(No Model.) 7 Sheets—Sheet 1.

A. STEARNS.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

No. 570,615. Patented Nov. 3, 1896.

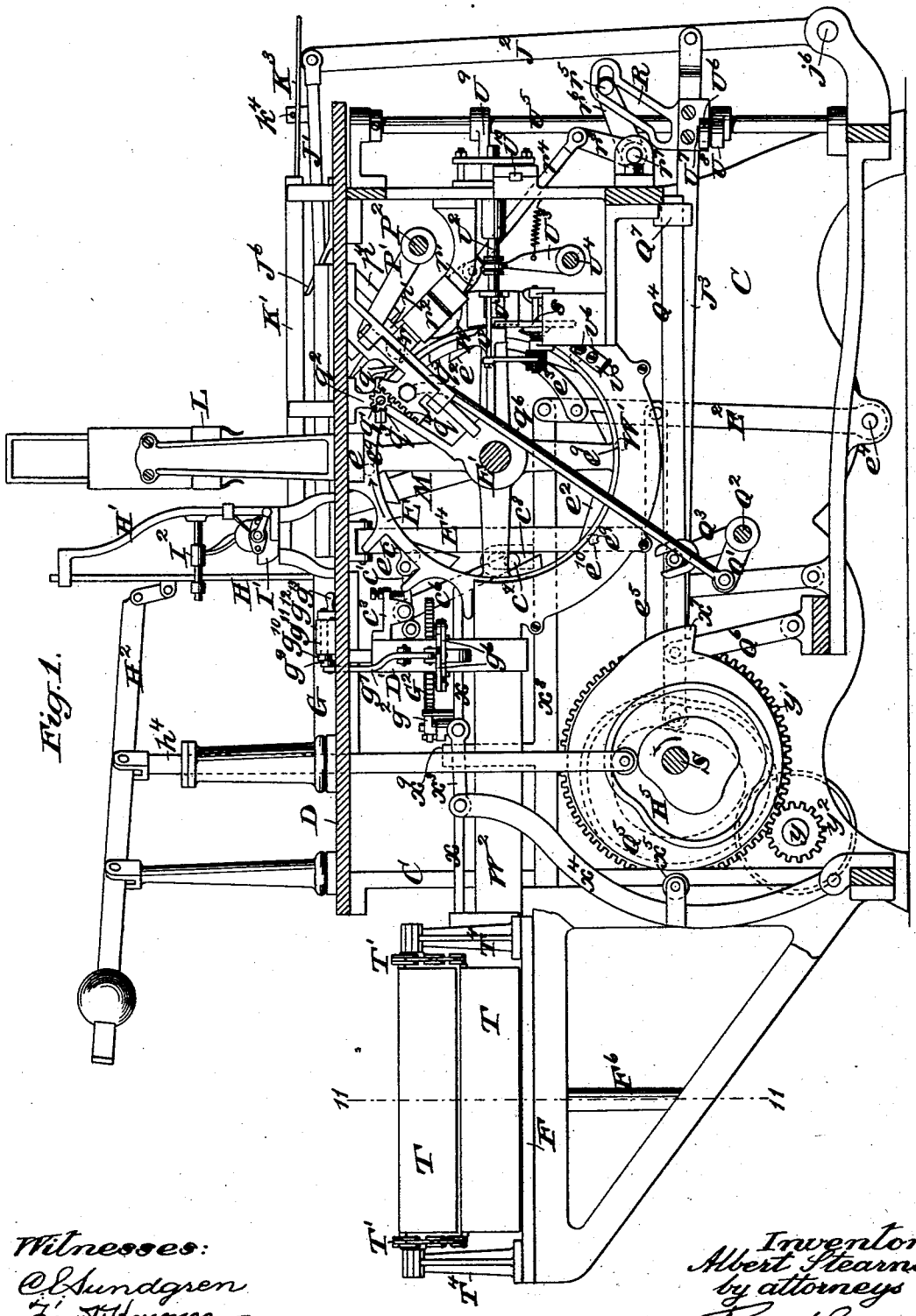


Fig. 1.

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Brown & Seward

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(No Model.) 7 Sheets—Sheet 2.

A. STEARNS.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

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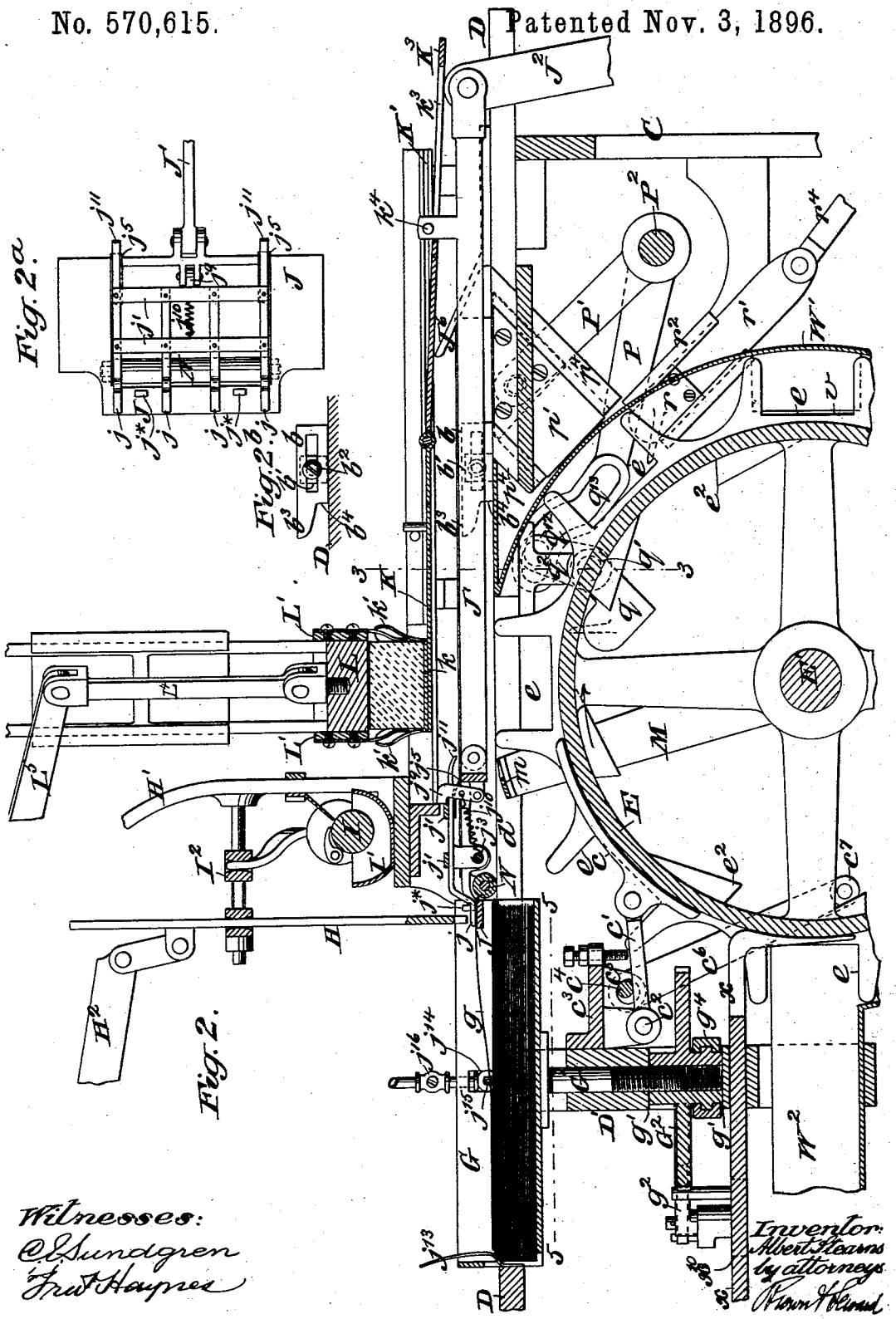


Fig. 2.

