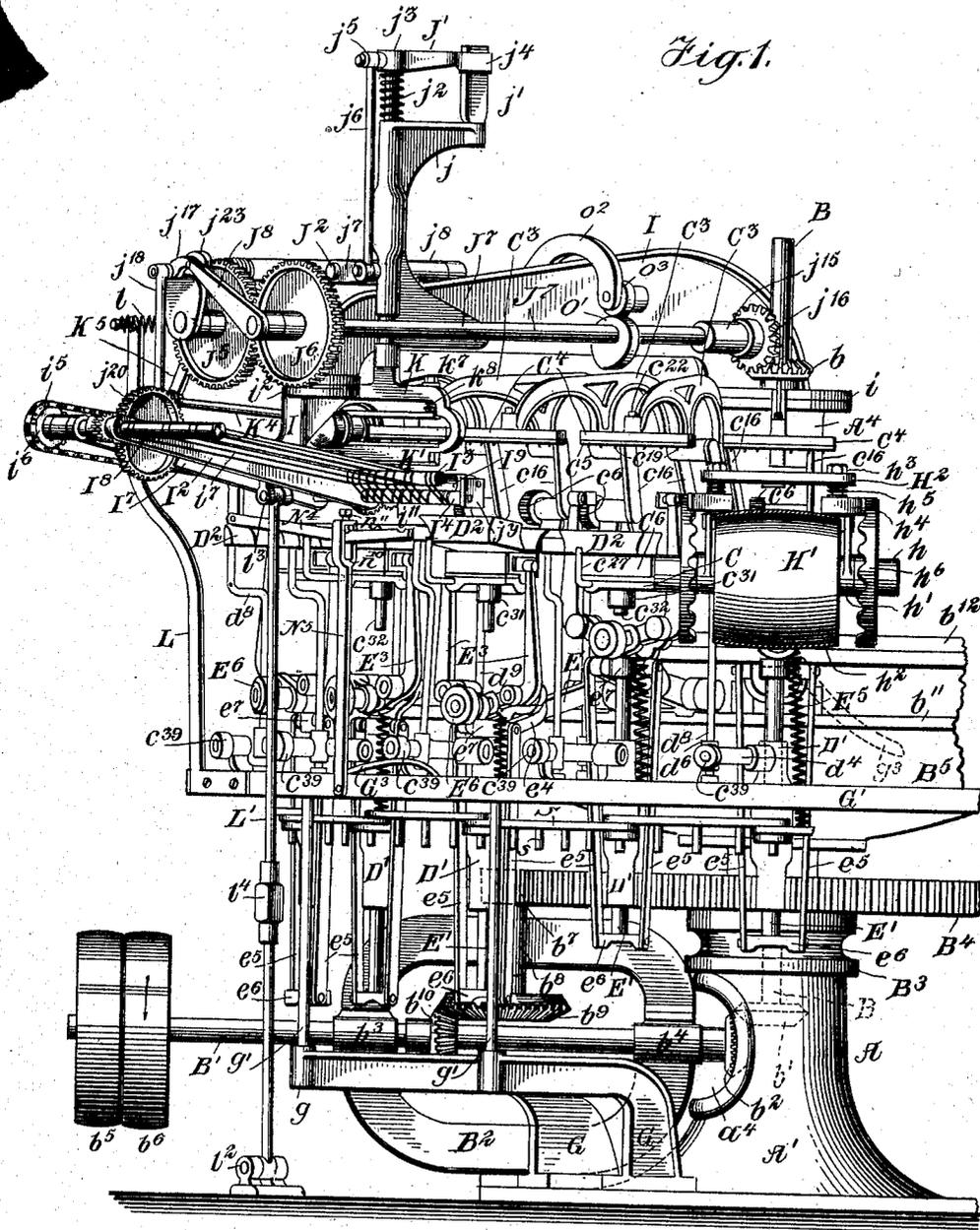


No. 833,451.

PATENTED OCT. 16, 1906.

E. FIDELL.
WRAPPING MACHINE.
APPLICATION FILED DEC. 2, 1904.

13 SHEETS—SHEET 1.



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13 SHEETS—SHEET 3.

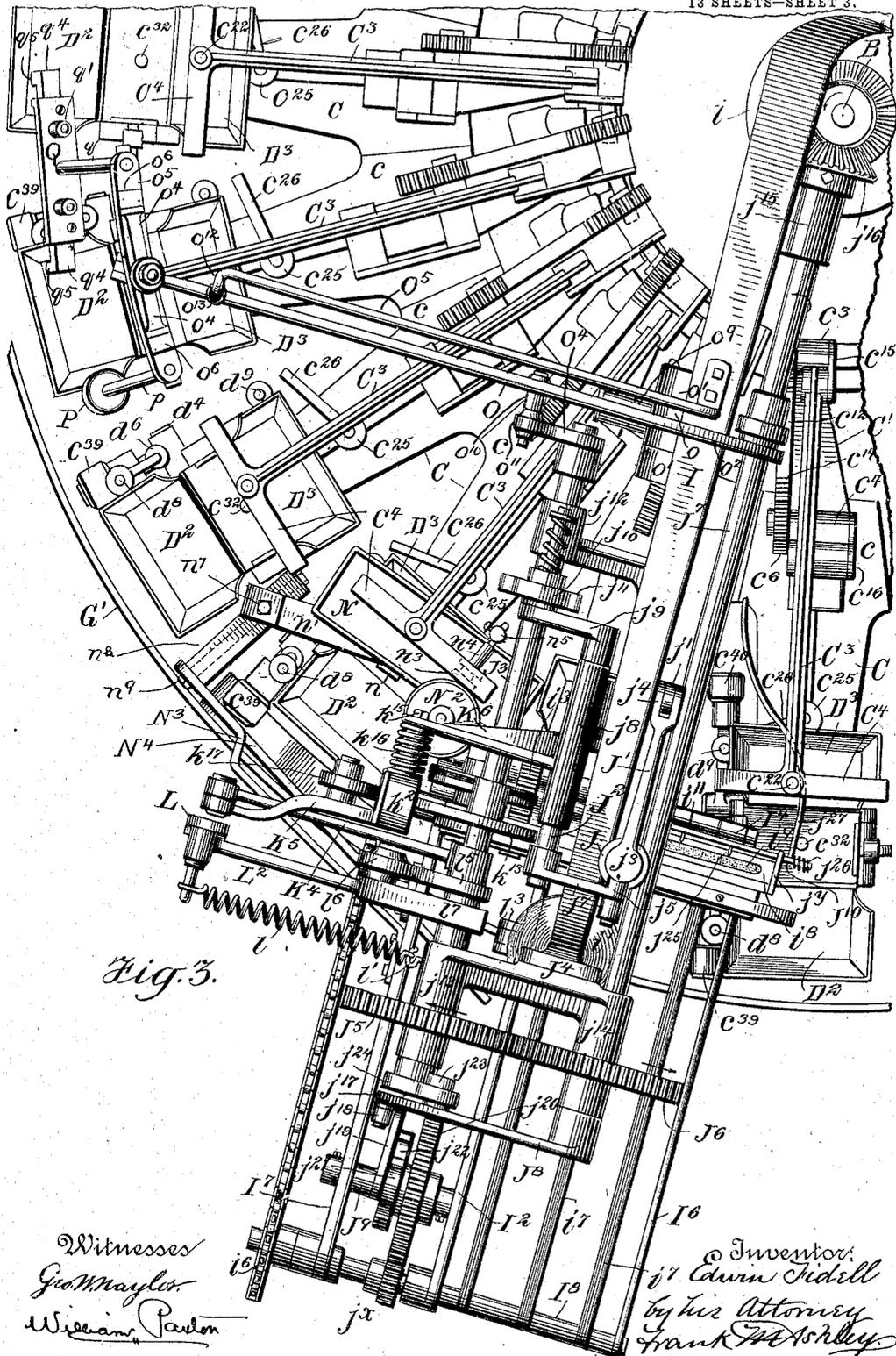


Fig. 3.

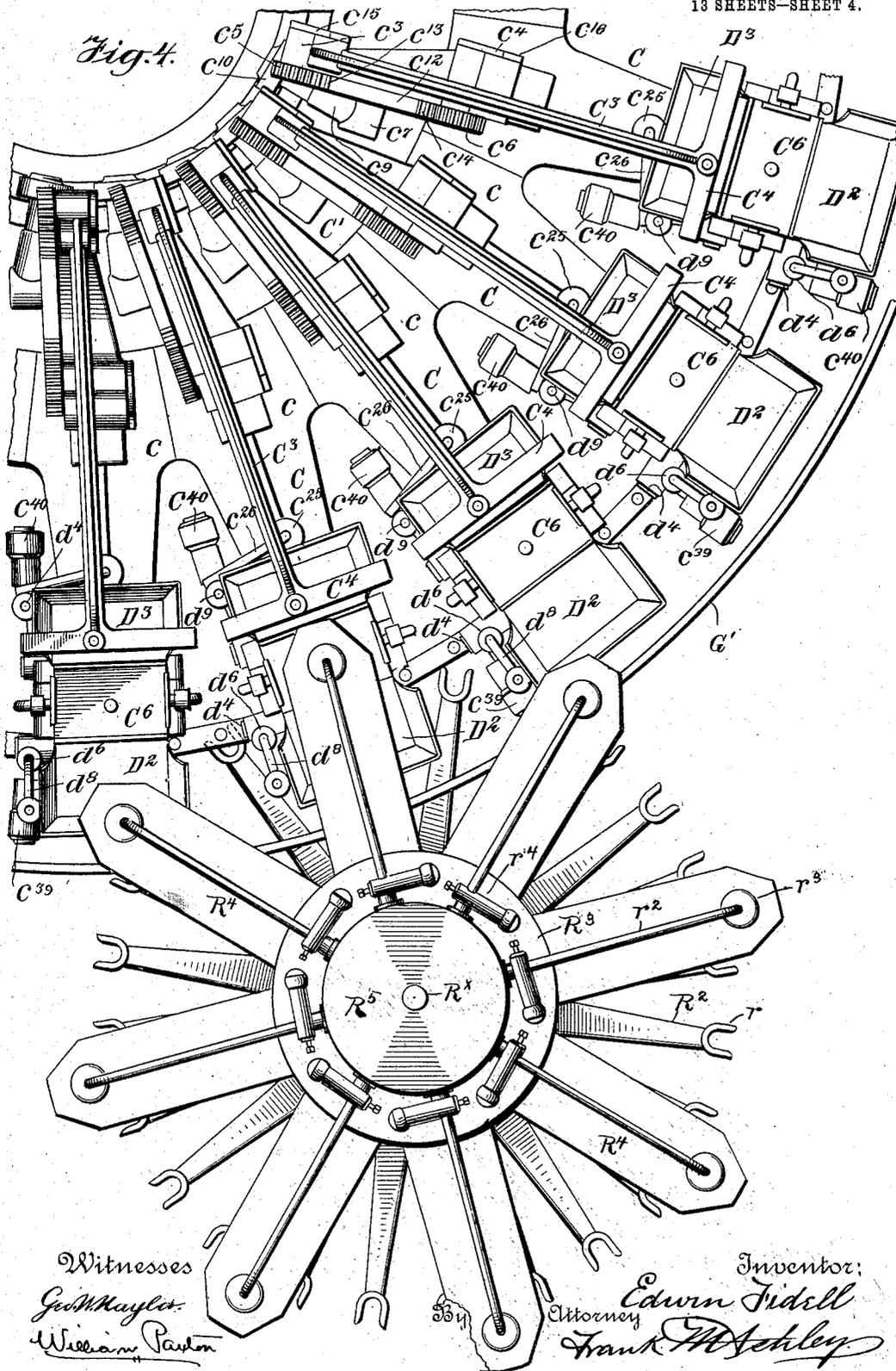
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13 SHEETS—SHEET 4.

Fig. 4.



