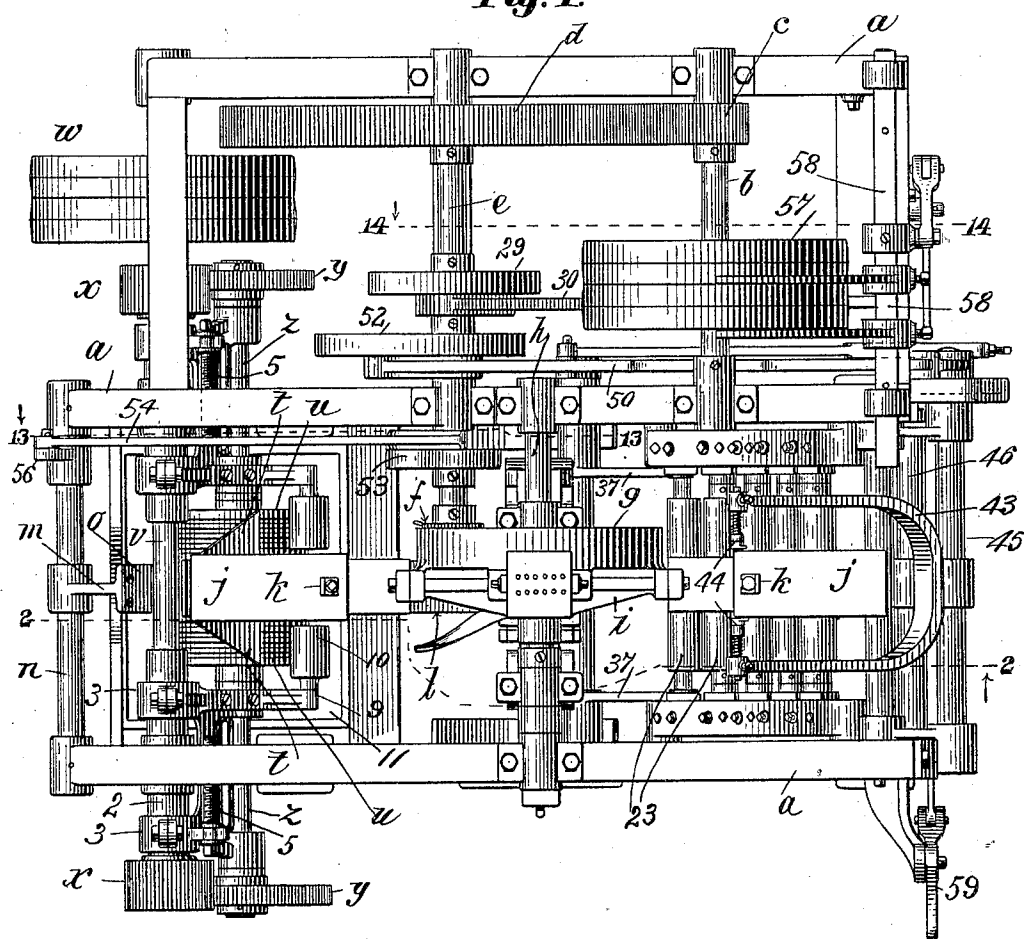


L. F. FALES.
PAPER BOX MACHINE.

(Application filed July 26, 1900.)

(No Model.)

6 Sheets—Sheet 1.

Fig. 1.

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No. 672,430.

Patented Apr. 16, 1901.

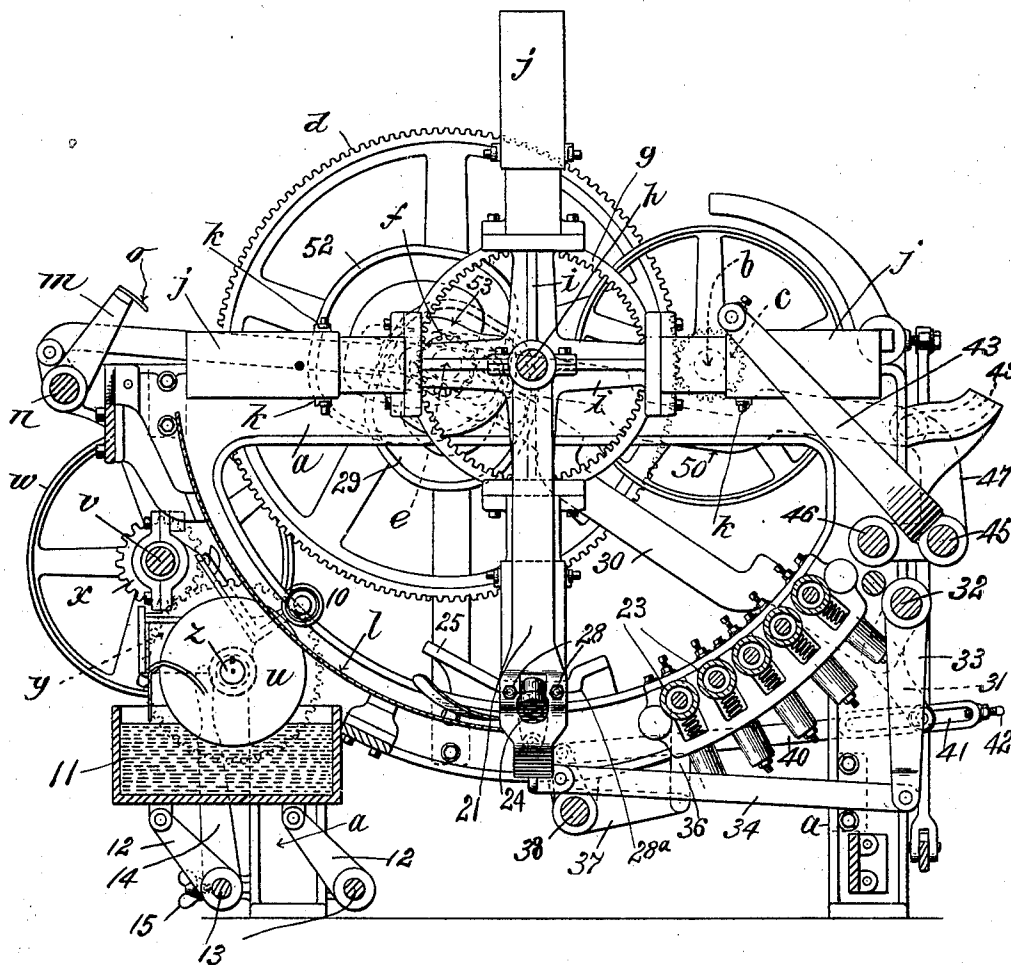
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(Application filed July 26, 1900.)

