

No. 827,671.

PATENTED JULY 31, 1906.

W. S. SCALES.
BOX OR CARTON SETTING-UP MACHINE.

APPLICATION FILED JAN. 25, 1904.

5 SHEETS—SHEET 1.

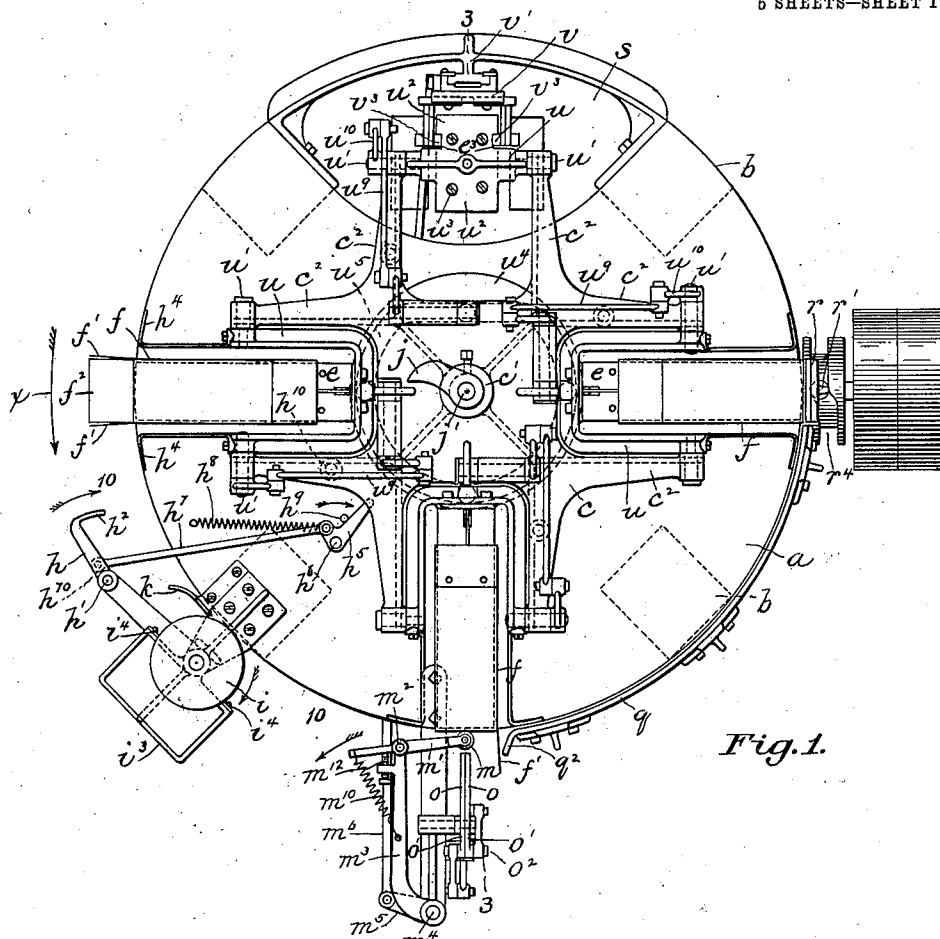


Fig. 1.

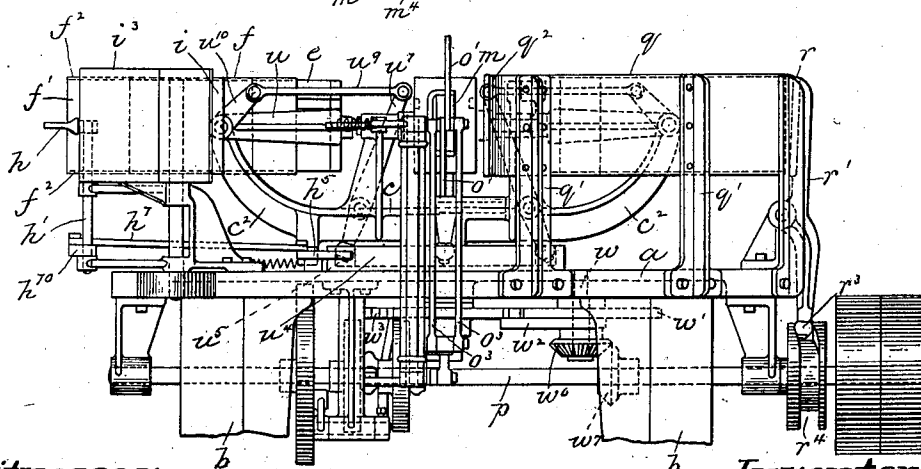


Fig. 2.