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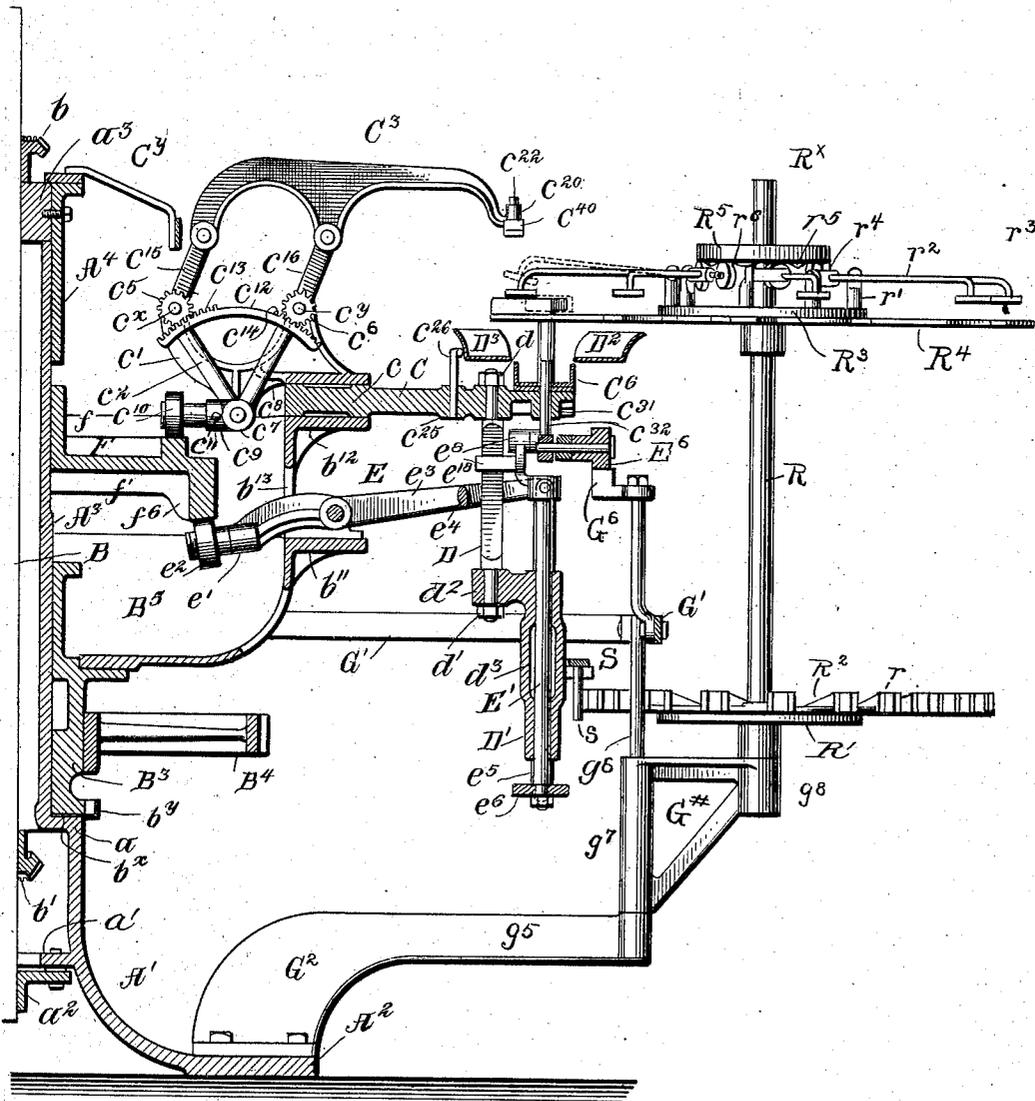
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13 SHEETS—SHEET 5.

Fig. 5.

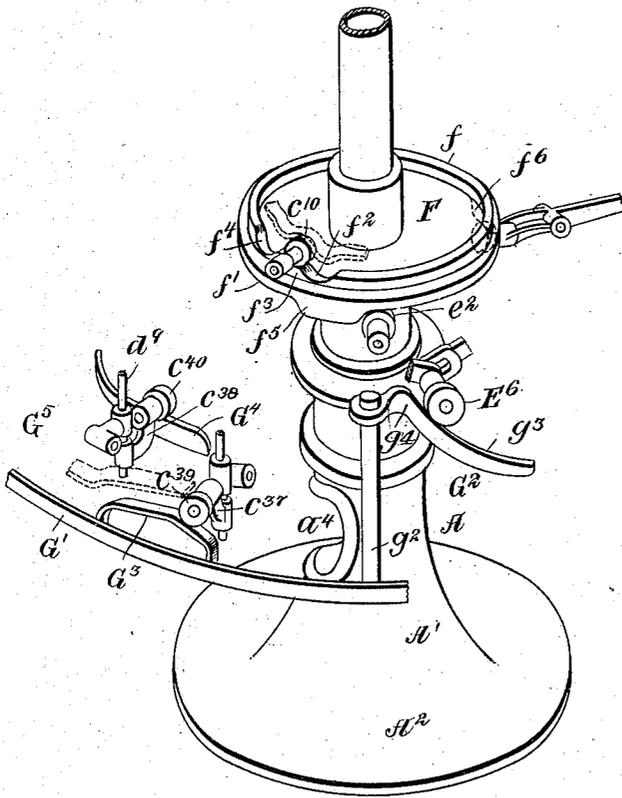


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Fig. 6.



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Fig. 9.

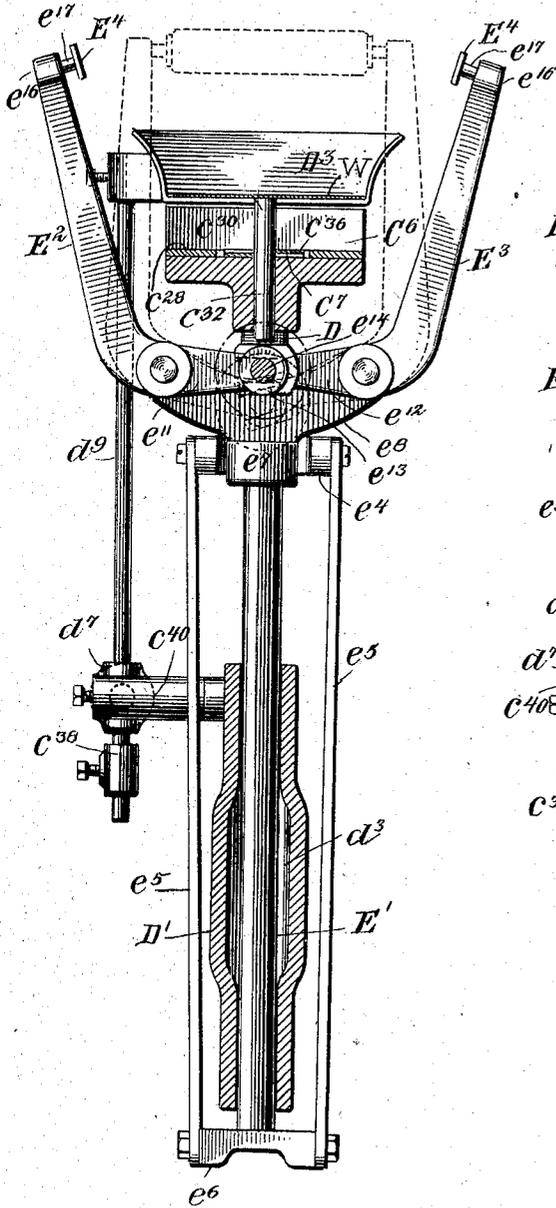
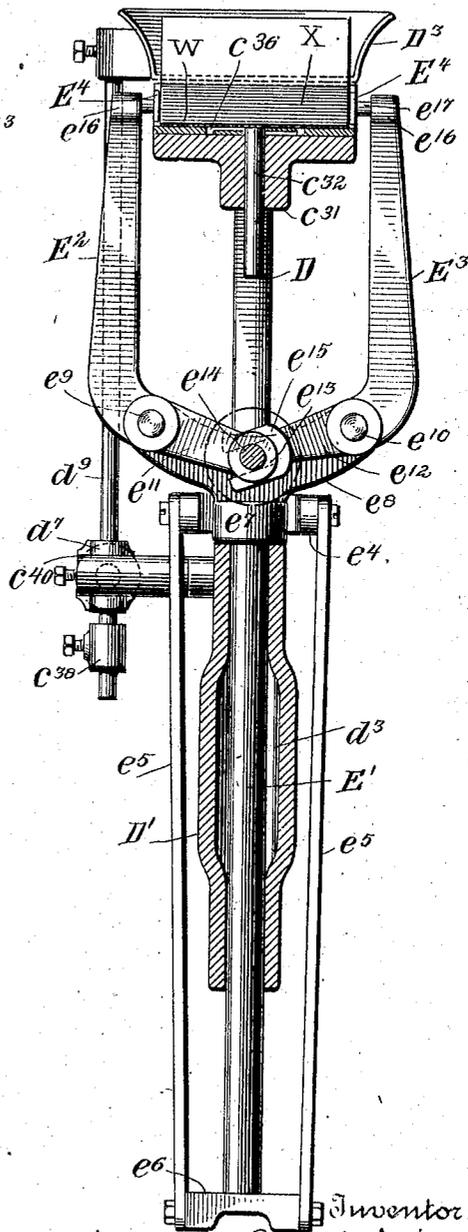


Fig. 10.



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Fig. 12.

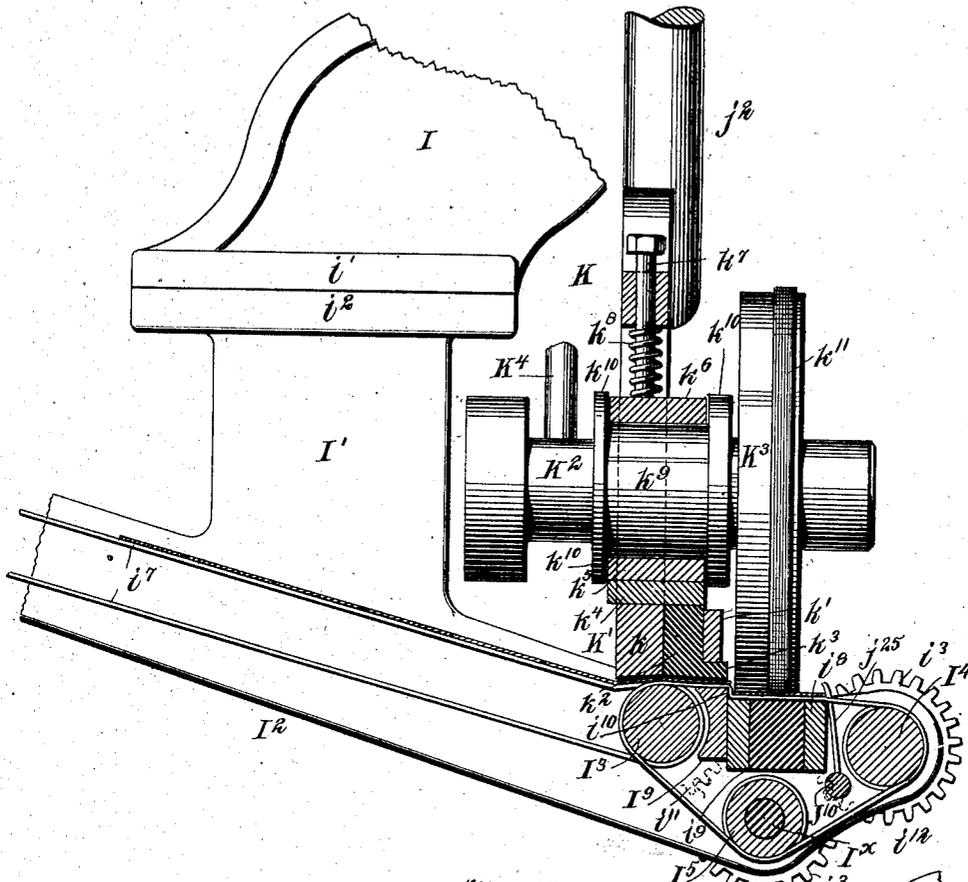
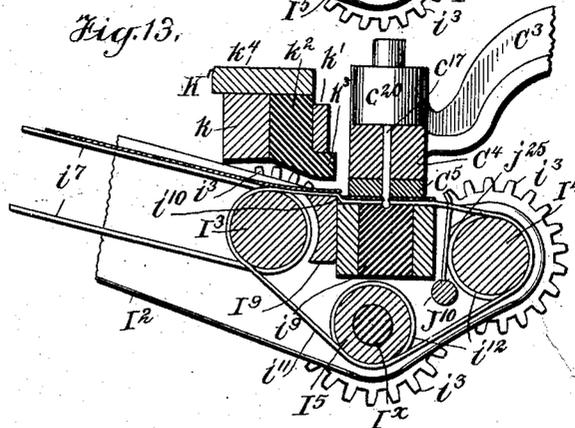


Fig. 13.