6 Sheets—Sheet 2.

Fig. 2.



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PAPER BOX MACHINE.

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Fig. 3.

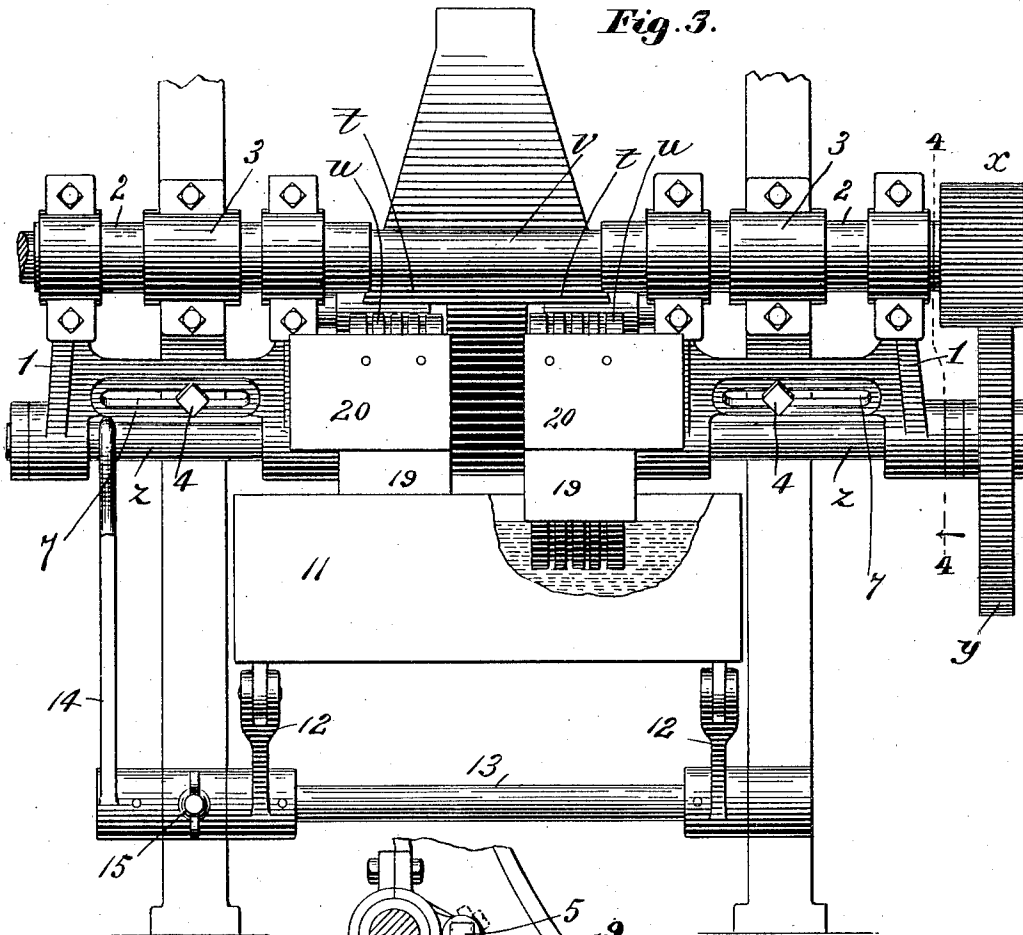
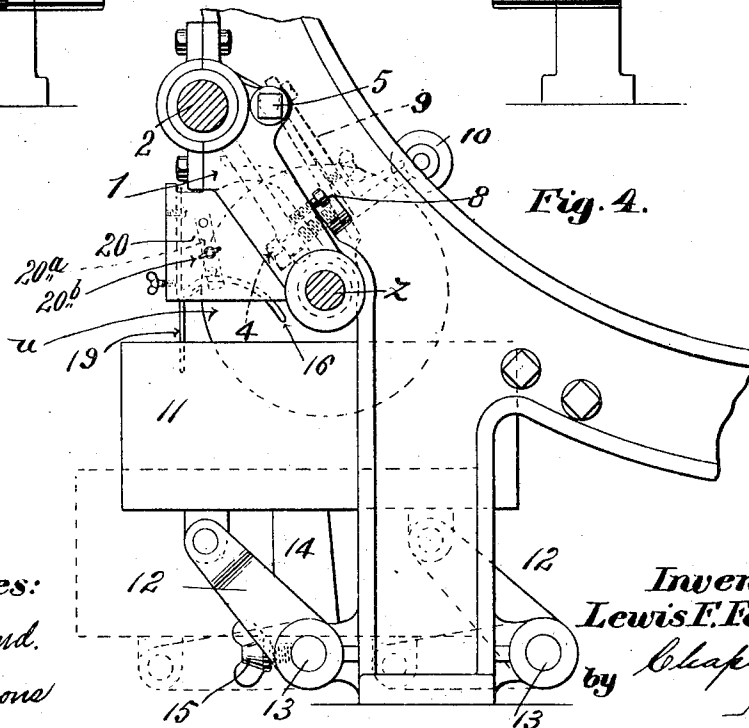


Fig. 4.



