G. M. WILLIAMS.

ART OF APPLYING TISSUE WRAPPERS TO CIGARS, &c.

APPLICATION FILED APR. 4, 1917

1,271,403.

Patented July 2, 1918.

7 SHEETS—SHEET 1.

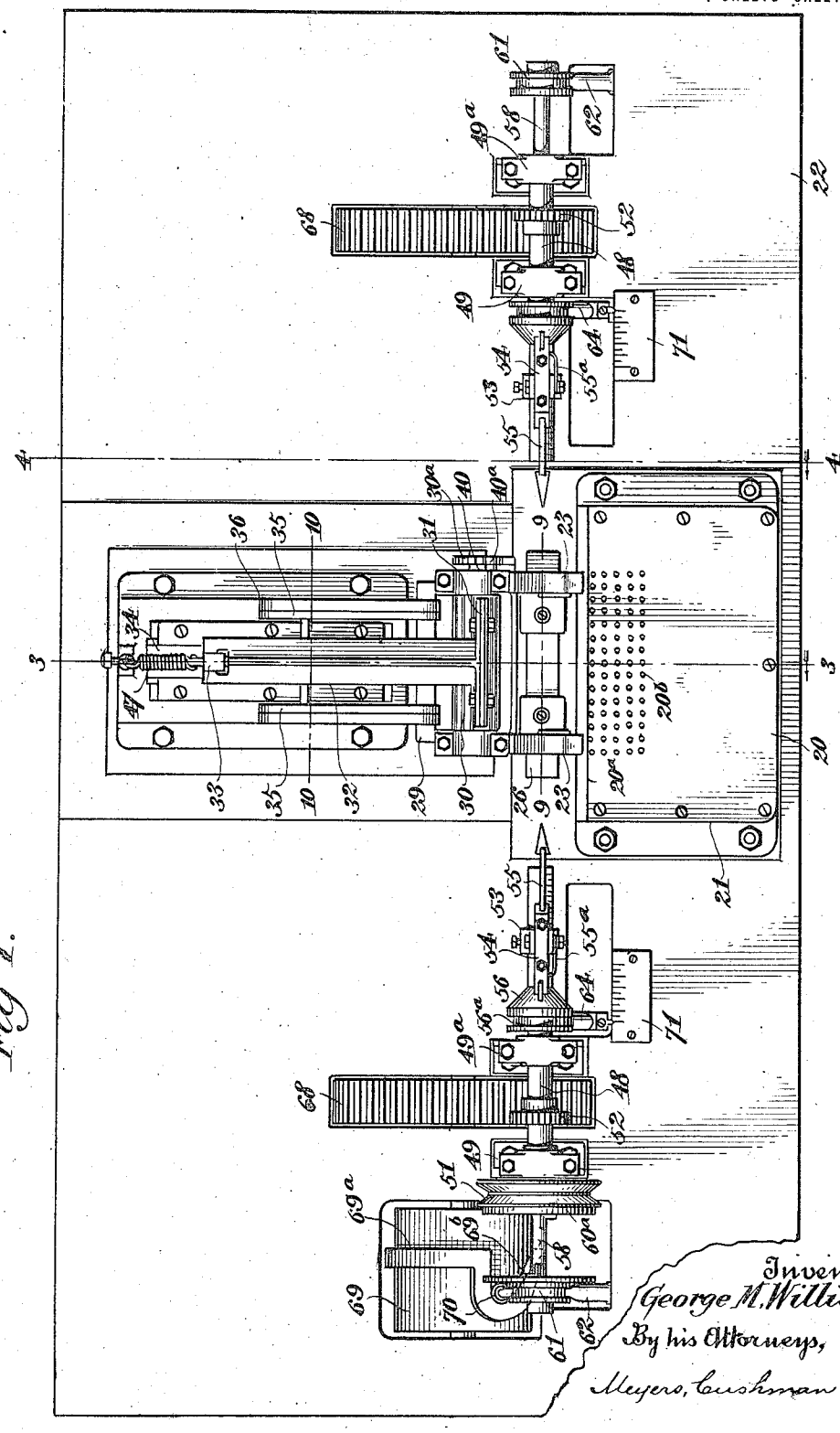


Fig 1.

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7 SHEETS—SHEET 2.

Fig. 2

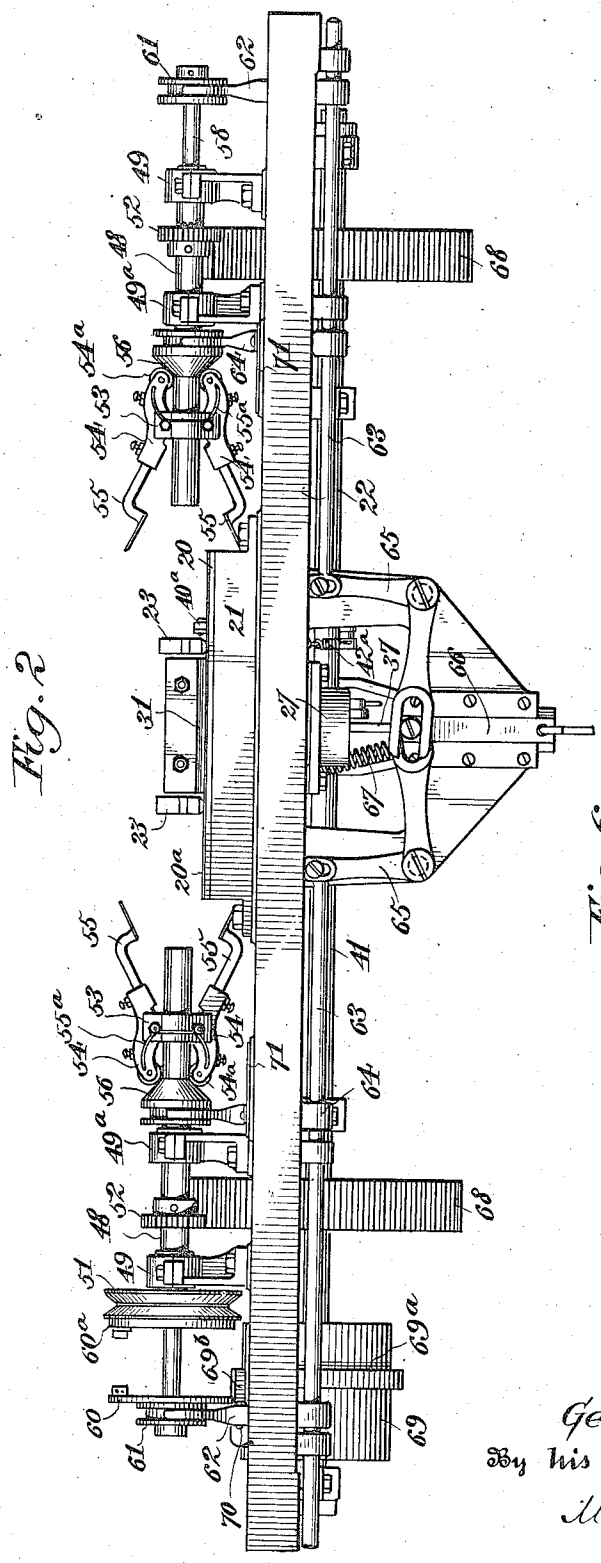
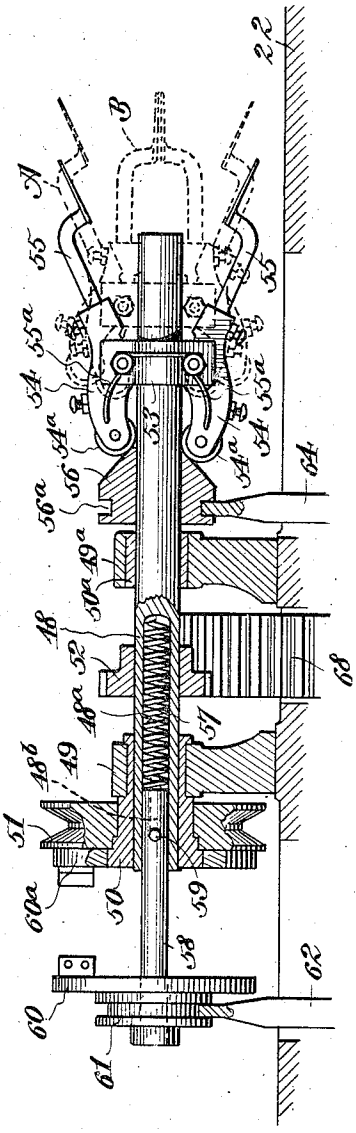