Fig. 2a.

Fig. 2b.

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(No Model.) 7 Sheets—Sheet 3.

A. STEARNS.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

No. 570,615. Patented Nov. 3, 1896.

Fig. 3.

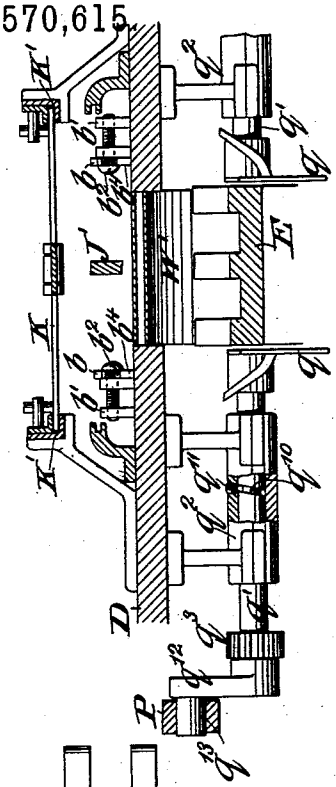


Fig. 6.

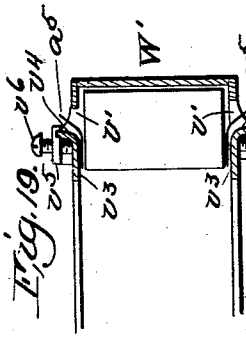


Fig. 7.

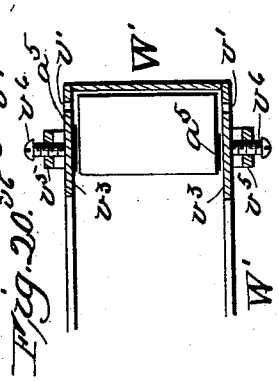


Fig. 4.

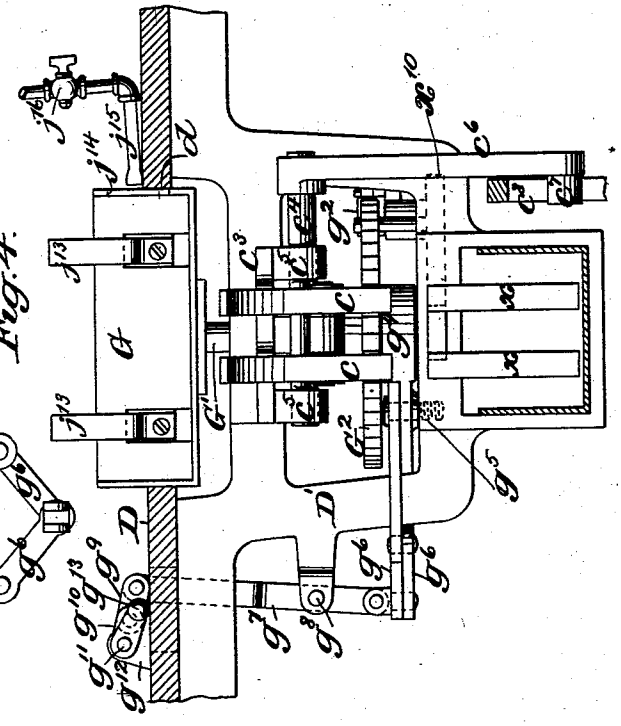
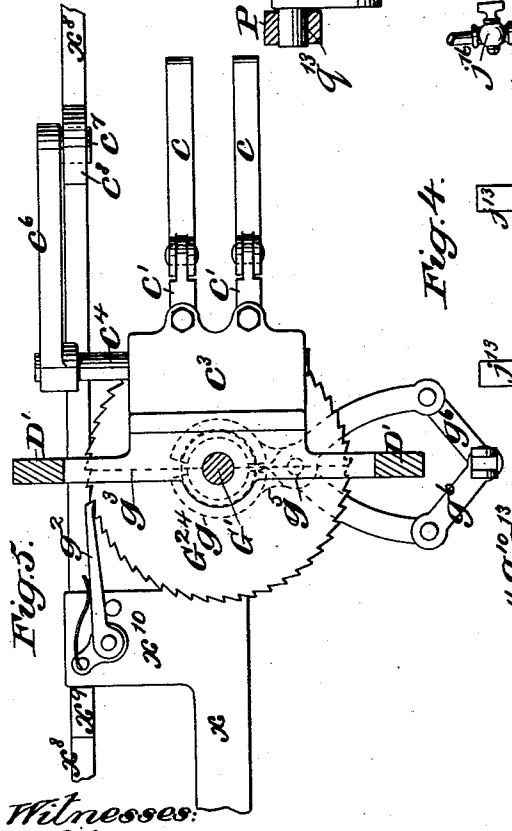


Fig. 5.



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(No Model.) 7 Sheets—Sheet 4.

A. STEARNS.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

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Fig. 6.*

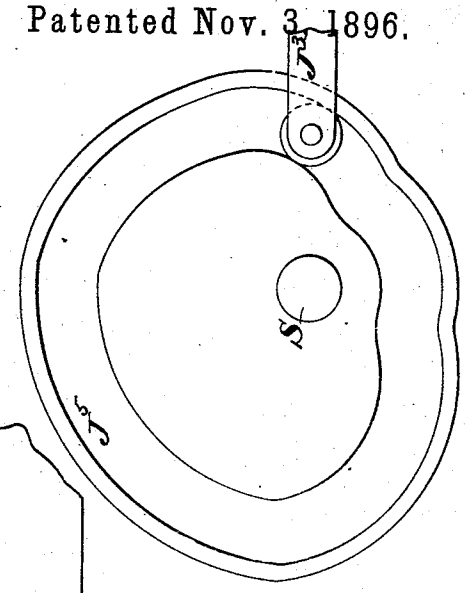
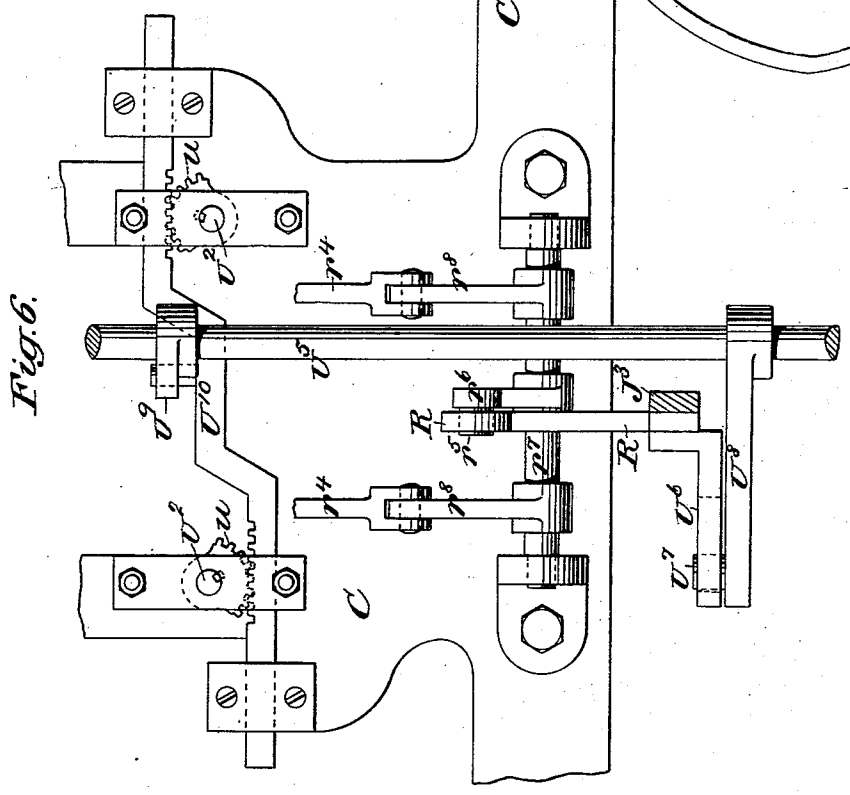