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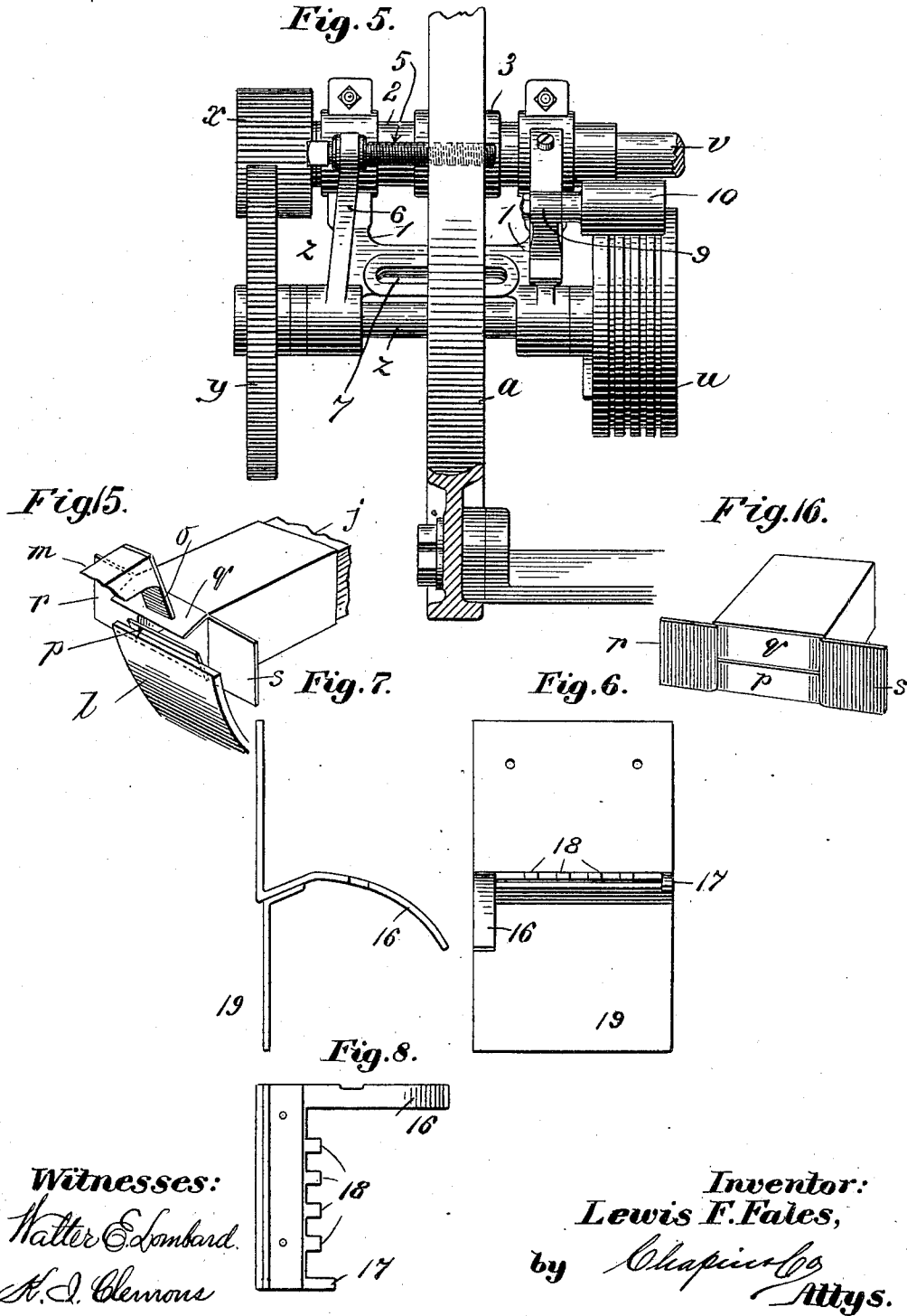
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PAPER BOX MACHINE.

(Application filed July 26, 1900.)

(No Model.)

6 Sheets—Sheet 4.



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L. F. FALES.
PAPER BOX MACHINE.

(No Model.)

(Application filed July 26, 1900.)

6 Sheets—Sheet 5.

Fig. 9.

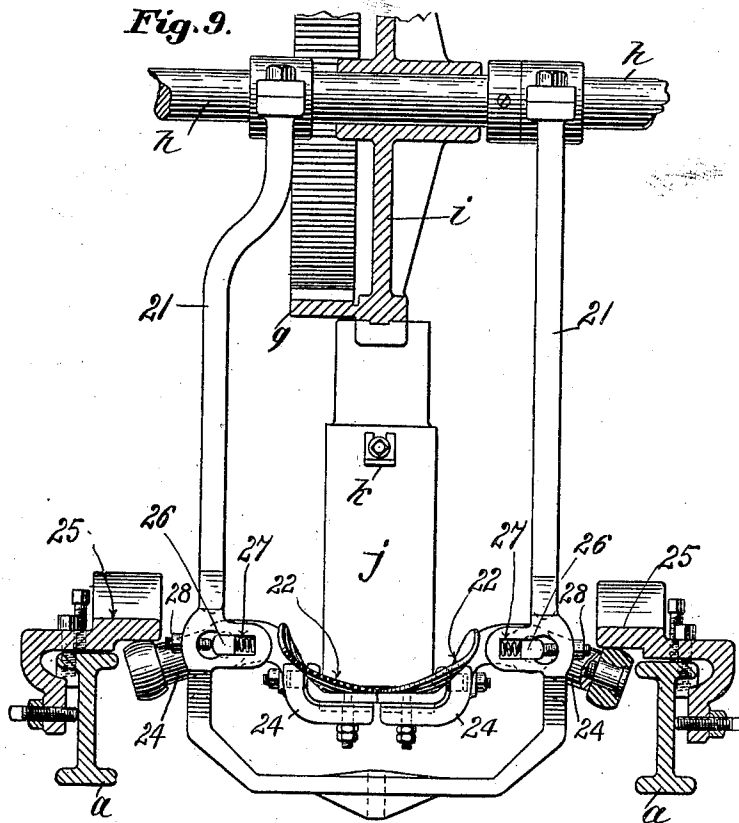


Fig. 12.