Fig. 6.



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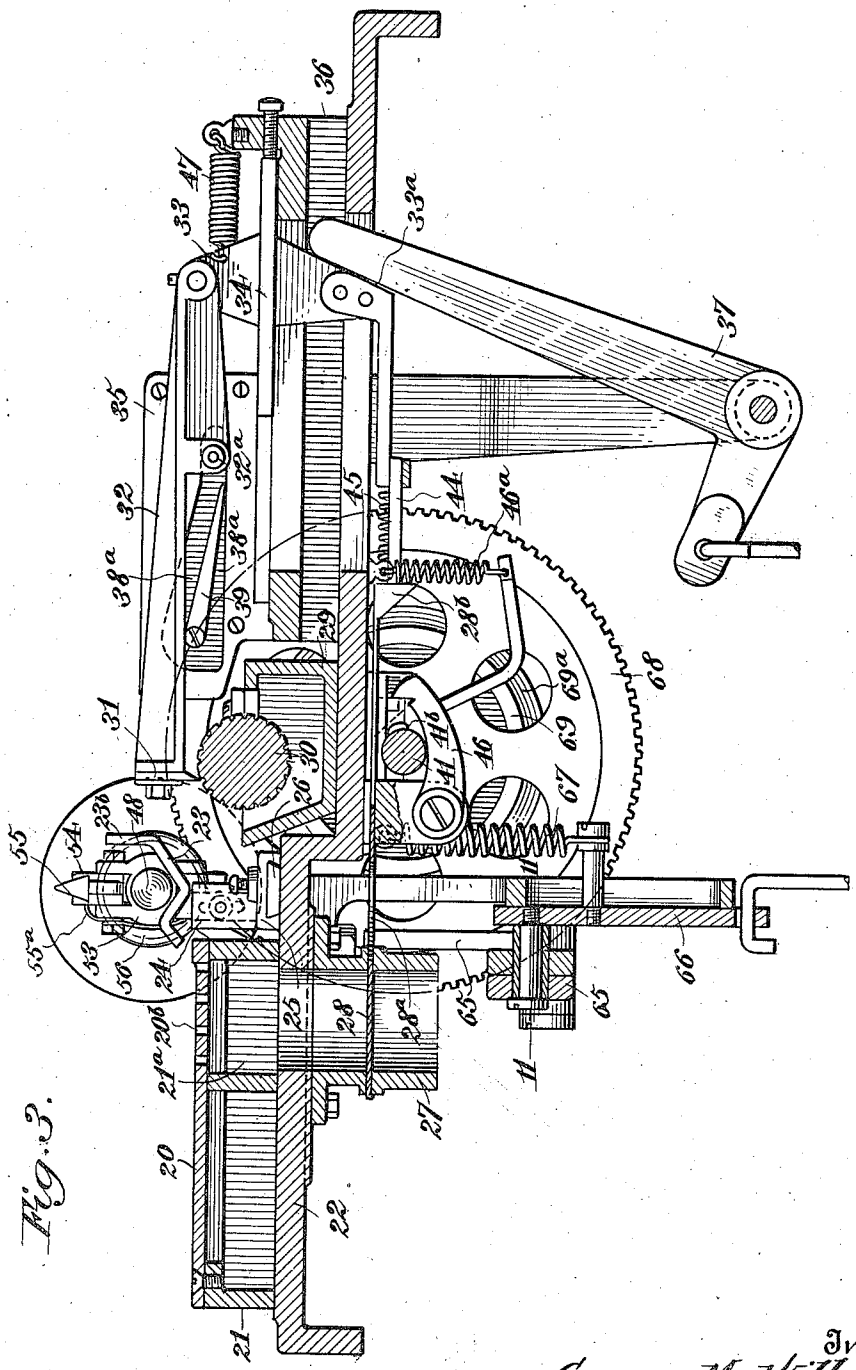


Fig. 3.