Fig. 6.



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(No Model.) 7 Sheets—Sheet 5.

A. STEARNS.

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Fig. 8.

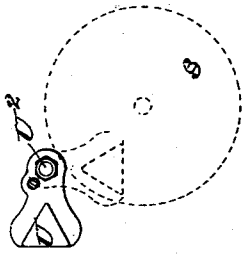


Fig. 7.

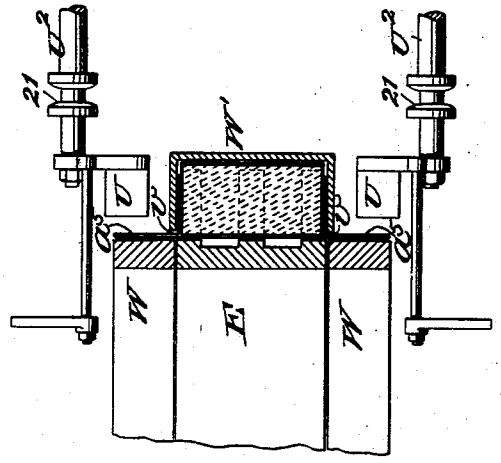


Fig. 9.

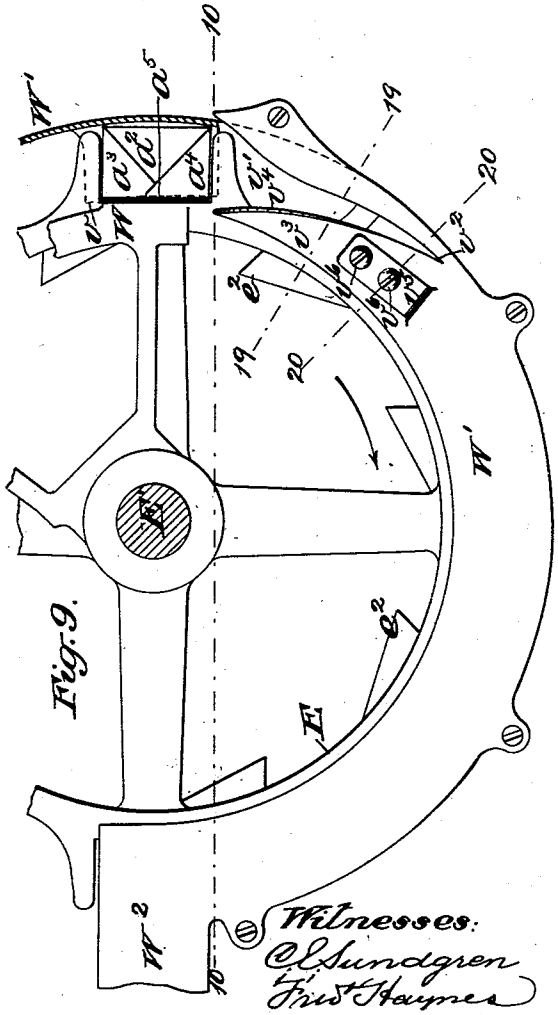
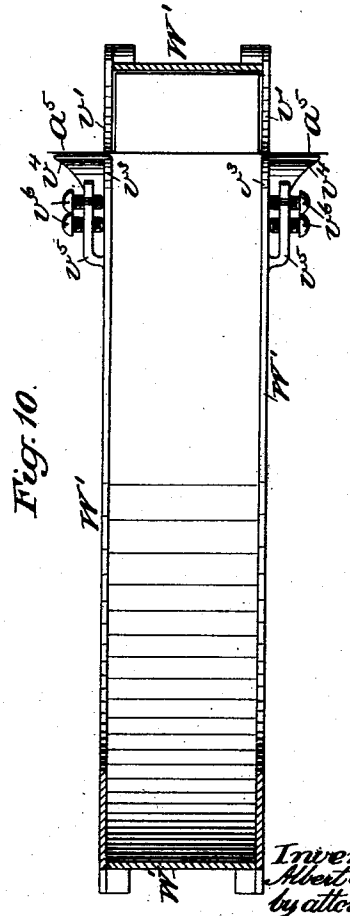


Fig. 10.



Witnesses:
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(No Model.) 7 Sheets—Sheet 6.

A. STEARNS.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

No. 570,615. Patented Nov. 3, 1896.