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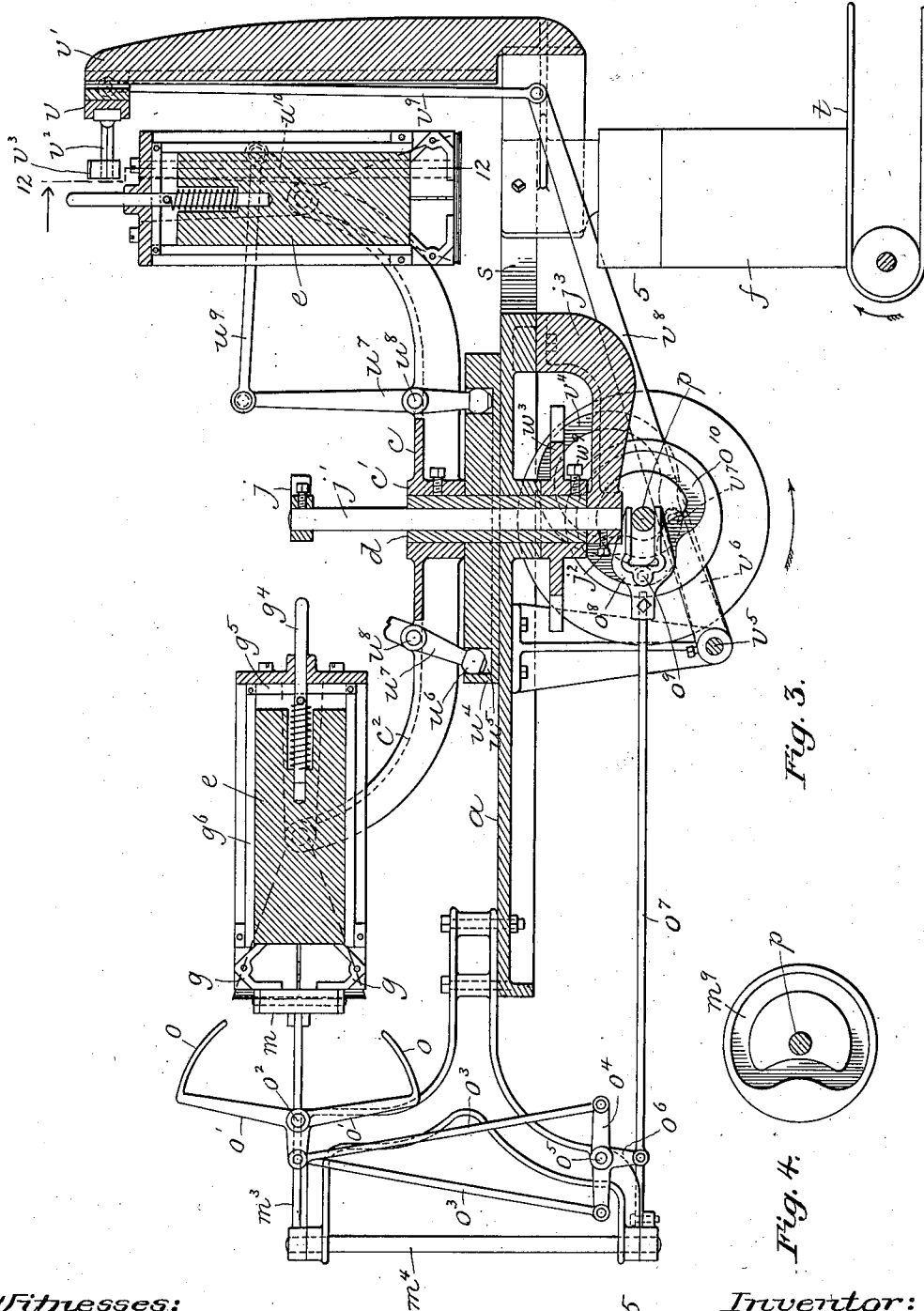
W. S. Scales
by Knight, Brown & Quincy
Attys.

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6 SHEETS—SHEET 3.

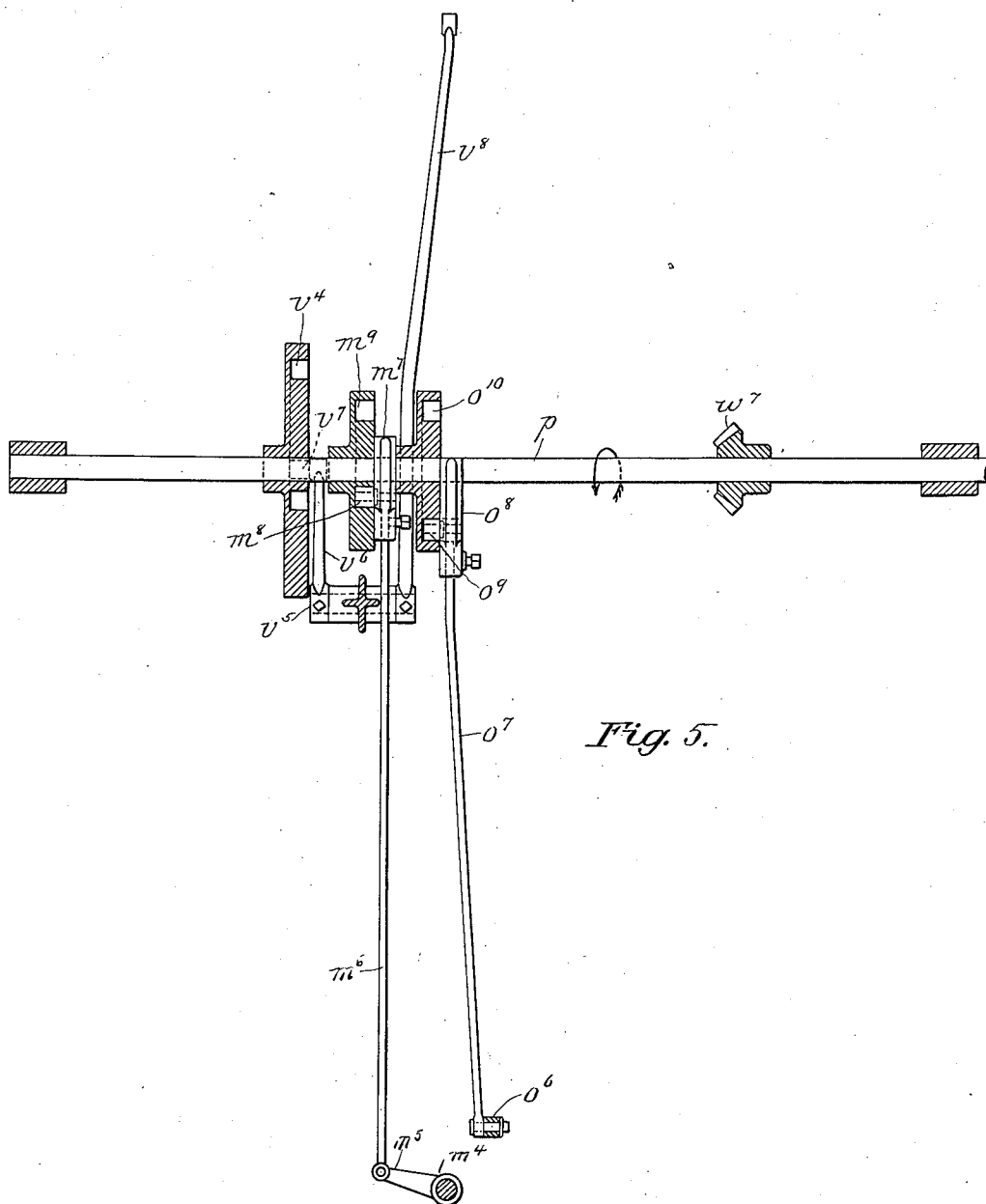


Fig. 5.