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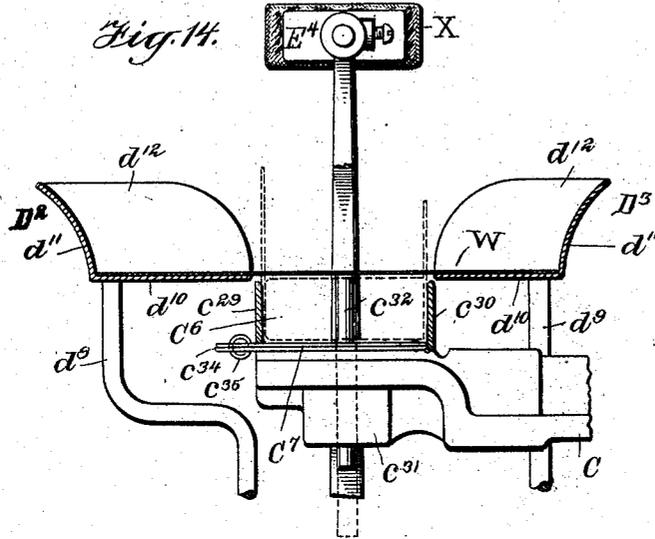


Fig. 15.

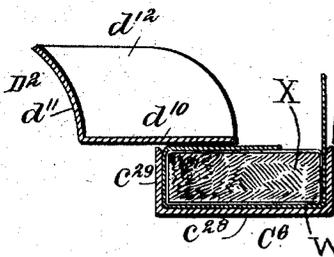


Fig. 16.

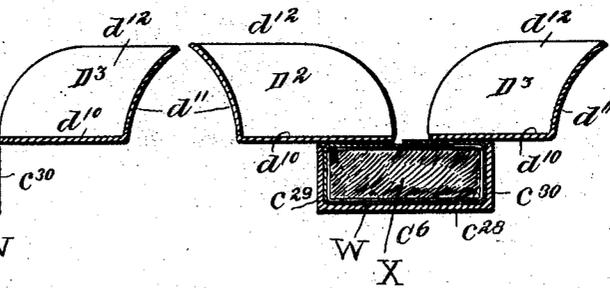
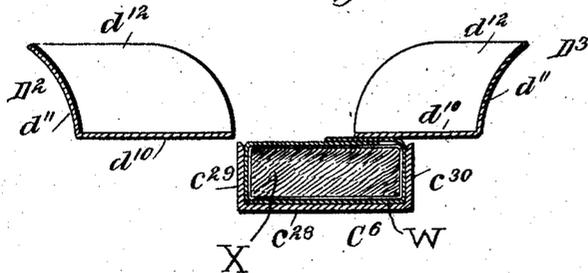


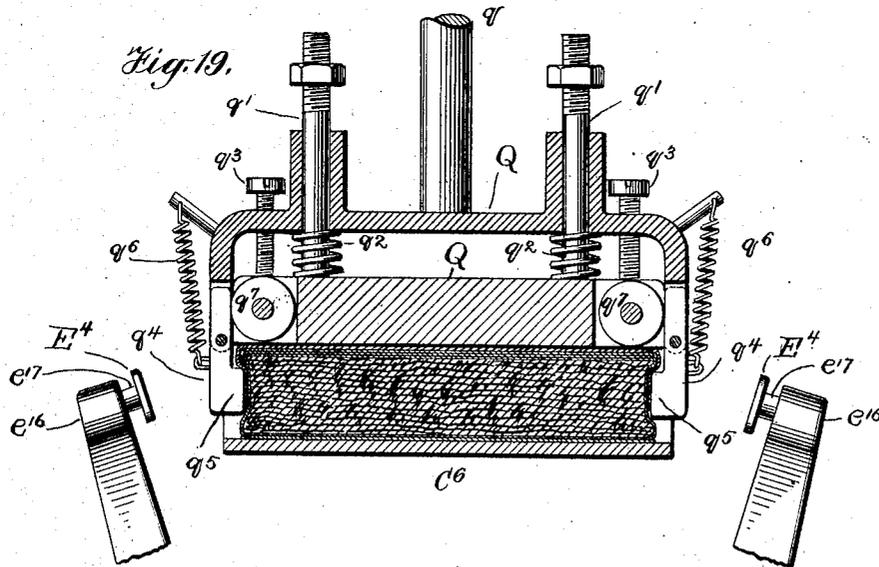
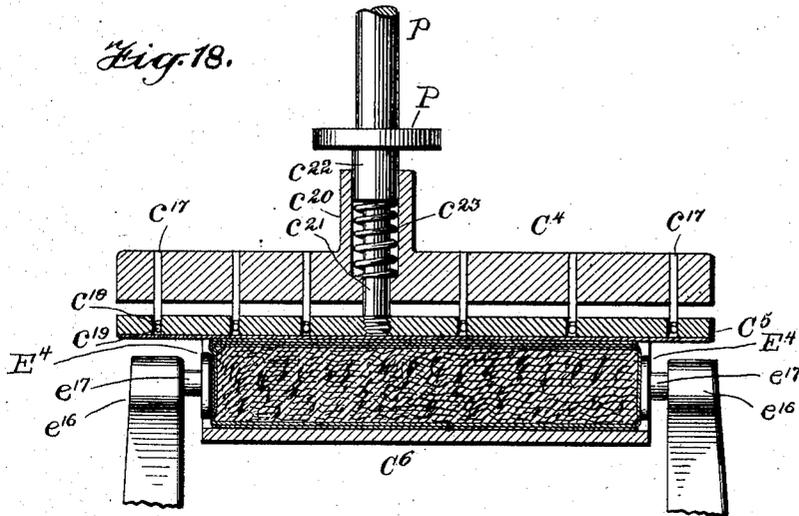
Fig. 17.



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UNITED STATES PATENT OFFICE.

EDWIN FIDELL, OF JERSEY CITY, NEW JERSEY.

WRAPPING-MACHINE.

No. 833,451.

Specification of Letters Patent.

Patented Oct. 16, 1906.

Application filed December 2, 1904. Serial No. 235,268.

To all whom it may concern:

Be it known that I, EDWIN FIDELL, residing in Jersey City, Hudson county, and State of New Jersey, have invented certain new and useful Improvements in Wrapping-Machines, of which the following is a specification.

This invention relates to means for wrapping packages of material, and while set forth herein as being intended for applying the wrappers to comparatively small rectangular packets of loose tobacco embodies principles and features applicable to wrapping-machines designed for other purposes.

Among the important objects of the invention are the positive and efficient operation of the wrapping-jaws and the association of said jaws with coacting devices for the rapid conduct of the wrapping operation.

The proper feed of the packets in relation to the jaws is a further consideration, while the removal and delivery of the wrapped packets in a simple and uniform manner constitute another object to be attained.

A conspicuous feature of the invention involves a pair of complementary wrapping-jaws movable with respect to each other and conjointly adapted for serving with an unfolded wrapper, together with coacting grippers and mechanism, whereby when a packet is properly positioned the grippers will be actuated to clasp the packet at the ends and bring said packet into such relation with regard to the wrapper that the packet will be infolded on three of its surfaces by said wrapper and the latter present extended folds, one of which is caused to overlie the other on a fourth surface of the packet and be so retained by subsequent successive movements of the jaws.

While any suitable construction of means may be employed for supplying the packets to the end that the wrapping operations can take place, the arrangement disclosed for this purpose comprises a platform having extended pivotal side strips which are vibrative to insure the proper feed of the packets along the platform and their positioning with respect to the wrappers, one manner of supplying the packets to the platform being by means of an endless conveyer delivering to the outer end of said platform, oppositely-located cylindrical cams being employed for imparting the desired vibratory movements to the side strips.

The removal and delivery of the wrapped

packets are effected by so conditioning the apparatus that after the wrapping operation each pair of grippers will so move its particular packet that clasping members will seize the same and upon the relaxation of the grippers carry the packet out of position with respect to the jaws and grippers.

Where occasion requires, mechanism can be employed admitting of the convenient feeding of sheets of revenue-stamps, the latter being of extended narrow character and successively joined together along parallel transverse rows of perforations. The construction and operation of this stamp-feeding mechanism result in each stamp being accurately detached from its sheet and maintained so that it can be picked up by a stamp-carrying head. This stamp feeding and detaching mechanism constitutes the subject-matter of a separate application of mine filed June 16, 1905, Serial No. 265,488, and is disclosed herein for the purpose of indicating its relation and function with regard to the wrapping-machine generally.

The stamp-carrying head is conditioned to successively convey the stamp to a device for applying paste to the stamp-back and then to a position above a wrapped packet, after which the head is operated to apply the pasted stamp to the packet, a stripper being combined with the head to insure the timely disengagement of the stamp from said head. Where the packet and stamp are such that portions of the stamp extend beyond the packet, a supplemental device serves to properly press the stamp extensions in contact with the contiguous surfaces of the packet. As will hereinafter be manifest, the novel stamp feeding and applying mechanism can be utilized in situations other than those set forth in the present case. There are other highly advantageous features connected with the invention, which, besides those alluded to, are clearly explained in the subsequent detailed description.

The improvements are disclosed as being embodied in an organized machine wherein a number of pairs of wrapping-jaws, their particular actuating devices, and coacting stamp conveying and applying heads are arranged to partake of a circular traverse, thus permitting the jaws, coacting devices, and heads to perform their several functions both rapidly and with high efficiency, and thereby conveniently permitting large quantities of the packets to be wrapped and stamped in a con-

tinuous manner and in an exceedingly-limited period of time. The invention will therefore be described as being in the organized form referred to.

5 In the accompanying drawings, forming part of this specification, Figure 1 is an elevational view of a considerable part of my improved wrapping and stamp-affixing machine viewed from a point contiguous to the
10 location of the means for feeding the packets to a position to be acted upon by the grippers cooperating with the wrapper-jaws. Fig. 2 is an enlarged detail plan view of certain parts of the machine appearing at the right-hand portion of Fig. 1 and including the
15 packet-feeding means. Fig. 3 is a somewhat similar view disclosing the stamp-feeding mechanism and certain other parts of the machine immediately adjacent and also to the
20 left of said mechanism, the latter being represented in its normal position. Fig. 4 is another view of the same general character, illustrating the provision for removing and delivering the wrapped and stamped packets,
25 and also other parts of the machine in contiguous relation to said provision. Fig. 5 is a detail vertical section of a part of the machine, the plane of section being radial and considerably to the left of the packet-removing
30 provision. Fig. 6 is a detail perspective view of the main supporting column or standard, stationary cams, and certain parts co-active with said cams. Fig. 7 is an enlarged detail plan view of a pair of the complementary
35 wrapping-jaws, together with the coacting mechanism more especially pertaining thereto. Fig. 8 is an elevational view, partly in section, of the features represented in the preceding figure, certain active parts below
40 the plane of the jaws being more clearly illustrated and dotted lines indicating the manner in which the projected downward movement of the stamp-carrying head operating in connection with said jaws is effected.
45 Figs. 9 and 10 are vertical detail sections, on a still larger scale, of the wrapping-jaws and certain immediate parts viewed from the front and illustrating by full and dotted lines successive movements involved in positioning
50 a packet with respect to said jaws. Fig. 11 is an enlarged detail elevation of the stamp-feeding mechanism and certain related parts viewed from the opposite side of said mechanism as it appears in Fig. 1 and looking toward the right in Fig. 3. Fig. 12 is an enlarged detail sectional view of features at the inner portion of the stamp-feeding mechanism and illustrating more particularly the
55 manner in which a stamp is detached from its sheet by being broken along the line of its perforated connection. Fig. 13 is a somewhat similar view showing how the detached stamp is engaged by a stamp-carrying head. Figs. 14 to 17, inclusive, are detail sections
60 illustrating successively the operation of po-

sitioning a packet with respect to a pair of jaws and the folding of the wrapper around said packet. Fig. 18 is an enlarged detail sectional view illustrating a stamp-carrying head in the act of applying a pasted stamp
70 to wrapped packet, a portion of a tappet being shown to indicate the disengagement of the stamp from the head. Fig. 19 is a somewhat similar view of the supplemental stamp-affixing device and indicating the manner in
75 which said device operates to perform its function. Fig. 20 is an enlarged cross-sectional view of the device for applying paste to the stamp-back. Fig. 21 is a side view showing the mechanism for affixing the stamp
80 to the packet.