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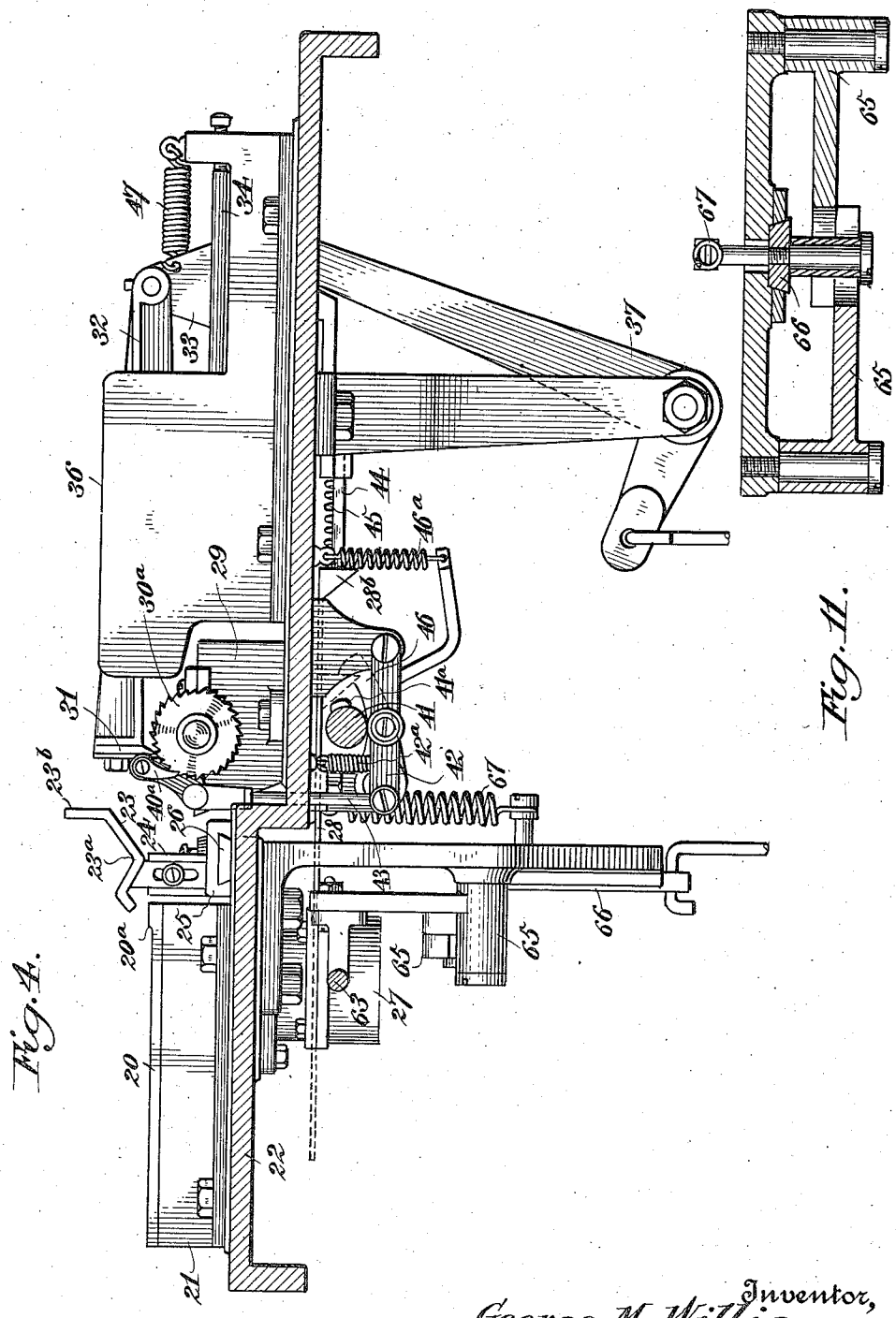


Fig. 4.

Fig. 11.

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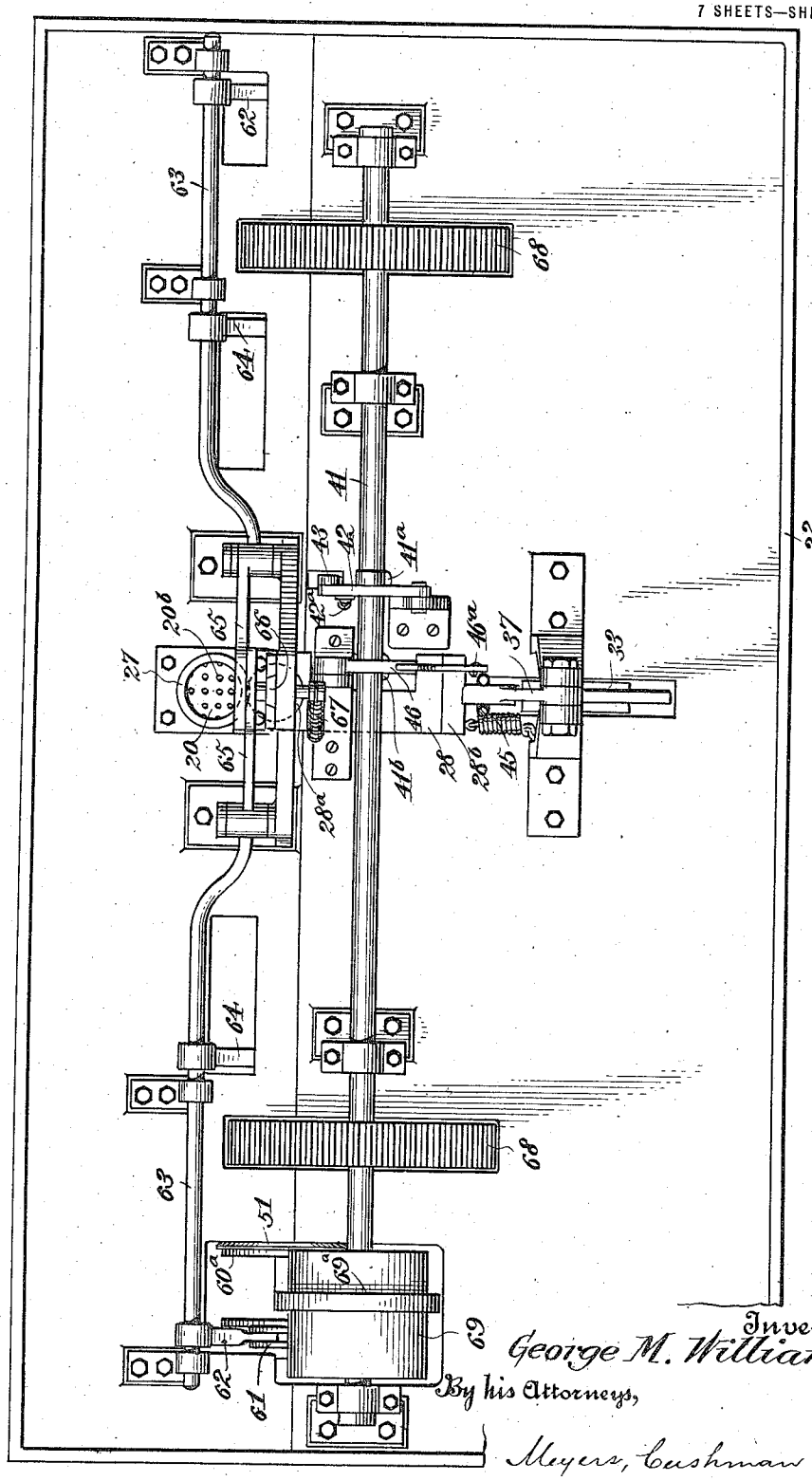


Fig. 5.