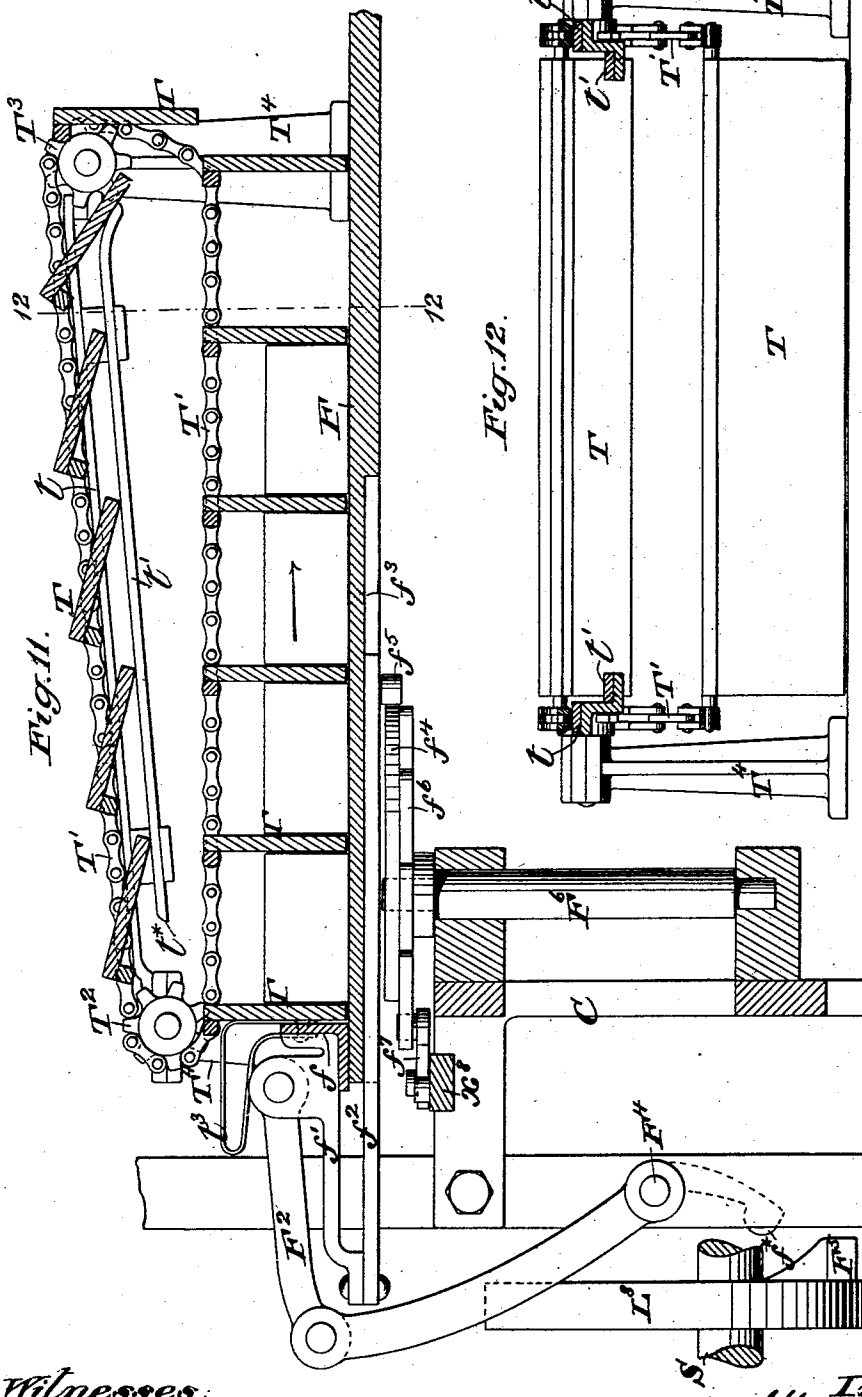


Fig. 11.

Fig. 12.

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(No Model.) 7 Sheets—Sheet 7.

A. STEARNS.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

No. 570,615. Patented Nov. 3, 1896.

Fig. 13.

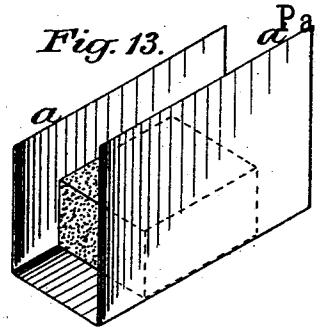


Fig. 14.

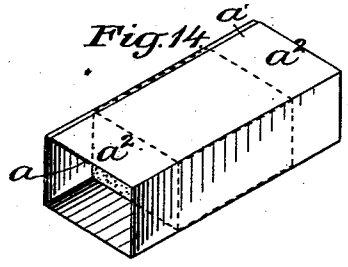


Fig. 15.

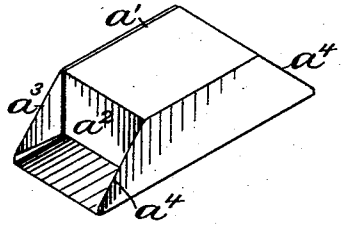


Fig. 16.

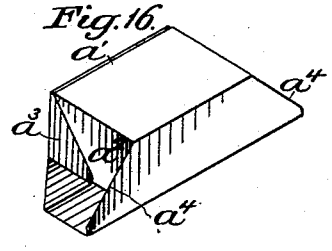


Fig. 17.

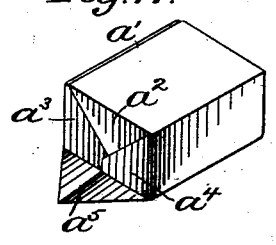
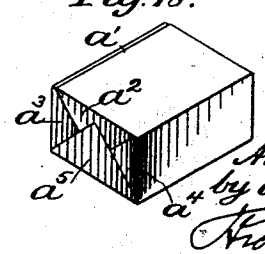


Fig. 18.



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UNITED STATES PATENT OFFICE.

ALBERT STEARNS, OF BROOKLYN, NEW YORK.

MACHINERY FOR WRAPPING AND SECURING WRAPPERS AROUND BOXES, &c.

SPECIFICATION forming part of Letters Patent No. 570,615, dated November 3, 1896.

Application filed April 3, 1894. Serial No. 506,162. (No model.)

To all whom it may concern:

Be it known that I, ALBERT STEARNS, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machinery for Wrapping and Securing Wrappers around Boxes, Cakes, Packages, and other Articles of Merchandise, of which the following is a full, clear, and exact specification.

A machine embodying this invention contains many of the features described and claimed in my United States Patent No. 522,723, dated July 10, 1894.

The object of this invention is to obtain a machine which is more simple in certain particulars than the machine which is the subject of said patent and which in certain ways is more effective.

To enable others skilled in the art to make and use my invention, I will first explain its construction so far as it is new with reference to the accompanying drawings, and afterward point out in claims the essential features of its novelty.

Figure 1 represents a longitudinal elevation of a complete machine embodying my invention, one of the side frames being omitted to expose the working parts to view and some of the shafts being in section. Fig. 2 represents a central section taken parallel with the view, Fig. 1, of some of the principal parts of the machine. Fig. 2^a is a plan view of what I call the "wrapper-placer." Fig. 2^b is a side view of one of the wrapper-depressing stops. Fig. 3 represents a transverse sectional view taken on the line 3 3 of Fig. 2. Fig. 4 represents a rear elevation of the feed-box from which the wrappers are supplied and of the parts thereunto appurtenant and adjacent. Fig. 5 represents a horizontal section in the line 5 5 of Fig. 2. Fig. 6 represents an elevation taken at right angles to the view, Fig. 1, of certain parts shown at the right-hand end of that figure and to be hereinafter explained. Fig. 6* represents a side view of one of the cams, to be hereinafter described. Fig. 7 represents a horizontal section of what is termed the "rotary" carrier and a plan of the dies for gluing the finally-folded-in ends of the wrappers. Fig. 8 represents a face view of one of the gluing-dies. Fig. 9 represents a side view of part of the rotary carrier and one of the folders for performing the final folding in of the ends of the wrappers. Fig. 10 represents a plan of the two folders last mentioned. Fig. 11 represents a vertical section taken at right angles to the view, Fig. 1, in the line 11 11. Fig. 12 represents a vertical section taken at right angles to the view, Fig. 11, in the line 12 12 of that figure, and viewed from the left thereof. Figs. 13, 14, 15, 16, 17, and 18 are perspective views of a package and wrapper, illustrating the work performed by the machine. Figs. 19 and 20 are detail views which, taken in connection with Figs. 9 and 10, illustrate the devices for applying the final closure to the package.

Similar letters of reference designate corresponding parts in all the figures.

Figs. 2 to 20 are on the same scale larger than the scale of Fig. 1.

Before proceeding with the description of the details of my invention I will state that Figs. 13 to 18 of the accompanying drawings represent nothing new and illustrate nothing more than operations similar to those performed by the machine which is the subject of my patent hereinbefore referred to; but I have not considered it superfluous to introduce them herein, because they will assist me in the explanation of the operation of my present invention.