Similar reference characters are employed to designate corresponding parts in the different figures of the drawings, wherein they occur.

85 The main column or standard A of the supporting-frame of the machine is preferably presented by a single casting and is of the configuration generally indicated in Figs. 1, 5, and 6, from which it will appear that said
90 standard is hollow throughout its length and embodies a lower portion A', which downwardly enlarges and merges in a circular base-plate A², resting on and, if necessary, bolted to the floor. This standard also com-
95 prises a vertically-extended body A³, which by reason of its relatively smaller diameter with respect to the portion A' contributes to form at its junction with the top of said portion an annular horizontal shoulder a
100 externally on the standard.

An annular horizontal flange a' is integrally provided within the portion A' for having bolted thereto and against the under side thereof a bearing a², in which turns the lower
105 end of a shaft B, also revolvably turning in a bearing a³ at the top of the standard. The latter bearing is disclosed in Fig. 5 as being maintained in position by a sleeve A⁴, which is bolted to the bearing and snugly embraces
110 the upper part of the standard.

The upper projecting portion of the shaft B has firmly secured thereto a bevel gear-wheel b, the hub of which rests upon the bearing a³, and thus serves to suspend the shaft revolvably
115 within the standard. Previous to lowering the shaft into position a gear-wheel b' is introduced through a hand-hole a⁴ in the lower portion A' and so held that the shaft in descending to engage within the bearing a²
120 will pass through the opening in the wheel b', and the latter can then be properly fastened to said shaft.

Motion is communicated to the shaft through the medium of a bevel gear-wheel b²,
125 meshing with the wheel b' and secured on the inner end of a lower horizontal shaft B', turning in bearings b³ b⁴, provided at the ends of an oval-shaped support B² of sectional character and bolted on the base-plate A², the
130

outer projecting portion of the shaft B' carrying the fixed and idle pulleys b^5 b^6 for co-operation with belt-gearing transmitting power to the machine.

5 Revolvably supported by the shoulder a of the standard and closely surrounding the latter is a vertical sleeve B³ of the configuration generally indicated in Fig. 5 and having secured thereto a horizontal gear-wheel B⁴ of comparatively large diameter. Interposed
10 between the shoulder a and the lower end of the sleeve B³ is a washer b^x , of hard steel or other good wearing metal, and having a flanged projecting portion forming an annular oil-cup b^y . By this means the bearing end of the sleeve can be conveniently and adequately maintained in a state of lubrication. The sleeve B³ is designed to be rotated on the standard through the medium of a gear-pinion b^7 , secured on the upper end of a vertical stub-shaft revolvably supported in a bearing b^8 therefor intermediately on the upper section of the support B², the lower end of said stub-shaft having fastened thereto a bevel gear-wheel b^9 , which meshes with a bevel gear-pinion b^{10} on and revolving with the drive-shaft B'. The sleeve B³ supports and is adapted to rotate a bowl-shaped carrier B⁵, conditioned as generally indicated in Figs. 1
25 and 5 and externally provided with broad horizontal flanges b^{11} b^{12} , annularly disposed, the flange b^{11} being intermediately located, while the flange b^{12} is at the upper edge of the carrier.

35 Bolted on the flange b^{12} are the inner end portions c of radially-extending flat horizontal arms C, arranged in a circular series, the said inner portions being of such segmental shape that they will fit edge to edge on the flange, and thereby collectively conform to the circular character of the latter and provide for the radial disposition of the arms.

40 On each portion c is the base of a bracket C', comprising short inner and outer vertical risers c^1 c^2 , each of which has at its upper end a transverse tubular bearing c^3 c^4 , revolvable in each of which is a pin c^x c^y , having secured on one projecting end of each a gear-pinion c^5 c^6 . The hub c^7 of a sector-shaped member C² is revolvably confined on a horizontal stud laterally projecting at one side of a lower depending ear c^8 of the bracket. The hub has integrally at its inner side a short tubular socket c^9 , which is slightly obliquely disposed
55 and which receives the inner end of a short journal carrying a revolvable roller c^{10} . A set-screw c^{11} , bearing in the socket, admits of the accurate clamping of the shaft in the socket. The upper curved rim c^{12} of the member C² is
60 peripherally provided with rear and forward series of gear-teeth c^{13} c^{14} , with which the pinions c^5 c^6 mesh respectively. Also secured on the pins c^x c^y are upwardly-extending short parallel arms c^{15} c^{16} , the upper ends of which
65 are pivotally connected to the lower ears of

a bar C³ above and radially coinciding with the appropriate arm C beneath. The downwardly-curved forward end of the bar has a transverse horizontal head C⁴, in which bear a series of small vertical pins c^{17} , portions of
70 which project at the under side of the bar and are provided at their lower ends with tapering contractions c^{18} , merging in spherical extremities c^{19} , as illustrated more clearly in Figs. 8, 12, 13, and 18.

75 Centrally at the upper side of the head C⁴ is an integral tubular boss c^{20} , the interior of which intersects a contracted opening in the lower portion of the head. Vertically guided within said opening and extending up through
80 and above the boss is the stem c^{21} of a stripper C⁵, perforated for the vertical play therein of the headed portions of the pins c^{17} . The upper portion of the stem terminates in an enlargement to form an abutment c^{22} within the
85 top part of the boss and between which and the bottom of the boss interior is interposed a spiral thrust-spring c^{23} , normally tending to maintain the stripper elevated against the head, so that the lower ends of the pins will
90 project below the under surface of the stripper. At an intermediate point of the arm C is a small vertical bearing c^{25} , in which is rigidly mounted the lower end of a bent stop c^{26} , the upper forward portion of which is laterally
95 disposed. The extremity of said arm is recessed to form a socket for the inner end of a forwardly-extending upwardly-turned hook c^{27} , also designed to serve as a stop, the purpose of which latter and of the stop c^{26}
100 will hereinafter be explained.

Suspended by a threaded stem and nut connection d at a point slightly forward of the stop-bearing c^{25} is a vertical hanger D, the lower end of which extends a short distance below the plane of the carrier-flange b^{11}
105 and terminates in a shouldered stem, to which is clamped by a nut d' the tubular eye d^2 of a short rearwardly-extending horizontal offset at the upper end of a depending socket
110 D' of vertically-extended character, as indicated in Figs. 5, 8, 9, and 10, the passage d^3 in which is entirely therethrough, a considerable portion of an intermediate part of the socket being swelled to provide for a somewhat similar
115 enlargement of the passage, and thus while tending to reduce interior frictional surfaces yet provide extended bearing capacity within the socket.

Pivotally confined on front and rear projections d^4 d^5 , laterally at one side of the socket, near the upper end thereof, are bearings d^6 d^7 , in which are secured the lower portions of vertically-adjustable rods d^8 d^9 , the upper ends of which are bolted in bosses at
120 the corresponding ends of a pair of complementary folding jaws D² D³. Each of these latter consists of flat bottom d^{10} , transverse wall d^{11} , and a wall d^{12} at each end, the transverse and end walls of each jaw being in up-
125 130

wardly-flaring relation, as indicated in the several figures in which these features most clearly appear. The inner free edges of the end walls of both jaws have a certain amount of shear to present an upwardly-increasing clearance between said jaws. Secured on the arm C is a packet-holder C⁶, consisting of a flat bottom c²⁸ and front and rear vertical walls c²⁹ c³⁰, which normally occupy a position slightly inside of the vertical plane of the inner edges of the jaw-bottoms, the under surfaces of which are in such horizontal plane that they are adapted to be moved in contact, or very nearly so, with the upper edges of the holder-walls. It will be observed that said upper edges are upwardly beveled in the direction of the exterior surfaces of the walls.

The bottom of the holder C⁶ centrally contains a small circular perforation registering with the vertical opening—an enlargement c³¹—at the under side of the bar C. This perforation and the opening form a bearing for a short cylindrical pin c³², capable of moving vertically therein. This pin is capable of being maintained with a portion thereof projecting above the bottom c²⁸, through the medium of a friction-clamp C⁷, comprising two thin flat members c³³ c³³, pivotally connected together at one end, the inner straight edges of said members containing semicircular recesses of such size that the members can clamp the pin c³² without completely closing. The free ends c³⁴ of the members are relatively diverging and are connected together by a small contractile spring c³⁵, which normally tends to cause the members to frictionally retain the pin clamped between them, but which will permit said pin to move vertically when a moderate pressure is exerted thereon. The holder-bottom c²⁸ is cut away, as indicated at c³⁶, Figs. 9, 10, and 14, to snugly accommodate the pin-clamping portions of the clamp C⁷, when said portions are slightly separated by the interposed pin c³², said cut-away feature also permitting those portions of the clamp within the holder to present an upper surface substantially flush with the top surface of the bottom c²⁸. The clamp in the absence of the pin can be readily inserted in or withdrawn from position through a transverse slot therefor in the front wall c²⁹ of the holder, said slot being in a horizontal plane common to the recess formed by the cut-away part of the bottom. When in position frictionally engaging the pin, the clamp not only serves to maintain the pin in position to the desired extent, but the pin in turn prevents the withdrawal of the clamp from the holder. Fig. 14 indicates these functions of the clamp and pin and also indicates the lower slot in the wall c²⁹. On the lower portions of the rods d⁸ d⁹, closely below the bearings d⁶ d⁷, are front and rear upwardly-curved bearers c³⁷ c³⁸, in the upper tubular bearings of which are bolted the ends of horizontal jour-

nals on which are revolubly confined front and rear rollers c³⁹ c⁴⁰, which, together with their bearers, are of sufficient weight to normally contribute in throwing the folding-jaws D² D³ away from each other, which opposite movements are limited by the jaws coming in contact with the strips c²⁷ c²⁸, as most clearly illustrated in Fig. 8.

Pivotally mounted on the lower flange b¹¹ of the carrier B⁵, and disposed in the same vertical radial plane as the particular arm C that has thus far been specially described, is a lever E, comprising a comparatively short rear part e, downwardly curved and extending through an aperture b¹³ therefor in said carrier and provided at its inner extremity within the carrier with a bearing e', in which is secured a short journal, on which is revolubly confined a roller e². The longer forward part e³ of the lever E presents at its forward end a bifurcation e⁴, the forwardly-extending tines of which have pivotally connected thereto the upper ends of a companion pair of substantially parallel rigid straps e⁵ e⁵ at opposite sides of the socket D⁵, said straps being of the extended depending character illustrated in Figs. 1, 8, 9, and 10 and bolted at their lower ends in a plane below the lower end of said socket to a small horizontal disk e⁶, centrally to which latter is secured the lower extremity of an extended rod E', vertically guided in the socket, the upper end of said rod having a cylindrical head e⁷, adapted to be stopped by and rest on the upper end of the socket when the rod is in its lowest position.

The head e⁷ has integrally an upwardly-extending section e⁸, which is rearwardly curved, as shown in Figs. 5 and 8, and which section embodies two oppositely-disposed and slightly oblique ears, in the end bearings of which are secured short forwardly-projecting arbors e⁹ e¹⁰, on which are revolubly confined a pair of bell-crank levers E² E³ of the shape most clearly disclosed in Figs. 9 and 10 and which constitute the main parts of the packet-gripping means. It will be observed that the pivots of said levers are at points slightly inside of their elbows. The lower shorter members e¹¹ e¹² converge and are at angles slightly obtuse to the other members of these levers, the member e¹¹ terminating at about the center of the section e⁸ in an eye e¹³, carrying a fixed pin e¹⁴, which projects both at the front and rear of said eye, the front projection being the longer. The lever E³ is so supported on its pivot that while its vertical member is coincidently opposite the corresponding member of the lever E² the lower shorter member e¹² of said lever E³ extends in a plane immediately to the rear side of the eye e¹³ and terminates in a fork e¹⁵, adapted to engage the rear projecting portion of the pin e¹⁴. At their upper extremities the vertical members of the levers are provided with tubular bearings e¹⁶, in which are the

horizontal shanks e^{17} of the gripping-plates E^4 E^4 , firmly held by set-screws in the bearings. These set-screw connections just referred to, besides providing positive means for holding the gripping-plates, also provide for nice adjustment of the same relative to the open ends of the packet-holder C^6 , in relation to which said plates are normally maintained in opposition. A coiled contractile spring E^5 has its upper end engaged with the forked extremity of the lever E^3 , while the lower end of the spring is attached to a lower independent movable part of the machine, and thereby tends to maintain the levers and their gripping-plates in the position set forth in Fig. 10. On the longer forward projection of the pin e^{14} is revolvably confined a roller E^6 . The dotted circles in Figs. 9 and 10 indicate the position of this roller with respect to the inner engaged ends of the levers, such roller, by reason of the plane of section in which these views are taken, not appearing in full lines.