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7 SHEETS—SHEET 6.

Fig. 9.

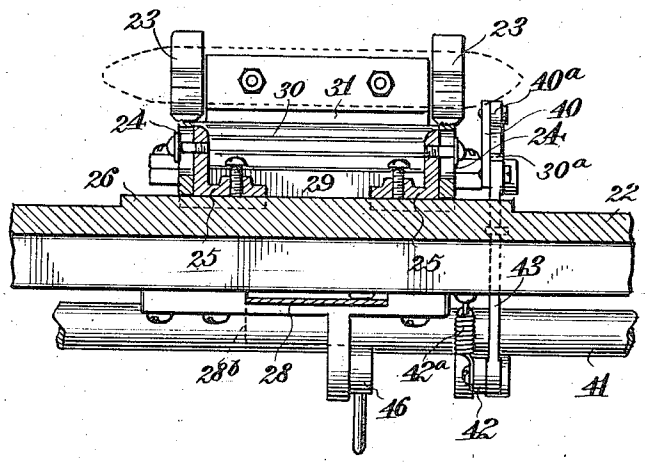


Fig. 10.

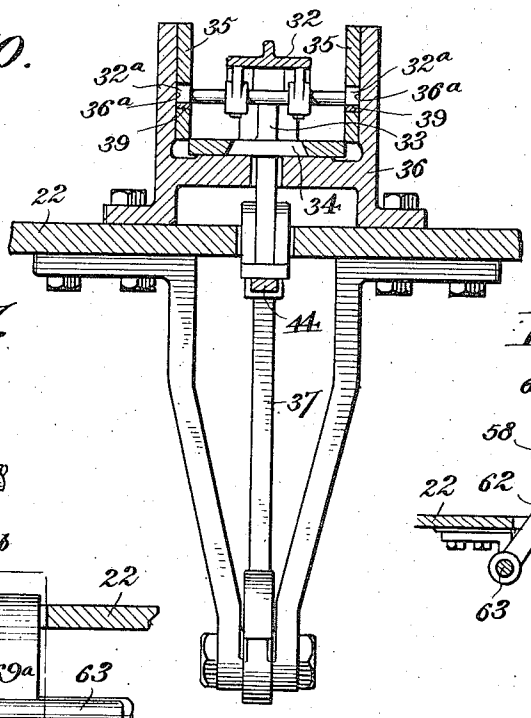


Fig. 7.

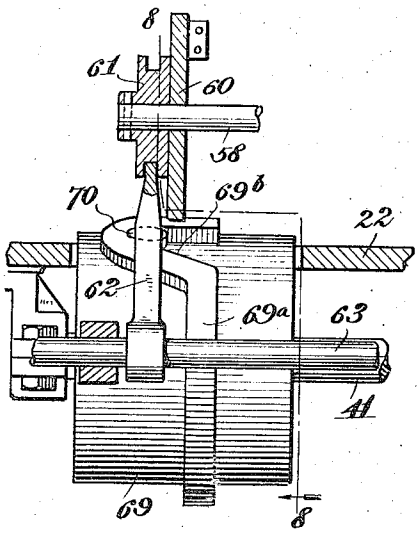
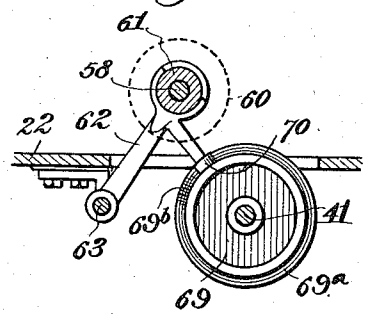


Fig. 8.



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7 SHEETS—SHEET 7.

Fig. 13.

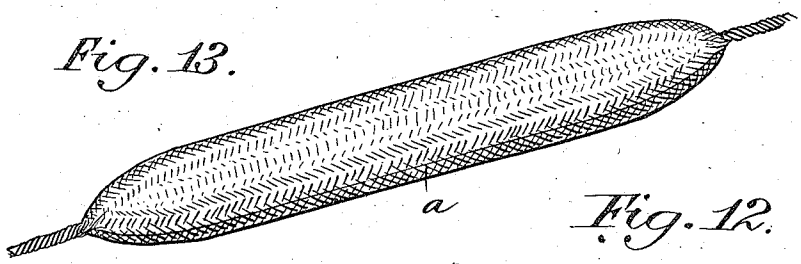


Fig. 12.

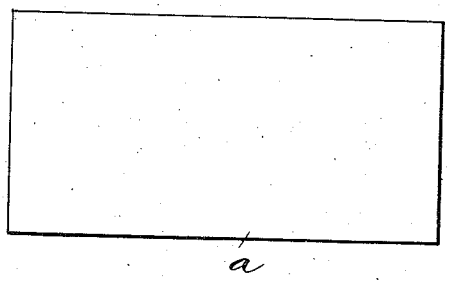


Fig. 14.

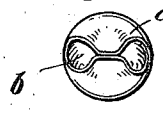


Fig. 15.

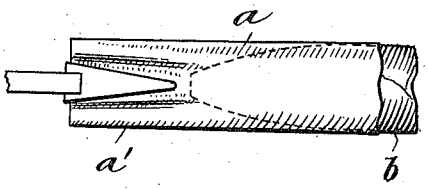


Fig. 17.

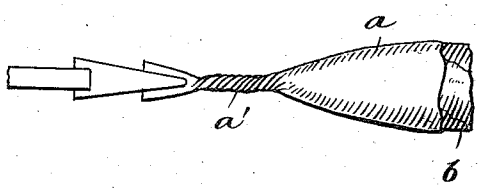


Fig. 16.

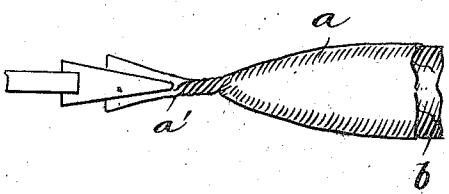
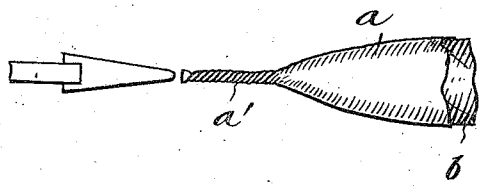


Fig. 18.



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UNITED STATES PATENT OFFICE.

GEORGE M. WILLIAMS, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO P. LORILLARD COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

ART OF APPLYING TISSUE WRAPPERS TO CIGARS, &c.

1,271,403. Specification of Letters Patent. **Patented July 2, 1918.**

Application filed April 4, 1917. Serial No. 159,664.

To all whom it may concern:

Be it known that GEORGE M. WILLIAMS, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, has invented certain new and useful Improvements in the Art of Applying Tissue Wrappers to Cigars, &c., (Case A,) of which the following is a specification.