I will now proceed with the description of the machine.

C C designate an upright framing, on the top of which is supported the receiving-table D, and in the sides of which, at some distance below the said table, are supported the ends of the horizontal shaft E′, of the receiving-wheel or rotary carrier E, which, as here represented, rotates upon the said shaft, which is stationary. The upper part of this carrier E, including one of the pockets *e* thereof, projects into an opening *d* in the said table and to the level of the upper surface of the latter, as shown in Fig. 2. This opening *d* extends backward far enough, and is wide enough to allow the passage within it of the box G, in which a number of wrappers *g* are placed one above another.

To provide for the intermittent rotation of the rotary carrier E, in the direction of the arrow shown upon it in Figs. 1 and 2, to present its pockets *e* successively within the opening

d of the receiving-table, (and under the package-placer L, as shown in Fig. 2,) the said carrier is furnished internally, near one side, with a series of ratchet-teeth e^2, Figs. 1 and 2, corresponding with the number of its pockets e, the said teeth to be engaged by a hooked pawl e^3, (see Fig 1,) carried by a lever E^2, which works on a fulcrum e^4, near the bottom of the machine. To this lever E^2 is connected one end of a rod e^5, the other end of which is operated upon by a cam on a shaft S, which also carries other cams for operating different members of the machine. This cam is not here represented, but it is sufficient to say that it and the parts upon which it operates to produce the rotation of the rotary carrier are the same as those heretofore used for the same purpose, as described in my aforesaid patent.

To provide for locking the rotary carrier every time it arrives in the position hereinbefore mentioned, and represented in Figs. 1 and 2, there are provided in one side of the said carrier a series of holes e^9, to be engaged by a stop pin e^{10}, which projects from the face of the bar E^1, (see Fig. 1,) which is suspended at its upper end from the receiving-table. This locking device and the means of actuating it being the same as those heretofore used, need no further description here.

In order to prevent the rotary carrier from being carried by its momentum, after the action of the pawl e^3 ceases, beyond the position for the pin e^{10} to lock it, there is applied to it a friction-brake c. (See Figs. 1, 2, and 4.) This friction-brake, instead of being constantly held against the carrier like the brake described in my aforesaid patent, is only brought into operation at the intervals required for stopping the rotary carrier. This brake, which is bifurcated, as shown in Figs. 4 and 5, is pivoted to one end of each of two arms c', the other ends of which are pivoted by a pivot c^2 to a bracket c^3, affixed to a hanger D', which is dependent from the receiving-table D. This brake lies loose upon the carrier until the proper time for stopping it, when it is depressed against the carrier by the action on the arm c' of the eccentric portion of a shaft c^4, which turns in bearings c^5, provided on the said bracket c^3, the said shaft c^4 being provided, for the purpose of operating the said eccentric, with an arm c^6, Figs. 2 and 4, on the lower end of which is a pin c^7, which is received in a slot c^8 in an upward extension provided on a rod x^8, (see Figs. 1, 4, and 5,) which is connected with and moved longitudinally by the upper end of the lever E^2, before described as carrying the pawl e^3 for turning the rotary carrier. This rod x^8 is the same rod which is described in my aforesaid patent, for the purpose of operating the row-dresser f, partly operating the package-expeller x, and will be hereinafter again referred to.

The feed-box G, in which is placed a pile of sheets g of the proper size for the wrappers, is of horizontal sectional form and dimensions corresponding with the wrapper-sheets. It is open at the top and on the whole of the side which is toward the rotary carrier. It is supported on and firmly secured to the upper end of a screw G', (see Figs. 2, 4, and 5,) the said screw being itself supported in a nut, which is constituted by the internally-screw-threaded central bore of a ratchet-wheel G^2, the said ratchet-wheel being confined vertically in an opening g' in the stationary hanger D' before mentioned. The box G and the screw G' being prevented from turning by reason of the box fitting the opening d in the receiving-table, the box is moved vertically by the rotation of the ratchet-wheel G^2. The turning of the ratchet-wheel G^2 to effect the raising of the box to bring the wrappers g to the proper level to be taken by the wrapper-placer J j (see Fig. 2) is effected by means of a pawl g^2, carried by a lateral projection x^{10}, on the expeller x. In order to provide for the lowering of the box when all the wrappers have been taken from it, the ratchet-wheel G^2 is divided diametrically into two halves, as indicated by the dotted outline g^3 in Fig. 5 and as shown in Fig. 2, so that the nut can be opened to liberate the screw G' and allow it to be lowered. When the nut is closed, it is held in a clamp g^4, which does not prevent it from turning. The two members of this clamp, resembling a pair of tongs, are pivoted to each other and to the hanger D' by a fixed pin g^5. The outer extremities of these tongs are connected by toggle-links g^6 with the lower end of a lever g^7, (see Figs. 1 and 4,) which works on a fulcrum g^8 in the hanger D', and the upper end of which is connected by a short link g^9 with the arm g^{10} of a short rock-shaft g^{11}, which works in a bearing g^{12} on the receiving-table D. This rock-shaft is provided with a hand-crank g^{13}, by which it may be manipulated above the table for the purpose of opening and closing the clamp g^4 to liberate the nut of the ratchet-wheel G^2 from the screw and reëngage it therewith when desired.

The paste-die H, (see Figs. 1 and 2,) by which a streak of paste is applied along the front edge of the top sheet or wrapper g in the box G and by which the said edge is picked up high enough to be taken hold of by the wrapper-placer J j, is like that described in my aforesaid patent, and therefore it and its operating parts need no further description here than is necessary to prevent their confusion with other parts of the machine. The said die, which may also be called the "wrapper-lifter," has an upward and downward movement as well as an oscillating movement in a fixed guide H' for the purpose of taking paste from a paste-roller I in a paste-trough I' and transferring the said paste to the front edge of the sheet or wrapper and afterward picking up the sheet or wrapper by the adhesion of the paste. The upward and downward movement is produced by a lever H^2, operated upon through a rod h^4 by a cam H^5 on the

shaft S. The oscillating movement is produced by a cross-head I^2, which is termed a "paste-die" shifter and which is moved back and forth by devices not represented. It will be understood that the front edge of a sheet *g* in the box G corresponds with the edge *a'* of the wrapper shown in Fig. 15.

The wrapper-placer J *j*, which takes the wrapper-sheet from the paste-die H, is the same as that described in my aforesaid patent, except that it has affixed to and projecting upward from the carriage J, the front part of which constitutes the lower member of its grippers J *j*, a gage represented as consisting of a row of pins, (see Figs. 2 and 2^a,) which I will further describe after such brief description of the wrapper-placer and means of operating it as I will first give for properly identifying them from other parts of the machine.

The connected fingers *j*, constituting the upper member of the grippers, are pivoted, as shown in Fig. 2, by a pivot j^3 to the lower member J, and between the members J *j* are placed springs j^5 for the purpose of closing them. The member J has pivoted to it a hook j^9, to which is applied a spring j^{10} for the purpose of pulling the said hook over one of the cross-bars *j'*, which connect the several fingers *j*. In Fig. 2 this hook is shown as behind the cross-bar *j'* and out of engagement with it, so as to leave the grippers closed. Fig. 2 also shows one of the gripper-openers J^6, under which the rearward projections j^{11} of the fingers *j* run for the purpose of opening the grippers when the wrapper-placer has brought the wrapper to a proper position over the upwardly-presented pocket *e* of the wheel. The cam J^5 on the shaft S for producing the backward and forward movement of the wrapper-placer is shown in Fig. 6*. The said cam operates, as heretofore, through a horizontal bar J^3 on a lever J^2, having its fulcrum j^6 in a bracket on the back of the framing C, the upper end of the said lever being connected by a rod J' with the plate J, constituting the lower member of the wrapper-placer.