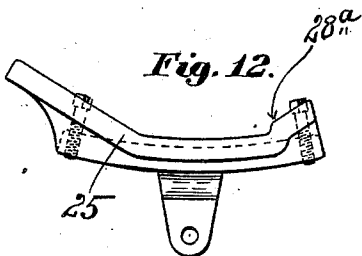


Fig. 10.

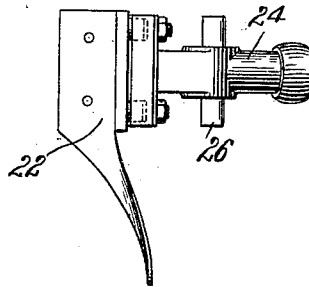
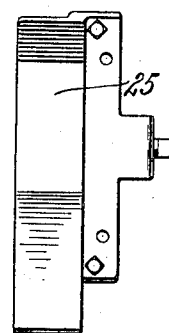


Fig. 11.



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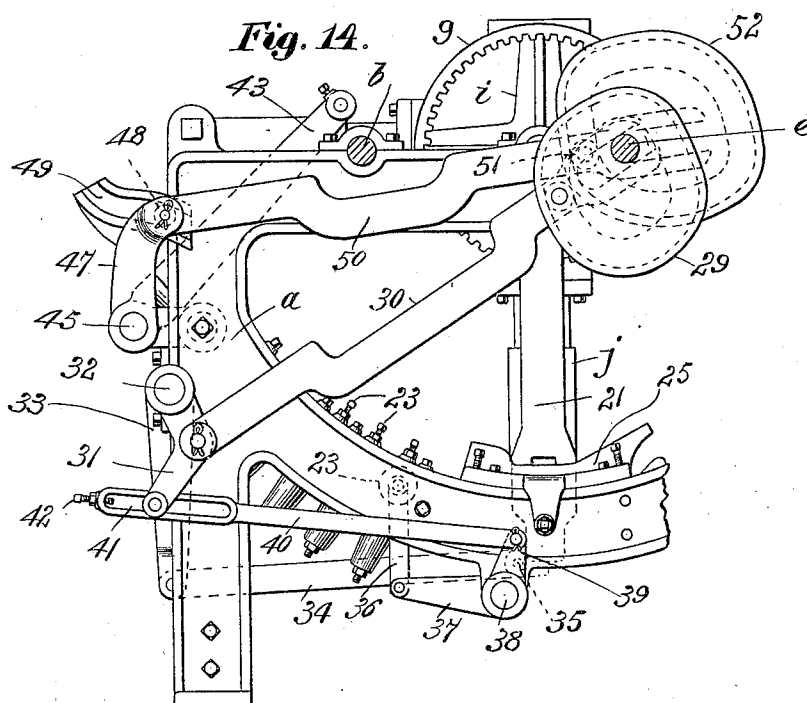
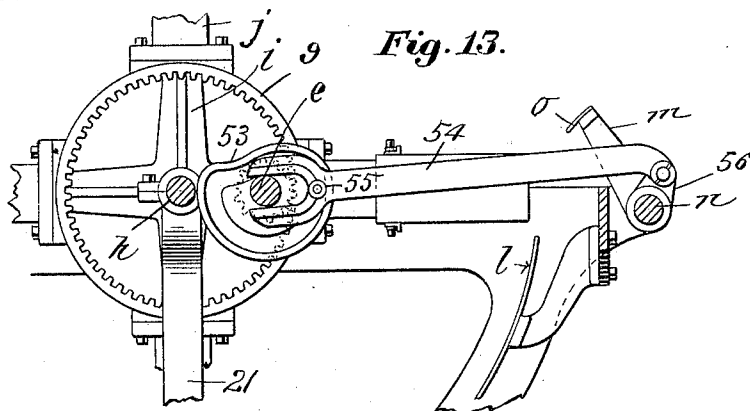
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PAPER BOX MACHINE.

(Application filed July 26, 1900.)

(No Model.)

6 Sheets—Sheet 6.



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UNITED STATES PATENT OFFICE.

LEWIS F. FALES, OF WALPOLE, MASSACHUSETTS, ASSIGNOR TO F. W. BIRD & SON, OF EAST WALPOLE, MASSACHUSETTS.

PAPER-BOX MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,430, dated April 16, 1901.

Application filed July 26, 1900. Serial No. 24,853. (No model.)

To all whom it may concern:

Be it known that I, LEWIS F. FALES, a citizen of the United States of America, residing at Walpole, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Paper-Box Machines, of which the following is a specification.

This invention for improvements in machines for making paper boxes more particularly relates to devices for closing and gluing or cementing the flaps which constitute the bottom or one end wall of the box, the other end thereof, as understood, being left open, as common in a well-known form of telescoping box or case, and is in the nature of an improvement on Letters Patent of the United States issued to me August 22, 1893, and numbered 503,907.

The improvements relate particularly to the gumming devices, to means for turning in the end sections of two opposite sides of the box over the previously-inturned end sections of the other two sides, to devices for pressing these inturned end sections (which together form the closure for the end of the box) upon one another without distorting the box from its proper rectangular form, to devices for removing the box from the former, over the end of which the end sections are folded, and to various improvements in the construction of the machine incidental to the above-specified general improved features, all as will be fully set forth in the following specification and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a plan view of the machine embodying this invention. Fig. 2 is a side elevation in section on line 2 2, Fig. 1. Fig. 3 is an enlarged view of a portion of the front end of the machine. Fig. 4 is an enlarged sectional elevation on line 4 4, Fig. 3. Fig. 5 is an elevation of one of the glue-wheels and its adjusting mechanism from the inside of the machine. Figs. 6, 7, and 8 are respectively an inner view, an edge view, and an inverted plan view of the "doctor-plate." Fig. 9 is a view of the swinging frame for turning in the end-closing sections of the box, portions thereof being shown in section. Fig. 10 is a plan view of one of the folding-

wings which turn in the end sections of the box. Figs. 11 and 12 are respectively a plan and elevation of one of the cams which operate the folding-wings. Fig. 13 is a sectional elevation on line 13 13, Fig. 1; and Fig. 14 is a sectional elevation on line 14 14, Fig. 1. Fig. 15 is a perspective view of a box at the beginning of the operation of the end-closing mechanism. Fig. 16 is a perspective view of a box, showing two of the end-closing sections thereof infolded and the other two sections in position to receive the glue, the path of the glue-wheel across said section being indicated in shade lines.