This invention relates to the art of applying inclosing wrappers to articles, the invention involving the method of and apparatus for applying inclosing wrappers to cigars, cheroots, etc., or other articles of merchandise, either individually or in a collective package.

While the structure is adapted for use with articles other than cigars, cheroots, etc., it is designed more particularly for use in applying a wrapper—preferably of tissue paper—to cigars, cheroots, etc., or other articles which are essentially of such character as to be easily damaged.

For instance, one of the important features of a cigar is the wrapper which must be of proper material and properly applied to the filler, in order that the purchaser may have no difficulty in smoking it. The wrapper, usually spirally wrapped, must be free from breaks or other damaging effects, in order to produce the desired result; when the wrapper has been damaged or broken, salable value of the cigar is lost. And owing to the fragile nature of the tobacco leaf, such damage is easily produced—even careless handling of the cigar, subjecting it to undue pressure, or turning against friction in a direction tending to open the close winding of superposed spiral layers, will affect the condition of the cigar for use.

Therefore, in attempting to apply an inclosing container for the completed cigar, a number of difficulties are encountered, in that the container itself and the applying operation must be such as to prevent damaging the cigar and especially its wrapper, in order that assurance will be had that the cigar so inclosed will, when the inclosure is removed, be found intact and usable. Among the problems to be met are:—

1. Since the value of the container lies, among other advantages, in tending to retain the aroma, reduction of the tendency of the cigar to become dry, and preservation of the original quality of the cigar generally, the applied wrapper or container must be wrapped snugly, producing a close-fit effect.

2. To provide the snug-fitting effect, not only must the wrapping be carefully provided, but the ends must be well twisted to insure such fit adjacent the cigar ends and the formation of a twisted end which will maintain the wrapper in snug-fitting relation and also close the ends of the container.

3. The twisting action tends to extend inward beyond the cigar ends and thus places considerable pressure on the body of the cigar at such ends, this pressure rapidly increases with any material increase in resistance to the shortening action on the ends of the wrapper produced by the twisting operation.

4. The wrapping operation must be such as to prevent a relative movement of wrapper and cigar such as would cause a torsional effect on the cigar and its wrapper, to prevent disturbance of the close wrapping of the tobacco leaf wrapper or damage to such wrapper.

To meet these problems I preferably employ a suitable tissue paper as the wrapping material, thereby reducing liability of damage owing to the flexibility of the paper and its ready accommodation to the configuration of the cigar. In wrapping the tissue sheet, I limit the resistance to the shortening action of the sheet end portions during the twisting operation, thereby limiting the pressure which is placed on the ends of the cigar, prevent any tendency of torsional action, and at the same time provide a tight twisting action of the wrapper ends.

Paper of this character requires careful manipulation to produce the proper result, and while the result can be obtained by manual manipulation, the productive capacity is exceedingly low, thus making the labor cost of adding such wrapper relatively high, it, being understood that the production of a satisfactory product requires the services of an experienced workman; as the manipulations must be made with care and differ in kind, the time required to complete the operations is such as to render the output of the experienced operator comparatively small. While it has been contemplated to meet this

difficulty by providing mechanism which will rotate the cigar and wrapper while the ends are retained in the fingers of the operator's hands, thus permitting the twisting of both ends of the wrapper concurrently through the use of both hands. the capacity is not materially increased due to the necessity of completing the operation on one cigar before taking any steps in preparation for the operation of the succeeding cigar.

The present invention contemplates the production of apparatus by means of which the proper twisting action can be obtained by the use of mechanical twist-producing elements, permitting operation with at least one hand of the operative free to prepare the succeeding cigar for twisting action, thus materially increasing capacity without affecting the product.

It also contemplates an apparatus in which the tissue sheet is mechanically held during the wrapping of the cigar with the optional additional feature of "tacking" the free edge of the rolled wrapper, thus insuring a maintenance of the fixed condition of the wrapper during the twisting operation as well as tending to prevent "puckering" of the intermediate portion of the wrapper and closing this portion enabling the operator to maintain the position of the cigar with one hand during the twisting operation, where no specific holding means are employed.

The invention also has for its objects the production of apparatus simple and efficient in operation, durable in construction and of low cost of manufacture and maintenance.

To these and other ends, the nature of which will be readily understood as the invention is hereinafter disclosed, said invention consists in the improved construction and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

The invention further consists in the novel method of producing a twisted end to the inclosing wrapper.

In the drawings, in which similar reference characters indicate similar parts in each of the views:—

Figure 1 is a top plan view of one form of apparatus for carrying out principles of my invention.

Fig. 2 is a front elevation of the same.

Figs. 3 and 4 are transverse sectional views, on an enlarged scale, taken on lines 3—3 and 4—4, respectively, of Fig. 1.

Fig. 5 is a bottom plan view.

Fig. 6 is a view, partly in section and partly in elevation, of one of the twister units.

Fig. 7 is a fragmentary detail showing mechanism operative in the control of a twister unit.

Fig. 8 is a sectional view taken on line 8—8 of Fig. 7.

Figs. 9 and 10 are detail sectional views taken on lines 9—9 and 10—10, respectively of Fig. 1.

Fig. 11 is a detail sectional view taken on line 11—11 of Fig. 3.

Fig. 12 is a plan view of a preferred form of tissue blank.

Fig. 13 is a perspective view showing the completed package—the tissue-inclosed cigar.

Fig. 14 is a detail view showing the package formation prior to end-twisting.

Figs. 15 to 18 show diagrammatically successive developments in the end-twisting operation.

The apparatus herein described while usable for the wrapping of other commodities, such for instance as stick candy, is designed more particularly to meet problems presented in the wrapping of cigars, etc., where it is essential that the original condition of the article, and especially its outer surface be maintained and be unaffected and undamaged by the container-wrapping operation. As heretofore pointed out, this problem is made difficult by the fact that the cigar wrapper is of a material—leaf tobacco—easily damaged and is generally applied in spiral form, so that the possibility is present of loosening the spiral and destroying the value of the cigar for smoking purposes in cigar form.

Obviously, the apparatus being adapted to successfully meet these onerous conditions, will be capable of use in connection with other articles of the same general contour but not having these conditions present as an inherent factor.

As heretofore pointed out, I prefer to provide the wrapper or container blank in the form of a sheet of tissue paper of suitable texture—comparatively tough, yet flexible and soft. This sheet is wrapped about the cigar with the ends of the sheet projecting beyond the ends of the cigar. The ends are then twisted, with the twist preferably in the same direction and similar in direction to the direction in which the wrapper is applied, thus tending to maintain the wrapper in snug-fitting relation to the cigar. If desired, the outer edge of the blank may, in addition to the end twisting, be "tacked" in position.