The gage *j**, hereinbefore mentioned, the addition of which to the wrapper-placer constitutes part of the present invention, is for the purpose of insuring the wrapper-sheet being taken from the paste-die H exactly at such distance from the upwardly-presented pocket of the rotary carrier, and in such relation to the movements of the package-feeder K and package-placer L L', that the wrapper will be carried by the wrapper-placer exactly to the requisite position to receive the package.

It has been found in practice that in the placing of the wrapper-sheets in the box G, although they may be of exactly the same size, their front edges will not always be even with each other or in the same vertical line, and the consequence is that when they are simply lifted from the pile in the box by the adhesion of the paste-die H, and grasped by the grippers of the wrapper-placer in the exact position to which they have been lifted, they will not all be carried to the exact position required, and therefore I have found it desirable that the positions which the uppermost sheets occupy in the box at the time they are lifted should be a little in advance of that at which the grippers are, and that after having been lifted they shall be pushed back far enough to bring their front edges to the exact place in which the grippers are to take them, and this pushing back is what the gage *j** is designed to effect. This gage is attached to the lower member J of the grippers, and as it has to pass through the upper member thereof it is composed of pins which are arranged in a row between the upper gripper-fingers *j*. These gage-pins *j** strike the front edge of the sheet just before the wrapper-placer completes its movement to take the wrapper and before the closing of the grippers, and as said movement is being completed the said pins push back the edge of the sheet and detach it from the paste-die. The movement being completed, the grippers close and take the sheet, which is then carried to the proper position over the pocket of the rotary carrier by the return movement of the wrapper-placer.

In order to push the upper wrapper-sheets *g* in the box G far enough toward the wrapper-placer to require to be pushed back by the gage *j**, as above described, leaf-springs j^{13}, Figs. 2 and 4, are attached to the rear edge of the opening *d* in the receiving-table and project into the box through openings in the rear thereof. These springs have their faces so curved or inclined just below the level of the upper sheets in the box as to constitute elastic cams against which the rear edges of the sheets are brought by the act of raising the box and so caused to be pushed forward by that act. For the purpose of loosening and separating the upper wrapper-sheets in the pile and insuring that only the top one shall be taken by the paste-die H, I provide, as shown in Figs. 2 and 4, an opening j^{14} in one side of the box G, and opposite this opening I arrange a small air-jet or blast pipe j^{15}, through which compressed air from any suitable source, controlled by a stop-cock j^{16} in said pipe, is blown into the box and among the sheets therein.

On the table D, some distance beyond the package-placer L in the direction in which the wrapper is carried by the wrapper-placer, there are what I call "wrapper-depressing" stops *b*, (see Figs. 2, 2^b, and 3,) of which there is one near each side of the machine. These are for the purpose of stopping the wrapper-sheets in the proper position when they are liberated from the wrapper-placer and for the purpose of depressing the forward edges of the said sheets toward the top of the receiving-table D. These stops *b* consist of plates of metal, the form of which is best shown in Fig. 2^b, and rest upon the receiving-table, but

are attached to two short fixed standards b' on the said table by means of screws b^3, (see Fig. 2^b,) by which the said stops are adjustable laterally, according to the width of the wrapper-sheets, that they may act upon the said sheets near the side edges thereof, and laterally outside of those parts of the sheets which are outside of the grippers J j of the wrapper-placer. The said stops have on their front edges projections b^3, (see Figs. 2 and 2^b,) the lower edges of which are curved or sloped in such manner, and are at such height, that the edge of the sheet in passing under them will be depressed, and the portions of the edges at b^4, below the said projections and immediately above the table D, are upright to serve as positive stops at the points where the front edge of the sheet is to be brought by the wrapper-placer.

The package-feeder K and the package-placer L L′ are like those described in my aforesaid patent, and therefore will be herein described only so far as is necessary to distinguish them from other parts of the machine in the drawings. The plate K of the package-feeder, to which the package-box $k\,k'$ is attached and which works in horizontal guides K′, has attached to it a slotted rod K^3, the slot k^3 of which receives an upward projection k^4, provided on the rod J′, hereinbefore described, the said projection, by its action against the ends of the slot k^3, producing the necessary movement of the package-feeder back and forth. The package-placer is operated by the lever L^5, a portion of which is shown in Fig. 2, connected by a rod L^4 with its plunger L. It is not necessary to show the cams and connections for operating this lever, or to say more about them here than that they are the same as those described in my aforesaid patent.

The folder M m, by which the edge a (see Figs. 13 and 14) of the wrapper is turned in, is the same as that shown and described in my aforesaid patent, consisting of a blade m (see Fig. 2) and a lever M, by which the said blade is carried, the said lever being arranged to oscillate upon the shaft E′ of the rotary carrier. As this lever may be operated by the same cam and connections as are described in my aforesaid patent, it is not necessary here to repeat the illustration and description of those parts.

For the turning over of the edge a' (see Fig. 13) of the wrapper to the condition shown in Fig. 14 I have represented in Fig. 2 the same roller N as is shown for the same purpose in my aforesaid patent, the said roller being attached to the wrapper-placer.

The top tuckers, for turning in the edges a^2 of the wrapper over the ends of the package, as shown in Fig. 15, and at the same time give form to the side tucks a^3 a^4, are like those in my aforesaid patent—that is to say, they consist of two thin plates p', (shown in Fig. 2,) one on each side of the rotary carrier, having a movement radial to the carrier in fixed guides p^4, the said movement being produced through a rock-shaft P^2, furnished with arms P′, which are connected with the said tuckers. In this machine the rock-shaft P^2, instead of being operated by a separate cam on the shaft S, as in the machine described in my aforesaid patent, derives its necessary motion from one of the rock-shafts q' of the wing tuckers q, as will be presently described.

The wing tuckers q have, like those described in my aforesaid patent, their rock-shafts q' working in bearings in small hangers q^2, (see Figs. 1 and 3,) but besides having the oscillating motion described in said patent for the purpose of tucking or folding in the side tucks a^3, as represented in Fig. 16, have also a slight longitudinal movement toward and from the rotary carrier, in a direction parallel with the axis thereof, for the purpose of bringing them closer to the rotary carrier preparatory to their movement by which the tucks a^3 are folded in and of afterward taking them out of the way of the tucks and the carrier preparatory to their return oscillating movement. The oscillating movement of the said rock-shaft q' and wing tuckers is here represented as produced in the same manner as heretofore. The groove of the cam Q^5 for producing the said movements of the said tuckers is shown in dotted outline in Fig. 1. This cam operates upon a longitudinally-moving bar Q^4, which is supported near the cam in a rocker Q^6 and works through a fixed guide Q^7 on the framing. This bar connects with one arm, Q^3 of a rock-shaft Q^2, working in fixed bearings. The said rock-shaft has two other arms, Q′, which are connected by two rods q^6 with two sliding toothed racks q^4, one on each side of the machine, which work in stationary guides q^5, and which gear with pinions q^8 on the said rock-shaft q'. The longitudinal movement of this rock-shaft q', for the purpose of making the wing tuckers q approach and recede from the rotary carrier, is produced by an oblique groove q^{10} (see Fig. 3) in each rock-shaft and a fixed pin q^{11}, which is inserted through the box of its hanger q^2, and which projects into the said oblique groove.