The body of the hanger D is rectangular in cross-section for the major portion of its length and is embraced by a rear horizontal loop e^{18} , integrally extending from the section e^8 and closely conforming to the cross-sectional shape of the body of the hanger. By this means the vertical movements of the shaft E' and parts in immediate operative relation thereto are positively guided and tendency to torsional twist of said shaft and contiguous parts avoided.

A horizontal disk F is secured on the standard A, so as to remain stationary therewith, said disk occupying a position in the upper part of the carrier B^5 and having upper and lower annular ways $f f'$, varying at certain predetermined points to present cams. By comparing the detail perspective view, Fig. 6, with the relative position of the standard A in Fig. 1 it will be noted that both positions correspond, so that the particular location of the upper and lower cams with regard to the rest of the machine can be generally understood. The upper way involves two recesses or depressions f^2 f^4 and an intermediate cam f^3 , while the lower way, which, it will be noted, occupies a position concentrically outside of the upper way, embodies a pronounced depending cam f^5 , somewhat adjacent to the depression f^2 , and at about one-quarter around the cam to the right, Fig. 6, said lower way presents another depending cam f^6 of pronounced character. The weight of the roller c^{10} pertaining to the sector-shaped member C^2 , together with the weight of the journal parts of said roller and the arm C^3 and its connections, will all suffice to maintain such roller in contact with the way f and follow the depressions and cam therein. The weight of the forward portion of the lever E, together with the normal tension of the particular spring E^5 coacting indirectly with

said lever, will serve to maintain the roller c^2 in intimate contact with the lower way f' throughout the traverse of the roller.

It will be well to state at this point of the specification that the construction previously described in so far as it relates to the group of elements represented by the radial arm C, bar C^3 , hanger D, box C^6 , complementary wrapping-jaws D^2 D^3 , lever E, socket E' , and all the immediate appurtenances of said element, are duplicated to any desired extent and number, and all radially disposed in a horizontal arrangement and conditioned to cooperate with other parts of the machine, whereby each group will in regular and consecutive order undergo a corresponding series of operations. The character and purpose of this series of operations will clearly appear in a subsequent part of this description.

Rigidly secured in the base A^2 of the standard A is a circular series of radially-disposed brackets G. In Fig. 1, which is the figure best adapted for showing said brackets for clearness of illustration, but two of said brackets appear. The upper horizontal part of each bracket has an outer bearing g , in which is secured the lower end of a vertical support g' , the entire circular series of said supports having their upper ends secured to the inner side of an annular rail G' to rigidly support the same. This rail and its supports partially constitute the supporting-frame of the machine. Said rail is in a slightly-lower plane and somewhat outside of the position of the rollers c^{24} pertaining to the folding-jaws.

At a point in the machine radially corresponding with and in proximity to the means for feeding the packets to be clasped by the grippers and which means are hereinafter described in detail the rail G' has bolted thereto a short vertical standard g^2 , the upper end of which has engaged therewith and supports a camway G^2 , which is of the peculiar form represented in Fig. 6 and comprises a curved rising portion g^3 , terminating at its top in an outward bend g^4 , which merges in the perforated end engaged with the standard. This cam G^2 is in the path of travel of the rollers E^6 , cooperating with the grippers, said rollers being adapted as the machine is actuated to successively ride up the portion g^3 and by reason of the outward bend g^4 to clear the cam and assume the position they occupied previous to mounting the cam. At a point considerably to the left of the position of the packet-feed means previously alluded to a skeleton cam G^3 is secured at the inner side of the rail G' and is in the path of travel of the rollers c^{30} , cooperating with the outer wrapping-jaws. Still further to the left, but at a more interior point of the machine, is a cam-bar G^4 , rigidly maintained by a bracket and rod support similar to one of the brackets G and its rod g' , the right-hand curved

end of said cam, as well as its top edge, being in the path of travel of the inner rollers c^{40} , cooperating with the inner wrapping-jaws. There is also another fixed cam G^5 contiguous to the cams G^3 G^4 .

The packet-feed means hereinbefore mentioned is illustrated in Figs. 1 and 2 and as disclosed involves a radially-arranged horizontal table H, which is firmly mounted at the upper ends of two vertical pillars h^x , rigidly secured at their lower ends to a base-bracket similar to the brackets G. Depending from the table at the outer end thereof are hangers h' , revolubly in which is a horizontal shaft h , on which and between the brackets is secured a small drum H' , the upper portion of which is adapted to rotate in a horizontal plane substantially coinciding with that of the table-top, the plane of the table being somewhat higher than that of the wrapping-jaws as they move in proximity to the inner end of the table. An endless belt or carrier h^2 , passing around the drum, is so driven that its upper pass will receive and convey the packets to be wrapped, said packets being so supplied to the belt that they will be carried by the same and delivered onto the table in a continuous series, the feed being maintained by the packets crowding those preceding. In order to insure an accurate as well as positive feed of the packets along the table, a transverse bar H^2 is supported near the inner end of and above the table to afford clearance for the packets passing beneath the bar, and on vertical pivots h^3 , depending from the ends of said bar, are slightly-diverging horizontal strips h^4 , which extend outwardly above the sides of the table and end portion of the belt h^2 . Inner end portions of these strips are closely contiguous to the corresponding extremity of the table H. Torsional springs h^5 , coacting with the pivots and strips, tend to maintain the latter in mutual diverging relation. Mounted on the projecting ends of the shaft h to rotate therewith are cylindrical cams h^6 h^6 , one at each side of the belt h^2 and outer end portion of the table H. As the cams rotate, their shoulders are adapted to vibrate the strips h^4 , so that the latter will act to rectify any irregularity of position of the packets and maintain them properly during their movement on the table. In order to cushion the vibratory or jogging motion thus imparted to the strips, the latter are externally provided near their outer ends with horizontally-arranged leaf-springs h^7 , obliquely disposed, so that their free ends will be acted upon by the cams h^6 and the motion thus induced transmitted to the strips with a modified effect. Connected centrally to the under side of the bar H^2 is the outer end of an inwardly-extending reach H^3 , the inner end whereof is downwardly turned to support on a level with the adjacent table end a short horizontal bar h^8 ,

having secured thereto a pair of short horizontal tongues h^9 , extending in the direction of and complementary to a similar pair of tongues oppositely projecting from and supported immediately from below the table end. These four tongues are adapted to receive from the table a packet and support the latter above the holders and jaws, but in the same vertical plane in which they move, so that the grippers can rise and grip the packet at its ends and carry it out of position, the separated relation of the pairs of tongues permitting the upper portions of the gripper-levers to pass between the tongues. The latter will preferably be pivotally secured and provided with torsional springs, so that while said tongues will normally be maintained as represented in Fig. 2 they will be capable of lateral yield should they be struck by a gripper portion out of alinement, and thus avoid the possible derangement of portions at this part of the machine. The bar h^8 will serve as a stop for properly positioning the packets to be grasped by the successive pairs of grippers.

At a point considerably to the left of the packet-feed means is the stamp feeding and detaching mechanism the details of which will be described more particularly in connection with Figs. 1, 3, 11, 12, and 13.

Rigidly bolted to the top of the sleeve A^4 on the upper end of the standard A is the inner integral circular flange i of an extended arm I, which overhangs the body of the machine and terminates at its outer extremity in a short bend having a disk flange i' , which occupies a vertical plane coincident with that of the rail G' , as indicated in Fig. 3. A short vertical hanger I' has at its upper end a flanged disk i^2 , corresponding with and bolted to the disk i' , and at its lower portion, but to one side, said hanger rigidly carries a radially-positioned bar I^2 , having a slight inclination in the direction of its outer end, as indicated in Figs. 1, 12, and 13. It will be noticed by reference to the last two mentioned figures that the inner end of the bar I^2 is configured to provide two upper bearings and a lower intermediate bearing arranged in triangular relation, the bearing at the extreme inner end of the bar being in a slightly-lower horizontal plane than the companion upper bearing. Revolubly mounted in these bearings are three shafts I^3 I^4 I^5 of comparatively small diameter and which are maintained in braced relation through the medium of a side bar I^7 , in the latter of which bear the upper shafts I^3 I^5 and a spindle I^X , on which the lower shaft, which is of tubular character, turns. A bar I^6 has a readily-detachable engagement with the right-hand end projecting portion of the shaft I^3 . The outer ends of the bars I^2 I^7 have tubular bearings, in which is revolubly supported a counter-shaft I^8 , with the right-hand end portion of which, Fig. 1, the outer

end of the bar I⁶ is adapted to be detachably engaged. Secured on the shafts I³ I⁵ and spindle I^x at points between the bars I² I⁷ are small pinions i³, Figs. 3, 11, 12, and 13, the pinion of the spindle I^x simply serving to communicate motion to the pinion of the shaft I⁵, that will cause the latter to revolve in a direction corresponding with that of the shaft I³. Also secured on the shaft I³ at the end thereof projecting immediately outside of the bar I⁷ is a small sprocket-wheel i⁴, which is geared by a chain belt i⁵ with a sprocket-wheel i⁶, secured on the projecting left-hand end of the outer shaft I⁸. Consequently the said bar and the said shafts will be locked in engagement. The principal object of the arrangements is to facilitate the application of endless bands or tapes i⁷ around the shafts I³ I⁸, said bands being disposed in parallel relation. The functions of these bands will presently become apparent.

Referring to Figs. 12 and 13, firmly supported by the bars I² I⁷ immediately at the inner side of the position of the shaft I³ is a cross-bar I⁹, which is recessed at one side to closely conform to the rounded surface of the adjacent part of the shaft I³, whereby the horizontal top edge of the bar will overhang and be flush with the top of said shaft. Secured to this bar I⁹ is a narrow transverse stamp-bed comprising a bar i⁸, longitudinally recessed for the reception and positive securement therein of a section i⁹ of yielding material which is exposed through an elongated opening in the top of the bar and is flush with the same. The stamp-bed thus formed is so secured to the bar I⁹ that the horizontal upper surface will be slightly below the top of said bar, thus converting the upper edge portion of the latter into a transverse shoulder i¹⁰. The three shafts I³ I⁴ I⁵ have extremely narrow bands i¹¹ passing around the same and also over the bar I⁹ and stamp-bed. The bands i¹¹ are spaced in parallel relation, and for the purpose of so maintaining them the shafts I⁴ I⁵ can have annular surface channels i¹² for receiving and retaining said bands in guided proper position. A short arm i¹³, adjustably clamped externally on the bar I⁷, extends above the same and carries a revoluble roller i¹⁴, bearing on the upper pass of the gear-chain i⁵ to take up slack therein. This tightener appears in Fig. 11, but is omitted from Fig. 3.

An extended tubular bearing J has a strong connection with the arm I at one side of the latter adjacent to the forward curved end portion thereof, the bearing extending considerably above the arm and integrally presenting a short inner horizontal bracket j, provided at its extremity with a short vertical guide j', which is shown as having flat parallel sides. Slidingly in the bearing J is a stem j², which is of such length that end portions thereof are adapted to project above and be-

low the bearing J. A small cross-head J' has a socket j³, secured in which is the upper end of the stem j², whereby said head is supported horizontally in position, the rear bifurcated end j⁴ of the head slidingly embracing the guide j', which thereby permits the head to move vertically, but contributes to prevent lateral play of the same. A strong spiral thrust-spring j⁵, embracing the upper part of the stem j², is interposed between the bearing J and socket j³ of the cross-head J' and normally tends to maintain said head and the stem in an elevated position. Pivotaly confined on a stud projecting at the front of the socket j³ is the upper end j⁵ of a depending pitman j⁶, the lower end of which is pivotaly attached to the outer end of an arm j⁷, secured on the outer end of a shaft J², revolubly supported in an extended radial bearing j⁸, bolted on the side of the arm I opposite to that at which the bearing J is situated. As indicated in Figs. 3 and 11, the inner projecting end of the shaft J² has rigidly affixed thereto a crank j⁹, which extends horizontally toward the left and carries a spring-mounted roller j¹⁰ in operative relation with a cam j¹¹ on a shaft J³ counter to the shaft J², said cam arrangement being designed to positively rock the latter shaft as the counter-shaft is revolved. It will be seen that the lifting of the crank j⁹ by the cam j¹¹ will swing the arm j⁷ downward, and said arm through the pitman connection depress the head J' and the stem j² counter to the action of the spring j⁵.