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5 SHEETS—SHEET 4.

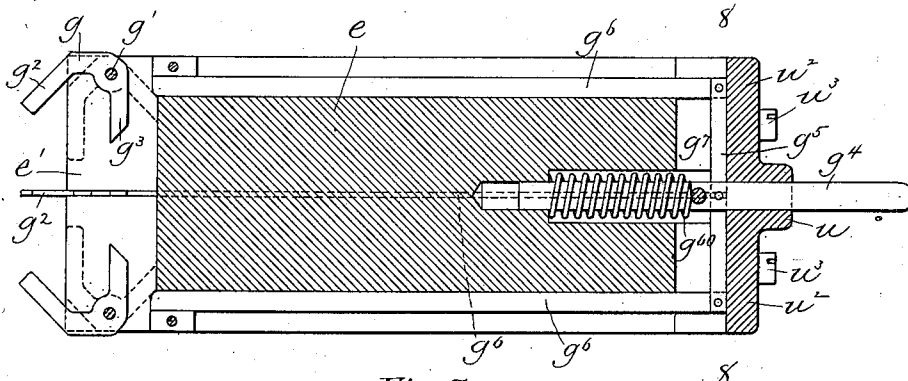


Fig. 7.

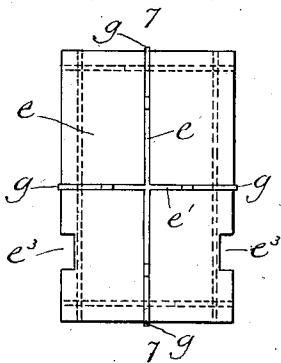


Fig. 6.

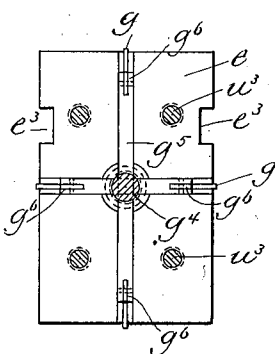


Fig. 8.

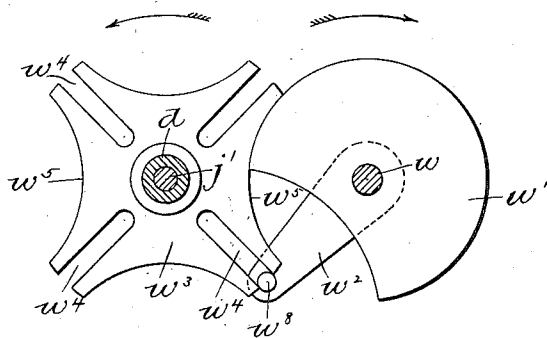


Fig. 9.

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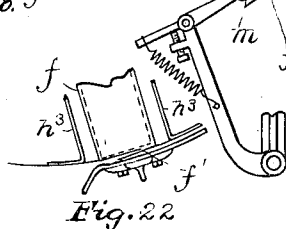
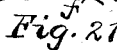
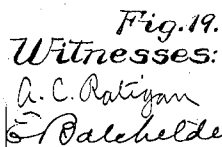
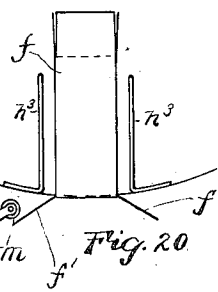
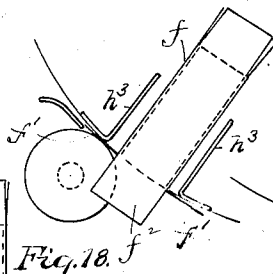
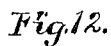
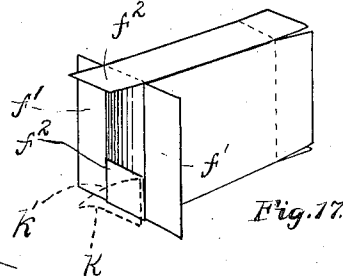
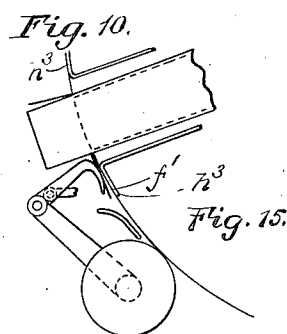
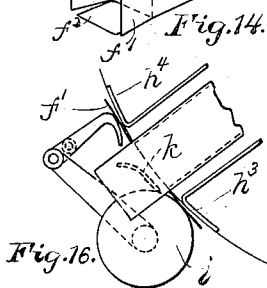
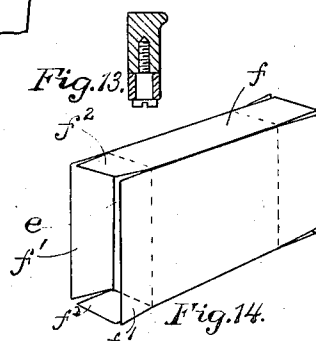
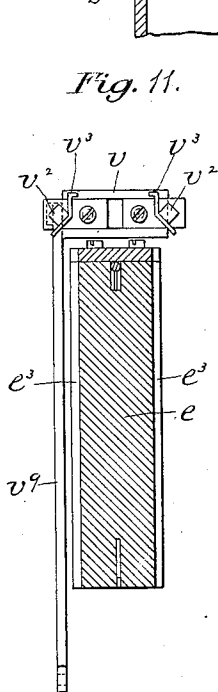
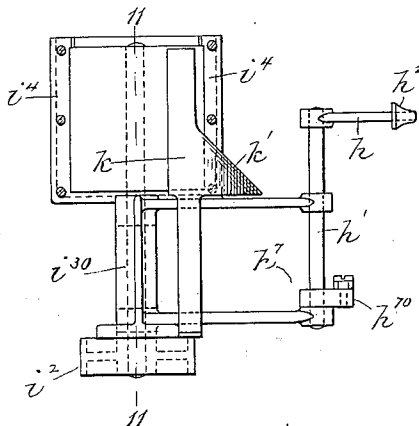
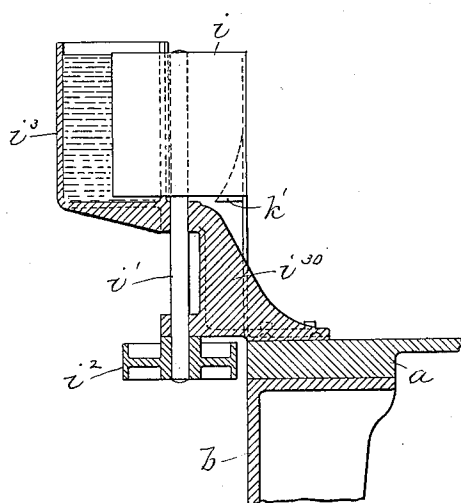
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5 SHEETS—SHEET 5.