It has been hereinbefore referred to as part of this invention that the rock-shaft P^2 for operating the top tuckers p derives its motion from one of the rock-shafts q'. This is effected by a crank q^{12} (see Figs. 2 and 3) on one end of the said rock-shaft, the wrist of the crank working in a slot q^{13} in an arm P, which is affixed to the rock-shaft p^2, the said slot being partly straight and partly curved, as shown in Fig. 2.

The slide-tuckers r, by which the side tucks a^4 (see Figs. 16 and 17) are turned or folded in, are, like those represented and described in my aforesaid patent, attached to slides r', which work in fixed guides r^2, attached to the framing of the machine; but instead of being operated by a special cam on the rock-shaft S, as described in that patent, they derive mo-

tion in a more simple way from the rod J^3, hereinbefore described, which forms part of the mechanism for operating the wrapper-placer, for which purpose the said rod has affixed to it, as shown in Fig. 1, an obliquely-slotted yoke or cam R, which is affixed to the said rod, and which receives within its slot a pin r^5 on the arm r^6 of a rock-shaft r^7, which is furnished with two other arms, r^8, which are connected, respectively, by the rods r^4 with the two tucker-slides r'. The rods r^4 and their connection with the cam-yoke R on the rod J^3 are also shown in Fig. 6.

U U, Figs. 1, 7, and 8, are dies which serve both to flatten the bottom tucks a^5 and to apply glue to the inner faces thereof. These dies are like what are called the "glue-dies" in my aforesaid patent, and have the same movements between the rotary disk glue-feeders s and the bottom tucks a^5 of a package while the latter are spread out, as shown in Fig. 7, against the two stationary segment-plates W, which are arranged on opposite sides of the rotary carrier E. What are called the "pressing-dies" in my aforesaid patent are now dispensed with, and the dies U are not only made to paste the end tucks, but also to press and flatten them. The reciprocating and oscillating shafts U^2, which carry the dies U, derive their reciprocating movements, as heretofore, from the rock-shaft U^4, (see Fig. 1,) which carries forked arms U^3, engaging with grooved collars 21 on the said shafts U^2. The means for producing the reciprocating movement of this rock-shaft being old, need not be herein described. The oscillating movements of the said shafts U^2, instead of being produced by a special cam on the rock-shaft S, are derived in a much simpler way from the same rod J^3, hereinbefore mentioned, through an upright rock-shaft U^5, (see Figs. 1 and 6,) which works in bearings in brackets affixed to the main framing, the said shaft deriving its motion from the said rod J^3 through a laterally-projecting arm U^6, projecting from the said rod and engaging with a pin U^7, projecting upward from the arm U^8 on the rock-shaft. The said rock-shaft U^5 carries another arm, U^9, which is connected with and gives the necessary motion to the rack-bar U^{10}, (see Fig. 6,) on which are the two toothed racks engaging with the toothed segments u on the die-shafts U^2.

It will be understood from the foregoing description that the one cam J^5 operates the package-feeder, the wrapper-placer, and the slide-dies r and produces the swinging movement of the glue-dies, thus simplifying the machine by dispensing with two of the cams and other complex mechanism heretofore used.

As a part of this invention I also dispense with the swinging bottom tuck-closers heretofore used and the mechanism for operating them by substituting for the said tuckers a simple device which forms part of or is an adjunct to the curb W', within which considerable portions of the circumference and sides of the rotary carrier is inclosed, the said device being made to close in the said tucks by the mere act of rotation of the carrier. This device is illustrated in Figs. 7, 9, 10, 19, and 20, Fig. 19 representing a section of the curb in the line 19 19 of Fig. 10, and Fig. 20 representing a section in the line 20 20 of Fig. 10. Just below the narrow openings v, (see Fig. 7,) provided in the sides of the said curb W' for the protrusion of the bottom tucks a^5 against the faces of the segment-pieces W, there is provided in each side of the said curb a wider lateral opening v', which at its entrance is of the full width of the curb, as shown in Fig. 9, and is gradually contracted downward in the direction away from the axis of the carrier to a point v^2. The portions of the sides of the curb on the inner sides of these openings v' or nearer the axis of the carrier of the rotary carrier form outwardly-flanged tongues v^3, the flanges v^4 of which, at the upper ends of the tongues and at the entrances to the openings v', are flat and stand at right angles to the side of the curb, as shown in Fig. 10, but the said flanges gradually assume a curvature, as shown in Fig. 19, and become narrower until they are finally merged into the side of the curb at the point v^2 at the bottoms of the openings v', where the tongues have the full width of the sides of the curb. In order to stiffen the said tongues v^3 and provide for a certain degree of lateral adjustment thereof, I have represented (see Figs. 9 and 10) bracing-brackets v^5, affixed to the sides of the curb W', having screwed through them set-screws v^6, which press against the sides of the said tongues.

The operation of closing the tongues by the rotation of the carrier is as follows: As the wrapped package, with the top tucks a^2 and side tucks a^3 a^4 of the wrapper turned in, arrives at the entrance to the openings v' in the sides of the curb the outwardly-projecting tucks a^5 enter the said openings and project outward against the flat upper portions of the flanges v^4 of the tongues v^3, as shown in Fig. 10. Then as the rotation is continued the said tucks a^5, following the curvature of the flange v^4 and coming within the wider parts of the tongues v^3, as shown in Fig. 19, are gradually turned inward until, as they arrive at the lower and wider portions of the tongues, they are drawn entirely within the openings v' and brought within the widest portions of the tongues at the bottom thereof and into the curb and closed against the side tucks a^3 a^4, in which condition they are carried by the carrier through the curb W' to the exit-trough W^2, whence the packages are taken by the expeller x, hereinbefore mentioned, and deposited upon the delivery-table F.

The package-expeller x is like that heretofore used consisting of a reciprocating rake. The said expeller receives its movement toward the rotary carrier for taking the wrapped packages from the upward projec-

tion x^9 on the rod x^8, hereinbefore referred to in the description of the mechanism for raising the box, the said projection x^9 acting upon a lateral projection x^{10} (see Figs. 1 and 5) on the said expeller. The outward movement of the expeller to draw the wrapped packages into and through the trough W^2 is effected by a projection x^7 on the periphery of the cam Q^5, which operates the wing tuckers, the said projection x^7 operating against a roller x^5 on a lever x^4, which is connected with the expeller by a link x^3.