When the cam j¹¹ turns to permit the lowering movement of the crank j⁹, the spring j⁵ will obviously operate to restore the head J' and stem to their elevated position. A further effect of the spring is to maintain the crank-roller j¹⁰ in contact with the cam j¹¹.

The shaft J³, which is of the extended length illustrated most clearly in Fig. 3, is revolubly supported in a rear horizontal bracket-bearing j¹², rigidly projecting from the side of the arm I, said shaft being revolubly supported at its outer portion by one of a pair forwardly-disposed horizontal bearings j¹³ j¹⁴, presented by a member J⁴, rigidly connected to the outer bent part of the arm I. On the shaft J³ immediately in front of its bearing j¹³ is secured a gear-wheel J⁵, adapted to be driven by a similar wheel J⁶, meshing therewith and secured on the forward portion of an extended shaft J⁷, supported in the bearing j¹⁴ and also in a bearing j¹⁵, the latter rigidly on the side of the rear part of the arm I contiguous to its connection with the sleeve A⁴ at the top of the standard. On the inner extremity of the shaft J⁷ is bolted a bevel gear-wheel j¹⁶, which meshes with the wheel b on the upper part of the shaft B, and thus provides for driving the shaft J⁷.

An arm J⁸, loosely supported on the forward extremity of the shaft J⁷, extends transversely, as illustrated in Figs. 1 and 3, and

has a curved end portion j^{17} , carrying a wrist-pin, with which is pivotally connected the upper end of a vertical pitman j^{18} , the lower end of which is pivotally secured to the rear end of a short rocker-arm j^{19} , loosely mounted at its front end, on a stub-shaft J^9 , rigidly secured to the bars $I^2 I^7$. A gear-wheel j^{20} is also loosely confined on the shaft J^9 and has revoluble therewith a ratchet-wheel j^{21} , with the teeth of which engages a gravity-pawl j^{22} , carried by the rocker-arm. The gear-wheel j^{20} meshes with a pinion j^x , secured on the outer shaft I^8 . Revolubly mounted on the rear of the curved end portion of the arm J^8 is a roller j^{23} , resting on a cam j^{24} on the forward end of the shaft J^3 and revoluble therewith. The cam j^{24} is somewhat elongated to adapt it as it rotates to impart a considerable lifting movement to the arm J^8 and pitman and rocker-arm actuated thereby, and hence as the shaft J^3 is rotated by motion acquired through the gear-wheels $J^5 J^9$ the rocker-arm j^{19} will be rocked by the alternate action of the cam and the gravity of the pivotal parts connected to said rocker-arm, so that the pawl carried by the latter will intermittently rotate the ratchet-wheel j^{21} and correspondingly the gear-wheel j^{20} , pinion j^x , and shaft I^8 . Provision is thus made for effecting the intermittent rearward travel of the upper passes of the endless bands i^7 . The movement thus imparted to the bands is transmitted to the shaft I^3 , which through its gearing with the shafts $I^4 I^5$ causes a similar movement of the latter.

It will be understood that the ratchet-wheel and its pawl and the actuating means for the latter are so proportioned that a sheet of parallel stamps successively joined together by perforated connections resting upon the bands will upon each positive movement of the ratchet-wheel be moved in the direction of the stamp-bed to an extent somewhat greater than that required to feed one stamp, and when the feed has progressed sufficiently far the stamp at the inner end of the sheet will overhang the bed, with the perforated connection of said stamp coinciding with the shoulder i^{10} of the bar i^9 , this latter result being attained by fingers which project above the inner side of the stamp-bed during the stamp-feeding movement and serve as a gage for limiting the stamp above the bed.

Oscillatively supported in the lower rear part of a plate j^v at one end of the stamp-bed and likewise in a second bearing (not shown) in the same horizontal plane at the other end of said bed is a rod J^{10} , which carries a series of upwardly-extending wire fingers j^{25} , which project up between the upper passes of the narrow bands i^{11} for a short distance and are slightly curved, so that when the rod J^{10} is in the position illustrated in Fig. 12 said fingers will bear against the adjacent upper corner

of the stamp-bed, and thereby serve as the gage for each stamp as it is fed to a position above the bed, as previously described. A torsional spring j^{26} on the end of the rod J^{10} and secured to the latter and engaged with the adjacent plate j^v tends to normally maintain said rod so that the fingers will bear against the stamp-bed. A curved tongue j^{27} of wire is rigidly connected at one end to the projecting part of the rod J^{10} and extends within the machine, so as to be struck and depressed by the bars C^3 as the latter approach the vicinity of the stamp-bed and assume a depressed position. Obviously the depression of the tongue j^{27} will effect such partial turning of the rod J^{10} that the fingers j^{25} will be swung and held away from the bed. Upon the tongue being relieved of pressure the torsional spring j^{26} will operate to restore the fingers to their former position.

I shall now proceed to describe the construction and functions of the novel stamp feeding and detaching mechanism previously referred to as forming the subject-matter of a separate application for patent and will thereafter continue the description with reference to the construction and operation of the wrapping-machine.

The stem j^2 carries at its lower end a frame K , which is of the character and shape generally indicated in Fig. 1 and embodies a lower presser-bar K' , which coincides vertically with the roller I^3 and bar I^9 contiguous to the stamp-bed. The presser-bar comprises an extended rigid forward section k , clamped between which and an inner strip k' is an extended section k^2 of yielding material, the lower edge of the strip k' being somewhat in a higher plane than the corresponding edge of the section k ; whereby a lower horizontal rear lip k^3 of the section k^2 takes closely beneath the section k' . The lip part of the section k^2 is of such character that it normally expands below the plane of the lower edge of the section k ; but when subjected to pressure, as it will be when the presser-bar is in its lower position, said lip part will be compressed, so that the entire under surface of the presser-bar will approximately conform to the surface upon which it is pressed.

The presser-bar is reinforced on its upper side by a horizontally-extended flat strip k^4 , upon which in turn is imposed another flat strip k^5 of extended length, both of said strips being positively retained in position. The strip k^5 constitutes the lower stationary track of a horizontally-elongated guideway within the frame K , the upper parallel track of said way being presented by a similar extended flat strip k^6 , yieldingly supported within the upper part of the frame-opening by bolts k^7 , vertically movable in the frame-top and having embracing-springs k^8 interposed between said top and the strip k^6 .

A journal K^2 has intermediately a revolu-

ble cylindrical barrel k^9 , confined by annular flanges k^{10} in rolling contact between the tracks $k^5 k^6$, and on the inner projecting part of the journal is a disk K^3 of comparatively large diameter and revoluble with the barrel. This disk is preferably provided peripherally with a flat tire k^{11} of yielding material. Rubber will satisfactorily answer on account of its frictional properties. This wheel occupies such position that when the frame K is lowered said wheel will bear upon the stamp-bed.

A pitman K^4 has one end rigidly connected to the forward projecting portion of the journal K^2 , while to the other end of said pitman is pivotally attached the lower extremity of an inclined arm K^5 of the peculiar configuration indicated in Figs. 3 and 11, wherein it is shown as having an upper yoke-shaped portion k^{12} straddling the upper portion of a large disk cam k^{13} , the latter secured on and revolving with the shaft J^3 . The short terminal leg k^{14} of the yoke rigidly carries a rear horizontal pin k^{15} , oscillatively supported in a bearing integrally presented by a bracket K^6 , laterally projecting from the extended tubular bearing γ^3 . A strong spiral spring k^{16} torsionally tends to swing the arm K^5 to the right. Intermediately on the last-mentioned arm at the rear side thereof is a roller k^{17} , which is maintained in peripheral contact with the disk cam k^{13} through the tension exerted by the torsional spring.

To the rail G' below the stamp feeding and detaching mechanism is the lower end of a standard L , the upper portion of which is bent to occupy a position some distance to the left of the feeding-frame, of which the bars $I^2 I^6 I'$ form parts. At the upper end of the standard is an outwardly-projecting pin, to which is attached one extremity of a strong contractile spring l , which is shown in Figs. 1 and 3 and omitted from Fig. 11 for the purpose of clearly illustrating other parts, the opposite end of said spring being engaged with a hook l' on the bearing γ^{13} . This spring tends to normally maintain the stamp feeding and detaching mechanism in the position illustrated in Fig. 3, said mechanism, by reason of its swivel-support, provided by the connection of the arm I with the revoluble sleeve A^4 on the standard A , being capable of a limited movement in a direction counter to the tension of the spring l . The counter movement of the feeding and detaching mechanism referred to is effected by means of a cam l^5 on and rotating with the shaft J^3 , said cam bearing against a roller l^6 , revolubly mounted on a stud on the rear of the forked portion l' of a horizontal arm L^2 , pivotally mounted at its outer end on the pin at the upper end of the standard L . The fork-recess receives the shaft J^3 , and this arrangement not only provides for supporting the arm L^2 at its inner end, but permits the

shaft J^3 to move to the right with the feeding and detaching mechanism generally, without interruption of the supporting relation between the arm L^2 and said shaft. Such movement to the right is obviously accomplished by the cam l^5 pushing against the abutment presented by the roller l^6 , which will result in forcing the feeding and detaching mechanism in the direction stated. For the purpose of aiding to support the weight of said feeding and detaching mechanism and contribute to guide the same during its shifting movements an extended vertical stay L' , Figs. 1 and 11, has its lower end pivotally mounted in a chair l^7 , secured to the floor, while the upper end of said stay has a thill connection with the bar I^2 of the feed-frame. The stay L' is shown as comprising two sections having their threaded portions connected by a coupling l^8 , which arrangement facilitates the securing of the stay in position.

Referring to Figs. 3, 11, and 20, N designates a rectangular paste box or reservoir open at its top and supported within the machine considerably to the left of the vertical plane occupied by the arm I . This box is mounted upon the free inner end of a horizontal bar n' , the box being clamped to said bar by a spring-yoke n , the horizontal part of which is secured to the bar, while the vertical members of the yoke clasp the box on opposite sides. At one side of and contiguous to the stamp-bed the box has a short vertical socket n^2 for receiving the journal of a horizontally-disposed roller N^2 . A grooved roller n^3 occupies such position in the box that the upper portion of the roller n^3 will be in a plane above the top edges of the box. This roller n^3 is closely adjacent to the periphery of the roller N^2 at the inner side thereof, the roller n^3 being revolubly supported on a small journal n^4 , which latter is slidably mounted at its outer end in the short vertically-slotted post n^5 , secured to the base of the box, an expanding spring being interposed between an abutment on the post and the lower side of the journal to yieldingly maintain the latter, together with its roller, in an elevated position.

At its outer end the bar n' has an upwardly-extending leg n^6 , the upper end portion of which is bent horizontally inward to form a foot which, together with the lower member of the bar, embraces a vertical pintle n^7 , carried by a saddle n^8 , the vertical turned ends of which are pivotally mounted on a horizontal rod n^9 , bolted to the end of an angle-bracket N^3 , secured to a fixed part of the machine. This arrangement provides for a horizontal as well as vertical pivotal movement of the box. A bar N^4 , rigidly connected to one end of the saddle, extends below the feed-frame and through a vertically-extended loop n^{10} at the upper end of a standard N^5 ,

bolted on the rail G' . The bar N^4 is bent to present two downwardly-converging portions. Manifestly, the nearer its point of convergence the bar N^4 engages with the top part of the loop the more central will be the saddle over the rod n^3 , and hence the higher will be the supported position of the paste-box. By shifting the bar N^4 so that the outer higher inclined edge thereof will be engaged with the loop top the saddle will be tilted to depress and support the said box in an inoperative position. A set-screw n^{11} in the top of the loop is designed to engage within a notch in the end of the bar N^4 , and thus positively lock the parts, so that the paste-box will be securely maintained out of position. For the present it need only be stated that the successive stamp-carrying heads C^4 pass over the box N at such altitude that a long narrow stamp at the lower side of each head will be lengthwise moved in contact with the parallel flanges of the roller n^3 , whereby as the lower portion of said roller revolves in paste contained in the box said flanges will apply the paste to the stamp-back at portions of the latter on both sides of the row of puncturing-pins c^{17} , which are engaged with the stamp. The accuracy of relation of the successive carrying-heads with respect to the grooved paste-roller will be insured through the contact of the outer sides of said heads with the periphery of the horizontal roller N^2 , which on account of the pivotal support of the box N insures the paste-roller nicely accommodating itself to the changes in the angular positions of the heads as they move in a circular orbit above the paste-box.