Inventor:

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UNITED STATES PATENT OFFICE.

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BOX OR CARTON SETTING-UP MACHINE.

No. 827,671.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed January 26, 1904. Serial No. 190,537.

To all whom it may concern:

Be it known that I, WILLIAM S. SCALES, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Box or Carton Setting-Up Machines, of which the following is a specification.

This invention relates particularly to machines for forming the bottoms or closed ends of paper boxes or cartons, which as originally formed comprise tubes of paper scored longitudinally and also scored transversely near their ends, each tube being supplied in a collapsed or flattened condition with its ends, which are provided with flaps, left open and the flaps extending in the same plane with the side portions or members of the box on which they are formed.

In setting up the carton the body portion is opened and held in its desired form and the flaps at one end are folded to form the bottom end or head, the said flaps being coated with glue and subjected to pressure between an internal pressing member within the body of the carton and one or more external pressing members.

The invention has for its object to provide a carton-setting-up machine having, first, means for facilitating the application of the carton to the internal pressing member; secondly, improvements relating to the treatment of the flaps comprising the bottom end or head preparatory to the completion of said head, and, thirdly, improvements relating to the discharge of the completed or set-up carton from the machine.

The invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of a carton-forming machine embodying my invention. Fig. 2 represents a side elevation of the same. Fig. 3 represents a section on line 3 3 of Fig. 1. Fig. 4 represents a side view of one of the cams on the driving-shaft of the machine. Fig. 5 represents a section on line 5 5 of Fig. 3. Fig. 6 represents an end view of one of the forming-blocks. Fig. 7 represents a section on line 7 7 of Fig. 6. Fig. 8 represents a section on line 8 8 of Fig. 7. Fig. 9 represents a

plan view of the members which impart a step-by-step motion to the rotary frame or carrier hereinafter described. Fig. 10 represents a section on line 10 10 of Fig. 1 and an elevation of the parts at the left of said line. Fig. 11 represents a section on line 11 11 of Fig. 10. Fig. 12 represents a section on line 12 12 of Fig. 3. Fig. 13 represents Fig. 14 represents a perspective view of a box or carton as it appears when first opened and placed upon one of the forming-blocks of the machine. Figs. 15 to 22, inclusive, are views illustrating successive stages of the operation of turning inwardly and securing the flaps at one end of the carton to form the bottom of the same.

The same reference characters indicate the same parts in all the figures.

In the drawings, *a* represents the main portion of the supporting-frame of the machine, the same being preferably a horizontal bed or table of circular form and mounted upon legs *b*.

c represents a rotary frame or carrier having a hub *c'*, which is affixed to a vertical shaft *d*, journaled in a bearing at the center of the bed *a* and rotated step by step by means hereinafter described. The rotary carrier *c* is provided with outwardly-projecting arms *c¹ c²*, arranged in pairs, there being preferably four pairs of arms, as shown in Fig. 1, although this particular number is not essential.

e e represent a series of carton forming and supporting blocks which are connected, as hereinafter described, with the arms of the rotary carrier *c* and are adapted to be moved progressively step by step by the movements of said carrier, each forming-block *e* being shaped to occupy the interior of a carton *f*, which may be of the form indicated in Fig. 14, said figure showing a carton which is oblong in cross-section and is provided at its ends with flaps *f' f' f² f²*. It will be understood, however, that the forming-blocks *e* may be formed to occupy a carton which is square in cross-section or having any other desired proportions. Each forming-block *e* is provided at its outer end with a series of fingers *g*, said fingers being pivoted at *g'* in slots *e'*, formed in the outer end of the block *e*. The slots *e'* may be narrow saw kerfs, as indicated in Fig. 6, and there are preferably

two of said slots extending at right angles with each other. The fingers g are thin metal pieces formed to fit and swing in the slots e' . Each finger g has an inclined outer arm g^2 and an inner arm g^3 . The arms g^2 are formed so that when the fingers are in the positions shown in full lines in Fig. 7 the outer edge of each arm g^2 will project at an incline from the outer end of the forming-block e in position to guide one end of a carton f onto the block and prevent the advancing end of the carton from catching on the end of the block. The block is provided with automatic means for forcing the fingers to the positions shown in full lines prior to the application of a carton to the block and then releasing the fingers, so that they may swing back to the positions indicated in Fig. 3 and by dotted lines in Fig. 7, the fingers being then retracted and contained wholly within the slots e' .