The row-dresser, for pushing aside the rows of packages delivered through the trough W^2 upon the receiving-table F, consists of a straight bar or plate f, such as was described in my aforesaid patent, having a reciprocating motion across the table or at right angles to the planes of revolution of the rotary carrier and to the direction of the delivery of the wrapped packages upon said table. As the said row-dresser is operated in the same way as described in that patent I have not thought it necessary to illustrate herein the whole of its operating mechanism and will only describe what is shown of such mechanism sufficiently to identify it from other parts of the machine. The row-dresser f itself is only visible in Fig. 11, where it is shown in section as constructed of angle-iron. Its advance movement, by which it pushes aside the rows, is obtained from the rod x^8, hereinbefore described and shown in transverse section in Fig. 11, the said bar carrying a pawl f^7, which operates upon a ratchet-wheel f^6 upon an upright rotary shaft F^6, and the said ratchet-wheel carrying a cam f^4, which operates upon a roller f^5, attached to a slide f^2, which works in a guide-groove f^3 in the bottom of the receiving-table, the said slide f^2 being connected with a bracket-arm f' rigidly attached to the row-dresser f. The return movement of the row-dresser is obtained from a cam offset F^5 on a cam L^8 on the shaft S, the said cam operating upon the lower end f^* of a lever, which works on a fulcrum F^4 and the upper end of which is connected by a rod F^2 with the bracket-arm f'.

An important feature of my invention consists in what I call a "point-holder," for the purpose of holding in the bottom tucks or points a^5 of the wrappers until the glue by which they are secured to the side tucks $a^3 a^4$ is thoroughly dried. This point-holder consists, as shown in Figs. 1, 11, and 12, of a series of boards T and endless chains T', carrying the said boards, the said chains being carried by sprocket-wheels T^2 T^3 on shafts which rotate freely in standards T^4, erected upon the receiving-table F, the direction of the run of the said chains being across the table and at right angles to the rows of packages delivered thereon, and the length of the boards being parallel with the direction of the rows. The said boards T, which are pivoted to the said chains to swing freely, are at a distance apart exactly corresponding with the length of the wrapped packages measured through their bottom tucks or points a^5, so that said boards may interpose themselves between and separate the rows of packages, as shown in Fig. 11, where one package of each of several rows is represented between the said boards, and where it will be seen that the lower runs of the chains are parallel with the table and that the lower edges of the boards on those parts of the chains run close to the receiving-table F. The upper runs of the chains have provided for them, between the sprocket-wheels T^2 T^3, guides t, and below these guides t are guides t', upon which the lower edges of the boards rest, as shown in Fig. 12, as they pass backward in the upper runs of the chains. In order to support the said boards as they fall over the sprocket-wheels T^2, and until the proper time for them to fall behind the last row of packages which has been deposited on the receiving-table, a stop t^3 is attached to the row-dresser. To explain the operation of this point-holder, I will suppose that a row of wrapped packages has just been placed between the two boards T nearest the row-dresser f and that the row-dresser is just beginning to move forward, as shown in Fig. 11. As the row-dresser advances it pushes forward the point-holder and the several rows of packages on the table F between the boards T in the lower runs of the chains, the boards T in the upper runs of the chains in the meantime running backward on the guides t' until one of the latter boards passes the extremity t^* of said guides t'. This last-mentioned board then drops onto the stop t^3, provided on the row-dresser, and there remains during the return movement of the row-dresser until the latter in completing said movement takes the stop t^3 clear of the said board, which is then allowed to drop to the upright position in front of the row-dresser ready for a fresh row of packages to be delivered between it and the next board in advance of it before the next advance movement of the row-dresser, by which all the packages on the receiving-table are pushed onward, while the several rows are kept separated by the boards between which the bottom tucks or points a^5 of their several wrappers are held closed.

The cam-shaft S, from which all parts of the machine derive their motion, may have rotary motion given to it by any suitable means. I have represented it in Fig. 1 as driven from a driving-shaft y, arranged parallel with it in suitable bearings on the framing through a pinion y' on itself deriving motion from a pinion y^2 on the said driving-shaft.

What I claim as my invention is—

1. The combination with the receiving-table, the wrapper-feed box arranged and working through an opening in said table and the wrapper-placer consisting of grippers entering the forward end of the said box to take the wrappers therefrom, of an elastic cam consisting of a spring having an inclined

face affixed to the said table and entering said box through an opening in the rear thereof for pressing forward the upper wrappers therein toward the grippers by the act of raising the said box, substantially as herein set forth.

2. The combination with the wrapper-feed box and means for pushing the wrappers forward therein, of a wrapper-lifter for lifting the so pushed-forward wrappers, a wrapper-placer provided with grippers for taking the wrapper from said lifter and a gage attached to said placer for pushing back the wrappers prior to the closing of its grippers thereon, substantially as herein set forth.

3. The combination with the rotary carrier, of wing tuckers q and shafts for the said tuckers arranged at the sides of said carrier with their axes parallel with the axis of the carrier and having both oscillating movements about their own axis and longitudinal movements toward and from the carrier, substantially as and for the purpose herein set forth.

4. The combination with the rotary carrier, the wing tuckers q, the shafts q' carrying said tuckers arranged on opposite sides of and parallel with the axis of the said carrier, stationary bearings for said shafts, cam-actuated mechanism for producing the oscillation of said shafts, and pins in said stationary bearings entering oblique grooves in said shafts for the purpose of producing from the rotary movement of said shafts a longitudinal movement of said shafts and their attached tuckers toward and from said carrier, substantially as herein set forth.

5. The combination with the rotary carrier and the curb W′ partly inclosing the circumference and sides of the said carrier, of the bottom tuck-closers consisting of stationary tongues projecting outward from openings in the sides of the said curb, substantially as herein set forth.

6. The combination with the delivery-table onto which the wrapped packages are delivered in successive rows, of a point-holder consisting of an endless chain and a series of boards attached to said chain for entering between the successive rows of wrapped packages, substantially as herein set forth.

7. The combination with the delivery-table and the row-dresser consisting of a reciprocating bar arranged on said table for pushing aside the wrapped packages as they are delivered in successive rows upon said table, of a point-holder consisting of an endless chain and boards attached to said chain for entering between the successive rows of packages, the said point-holder being operated by the pressure of the row-dresser against it, substantially as herein set forth.

8. The combination with the point-holder consisting of a chain having boards pivoted thereto, of the row-dresser f provided with a stop f^3 for temporarily detaining the said boards, substantially as herein described.

9. The combination with the tuckers p', the rock-shaft P^2 carrying the said tuckers p', the wing tuckers q and the rock-shafts q' carrying the said tuckers q, the slotted arm P on the rock-shaft P^2 and the crank q^{12} on one of the rock-shafts q' engaging with said slotted arm for transmitting motion to the top tuckers from one of the rock-shafts of the wing tuckers, substantially as herein described.

10. The combination with the reciprocating wrapper-placer and the sliding side tuckers r, of the cam J^5, the lever J^2, the rod J^3 for transmitting motion from said cam to said lever, the rod J′ connecting said lever with the wrapper-placer, the slotted cam-yoke R on said rod J^3, and the rock-shaft r^7 having an arm r^6 which engages with said cam-yoke and arms r^8 connected with the said tuckers, all substantially as herein described, whereby the wrapper-placer and the side tuckers are operated by one cam as herein set forth.

11. The combination with the reciprocating wrapper-placer and the pressing and gluing dies U, of the cam J*, the lever J^2, the rod J^3 for transmitting motion from said cam to said lever, the rod J′ connecting said lever with the wrapper-placer, the oscillating shafts U^2 which carry the pressing and gluing dies, the toothed segments on said shafts U^2, the rack-bar U^{10} gearing with said toothed segments, and the upright shaft U^5 having one arm U^8 engaging with said rod J^3 and having another arm U^9 engaging with said rack-bar, all substantially as herein described, whereby the reciprocating wrapper-placer and the pressing and gluing dies are operated by one cam as herein set forth.

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Witnesses:
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