The form of box-blanks such as may be operated by this machine is shown in Figs. 15 and 16 and has four end sections, two opposite ones being first infolded, and then the remaining opposite ones, after having glue or other cement applied thereto and to a part of the already-infolded sections, are folded over onto the latter, and the end sections are then pressed together to complete their adhesion and effect the closure of the end of the box.

On a suitable frame *a* a driving-shaft *b* is mounted, on which is a driving-pulley. On the outer end of this shaft *b* is a pinion *c*, which meshes with a large gear *d* on a second shaft *e*. On the inner end of this shaft is a pinion *f*, which meshes with the internal gear *g*, supported on the shaft *h*, and it is on this shaft that the frame *i* is mounted, which comprises several radial arms, on the outer extremities of which are mounted formers or carriers *j*, onto which the boxes are slipped and over the ends of which the end sections of the box are folded and gummed to close the end thereof, as will be hereinafter described.

Suitable gages *k* are secured to the formers or carriers *j*, which are adjustable toward and from the outer end of the former, whereby the folding-lines of the end sections of the box may be brought accurately to the plane of the end of the former.

As in my said former patent, an attendant stands beside the machine and slips the tubular body-blanks of the boxes onto the formers or carriers as the latter slowly revolve. When the box is thus placed on the carrier, the end-closing sections of the blank will lie

substantially in the plane of the sides of the carrier, and, as in my former patent, a curved guide-plate *l* is provided, which is supported in the frame of the machine in close proximity to the path of the ends of the carriers as the latter revolve, and the end-closing section of the box, which lies on the under side of the carrier, comes in contact with the upper edge of the said guide-plate *l* and is thereby turned in across the end of said carrier. (See Fig. 15.) At this point an arm *m*, mounted on a shaft *n*, is made to swing down toward the upper end of the guide-plate *l*. This arm *m* is provided at its outer end with a blade *o*, which is adapted to strike the opposite end section of the box to that acted upon by the upper end of the guide-plate *l* and fold in that section over the end of the carrier *j*, all as described in my said former patent. The aforesaid end-closing sections of the box are indicated in Figs. 15 and 16 by the letters *p* and *q*, Fig. 15 showing said sections partially infolded, and Fig. 16 showing them as they are held during their passage over the guide-plate *l*. It is seen that the opposite end-closing sections (indicated by *r* and *s*) lie substantially at right angles to the carrier, and it is while they are in this position that these end-closing sections of the box are subjected to the action of the gumming devices. The said sections *r* and *s* are forced outward into the plane of the end of the carrier by coming in contact with the flat surfaces *t* of the guide-plate *l*, (see Figs. 1 and 3,) which, beginning at the upper end of said plate, gradually taper outward and terminate near the periphery of the glue-wheels *u u*, where the guide-plate *l* is narrowed sufficiently to permit it to pass between said glue-wheels, the latter, as shown in Fig. 3, being separated to an extent slightly less than the width of the box.

The construction of the gumming devices of the machine embodies many features of improved construction over that shown and described in my said former patent and which will now be described.

Figs. 2, 3, 4, and 5 more particularly illustrate the construction of the gumming devices, and referring to Figs. 3 and 4, *v* indicates a shaft of the machine driven by independent pulleys *w*. (Shown in Figs. 1 and 2.) On each end of this shaft is a wide-faced gear *x*, (see Fig. 1,) in mesh with larger gears *y*, fixed on the outer ends of two short shafts *z*, hung in yokes 1 on said shaft *v*. On the contiguous ends of said shafts *z* are fixed the glue-wheels *u u*. These are of brass, and their peripheries are provided with annular grooves, as usual. Said yokes 1 are hung independently of one another on the shaft *v* and may be adjusted in lines parallel with and at right angles to the said shaft. The yokes 1, as shown in the drawings, are hung on a sleeve 2, which passes through the bearings 3 and may be clamped fixedly therein, and said sleeves themselves constitute the bearings for the shaft *v*, which rotates therein. To

adjust the glue-wheels *u* toward or from each other, the sleeve is moved endwise in its bearings. To adjust the glue-wheels in the opposite direction—that is, relative to the path described by the end of the box on one of the carriers *j*—the caps of the bearings 3 on the arms of the yokes 1 are loosened, and by means of the adjusting-screws 4 4 (shown in Figs. 3 and 4) said shafts *z* and the glue-wheels *u* on their extremities and the yokes 1 may be each moved as desired toward or from the path of said box end by means of a long screw 5, (see Fig. 5,) which engages the arm 6 and enters the frame of the machine. The end of the arm 6 engaged by the said screw 5 is forked, the slot in which the screw lies being curved and concentric with said sleeve, whereby means are provided for swinging said yoke 1 freely when adjusting it in the opposite direction. Obviously the axis of said glue-wheels must always be substantially the same. The said adjusting-screw 4 passes through a slot 7 on the yoke 1 and enters the frame of the machine beyond, as shown in Fig. 4. In said frame is a second screw 8, which is adapted to bear against the face of the yoke, (see Fig. 4,) and when the latter has been properly adjusted the screw 8 may be turned up to lock the yoke in position. Hung on each of said yokes near its inner end is an arm 9, on which is a press-roll 10, between which and the glue-wheel *u* the outwardly-projecting end sections of the box pass as the latter moves over the curved guide-plate *l*. This arm 9 is, by means of a screw, (shown in dotted lines in Fig. 4,) adjusted relative to the periphery of the glue-wheel, whereby the end section of the box passing beneath it will receive the required amount of pressure to properly apply the glue to the under side thereof.