Owing to the character of the wrapping sheet and the inherent liability of damage to the cigar, the wrapping operation becomes of considerable importance. To insure safety to wrapper and cigar during this operation, I prefer to employ hand rolling, although this may be substituted by mechanical mechanism without departing from the spirit of the invention. By hand-rolling, however, there is an assurance of the application of proper pressure, etc., so that liability of

damaging the cigar is reduced to a minimum.

This wrapping of the sheet is had on a plate 20 secured to a block 21 carried by the table 22 suitably supported. Plate 20 may have a guide 20^a against which one of the longitudinal edges of the sheet is fed.

The plate is preferably positioned in front of a pair of spaced-apart members 23 mounted on the standards 24 carried on slides 25 mounted on retainers 26 carried by the table. Each member is formed with an approximately V-shaped depression 23^a and an upstanding portion 23^b beyond the depression. These members are adapted to receive and support the cigar and its tissue wrapper—which may be termed a "package"—during the end-twisting operation. Members 23 and slides 25 are preferably adjustable to permit shifting to accommodate for cigars of different lengths and thicknesses, these members being adapted to position the "package" with proper relation to the twisting units. Depressions 23^a are in alinement.

In the present embodiment the "package" is held stationary during the twisting operation—preferably by the hand of the operator—and hence the depressions are freely open at the top to permit ready positioning of the "package," upstanding portions 23^b acting to prevent carrying the "package" beyond the depressions, thus reducing the time required in positioning the package.

However, as pointed out in a companion application, this package support may be of a different form and may be of a type adapted to provide rotation to the package—the twister units remaining stationary—thus permitting both hands of the operator to be free during the twisting operation.

In each case, however, the support is preferably located directly in rear of plate 20 so that the package may be seated on members 23 with an arm movement which is practically a continuation of the cigar wrapping operation taking place on plate 20.

For the purpose of retaining the sheet in its position on plate 20, I preferably employ a holding mechanism which may be of suitable type. A preferred mechanism embodies the use of a light suction made effective through a series of perforations 20^b in plate 20, these perforations opening into a chamber 21^a in block 21, this chamber having a controllable connection with a suction-producing mechanism (not shown) through conduit 27. Conduit 27 is controlled by suitable means, that shown in the drawings (Figs. 3 and 4) being in the form of a plate 28 adapted to reciprocate longitudinally in a plane intersecting conduit 27 and having an opening 28^a which is moved into and out of registration with said conduit by such reciprocations. The plate thus forms a valve for controlling the activity of the suction at the outer ends of perforations 20^b. The mechanism for reciprocating the valve will be presently described, but it may be noted that the movement of the valve to render the suction active is controlled by the operator, enabling the latter to take a tissue sheet from a pile at one side of plate 20, place the selected sheet on the plate over the perforations and then actuate the valve to open the suction, preferably by a treadle (not shown). The time of return movement of the valve may be controlled in any suitable manner, the disclosed arrangement placing it during the twisting operation, but this may be varied as will be obvious, it being deemed desirable that the suction should be applied for a period sufficient to cover the rolling or wrapping operation, thus tending to maintain the position of the outer edge of the sheet and enabling the operator to roll or wrap the sheet on to the cigar rapidly and at the same time wrap with the proper tightness and freedom from pucker, etc. As will be understood, wrapping takes place while the suction is active, the operator placing the cigar at the advance portion of the held sheet, bringing the advance edge over the cigar and then rolling the cigar toward guide 20^a, the sheet thus being wrapped about the cigar, the suction being ineffective to prevent the sheet from being raised from a row of perforations. The cigar with the sheet rolled thereon is then placed on the support (members 23) and the end-twisting mechanism brought into operation.

Since the suction is not applied continuously, being brought into action at the will of the operator, the sheet can be freely moved about on plate 20, quickly brought to the proper position, and held there by rendering the suction active.

If desired, the free edge of the rolled sheet may be "tacked" to the underlying portion, this action producing an advantageous result in tending to close the intermediate and untwisted portion of the sheet and maintain it more snugly, forming a more efficient container for retaining the original qualities of the cigar. While I prefer to employ such "tacking" feature, it may obviously be omitted, the invention contemplating structures which may or may not include this feature.

The "tacking" is preferably placed approximately midway of the length of the wrapper, extending lengthwise of the wrapper a suitable distance, but preferably not extending into the portion being twisted.

In the present embodiment of the invention, the "tacking" is provided by the application of a stripe of paste to the sheet at or adjacent the sheet edge in contact with guide 20^a. This stripe may be applied by any suitable mechanism, one form applica-

ble for such use being shown in the drawings and located in rear of members 23. The structure shown embodies a paste-containing reservoir 29, carried by table 22, and in which is located a rotatable roller 30, of suitable peripheral contour. Roller 30 extends into the paste of reservoir 29, taking up a film of paste and delivering it to a suitable applying mechanism. The latter, at the proper time, is brought forward into contact with the sheet and then withdrawn, thus applying the stripe to the sheet the applying mechanism having a width sufficient to produce the length of the stripe. The path of movement of this applying mechaanism in the present embodiment extends between members 23 (Fig. 9) but it is obvious that the mechanism may be located at a different point, as for instance overhead or at one side of the wrapping plate and be brought into proper relation to the sheet. In the present form, however, the arrangement is such that the paste carrying member may be narrow, taking up a small amount of paste, and after being brought into contact with the sheet, the withdrawing action will wipe over the sheet and distribute the paste in such manner as to not cause any material effect on the tissue sheet. Hence, when the succeeding wrapping action takes place, the wrapper will not pucker to any material extent.

31 designates the paste applying member, formed of suitable material, this member being removably secured to a carrier 32 having its rear end pivotally connected to a vertically extending support 33 carried by a slide 34 (Fig. 10) mounted in guides 35 carried by a supporting frame 36 mounted on table 22, member 31 being located at the forward end of carrier 32 and normally positioned to rest in contact with roller 30 (Figs. 4 and 9.)

Support 33 extends below the plane of slide 34, and has a face 33^a adapted to cooperate with one arm of a pivoted bell crank lever 37 the other arm of which is connected to a suitable operating mechanism (not shown) such for instance as a treadle.

The carrier is normally held in its rear position by a spring 47 connecting support 33 with frame 36, said spring acting to return the parts when operation of lever 37 has carried the carrier forward and the treadle released to permit return.