The means here shown for projecting the fingers g comprise a push-rod or plunger g^4 , which is movable longitudinally in the block e , arms g^5 , affixed to the said plunger, push-rods g^6 , affixed to the outer ends of the arms g^5 and movable in slots or grooves formed for their reception in the block e , the outer ends of said rods bearing against the inner arms g^3 , as shown in Fig. 3, and a spring g^8 , interposed between a shoulder within the block e , and a stud or pin g^7 , affixed to the plunger g^4 . The spring g^8 acts to normally hold the plunger g^4 and rods g^6 in the retracted position shown in Figs. 3 and 7. The plunger g^4 of each block e is forced outwardly at a given point in the rotation of the carrier c by means of a fixed arm or cam j , Figs. 1 and 3, which projects into the path in which the inner ends of the plungers g^4 are carried and imparts to each plunger in succession a quick outward movement, causing the rods g^6 to project the fingers g . The plunger is immediately released, leaving the fingers unsupported, so that the arms g^2 will yield inwardly to the pressure of the advancing end of the body portion of the carton against them and will be swung inwardly to or nearly to their retracted position by the time the advancing end of the body portion has passed onto the sides of the block e . The outer edges of the portions of the fingers connecting the arms g^2 and g^3 project outwardly from the sides of the block when the fingers are projected, so that they oppose the movement of the body of the carton onto the block. Hence said body, which fits the block somewhat closely, exerts inward pressure on the fingers after the flaps have been moved over the sides of the block, and thus swings the fingers to their retracted position. The fingers g remain retracted until the block with which they are connected again reaches the fixed cam h .

The mechanism for rotating the carrier c is organized in this embodiment of my inven-

tion to give the carrier a quarter of a complete rotation at each step, the carrier being arrested and held stationary for a brief period after each partial rotation. By referring to Fig. 1 it will be seen that the block e shown at the left of said figure has just passed the fixed cam j . Hence the fingers g of said block have been projected and may be supposed to have guided the advancing ends of the carton-flaps while the carton was being placed upon said block, the carrier being held stationary long enough to permit this operation. After the carton has been positioned the carrier c is given a partial rotation, and the carton is moved in the direction indicated by the arrow x in Fig. 1 toward an oscillating arm h , affixed to a vertical rock-shaft h' , which is journaled in fixed bearings. The said arm h , which is provided with a curved finger h^2 at its outer end, is oscillated between the positions shown in Figs. 1 and 15. The means for oscillating the arm h comprise a bell-crank lever h^5 , pivoted at h^6 to the bed a , a rod h^7 connecting one arm of said lever with the arm h , a spring h^8 , which holds the other arm of the lever h^5 against a fixed stop h^9 , and a stud h^{10} on the rotary carrier c , said stud being arranged to strike the lever h^5 , and thus move the arm h to the position shown in Fig. 15. After the stud h^{10} passes the lever h^5 the spring h^8 restores the arm h to the position shown in Fig. 1. The arm h is swung inwardly while the carrier c is in motion and is so timed that its finger h^2 strikes the forward vertical flap f' of the carton and swings said flap forward against a wing or supporting-bed h^3 , which moves with the rotary carrier. The arm h remains in the position shown in Fig. 15 until the movement of the rotary carrier brings the rear vertical flap f'' of the carton against the finger h^2 , as shown in Fig. 16, the said flap being thus turned outwardly against a wing or supporting-bed h^4 , which also moves with the rotary carrier. The vertical flaps f' f'' are now in position to receive glue from a glue-roll i , which is located in position to bear on the outer surfaces of said flaps and apply glue thereto, the flaps being backed or supported by the wings h^3 h^4 .

k represents a fixed guide having an inclined edge k' , Fig. 10, which is arranged to turn upwardly the lower horizontal flap f^2 of the carton, as indicated in Fig. 17, before the said flap reaches the glue-roll i . The said lower flap is therefore coated with glue when the block which carries it passes the glue-roll, and after this the rear vertical flap f' is in turn presented to the glue-roll.

The glue-roll i is affixed to a vertical shaft i' , journaled in fixed bearings and rotated by suitable means, such as a belt running on a pulley i^2 , Figs. 10 and 11, affixed to the lower portion of the shaft i .

i^3 represents a trough which incloses a

part of the periphery of the roll i , the inner wall of said trough having an opening into which the roll projects. The edges of said opening are provided with blades $i^4 i^4$, which are in close proximity to the periphery of the glue-roll and prevent the glue from flowing through said opening, the roll removing from the trough only a relatively thin film of glue.

The operations above described all take place during a single movement or partial rotation of the carrier. The said movement is continued until the carton that has been acted on as above described has been brought into position to be acted on by a vertical roll m and a pair of fingers $o o$, the motion of the rotary carrier being arrested while the said roll and fingers are acting. The fingers $o o$ are arranged in a vertical plane and are moved simultaneously toward and from each other by the mechanism shown in Figs. 3 and 5 and hereinafter described. When the movement of the carton is arrested, the fingers $o o$ move toward each other, the upper finger o striking the upper horizontal flap f^2 of the carton and bending it downwardly, as shown in Fig. 18, while the lower finger o bears upon the previously-bent lower flap and holds the latter in place against the end of the forming-block. The two flaps $f^2 f^2$ are thus held in place until the roll m has engaged the rear vertical flap f' and folded the same partially over the outer end of the block, after which the fingers $o o$ return to the position shown in Fig. 3 and the roll m advances to the position shown in Fig. 21, thus pressing the rear flap f' against the flaps $f^2 f^2$. The roll m is moved from the position shown in Fig. 20 to that shown in Fig. 21 by mechanism hereinafter described, said roll occupying the position shown in Fig. 2 before acting on the rear flap f' . The said flap has a tendency to spring outward into the path of the roll m , as indicated in Fig. 20, so that when the roll m is moving to the position shown in Fig. 1 it it engages the back or outer side of the flap, and thus folds it inwardly.