In my previous patent only the underside of the end sections of the box were supplied with glue; but in the present construction the guide-plate *l* has been made narrower, and thus permits the glue-wheels to be placed nearer together, the space between them being somewhat narrower than the width of the box end, whereby when the latter passes over the glue-wheels the inner edges of the latter will lap over the folding-line of the outstanding end sections which are to receive the glue, and when the latter is applied to said sections it also is applied to a portion of the outside surface of the two sections already infolded, as shown by the shaded portions of Fig. 16, thereby greatly increasing the strength of the union between the under sections *p q* and the sections *r s* folded over them.

The glue-box 11 is supported on the upper extremities of arms 12, fixed on the parallel rock-shafts 13, supported in bearings on the frame near the floor. (See Figs. 2 and 4.) A hand-lever 14 is secured on one of said shafts, whereby the latter may be oscillated and the glue-box lowered away from the glue-wheels *u* for refilling or cleaning. A screw

15 in one of the bearings of one of the rock-shafts is screwed up against the shaft to hold the latter against rotation and keep the glue-box in its place under the glue-wheels *u*. The latter are continuously rotated with the lower portion thereof immersed in the glue, and an improved doctor is provided which bears on the glue-wheels, whereby the requisite amount of glue may be applied to the end sections of the box. This doctor is shown in Figs. 6, 7, and 8 of the drawings and consists of a metal plate having its lower edge turned at an angle to the body thereof, the said edge having one long arm 16, adapted to bear against the outside of the glue-wheel *u*, and a short arm 17, adapted to bear on the opposite inner corner of the wheel, and between these two wheels the said edge is serrated and each projection 18 of said edge is adapted to bear upon that portion of the glue-wheel *u* between two of the annular grooves which are formed therein. A guard-plate or fender 19 is secured to the lower edge of the doctor and is adapted to prevent the glue from piling up behind the glue-wheels *u* and flowing over the edge of the tank. The doctor and fender plates are supported on two plates 20 on the yokes 1, which extend around outside of each of the glue-wheels, forming a sort of boxing therefor, as shown in Figs. 3 and 4. In said plate 20 on the side of the wheel is a swinging bar 20^a, which is loosely secured to the plate by its upper end only, and a screw 20^b passes through the said plate 20 and forces said arm 16 against the side of the glue-wheels *u* with any desired degree of pressure.

In my former patent the end sections of the box were guided under converging wires, and thus turned inward over the already-infolded sections of the opposite sides of the box. This construction in practice has some objectionable features which are overcome in the construction embodied in this application and will now be described.

A swinging yoke 21 is hung on the shaft *h*, one arm of said yoke engaging said shaft on each side of the hub on which the carriers *j* are supported. This yoke (shown particularly in Fig. 9) is U-shaped and has a reciprocatory swinging movement between the glue-wheels *u* and the presser-rolls 23 so timed that the yoke 21 meets each of the four carriers *j* just after they have passed the glue-wheels *u* and then swings with said arms back to the presser-rolls, as stated, and it is during this movement with the carriers that the end sections *r* and *s* are folded over the sections *p* *q*, as will be described. Near the bottom of the yoke 21 two folding-wings 22 are supported, one in each arm of the yoke, as shown in Fig. 10, whose function it is to fold inward the end sections *r* and *s* of the box after they have been gummed and to press them firmly against the other sections *p* and *q*, and this operation takes place during the swinging movement of the yoke between the glue-wheels and the first of the presser-

rolls 23, as stated, and is effected by the engagement of the arm 24 on said wings 22 (provided with suitable rolls) with suitably-formed cams 25, supported on the frame of the machine in the path of said folding-wings. These cams are shown in Figs. 2, 9, 11, and 12, in the last two figures in plan and side elevation, respectively. Said folding-wings 22 each consists of the rigid arm 24, which pivots freely on a stud 26, the ends of which studs are flattened, as shown in Fig. 9, and adapted to have a sliding movement toward and from each other in the slots 27 in the arms of said yoke 21. This movement is imparted to these studs by two screws 28, Figs. 2 and 9. Each of these arms 24 is widened, as seen in Fig. 10, to receive the folding-wing 22, that portion of which is located on the arm being flat and of substantially the same area as one of the box end sections *r* or *s*. That end of the said plates toward the glue-wheels *u* tapers out to a point and is given a slightly-concaved form and bent back slightly away from the path of movement of the box along the guide-plate *l*, the outer end of the plate being bent substantially at right angles to the portion thereof on the arm 24 and said point lying normally slightly above the plane of movement of the end sections *r* and *s* when the yoke 21 is swung toward the glue-wheels to the limit of its movement in that direction. During the movement of said yoke toward the glue-wheels the ends of the arms 24 run out to the extreme end of the cams 25, and the inner contiguous ends of the said arms 24 being the heavier these latter fall apart. As the yoke approaches the glue-wheels the carrier *i* passes over the latter, and as said carrier-arm and the yoke approach each other the ends of the folding-wings 22, which extend out toward the glue-wheels, encounter the two sections *r* and *s*, and as the yoke and carrier-arm meet and the direction of movement of the yoke is reversed these sections have, by reason of the hereinbefore-described conformation of the folding-wings, been turned down and somewhat under the guide-plate *l* and at this time will lie substantially over the rectangular portion of said wings. As the yoke begins its movement in a reverse direction, as described, with one of the carrier-arms this reverse movement causes the outer ends of the arms 24 to be depressed by reason of their engagement with the cams 25, and the folding-wings 22 on the other end of said arms will thus be gradually swung up toward the end of the carrier, and as the latter passes off the guide-plate *l* the outer ends of the arms 24 reach the lowest point of the cams 25, and thereby force the rectangular part of the folding-wings up against the end of the carrier with as much power as may be desired. Just beyond the point where the carrier leaves the end of the guide-plate *l* the cams run up abruptly at the point 28^a and release the wings 22, which drop away from the end of the carrier, and at this point the move-