It is desirable that the forward movement of member 31 retain it out of contact with the sheet, thus restricting its movement, while in contact, to one direction, and to provide this result I employ mechanism for guiding the forward end of the carrier to raise it during the forward movement, then permit it to drop to bring member 31 into contact with the sheet and then withdraw the carrier. A simple mechanism for producing this result is shown in Figs. 3 and 10 in which the side walls of frame 36 are shown as having recesses 36^a in which is pivotally mounted a cam-member 39 which acts in the nature of a switch point, thus forming an inclined groove 38^a, normally open as in Fig. 3 and a return groove 38^b, normally closed by the point. This construction is employed on opposite sides of the carrier 32, the latter carrying rollers 32^a adapted to travel in such grooves, these rollers normally resting in the recess in rear of the switch point. During the forward movement rollers 32^a travel in grooves 38^a, moving downward at the forward end of such grooves and entering grooves 38^b in which they travel during the return movement of the carrier, the switch-points raising to permit the passage of the rollers during this movement.

Paste roller 30 carries a ratchet wheel 30^a which coöperates with a pawl 40^a carried by an element 40 pivoted on the roller shaft. Element 40 is oscillated by the action of a cam 41^a mounted on shaft 41 presently referred to, said cam being adapted to move lever 42 through a link 43 connecting the lever with element 40, this action being against the action of a spring 42^a which acts to return the parts to normal position when cam 41^a becomes active to move the roller. As shaft 41 is rotated intermittently (during the twisting operation) and at a time when member 31 is in contact with roller 30, it will be understood that said member will receive its quota of paste while stationary and in advance of the succeeding pasting operation, so that the amount of paste to be applied can be somewhat controlled, it being possible for any excess delivered to member 31 to be drained off of said member in advance of the member movement.

As it is desired that during the paste-applying operation the tissue sheet be firmly held, suction action is applied in advance of contact of member 31 and the sheet. This timing relation may be provided in any suitable manner. In the present embodiment this control is had by placing the conduit-opening action of plate 28 under control of the actuating mechanism for carrier 32, opening 28^a being so positioned that the suction effect is produced before the carrier reaches its forward position.

The mechanism for effecting this action is shown more particularly in Figs. 3 and 4. Support 33 carries a forwardly-extending arm 44 (shown as formed in two parts, although it may obviously be an integral structure), the forward end of said arm normally contacting the rear end of plate 28, the latter being enlarged, as at 28^b. Arm 44 is adapted to move plate 28 forwardly concurrently with the forward movement of carrier 32 this movement of plate 28 plac-

ing a spring 45 (connecting plate 28 with the frame) under tension. As plate 28 approaches its forward position enlargement 28^b rides over a pivoted catch member 46, normally held in position by spring 46^a, thus locking plate 28 in such position. Therefore when member 31 is withdrawn, plate 28 retains its position with opening 28^a in registration with the conduit.

Plate 28 may be released in any suitable manner to permit spring 45 to return it to its position of inactivity. In the drawings this release is shown as provided by a cam 41^b carried by shaft 41. This places the control in the twisting mechanism, but it is obvious that this control may be otherwise provided, it being preferred, however, that the shutting-off of the suction be automatically provided in advance of positioning of the succeeding tissue sheet in order to permit free positioning action.

From the above it will be understood that the package, formed of the cigar with its easily damaged tobacco wrapper, and the tissue sheet forming the inclosing wrapper, is produced in such manner as to reduce liability of damage to a minimum, while at the same time the operation may take place with rapidity, providing for comparatively high capacity. In producing this result the particular location of the wrapping plate relative to the package support is of advantage, in that the operator is able, by a practically continuous motion of the arm, to form the package and position it for twisting operation. In this operation the suction mechanism, applied at will, materially aids, since it retains the positioned sheet while paste is being applied—if this mechanism is being used; also while the operator is picking up and positioning the cigar to be wrapped, and during the wrapping operation, thus insuring smooth and snug-fitting wrapping of the cigar.

It will also be understood that during these operations the integrity of the cigar and sheet is being constantly protected to insure the production of an undamaged product.

The package thus produced is practically a tube inclosing the cigar, the tube having its ends projecting beyond the cigar ends, as shown in dotted lines in Fig. 14. Where pasting mechanism is employed this tube will also be "tacked" at its intermediate portion. While this tubular form is present, the tube is not of multiple convolutions, the blank preferably having a width sufficient to provide an overlapping relation but of a length less than the length of a single convolution. Obviously, the blank width may be increased to provide superposed convolutions without departing from the spirit of the invention, but such arrangement increases the cost of the sheet and such excess material is not essential when the operation is provided in accordance with the principles of my invention—the construction being designed to operate with the thin and flexible end configuration of the wrapped tube.

Where, as in the present embodiment of the invention, the wrapped cigar is manually held during twisting of the ends, the use of pasting mechanism is of advantage in increasing the output, since the operator is not required to carefully maintain the wrapped condition during transfer to the support and until sufficient twisting is had to fix the wrapper in position. As will be obvious, this enables the operator to use the free hand to segregate the succeeding sheet and bring it to the wrapping plate while the end twisting operation is taking place. And as the pasting is at an intermediate point in the length of the wrapper, the "tacking" action will be positively produced during the wrapping operation.

Hence, the entire tube-forming operation is completed and the package placed in position with the single arm movement whether or not the "tacking" operation is employed.

The inclosing operation is completed by twisting the ends of the tube preferably in the same direction and in the direction of wrapping of the sheet. This result is obtained by a relative movement between the intermediate portion of the wrapper and the ends, either by holding the wrapped cigar stationary and twirling the ends, as in the present disclosure, or by a reversal of this operation, the ends remaining stationary, as in the companion case. In each instance, mechanism is provided for grasping the opposite ends of the thin tube and maintaining a connection between such ends and the mechanism during the twisting action without, however, placing any damaging strains on the tube or providing twisting action which will damage the cigar.

In the present embodiment, where the twirling action is by the ends in forming the twist, rotating twister mechanisms are employed, these being held inoperative and out of position to obstruct the positioning of the package. The start of twisting action is placed under control of the operator to prevent premature activity of the twisters.

When the package is in position the twisters are moved to an operative position and then closed upon the ends. This is followed by the rotation of the twisters for a predetermined number of turns, after which the twisters open and move to the inoperative positions. During the twisting operation the twisters have no movement excepting that of rotation. Obviously, twisting of the ends foreshortens such ends, and this is compensated by permitting the ends to move relatively to the twisters in a direction to

withdraw the ends from the twisters, the latter having a formation which will provide the grasping action and prevent free withdrawal, but which will permit relative movement, a sufficient resistance being present to effect a proper twisting action.

As a result the irregularity in contour of the cigar is unimportant, the twisting ends of the wrapper moving lengthwise of the twisting fingers as may be required under the twisting action. Hence, the speed of the twisters may be comparatively high without damaging the wrapper and without placing any strains on the tobacco wrapper of the cigar to break it or tend to unwind its convolutions.