The fingers $o o$ are fixed to the long arm of bell-crank levers $o' o'$, which levers are pivoted at o^2 . The shorter arms of said levers are connected by links $o^3 o^3$ with a rocker-arm o^4 , pivoted at o^5 . Said rocker-arm has an arm o , which is connected with a rod o^7 , having a head o^8 , on which is a trundle-roll o^9 , entering a cam-groove o^{10} in a disk affixed to the driving-shaft p of the machine. The described mechanism causes the fingers $o o$ to oscillate in opposite directions.

The roll m is journaled in bearings in the ends of a forked lever m' , which is pivoted at m^2 to the swinging end of an oscillatory arm m^3 . Said arm is affixed to a vertical rock-shaft m^4 , journaled in fixed bearings. The rock-shaft m^4 is provided with an arm m^5 , which is connected by a rod m^6 with a head m^7 , Fig. 5, having a trundle-roll m^8 , which en-

gages a cam-groove m^9 in a disk affixed to the shaft p . A spring m^{10} holds one arm of the roll-carrying lever m' against an adjustable stop m^{12} , mounted on the arm m^3 . The roll m is thus permitted to move in a rectangular direction and conform to the outer end of the forming-block e .

It will be seen that the operations above described secure in place three of the flaps at the outer end of the block—namely, the top and bottom flaps $f^2 f^2$ and the rear vertical flap f' . The remaining flap—namely, the forward vertical flap f' —is next folded inwardly against the rear vertical flap after the movement of the carriage, which has been suspended to permit the action of the roll m , and fingers $o o$ has been resumed.

q represents a fixed segmental guide-strip which is supported by a standard q' , which is affixed to the bed a , the inner side of said strip being concentric with the path in which the outer end of the forming-block moves. One end of the guide-strip q is bent outwardly to form an inclined lip q^2 , against which the forward flap f' abuts when the movement of the rotary carrier is resumed, said flap being caused by the lip q^2 and by the movement of the carrier to swing inwardly toward the outer end of the forming-block and to bear upon the previously-folded rear flap f' . The inner surface of the guide-strip q is arranged so that it holds the forward flap f' in contact with the rear flap until the forming-block is arrested in its third position or at the right of the table as viewed in Fig. 1. When the block reaches this point, the several flaps are pressed together and against the outer end of the block by means of a platen r , which is formed to cover the outer end of the block and the flaps thereon and is moved toward and from the block. The platen r is affixed to one arm of a lever r' , which is pivoted at r^2 to a fixed support, its other arm having a trundle-roll r^3 located in a cam-groove r^4 in a disk affixed to the driving-shaft p . The said cam-groove is timed to hold the platen in contact with the outer flap on the forming-block while said block is at rest in its third position and to hold the said platen in a retracted position while the rotary carrier c is in motion.

After the flaps constituting the bottom of the carton have been subjected a sufficient length of time to the pressing action of the platen r the carrier is again moved to bring the block with the now completed carton to its fourth or carton-delivering position over an opening or outlet s , provided in the bed a , to permit each completed carton f to drop with its closed end downward upon a conveying-belt t , which moves in the direction required to carry the completed cartons away from the machine. At this point it should be noted that the forming-block e is pivotally connected with the rotary carrier c in such

manner that it can be swung from the horizontal position it occupies during the operations above described and, as shown at the left in Fig. 3, to a vertical position over the outlet *s*, as shown at the right in Fig. 3, so that the completed carton may be forced downwardly from the block, and thus conveniently and advantageously removed.

The preferred construction whereby the block may be turned to discharge the finished carton downwardly and the preferred mechanism for changing the position of the block will now be described. *u* represents a U-shaped yoke or frame. The outer ends of the arms of the yoke *u* are provided with trunnions *u'* *u'*, which are journaled in bearings in the outer ends of the carrier-arms *c'* *c'*, the yoke *u* being located between and pivotally connected with a pair of the carrier-arms *c'*. The central or neck portion of the yoke *u* is provided with extensions *u''* *u''*, projecting from opposite sides of the yoke and forming with said neck portion of the yoke a head to which the forming-block *e* is attached by screws *u'''*. It will be seen that the yoke engaged as described with the block and pivotally connected with the carrier enables the block to assume the different positions indicated in Fig. 3, the yoke and block turning together on the axis formed by the trunnions *u'* of the yoke. The block is held in a horizontal position while it is receiving the carton and during the described operations thereon by means of a cam *n'*, affixed to the bed *a* and having a cam-groove *u⁵*, which is engaged by a trundle-roll *u⁶* on one arm of a lever *u⁷*, which is pivoted at *u⁸* to the rotary carrier *c*. The other arm of the lever *u⁷* is connected by a rod *u⁹* with an arm *u¹⁰*, affixed to one of the trunnions *u'* of the yoke *u*. The major portion of the cam-groove *u⁵* is concentric with the axis of the rotary carrier *c*, this concentric portion controlling the lever *u⁷*, while the carton is being applied to the block and during the various operations preceding the stripping or discharging operation, the arrangement being such that the concentric portion of the cam in cooperation with the lever *u⁷* holds the block in a horizontal position. Another portion of the cam-groove *u⁵* (shown at the right in Fig. 3) is formed to raise the lever *u⁷* to a substantially vertical position, thus causing it to swing the block with which it is connected also to a vertical position, as indicated at the right in Fig. 3. This takes place when the block reaches the position represented at the top of Fig. 1, the carrier being stopped when the block is in a vertical position and held a sufficient length of time to permit the ejecting device next described to force the carton downwardly from the block. The said ejecting device comprises a cross-head *v*, which is movable on vertical guides on a standard *v'*,

affixed to the bed *a*, arms *v²* *v²*, affixed to the cross-head *v*, and fingers *v³*, affixed to said arms. The cross-head *v* is reciprocated vertically by means presently described, and the fingers *v³* are formed and arranged to enter longitudinal grooves *e³*, formed in two opposite sides of the forming-block *e*. The fingers *v³* commence their forward movement when elevated above the upper end of the block, as shown in Fig. 3, so that they strike the upper end of the carton and force it downwardly until the carton drops from the block onto the conveyer *t*. After the fingers have discharged the carton they immediately return to the raised position shown in Fig. 3, so that the forming-block is free to swing back to its horizontal position. The cross-head *v* is reciprocated by means of a cam-groove *v⁴* in a disk affixed to the driving-shaft *p*, a rock-shaft *v⁵*, journaled in bearings affixed to the bed *a*, an arm *v⁶*, affixed to said rock-shaft and having a trundle-roll *v⁷*, engaged with said cam-groove, an arm *v⁸*, affixed to the rock-shaft *v⁵*, and a rod *v⁹*, connecting the arm *v⁸* with the cross-head *v*. The cam-groove *v⁴* is formed to oscillate the arm *v⁸*, and thus cause the reciprocation of the cross-head and the stripping-fingers.