An extended lever O embodies, adjacent to the left-hand side of the arm I , Figs. 3, 11, and 21, a depending leg o^{14} , which integrally carries a hub o between and pivotally mounted in bearings o' o' on the side of the arm I , the inner end portion o^2 of said lever being arched to extend over to the opposite side of the arm I , where said portion carries at its extremity a roller o^3 , resting on a cam O' , secured to and revolving with the shaft J^7 . At its outer end the lever O has bolted thereto cylindrical block O^2 , at opposite sides of which are trunnions o^4 , from which is pivotally suspended a horizontal bar o^5 , through the medium of ears o^6 at the upper side of said head and revolubly engaging the trunnion ends. Rigidly depending from the bar o^5 at the central portion thereof is a short hanger o^7 , in the lower bifurcated part of which is pivotally connected the forward end o^8 of an extended rod O^3 , while the inner end of said rod is normally held spring-retracted within a socket o^9 , secured to the arm I . The rod O^3 carries somewhat adjacent to the socket a short laterally-projecting journal o^{10} , on which is revolubly confined a small roller o^{11} , which is adapted to be peripherally

acted upon by a cam O^4 , secured to and revolving with the shaft J^3 at the inner end of the latter.

In one end of the bar o^5 is bolted an extended depending shank p , which carries at its lower end a disk-shaped horizontal tappet P . A similar shank q is secured in the other end of the bar o^5 and carries at its lower end the supplemental stamp-applying device, comprising an inverted horizontal yoke Q , a movable block Q' being supported vertically yielding in said yoke by means of bolts Q'' , which are guided in bosses on the yoke-top, and having expanding-springs q^2 , embracing said bolts and interposed between the block and the yoke-top. Threaded bolts q^3 , tapped through the yoke-top, provide for limiting the upward movement of the block within the yoke. Pivotaly mounted in vertical slots in the legs of the yoke are small pressers q^4 , which are each enlarged at one end to present a projecting portion q^5 , disposed at an angle to the shank of its presser. These pressers are normally maintained in the position indicated in Fig. 11 by small contractile springs q^6 , which are attached to said pressers and to projections at the upper corners of the yoke. Small rollers q^7 , revolubly supported in end recesses therefor in the block, serve as antifriction means for guiding the block in its movements in the yoke and also a suitable surface against which the upper ends of the presser-shanks are held by the springs q^6 .

An extended horizontal rod O^5 rigidly projects from the arm I and has its outer end o^{12} bent at an angle above the connection of the lever O with the block O^2 , so that a contractile spring o^{13} , attached both to the end o^{12} and to the block O^2 , will serve to normally maintain the outer end of the lever elevated and hold the inner end of said lever in contact with the cam O' .

At that side of the machine opposite from where the features just described are located is a lower bracket G^2 , bolted on the base-plate A^2 and having secured to the outer end of its horizontal portion g^5 a vertical support g^6 , which is bolted at its upper end to the rail G' at the inner side thereof. Rigidly maintained by the outer end of the bracket G^2 is an angle-bracket G^8 , embodying an inner vertically-extended sleeve g^7 and an upper outer bearing-socket g^8 . Positively secured in the socket g^8 is the lower end of a vertical rod R^x , the upper end of which intersects a horizontal plane approximating that of the bars C^3 in their highest positions. Revolubly mounted on the rod R^x is an arbor R , on which a short distance above the bearing g^8 is fastened a disk R' , having rigidly secured thereon a series of equidistantly-disposed radial-arms R^2 , which terminate at their outer ends in forks r . It will be noted that the length of the arms R^2 is such that they are

adapted to revolve contiguous to the adjacent sockets D' . Secured on the upper part of the arbor R , to revolve therewith, is a disk R^3 , having fixed at the under side thereof a series of equidistantly-spaced radial plates R^4 , of the thin character indicated in Fig. 5 and of the extended length and breadth illustrated in Fig. 4. Upon the disk R^3 is a circular series of short posts r' , pivotally supported by each of which is a radial shank r^2 , coincident above its particular plate R^4 , said shank having an outer downward bend carrying a small horizontal disk r^3 . At the inner side of each shank r^2 is a barrel r^4 , containing a torsional spring connected with said barrel and with a fixed part of the post r' , to normally maintain the shank and its outer disk in the position illustrated at the upper right-hand portion of Fig. 5. On the rod R^x and in a plane above the parts just described is a stationary disk R^5 , which is provided on its under side with a cam r^5 , in operative relation with respect to small rollers r^6 on the inner extended ends of the shanks r^2 .

A circular band S extends externally around the entire series of sockets D' and is in such relation thereto as to be positively supported in position. This band has a series of equidistantly-disposed pins s , which, as the band rotates with the corresponding movable parts of the machine will engage within the successive forks r of the arms R^2 , and thus effect the rotation of the arbor R and parts carried thereby. For convenience in adjusting the band S the same embodies a series of distinct links which are bolted together at their contiguous ends. This feature is indicated in Figs. 1 and 5. It is to certain of these links that the lower ends of the contractile springs E^5 are secured.

The machine will be constantly driven, so that the bowl-shaped carrier B^5 and parts supported thereby will partake of a continuous horizontal circular movement to the right. Beginning with a pair of jaws D^2 D^3 and their related features, as said jaws approach the vicinity of the packet-feed means, said jaws will be in their mutually-separated relation and with their allied features in the positions illustrated in Figs. 7 and 8, it being understood that the pin c^{32} in the holder C^6 , pertaining to said jaws, is frictionally supported in position with its upper end in a horizontal plane common with that of the upper surfaces of the jaw-bottoms d^{10} . While the parts are conditioned and moving as described, an attendant places an unfolded wrapper W so that it is centrally supported upon the pin c^{32} and above the holder C^6 , the end portions of the wrapper snugly occupying the spaces within the jaws and supported on the jaw-bottoms. It will be noted that the transverse dimension of the bottom of the outer jaw D^2 , or, in other words, the distance from the outer wall d^{11} and the inner

edge of the bottom of said jaw is greater than the distance from the wall d^{11} of the jaw D^3 to the free bottom edge of the latter. A packet X , being in position upon the tongues h^9 , the pair of jaws, with accompanying holder C^6 , and grippers, pass beneath the tongues. Coincidentally the roller E^6 rides up the cam part g^3 of the cam G^2 , which has the effect of mutually spreading the gripper-plates E^4 counter to the gripper-closing tendency of the spring E^3 . Simultaneous with the jaw-spreading operation referred to the roller e^2 of the appropriate lever E is depressed by the lower cam f^5 of the stationary disk F , which depression has the effect of throwing up the outer end of said lever and causing the rod E' , supported thereby, to be lifted to elevate the spread-grippers, which will bring them opposite the ends of the packets. Before the roller e^2 clears the cam f^5 the roller E^6 will clear the cam G^2 , and the spring E^2 will react to close said grippers, so that they will grip the packet at its ends. With the packet thus held it will be carried by the horizontally-moving grippers out of position, but still above the unfolded wrapper and in accurate position above the holder C^6 . By this time the roller e^2 will have cleared the cam f^5 , so that the weight of the parts plus the downward pull of the spring E^5 will cause the descent of the rod E' , and with it the closed grippers, which will thereby be caused to lower the packet with interposed wrapper into the holder C^6 , this operation resulting in the wrapper W being partially folded, as illustrated by dotted lines in Fig. 14, wherein it will be seen that the wrapper presents two vertically-extended folds at the side edges of the packet, the outer fold being higher than the inner fold. The lowering of the packet X within the holder C^6 causes the pin c^{32} to be depressed until its upper end is flush with the top surface of the holder-bottom. The parts still continuing their circular traverse, the roller c^{39} will ride upon the skeleton cam G^3 , the first portion of which will have the effect of inwardly moving the outer jaw D^2 , so that its bottom will fold the longer wrapper extension upon the surface of the packet, as indicated in Fig. 15. The remaining part of the top of the cam G^3 is such as to cause a more gradual outer movement of the jaw D^2 from its folded wrapper extension, so that at the beginning of said outer movement the roller c^{40} of the inner jaw D^3 rides up on the curved end of the cam-bar G^4 , which has the effect of causing the inner jaw to fold the contiguous wrapper extension so that the latter will overlie that previously folded. The parts will now be in the position approximately represented in Fig. 16. The subsequent clearance of the roller c^{39} from the cam G^3 will cause the outer jaw to be withdrawn from its fold, the extended character of the top edge of the cam-bar G^4 maintaining the

jaw D^3 so that both folds will be conjointly held during a considerable further period of the operation of the machine. The position of the parts at this stage is represented in Fig. 17. The holder C^6 , containing its en-
 5 folded packet, held as last described, now approaches the vicinity of the stamp-bed. Previously, however, a stamp has been fed above the bed and the head K depressed, so that
 10 its presser-bar will clamp the sheet immediately outside of the shoulder i^{10} , with which latter coincides the perforated connection of the stamp over the bed. The detaching-
 15 disk K^3 is caused to roll to the right along the bed, so that the stamp upon the same is detached from the rest of the stamp-sheet by being broken along the line of its perforated
 20 connection. The advantage of breaking the stamp, as stated, in lieu of detaching it by cutting is that slight irregularities in the feed of the stamp-sheet will in the aggregate ultimately result in such variation from the
 25 correct severing position that the stamps will become injured and serious loss be entailed. The pressing down of the head K , as previously mentioned, will result in the springs
 30 k^8 of the bolts k^7 coöperating with the lower yielding section k^2 to cushion said frame, the springs k^8 being so compressed that the roller-barrel k^9 will bear with considerable friction
 at the under side of the track k^6 . When the disk K^3 has reached the limit of its travel to the right and completed the stamp-detach-
 35 ing operation, the head K then rises, leaving the detached stamp upon the bed. The rising of the head K will obviously relieve the barrel k^9 from the more pronounced frictional pressure of the track k^6 , so that the roller can
 40 then be retracted to its former position within the head without encountering any pronounced frictional retardation. As the head K rises the cam l^5 operates to shift to the right the stamp feeding and detaching mechanism, so that the stamp-bed correspondingly
 45 moves. The approach of the holder C^6 , previously referred to as containing the enfolded packet, with the inner jaw D^3 , positively retaining one wrapper extension over the other, correspondingly brings the bar C^3 above in
 50 the vicinity of the stamp-bed. At this time the roller c^{10} pertaining to said bar is entering the cam depression f^2 , which has the effect of moving the sector member C^2 to the position indicated in dotted lines, Fig. 8, so
 55 that the pinions and arms c^{15} c^{16} will cause said bar to be moved outwardly and downwardly, contacting in its downward movement with and depressing the tongue j^{27} of the small rod J^{10} , turning the latter to throw
 60 its fingers away from the bed. The further downward lateral movement of the bar C^3 will result in the spherical ends of its pins c^{17} puncturing the stamp upon the bed, said puncturing being facilitated by the yielding
 65 material forming part of the stamp-bed, and

which material can be readily replaced when worn. The passage of the spherical heads through the stamp will cause the paper contiguous to said punctures to contract sufficiently to engage behind the heads and with-
 70 in the contracted parts of the pins, thereby insuring a positive engagement of the latter with the stamp. The roller c^{10} immediately thereafter rolls upon the cam f^3 , which obviously has the effect of securing a rising
 75 movement of the arm C^3 with its head C^4 , picking up the detached stamp with its back or rear surface exposed. As the stamp-head in rising coincidentally partakes of a lateral movement to the left, the spring l is now
 80 permitted to bodily retract the stamp feeding and detaching mechanism, including the stamp-bed, so that the latter moves to a limited extent in the same lateral direction as the stamp-head, but sufficient, however, to
 85 prevent the ends of the pins from exerting a dragging action at the stamp-bed, which action might have the effect of tearing or mutilating the stamp. Said head C^4 , with its engaged stamp, now moves over the paste-
 90 box and the stamp receives parallel lines of paste along its back, as previously described. In rising the bar C^3 , if the occasion should require, is prevented from being moved too far back and beyond its normal center by a
 95 stop-hanger C^7 , secured to the top of the sleeve A^4 . (See Fig. 5.) The roller C^{10} next enters the cam depression f^4 , the effect being that after the head C^4 has passed well to the left of the paste-box the head will be
 100 again lowered, so that its stamp will bear lengthwise on the enwrapped packet in the holder beneath. The cam O' on the shaft J^7 now raises the inner end of the lever O , so that the outer end of said lever is depressed,
 105 whereby the tappet P depresses the stem c^{32} , so that at the beginning of the subsequent movement of the bar C^3 the stripper C^5 will operate to strip the stamp from the lower ends of the pins c^{17} said stamp by reason of
 110 its pasted back remaining adhering to the wrapped packet. The character of the punctures made by the spherical pin ends in the stamp is such that when said ends are withdrawn from the stamp the momentary
 115 pressing of the latter by the stripper-face will cause the minor displaced parts of the stamp to evenly fill the punctures, and thereby avoid any unsightly mutilation in the stamp. The cam O' now permits the outer end of the lever
 120 O to be lifted under the action of the spiral spring o^{13} , and coincidentally the cam O^4 operates to tilt the bar o^5 , so that the tappet and the supplemental stamp-affixing device will be swung outward from the path of the advancing
 125 bar C^3 . At this time the roller E^6 , controlling the grippers, will pass onto the cam G^5 , so that said grippers will be thrown away from the ends of the packet, which, it will be understood, have overhanging stamp extensions. 130

