact with the knives, shears to cut the paper transversely and a treadle connected with the roller and shears, for the purpose set forth.

2. The combination of a support for a roll of paper, a glue roller and tank, a scraper, knives set in the line of the paper and adapted to lateral adjustment, a sliding roller adapted to move longitudinally in contact with the knives, shears to cut the paper transversely and a treadle connected with said roller and shears, for the purposes set forth.

3. The combination of a support for a roll of paper, devices for continuously applying adhesive material to the paper, knives set in the line of the paper, a sliding roller adapted to move longitudinally in contact with the knives, and shears to cut the paper transversely, for the purposes set forth.

4. The combination in a box covering machine of laterally adjustable knives arranged to cut the paper longitudinally, a movable roller adapted to press the paper upon said knives and shears to cut the paper transversely, for the purposes set forth.

5. The combination in a box covering machine of laterally adjustable knives adapted to cut the paper longitudinally, guides to adjust the paper relative to said knives, and a

device to press the paper upon the knives, and a shears to cut the paper transversely, for the purposes set forth.

6. The combination of a support for a roll of paper, devices to apply adhesive material to the paper, knives adapted to cut the paper longitudinally, a device to press the paper upon the knives, and shears to cut the paper transversely, for the purposes set forth.

7. The combination in a machine for covering boxes of knives adapted to cut the paper longitudinally, a movable device to press the paper upon the said knives, means to move said device forwardly and backwardly, and means to remove said pressing device from the knives in its backward movement, for the purposes set forth.

8. The combination in a box covering machine of a frame having vertically adjustable side plates, each having a double inclined upper edge, knives carried by said frame adapted to cut the paper longitudinally, a device to press the paper upon the knives and which engages with the double inclined edges of said side plates, for the purposes set forth.

9. The combination in a box covering machine of a frame having vertically adjustable side plates, each having a double inclined upper edge, knives carried by said frame adapted to cut the paper longitudinally, a device to press the paper upon the knives and which engages with the double inclined edges of said side plates, and pivoted plates which receive said presser device upon their upper ends upon the completion of its forward movement, and prevent its contact with the paper or knives upon its return movement, for the purposes set forth.

10. The combination in a box covering machine of a frame having vertically adjustable side plates, each having a double inclined upper edge, knives carried by said frame adapted to cut the paper longitudinally, a device to press the paper upon the knives and which engages with the double inclined edges of said side plates, pivoted plates which receive said presser device upon their upper ends upon the completion of its forward movement, and prevent its contact with the paper or knives upon its return movement, and devices for laterally adjusting said knives, for the purposes set forth.

11. The combination of a support for a roll of paper, a longitudinally adjustable device for applying adhesive material, longitudinally and laterally adjustable knives set in the line of the paper, a device adapted to move independently of the knives and to press the paper upon them, devices to remove said pressure device from contact with the paper or the knives in its return movement, and shears to cut the paper transversely, for the purposes set forth.

12. The combination of a support for a roll of paper, devices to automatically apply adhesive material to one side of the paper, laterally adjustable knives adapted to slit the

paper longitudinally, a device to press the paper upon said knives, devices to prevent said pressure device from engaging with the knives or paper on its return movement, and
5 a longitudinally adjustable box form or support, for the purposes set forth.

13. The combination of laterally adjustable knives adapted to slit the paper longitudinally, a device to press the paper upon said
10 knives, devices to prevent said pressure device from engaging with the paper on its return movement, and a longitudinally adjustable and oscillating box form or support, for the purposes set forth.

15 14. In a box covering machine, laterally adjustable guiding devices for the strip of paper, a frame supporting knives adapted to slit the paper longitudinally, said knives having lateral adjustment, a device to press the
20 paper upon the knives and devices to regulate the duration of contact between the knives and the said pressure device, for the purposes set forth.

15 15. In a box covering machine, laterally adjustable guiding devices for the strip of paper, a frame supporting knives adapted to slit the paper longitudinally, said knives having lateral adjustment, a device to press the
25 paper upon the knives devices to regulate the duration of contact between the knives and the said pressure device, and devices which receive the said pressure device at the end of its forward movement and support the
30 same free from contact with the paper or knives during its return movement, for the purposes set forth.

16. In a box covering machine, laterally adjustable guiding devices for the strip of paper, a frame supporting knives adapted to
40 slit the paper longitudinally, said knives having lateral adjustment, a device to press the paper upon the knives devices to regulate the duration of contact between the knives and the said pressure device, devices which
45 receive the said pressure device at the end of its forward movement and support the same free from contact with the paper or knives during its return movement, and a longitudinally adjustable box form, for the purposes
50 set forth.

17. In a box covering machine, laterally adjustable guiding devices for the strip of paper, a frame supporting knives adapted to slit the paper longitudinally, said knives having
55 lateral adjustment, a device to press the paper upon the knives, devices to regulate the duration of contact between the knives and the said pressure device, devices which receive the said pressure device at the end of
60 its forward movement and support the same free from contact with the paper or knives during its return movement, and a longitudinally adjustable and oscillatory box form, for the purposes set forth.

65 18. A box covering machine comprising essentially a support for a roll of paper, devices for applying adhesive material to one

side thereof, devices for longitudinally slitting the paper, other devices for transversely cutting the paper and devices to support the
70 box or cover blank, each of said devices being longitudinally adjustable, for the purposes set forth.

19. In a box covering machine the combination of a frame carrying knives adapted to
75 cut the paper longitudinally, vertically adjustable side plates having double inclined upper surfaces, pivoted plates at the sides of said frame having counterpoises, a spring for the support of said plates, a roller supported
80 upon pivoted arms and adapted to engage with the double inclined upper edges of said side plates, and with said knives and means whereby said roller may be moved longitudinally, for the purposes set forth. 85

20. In a box covering machine, the combination of a frame carrying knives adapted to cut the paper longitudinally, vertically adjustable side plates having double inclined upper surfaces, pivoted plates at the sides of
90 said frame having counterpoises, a spring for the support of said plates, a roller supported upon pivoted arms and adapted to engage with the double inclined upper edges of said side plates and with said knives, means where-
95 by said roller may be moved longitudinally, and one or more springs which secure contact between said roller and said double inclined plates and said knives, for the purposes set forth. 100

21. In a box covering machine, a device for longitudinally slitting the paper, comprising laterally adjustable knives adapted to slit the paper longitudinally, vertically adjustable
105 side plates, a longitudinally movable device for pressing the paper upon the knives, and one or more springs, which press the said pressure devices against the cutters, for the purposes set forth.

22. In a box covering machine the combination of a support for a roll of paper, a rotary glue roller, a glue pan or tank within
110 which the roller revolves, intermittently acting slitting devices adapted to cut the paper longitudinally, and a shears or like device for
115 cutting the paper transversely, for the purposes set forth.

23. In a box covering machine, the combination of a support for a roll of paper, a rotary glue roller, a glue pan or tank within
120 which the roller revolves, intermittently acting slitting devices adapted to cut the paper longitudinally, a shears or like device for cutting the paper transversely, and a form or support for the box or cover, for the purposes set
125 forth.

Signed at Amsterdam, in the county of Montgomery and State of New York, this 23d day of May, A. D. 1895.

HARRY A. INMAN.

Witnesses:

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