The preferred means for imparting the described step-by-step rotation to the carrier *c* comprise a driving member mounted to rotate on a vertical stud *w*, Figs. 2 and 9, affixed to the bed *a*, said driving member comprising the crescent-shaped part *w'* and an arm *w²* affixed thereto, and a driven member *w³*, affixed to the tubular shaft *d* of the rotary carrier, said driven member comprising a wheel having a series of radial slots *w⁴* and a series of concave edges *w⁵*. The driving member is provided with a gear *w⁶*, meshing with and rotated by a gear *w⁷*, affixed to the driving-shaft *p*. The arm *w²* of the driving member is provided with a pin or stud *w⁸*, which is adapted to enter and move in each of the slots *w⁴*. The said members are formed and arranged as shown in Fig. 9, so that each rotation of the driving member causes the pin *w⁸* to enter one of the slots *w⁴*, and thus impart a partial rotation to the driven member, said rotation continuing while the pin *w⁸* moves first inwardly and then outwardly in the engaged slot, the rotation of the driven member stopping when the pin leaves the slot and being discontinued until the pin enters the next slot. The driving member, which is rotated continuously, therefore imparts a step-by-step rotation to the driven member and to the carrier *c*, to which said driven member is affixed by a set-screw *w⁹*, Fig. 3.

The fixed cam *j*, which projects the finger-operating plunger *g⁴* in the forming-block, is supported by a stationary rod or post *j'*, which extends through the tubular shaft *d* and is affixed at its lower end by a set-screw

j^2 to a bracket j^3 , attached to the bed a . It will be understood that the foregoing description of the forming-block e and means for operating the same applies to each of the forming-blocks of the series.

The operation of the machine may be briefly recapitulated as follows: While the rotary carrier is at rest the operator opens a carton and applies it to the forming-block which is nearest the flap-turning finger h^2 and glue-roll i . The next partial rotation of the carrier advances the block to the position occupied by the flap and pressing-roll m , the vertical flaps and the lower flap of the carton being adjusted and coated with glue while in transit, as above described. The carrier remains stationary while the fingers o and the roll m are acting and is then advanced to cause the guide-strip q and its lip q^2 to fold the last flap, this movement carrying the carton to the pressing-platen r , where it is held for the action of said platen, after which the carrier is again moved forward to bring the block over the outlet s , the block being then moved to a vertical position. The stripping-fingers b^3 then discharge the carton, and the block is returned to its horizontal position, after which the carrier is given another partial rotation to bring the block into position to receive another carton, the guiding-fingers g being projected just before the block reaches its carton-receiving position. The block e internally supports the flap portions of the carton against external pressure exerted on them. Hence said block serves as a pressing member. The flap-guiding fingers g materially facilitate the engagement of a carton with the pressing member and increase the effectiveness of the machine of which said member is an element. The flap-guiding fingers are not limited, however, to use in a pressing member formed and operated as shown in this embodiment of my invention, it being obvious that said fingers may be employed in connection with any suitably formed and operated pressing member.

It will be observed that the front and rear flaps $f' f'$ of the carton are bent outwardly or extended from their original position at right angles to the path of movement of the carton-supporting block to a position substantially in the line of said path. Hence a glue-roll located adjacent to said path and opposite the outer end of the block e is in position to apply a coating of adhesive to the extended front and rear flaps $f' f'$ successively or to either of said flaps, said roll being also in position to apply a coating to a flap f^2 , bearing on the end of the block between the two extended flaps.

Having thus explained the nature of my invention and described a way of constructing and using the same, although without having attempted to set forth all the forms in which

it may be embodied or all the modes of its use, I declare that what I claim is—

1. In a carton-setting-up machine, a carton pressing and supporting member having yielding flap-guiding fingers adapted to be projected from the flap-supporting end of the member, and to be forced into said end by the body of the carton.

2. In a carton-setting-up machine, a carton pressing and supporting member having movable flap-guiding fingers adapted to be projected from and forced into the flap-supporting end of the member, and having inclined guiding edges.

3. In a carton-setting-up machine, a carton pressing and supporting member having slots in its flap-supporting end, and fingers pivoted in said slots and adapted to be projected from and forced into the said end, said fingers having guiding edges which are inclined relatively to the flap-supporting end when the fingers are projected.

4. In a carton-setting-up machine, a carton pressing and supporting member having a flap-supporting end, yielding carton-guiding fingers, and means for alternately projecting said fingers from the flap-supporting end and releasing said fingers to permit their inward displacement by a carton.

5. In a carton-setting-up machine, a carton-pressing member having yielding carton-guiding fingers, push-rods for projecting the same, and means for simultaneously projecting and retracting said push-rods.

6. In a carton-setting-up machine, a carton-pressing member having yielding flap-guiding fingers pivoted to the pressing member, each having an inner arm and an outer arm inclined relatively to the inner arm, push-rods bearing on the inner arms, and means for simultaneously reciprocating said rods to alternately project and release the fingers.

7. In a carton-setting-up machine, a carton-pressing member having yielding carton-guiding fingers pivoted to the pressing member, each having an inner arm and an outer arm inclined relatively to the inner arm, push-rods bearing on the inner arms, a spring-retracted plunger connected with said rods, and means for alternately projecting and retracting said plunger.