ment of the yoke is again reversed, and it swings back to meet the next succeeding carrier—the one over the end of which the end sections *p q r s* of a box have just been folded—passing on to the presser-rolls 23. These rolls are spring-supported and their peripheries intercept the path of the end of the carrier, and in my former patent the contact of the forward edge of the carrier effected the depression of the first of these rolls. It has been found in practice, however, that the contact of the edge of the carrier with the first of these rolls 23 would frequently cause the end sections *r* and *s* to slip on the other sections to which they had just been gummed, because said sections had not been sufficiently pressed together to cause them to firmly adhere. In the present construction, therefore, means have been provided for depressing the first of the said presser-rolls 23 at the moment the end of the carrier is about to pass over it, and before the edge of the carrier strikes the second of the presser-rolls the first roll is released and its spring forces it in against the end of the carrier, thus putting the gummed end section of the box under pressure just before they strike the second roll. By this means the said end sections *r* and *s* are firmly held in place until they are fairly entered on the rolls, after which there is practically no danger that the end section will be moved by their contact with succeeding rolls, because two rolls are always bearing thereon at the same time, some at the moment of contact with the first roll. The mechanism whereby the yoke is given its swinging movement and the first of the presser-rolls 23 is depressed and released at the proper time will now be described.

The mechanism for reciprocally swinging the yoke consists of a cam 29 on the shaft *e*, Fig. 14, with which an arm 30 engages by means of a suitable cam-roll on the side of said arm. One end of said arm is forked and straddles the shaft *e* and is thereby supported, and the opposite end, as shown in Fig. 14, is pivotally connected with an elbow-lever 31, which is fixed on the end of a rock-shaft 32, and on this rock-shaft is a depending lever 33, from the lower end of which a rigid connecting-rod 34 extends to the bottom of the yoke 21. This connection is pivotally secured to the yoke centrally between its arms at the lowest point thereof, and is shown in dotted lines in Fig. 14, and is indicated by 35. One revolution of the cam 29 will swing the yoke from the presser-rolls backward to meet one of the carriers, and thence forward again to the point where the carrier passes onto the said rolls, as described. The means whereby the first of said presser-rolls 23 is depressed at the moment the carrier is about to pass onto it is also shown most clearly in Fig. 14, and consists of two arms 36, (see Fig. 14,) one of which is pivotally hung on each end of the first of said presser-rolls 23, and whose opposite ends are pivot-

ally connected with the ends of two levers 37, fixed on a rock-shaft 38, on one end of which is an upstanding arm 39, from the extremity of which a connecting-rod 40 runs to the lower end of the elbow-lever 31. The end of the rod 40 connected with said elbow-lever is provided with a long slot 41, through which a stud on said elbow-lever passes, and in the outer end of said rod 40 an adjusting-screw 42 is provided, whose point extends more or less into said slot 41. By means of this construction when the cam 29 operates through the described mechanism to swing the yoke 21 toward the presser-rolls at the proper moment the stud in the end of the elbow-lever 31 comes in contact with the end of the screw 42 and imparts to the rod 40 an endwise movement, which partially rotates the rock-shaft 38 and through the described connections depresses the first of said rolls 23 until the forward edge of the carrier has passed over the center of the roll, which is then released and by means of the springs on which said roll is supported causes the latter to come to a bearing against the end sections *r* and *s* of the box before the forward edge of the carrier strikes the second roll. Thus there is no danger that the impact of the edge of the box against the presser-rolls will cause the sections *r* and *s* to slip edgewise on the under sections *p* and *q* and throw the bottom of the box out of its proper rectangular form. This is very important, for many of these boxes are used in automatic package-filling machines, whereby they are filled with material, and many of which are provided with pockets adapted to receive said boxes, and in which the latter fit snugly, and there is difficulty in introducing said boxes in the pockets if the latter are distorted in shape.

Taking up now the means for stripping the boxes off the carriers, it has been found in practice that the means provided in my former patent are for certain reasons objectionable in that the stripping-yoke (indicated in this application by the numeral 43) did not have time to remove the box from the carrier while the latter was passing by said stripping-yoke without too great a reduction in the speed of the machine. Means have therefore been provided in the present construction which overcome this objection and will now be described. The said stripping-yoke 43 operates to remove the box from the carrier in precisely the same manner as does the same arm in my said former patent, viz: The carrier passes between the two arms of the yoke 43, each of which is provided with the fingers 44 in the extremities of the arms of said yoke and adapted to engage two opposite edges of the box, and as the carrier and yoke continued their rotation on their separate axes, the said fingers would draw the box off from the carrier. To provide for giving the said yoke a longer time for withdrawing the box from the carrier, I provide for shifting the axis on which the yoke 43 swings, whereby, while the said