The packet, with the stamp partially pasted thereto, has now arrived at a position immediately below the supplemental affixing device and the outer end of the bar C³ has risen to such plane as will permit the spring retraction of the rod O³, the positive action of the cam O⁴ having terminated by this time. The spring retraction referred to will cause the supplemental device to be swung inward immediately above the stamp-carrying packet, whereupon the cam O⁴ again operates to depress the outer end of the lever O, so that the supplemental device is forced down to cause its block Q⁴ to bear upon the upper stamped surface of the packet, and the block in vertically yielding will result in the stamp extensions being folded downward and the pressers q⁴ being swung on their pivots, so that their inner projections q⁵ will positively press said folded extensions against the ends of the packet. The cam O⁴ again ceases to act positively on the lever O, permitting it to again rise, while the cam O⁴ again acts to tilt the bar o⁵, so that the supplemental device can be swung out of the way of the succeeding advancing bar C³. It will be understood that while the supplemental device is securing the stamp ends of one package the tappet P is operating to strip the stamp from the head of a succeeding bar C³ and apply the same to its particular packet, this relation of the supplemental device and tappet being continued with regard to all the packets as they successively arrive at this part of the machine. As the supplemental device rises and swings outward, as shortly before stated, the stamped packet continues in its path of circular movement, and at this period the roller E⁶ will pass clear of the cam G⁵, so that the grippers can again grip the ends of the packet. Of course before the supplemental device acted on the packet the roller e⁴⁰, operating the inner jaw D³, passed clear of its cam-bar G⁴, so that said jaw is withdrawn from position with respect to its packet. The completely-stamped packet now continues its circular movement around to the other side of the machine, and upon arriving thereat the roller e² comes in contact with the lower fixed cam f⁶, so that the outer end of the lever E pertaining to said roller is thrown upward to occasion the elevation of the grippers, with the packet clasped between them. At this stage one of the flat plates R⁴ passes immediately below the packet, and the arm r², coacting with this plate, has its outer end lifted by reason of its inner roller being depressed by an under cam on the fixed disk R⁵. The release of said roller end causes the torsional spring connection of the arm to depress the outer end of the latter, so that the packet will be yieldingly clasped between the plate R⁴ and the disk r³ at the outer end of said arm. The roller e² now clears the

cam f⁶, which permits the grippers to release the packet and descend, whereupon the further rotation of the plate R⁴ and arm r² will carry the packet out of position, and when it arrives at the outer side of the disk R³ the inner roller end of the arm r² will again be depressed by an under cam of the fixed disk R⁵ to release the packet and permit the complete removal of the latter from the machine. When the flat plate R⁴ and arm r² have clamped the gripper-elevated packet, as above described, the roller E⁶, controlling the grippers, will contact with and ride on a cam G⁶, rigidly supported from the rail G⁷ below. The effect of the roller E⁶ riding on the cam, as stated, will be to lift the inner members of the gripper-levers, so that the latter will be separated at their upper ends to release the package and permit the latter to be carried out of position by the plate R⁴ and coacting arm r². The elevation of the inner members of the gripper-levers, as stated, will also result in the plane top of the lever-fork e¹⁵ striking the lower end of the depressed pin c³² to again position it for coaction with the wrapping-jaws in supporting an unfolded wrapper for the purpose of repeating the wrapping and stamping operation. Of course when the roller E⁶ clears the cam G⁶ the spring E⁵ pertaining to the pair of gripper-levers under consideration will coact with the now lowered lever E in restoring the grippers to their lower position.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In means of the character described, the combination with a carrier-arm arranged for continuous advancement, of a packet-holder mounted thereon, means carried by the arm and adapted to move the packet with an interposed wrapper into the holder to form two twofold extensions of the wrapper, wrapping-jaws mounted on the arm and means for actuating the jaws to press the wrapping extensions on the packet.

2. In means of the character described, the combination with a carrier-arm arranged for continuous advancement, of jaws mounted thereon and adapted to receive an unfolded wrapper, a packet-holder carried by the arm, means also carried by the arm and adapted to move the packet with an interposed wrapper into the holder to form two twofold extensions of the wrapper, and means for actuating the jaws to press the extensions on the packet.

3. In means of the character described, the combination with a carrier-arm arranged for continuous advancement, of a packet-holder mounted thereon, jaws carried by the arm and provided with upwardly and outwardly extending side flanges adapted to receive an unfolded wrapper and position the same with respect to the packet, means car-

ried by the arm and adapted to move the packet with an interposed wrapper into the holder to form two twofold extensions of unequal lengths, and means for actuating the jaws to press the extensions on the packet.

4. In means of the character described, the combination with a carrier-arm arranged for continuous advancement, of a packet-holder mounted thereon, jaws carried by the arm and adapted to receive an unfolded wrapper and position the same with respect to the packet, means carried by the arm and adapted to move the packet with an interposed wrapper in the holder to form two twofold extensions of unequal lengths, and means for successively actuating the jaws to press the extensions in overlying relation on the packet.

5. In means of the character described, the combination with wrapping devices arranged for continuous advancement, including grippers and their operating mechanism, of stationary packet-supports between which the grippers are adapted to travel, and means for feeding the packets to the support.

6. In means of the character described, the combination with wrapping devices arranged for continuous advancement, including grippers and their operating mechanism, of stationary packet-supports between which the grippers are adapted to travel, means for feeding the packets to the support and means for alining said packets thereon.

7. In means of the character described, the combination with a means for feeding packets and including an inner support, of a holder movable in relation to said support, grippers and operating mechanism therefor for gripping the supported package, removing it from position and placing it with an intermediate wrapper within the holder, and means for folding the wrapper extensions upon the packet.

8. In means of the character described, the combination with packet-feeding means having an inner packet-support, of a packet-holder adapted to move relative to said support, wrapping-jaws movable with the holder and designed to support an unfolded wrapper, grippers and their operating mechanism for causing the grippers to grip the package and remove it from position on said support, and move it with the interposed wrapper within the holder, and means for actuating the jaws to cause them to fold the wrapper extensions upon the packet.

9. In means of the character described, the combination with packet-feeding means having an inner packet-support, of a packet-holder adapted to move relative to said support, wrapping-jaws movable with the holder and designed to support an unfolded wrapper, grippers and their operating mechanism for causing the grippers to grip the package and remove it from position on said support

and move it with the interposed wrapper within the holder, means for actuating the jaws to cause them to fold the wrapper extensions upon the packet, and means for securing said extensions.

10. In means of the character described, the combination with packet-feeding means having an inner support for a packet, of a packet-holder movable relative to said support, wrapping-jaws movable with said holder and adapted to support an unfolded wrapper, grippers and their operating mechanism for removing the packet from said support and placing it with the interposed wrapper in the holder, means for operating the wrapper-jaws to cause them to fold the wrapper extensions upon the packet, and mechanism for applying a pasted stamp to said folds to secure the wrapper.

11. In means of the character described, the combination with an arm adapted for continuous advancement and carrying a packet-holder, of jaws and connections for supporting the same in pivotal relation with respect to said packet-holder, and cam devices for actuating said connections to operate the jaws.

12. In means of the character described, the combination with an arm carrying a packet-holder and adapted for continuous advancement, of jaws and connections for supporting the same in pivotal relation with respect to said packet-holder, projecting portions carried by said connections, and cam devices with which said projecting portions are adapted to contact to operate the jaws.

13. In means of the character described, the combination with an arm carrying a packet-holder and arranged for continuous advancement, said packet-holder containing a perforation, of a pin movably bearing in said perforation, wrapping-jaws pivotally supported with respect to said packet-holder, means for operating the jaws, and means for projecting the pin upon the opening of the jaws.

14. In means of the character described, the combination with a movable arm carrying a packet-holder, the latter containing a perforation, of a pin movably bearing in said perforation, a device for frictionally maintaining said pin in position, wrapping-jaws pivotally supported with respect to said packet-holder, means for operating the jaws, and means for projecting the pin upon the opening of the jaws.

15. In means of the character described, the combination with a packet-holder containing a perforation and arranged for continuous advancement, jaws in movable relation with respect to said holder, a pin movably bearing in said perforation and adapted to coact with the jaws in supporting a wrapper in an elevated position, means for moving a packet within said holder to depress the pin

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and form twofold extensions of the wrapper, means for moving the jaws to press the extensions on the packet, and means for projecting the pin upon the opening movement of the jaws.

16. In means of the character described, the combination with a packet-holder containing a perforation, jaws in movable relation with respect to said holder, a pin movably bearing in said perforation and adapted to coact with the jaws in supporting a wrapper in an elevated position, a device for frictionally maintaining said pin in position, provision for moving a packet within said holder to depress the pin and form twofold extensions of the wrapper, and means for moving the jaws to press the extensions on the packet.

17. In means of the character described, the combination with a packet-holder containing a perforation and arranged for continuous advancement, wrapping-jaws in movable relation with respect to said holder and adapted to receive an unfolded wrapper and position the same with respect to the packet, a pin movably bearing in said perforation of the packet-holder and adapted to coact with the jaws in supporting the wrapper in an elevated position, means for moving a packet within said holder to depress the pin and form two twofold extensions of the wrapper, one of the extensions being longer than the other, and means for successively moving the jaws to press the extensions in overlying relation on the packet.

18. In means of the character described, the combination with a packet-holder containing a perforation and arranged for continuous advancement, wrapping-jaws in movable relation with respect to said holder, a pin movably bearing in said perforation and adapted to coact with the jaws in supporting a wrapper in an elevated position, means for

moving a packet within said holder to depress the pin and form two twofold extensions of the wrapper, means for moving the jaws to press the extensions on the packet, and means for projecting the pin upon the opening movement of the jaws.

19. In means of the character described, the combination with a packet-holder and a socket supported in fixed relation thereto, of a rod movable in said socket, packet-gripping devices pivotally carried by the rod, wrapping-jaws in operative relation with respect to the holder, means for elevating closing and lowering the gripping devices, and provision for operating the wrapping-jaws.

20. In means of the character described, the combination with a packet-holder containing a perforation, of a pin movably bearing in said perforation, a socket supported in fixed relation with respect to said holder, a rod movable in said socket, packet-gripping devices pivotally carried by the rod, wrapping-jaws in operative relation with respect to the holder, provision for operating the wrapping-jaws, and provision for elevating, closing and lowering the gripping devices, the elevating movement of said provision effecting the projection of the pin.

21. In means of the character described, the combination with packet-wrapping devices arranged for continuous advancement, of means for breaking a stamp from a sheet, means for applying paste to the stamp-back and means for affixing the stamp to the wrapped packet.

. In testimony whereof I have signed my name, in the presence of two subscribing witnesses, to this specification.

EDWIN FIDELL.

Witnesses:

WILLIAM PAXTON,
GEORGE H. SPENCER.