8. In a carton-setting-up machine, a movable carrier, a carton-pressing member mounted thereon, a series of carton-guiding fingers yieldingly mounted on said pressing member, a spring-retracted plunger, and means connected therewith for simultaneously projecting and releasing said fingers, and a fixed plunger-projecting cam to which said plunger is presented by the movement of the carrier.

9. In a carton-setting-up machine, a movable carrier, mechanism for moving the same

progressively, a carton-supporting block connected with the carrier, and a glue-roll located adjacent to the path of movement of the block, in position to act on a carton-flap
5 extended from the block in the line of the path of movement of the block.

10. In a carton-setting-up machine, a movable carrier, mechanism for moving the same progressively, a carton-supporting block connected with the carrier, means for bending a
10 carton-flap outwardly from the block, to cause said flap to project in the direction of the path of movement of the block, and a glue-roll located adjacent to the said path of
15 movement, in position to act on said flap.

11. In a carton-setting-up machine, a movable carrier, mechanism for moving the same progressively, a carton-supporting block connected with the carrier, means for bending a
20 carton-flap outwardly from the block to cause said flap to project in the direction of the path of movement of the block, a glue-roll located adjacent to said path of movement in position to act on the said flap, and a
25 bed or support moving with the block and adapted to support the outwardly-bent flap against the pressure of the glue-roll.

12. In a carton-setting-up machine, a movable carrier, mechanism for moving the same
30 progressively, a carton-supporting block connected with the carrier, beds or flap-supports moving with the block and located at opposite sides of the same, means for successively bending the front and rear carton-flaps out-
35 wardly from the block toward said beds, to cause said flaps to project in the direction of the path of movement of the block, one flap being bent forward and the other backward, and a glue-roll to which said flaps are suc-
40 cessively presented by the movement of the carrier.

13. In a carton-setting-up machine, a movable carrier, mechanism for moving the same progressively, a carton-supporting block connected with the carrier, a movable flap-bend-
45 ing finger adapted to bend the front carton-flap forward, and the rear flap backward, each flap projecting in the direction of the path of movement of the block, and a glue-roll arranged to act successively on said flaps.
50

14. In a carton-setting-up machine, a movable carrier, mechanism for moving the same progressively, a carton-supporting block connected with the carrier, a movable flap-bend-
55 ing finger which moves inwardly to bend the forward flap of a carton on said block in one direction, and remains stationary to bend the rear flap in the opposite direction, and a glue-roll arranged to act successively on said
60 flaps.

15. In a carton-setting-up machine, in combination, a movable carton-holder, means for extending a carton-flap outwardly from
65 said holder in the direction of the path of movement of the holder, and a glue-roll lo-

cated adjacent to the path of movement of the holder and adapted to engage a flap extended in the direction of the said path, whereby said flap may receive a layer of ad-
70 hesive.

16. In a carton-setting-up machine, in combination, a carton-holder, means for giving the same a progressive step-by-step movement in a predetermined path and a swinging movement independently of the said
75 progressive movement, flap-folding devices which act on a carton while the holder is moving progressively, a discharging device which engages a carton when the holder is at rest, and means for swinging the holder to
80 support it in a given plane while cooperating with the folding devices and in a different plane while cooperating with the discharging device.

17. In a carton-setting-up machine, a
85 movable carrier, mechanism for moving the same progressively step by step, a carton-supporting block having a swinging connection with the carrier, forming devices to which the projecting flaps of a carton on said
90 block are presented by movements of the block, and block-controlling mechanism organized to swing the block first to position to cooperate with said devices and then to position to permit the downward discharge
95 of the carton, the block occupying the last-named position when at rest.

18. In a carton-setting-up machine, a movable carrier, mechanism for moving the same
100 step by step, a carton-supporting block pivotally connected with the carrier, forming devices, and a discharging device to which the flaps of a carton on said block are successively presented, and means for holding the block in
105 a substantially horizontal position for the action of the forming devices and in a substantially vertical position for the action of the discharging device.

19. In a carton-setting-up machine, a movable carrier, mechanism for moving the same
110 progressively, step by step, and for holding the carrier after each movement, a carton-supporting block movably connected with the carrier, forming devices to which the projecting flaps of a carton on said block are pre-
115 sented by movements of the block, block-controlling mechanism organized to hold the block first in position to cooperate with said devices and then in position to permit the downward discharge of the carton, and means
120 for forcing the carton downwardly when the block is in the last-named position.

20. In a carton-setting-up machine, a movable carrier, mechanism for moving the same
125 progressively, step by step, and for holding the carrier after each movement, a yoke pivotally connected with the carrier, a carton-supporting block attached to the yoke, forming devices to which the projecting flaps of a
130 carton on said block are presented by move-

ments of the block, and mechanism for holding the yoke and block first in a substantially horizontal position to present the carton-flaps to the said forming devices, and then in a substantially vertical position to permit the downward discharge of the carton.

21. In a carton-setting-up machine, a rotary carrier, mechanism for moving the same progressively, step by step, and for holding the carrier after each movement, a yoke pivotally connected with the carrier, a carton-supporting block attached to the yoke, forming devices to which the projecting flaps of a carton on said block are presented by movements of the block, a fixed cam surrounding the axis of the carrier, a lever pivoted to the carrier and engaged with said cam, and connections between the said lever and yoke, the cam being formed to hold the yoke and block through said connections, first in a substantially horizontal position and then in a substantially vertical position.

22. In a carton-setting-up machine, a mov-

able carrier, mechanism for moving the same progressively, step by step, and for holding the carrier after each movement, a carton-supporting block movably connected with the carrier, forming devices to which the projecting flaps of a carton on said block are presented by movements of the block, block-controlling mechanism organized to hold the block first in position to cooperate with said devices and then in position to permit the downward discharge of the carton, said block having longitudinal grooves, a movable cross-head having carton-discharging fingers which are movable in said grooves when the block is held in its discharging position, and means for reciprocating said cross-head.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM S. SCALES.

Witnesses:

C. F. BROWN,
E. BATCHELDER.