stripping-fingers are moved longitudinally of the carrier by the swinging of the yoke on its axis, the yoke is made to follow the general direction of movement of the carrier, and thus the ends of the fingers 44 may remain longer in contact with the edges of the box, and thus insure its withdrawal from the carrier in good shape. To effect this movement of the stripping-yoke 43, it is secured to the rock-shaft 45, which shaft is in turn supported in parallelism with a rock-shaft 46. (See Figs. 2 and 14.) On the end of the rock-shaft 45 is fixed an arm 47, provided with a stud 48 at its extremity, which engages with a cam-groove 49 in an arm forming part of or secured to the frame of the machine. To said stud is also secured one end of a lever 50, the opposite end of which extends to and straddles the shaft *e* and has a cam-stud 51 thereon, which engages the groove of the cam 52, whereby at the proper time the said lever 50 has imparted to it an endwise movement, whereby the stud 48 is caused to follow the cam-groove 49 nearly to the end thereof, the shape of which is such that the resultant movement of the stripping-yoke 43 will be substantially in the direction of the receding carrier after it rises beyond the horizontal position it occupies in Figs. 2 and 14; but during this movement said end of the yoke also has imparted to it a swinging movement on its axis away from said carrier. The arm *m* on the shaft *n* is swung downwardly at the proper time to fold in the end section *q* by means of a cam 53, also on the shaft *e*. (See Figs. 1 and 13.) One end of a lever 54, having a stud 55 thereon, which engages with said cam, is forked to embrace said shaft *e*, and the opposite end of said lever is pivotally connected with a short arm 56 on the shaft *n*. The form of the cam 53 is such as to impart to the arm *m* the requisite quick descent to unfold the said section *q*, as described, and the means for operating said arm are substantially the same as shown and described in my said prior patent. On the driving-shaft *b* are the usual tight and loose pulleys 57 and a shipper-rod 58, whereby a belt on said pulleys may be shifted at will. In Fig. 1 of the drawings, in which these belt-shipping devices are most clearly shown, there is also shown a shipping-lever 59, which is located on the side of the machine opposite to that on which the pulleys 57 are located, whereby through suitable connections said shipper-rod may be shifted.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a paper-box machine, the combination with a movable carrier upon which a tubular blank may be placed with end-closing sections extending beyond the end of said carrier, of a guide-plate past which the end of the carrier has its course of movement; means for laterally extending two opposite end-closing sections of said blank beyond each edge of said guide-plate; a yoke, glue-wheels in

said yoke whose plane of rotation is at one side of said guide-plate, a press-roll supported on said yoke and adjustable toward and from the periphery of said glue-wheel, means for adjusting said yoke toward and from the path of movement of the end of the carrier, whereby the periphery of the glue-wheels may intercept more or less the path of the end of the carrier for applying an adhesive substance to said extended end-closing sections as they pass between the glue-wheel and said press-roll, substantially as described.

2. In a paper-box machine, the combination with a movable carrier upon which a tubular blank may be placed with end-closing sections extending beyond the end of said carrier, of a guide-plate past which the end of the carrier has its course of movement; means for laterally extending two opposite end-closing sections of said blank beyond each edge of said guide-plate; a yoke, glue-wheels in said yoke, press-rolls adjustably supported on the latter and extending across the face of the glue-wheels in close proximity thereto, a doctor-plate for said wheels, also supported on said yoke, the latter having a swinging movement toward and from the said path of the end of the carrier, and the glue-wheels being adapted to lateral adjustment in said yoke, as and for the purpose set forth.

3. In a paper-box machine, the combination with a movable carrier upon which a tubular blank may be placed with end-closing sections extending beyond the end of said carrier, of a guide-plate past which the end of the carrier has its course of movement; means for laterally extending two opposite end-closing sections of said blank beyond each edge of said guide-plate; a yoke, glue-wheels in said yoke whose plane of rotation is at one side of said plate; a glue-box normally supported close to the under side of said glue-wheels, arms on which said box is supported, and means for swinging said arms for moving said box vertically, and means for adjusting said yoke, whereby said glue-wheels may be swung to a position intercepting said path of movement of said carrier, substantially as described.

4. In a paper-box machine, the combination with a rotatable support having a series of radially-extending blank-carriers, of a series of spring-supported rollers whose peripheries intercept the path of movement of the end of said blank-carriers, and means for retracting the first roll of said series just prior to the contact of said carrier therewith, and for releasing it at about the moment of contact of said carrier with the second roll of said series, as and for the purpose described.

5. In a paper-box machine, the combination with a revoluble blank-carrier, on which a tubular blank may be placed, having end-closing sections extending beyond the end of said carrier, of means, as described, for folding over the end of said carrier two of said sections lying at right angles to the plane of

their rotation, and means for folding over said first-folded sections, the two remaining sections lying parallel with the plane of their rotation, consisting of a swinging member adapted to move during a part of one revolution with said carrier, and wings on said member adapted to fold said last-named end sections over said first-folded sections, and means on the frame of the machine for actuating said wings, substantially as described.

6. In a paper-box machine, a movable carrier having a tubular blank thereon whose end-closing sections extend beyond the end of said carrier, means for folding down against the end of the carrier two of said end sections standing at right angles to the direction of their movement; suitable gumming devices, a swinging yoke movable for a certain distance with said carrier, wings on said yoke for folding down over said first-named sections the two end-closing sections standing parallel with the line of their movement, and cams on the frame of the machine for actuating said wings at the proper time, substantially as described.

7. In a paper-box machine, a movable carrier having a tubular blank thereon whose end-closing sections extend beyond the end of said carrier, means for folding down against the end of the carrier two of said end sections standing at right angles to the direction of their movement; suitable gumming devices,

a swinging yoke movable for a certain distance with said carrier, wings on said yoke for folding down over said first-named sections the two end-closing sections standing parallel with the line of their movement, and cams on the frame of the machine for actuating said wings at the proper time, in combination with suitable rolls for pressing together the folded and gummed end-closing sections, and means for removing the said blank from said carrier, substantially as described.

8. The combination in a paper-box machine, of a movable carrier having a tubular blank thereon, and end-closing sections extending beyond the end of said carrier, means for gumming and folding said sections over the end of said carrier to close the end of the blank, an arm pivotally supported outside of the path of movement of the end of said carrier, whose upper end is adapted to engage the blank, means for swinging said upper end outward to strip the said blank from said carrier, and means for moving the support of said arm for a certain distance in a path substantially concentric with that of said carrier, during the engagement of said arm with said blank, substantially as described.

LEWIS F. FALES.

Witnesses:

GEORGE A. FALES,

MARGARET CLAIRE DALTON.