The general structures and operations of the opposing twisters are similar and a detailed description of one for instance that shown at the left in Fig. 1, will be sufficiently indicative.

49 and 49ª indicate pedestals (which may be independent or unitary, as desired), pedestal 49 carrying a bushing or sleeve 50 to which is secured a drive member 51; pedestal 49ª carries a bushing 50ª said bushings being axially alined and adapted to receive a shaft 48 free to rotate in said bushings. Shaft 48 is free to move axially in said bushings, a pinion 52 thereon limiting the length of such movement, especially in the advancing direction in which contact of pinion 52 and bushing 50ª prevents further advance movement.

Shaft 48 carries a support 53 for a pair of pivotally mounted elements 54 carrying fingers 55, the latter being shown as removably secured to the elements but which may obviously be formed integral therewith.

Fingers 55 are of suitable configuration the grasping faces being substantially flat. The advance ends of the fingers are approximately pointed, widening as the face recedes from such end. Consequently, that portion of the finger which is closest to the twist has a relatively narrow face in contact with the tube end, permitting a ready twisting action to take place, the wider face portions gripping the wrapper to produce the proper relative movement of the ends and body of the wrapper sheet. In other words, the widest gripping face is at the extreme end of the tube, such face decreasing in width toward the twist, the more or less pointed end extending approximately to the twist. Hence, the twist is started at a point spaced from the wrapper ends, and as the shortening action takes place, the wrapper end shifts its position in a direction to withdraw, practically decreasing the amount of face contact (length and width) as the length of the untwisted portion of the end decreases, thus providing compensation for the twisting action without liability of damaging the tissue sheet. This is of great advantage where the sheet is relatively thin and easily damaged, especially when operating in connection with a tobacco wrapper and on a cigar configuration which may vary more or less with successive cigars. Furthermore, the structure enables formation of a twist extending throughout the length of the free ends of the wrapper.

The inactive position of the fingers is shown in full lines in Fig. 6, the fingers being opened to the full extent and located to permit the free positioning of the package on the support.

Mounted at the outer ends of elements 54 are rollers 54ª which coöperate with a cam 56 splined to shaft 48 to rotate therewith but free to move longitudinally of the shaft.

The initial movement of the fingers is to advance them to a position from which a simple closing action will properly locate them on the wrapper end. Such advanced position is shown at dotted line position A in Fig. 6, the fingers remaining open. This travel of the fingers is provided by advancing shaft 48 until pinion 52 contacts with bushing 50ª, this movement being had through suitable mechanism one form in which it may take being now described.

Shaft 48 is shown as hollow as at 48ª for a portion of its length, said hollow portion being adapted to receive a spring 57 and a stub shaft 58, the latter having a pin 59 cooperating with a slot 48ᵇ in shaft 48. Mounted on shaft 58 is a clutch member 60, carrying a grooved member 61 with which an arm 62 coöperates, arm 62 being carried by a rod or other connection 63 located below table 22. Cam 56 also carries a grooved portion 56ª with which an arm 64, carried by the rod 63, coöperates.

Rod 63 is movable longitudinally in bearings, and has its inner end connected to one arm of a bell crank lever 65 the other arm being operatively connected to a vertical slide 66 mounted in guides carried by the table, and connected to a suitable operating device (not shown) such as a treadle. Slide 66 is normally held elevated by a spring 67, thus retaining rod 63 in its outer position; as arms 62 and 64 are carried by rod 63 and these arms control the positions of member 60 and its shaft 58 as well as cam 56, it will be understood that these several parts are in the outer position. At this time pin 59 is at the outer end of slot 48ᵇ, thus placing shaft 48 in its outer position, rollers 54ª being in contact with cam 56 at an inner point of the inclined face.

When the operator desires to bring fingers 55 to position A, the treadle is depressed thereby advancing rods 63 and moving members 60 and cams 56 toward the center of the machine. While cam 56 is free on shaft 48 and shaft 58 is yieldingly supported in shaft 48 by spring 57 it will be

understood that this advancing movement will be communicated to shaft 48, elements 54 and cams 56 practically moving together, spring 57 aiding in producing this movement, it being understood that little, if any, resistance against this initial movement of the shaft is present.

This advancing movement is continued until pinion 52 contacts with bushing 50ª which prevents further advance of shaft 48, this being the position indicated at A.

However, the movements of rods 63 continue, thus moving shaft 58 relative to shaft 48 (permitted by the pin and slot connection), compressing spring 57, and advancing cam 56, while elements 54 remain held against advance. As a result clutch member 60 approaches the path of movement of a complemental member 60ª movable with drive member 51 while the inclined faces of cams 56 operate on elements 54 to move fingers 55 in directions to close on to the free ends of the tissue wrapper, the position indicated in dotted lines at B in Fig. 6.

This closing of the fingers gives the free ends of the wrapper a configuration somewhat as shown in full lines in Fig. 14, this action being similar at both ends, both twister mechanisms being approximately similar, the mechanism at the right in Fig. 1 having the drive member and the clutch members omitted.

As the movement of slide 66 approaches its end, and after the fingers have closed, clutch member 60 reaches the path of travel of member 60ª thus operatively connecting the drive member to shaft 48 of the twister mechanism at the left in Fig. 1, and causing said shaft to rotate, thereby causing the fingers to twist the wrapper end.

The twister mechanism at the right in Fig. 1 is caused to rotate in unison with that at the left by operatively connecting pinions 52 through shaft 41 heretofore referred to this shaft carrying gears 68 in permanent mesh with pinions 52. Hence, driving of shaft 48 at the left will provide movement to shaft 48 at the right, the movements of the shafts being in the same direction when viewed from either end of the machine.

Consequently, if drive member 51 is rotated in a direction to cause the shafts to rotate in the proper direction, and the body of the wrapper is held, the twisting action on the wrapper will tend to produce the desired wrapping effect. And in view of the ability of the ends to automatically move in a withdrawal direction damaging of the tissue is practically prevented. Obviously, the number of turns made is not limited. The twist is practically uniform and as the wrapper end reaches its final twisted condition, any excessive turns will simply cause the ends to withdraw from the fingers, so that no damage is provided to the tissue. Consequently any desired length of twisted end may be provided, depending on the number of turns the twisters make.

As it is preferred to provide uniformity in successive cigars, I preferably employ means to insure a sufficient number of turns, relieving the operator of any necessity for attempting to control. Any suitable means may be employed for the purpose, a simple mechanism being shown in Figs. 7 and 8, in which 69 indicates a member carried by shaft 41, said member having a cam face 69ª adapted to coöperate with a roller 70 carried by one of the arms 62. Cam face 69ª has an offset 69ᵇ in which the roller rests when the twisting mechanism is inactive, the arrangement practically locking the twisters against rotation in such position.

When rod 63 is advanced, roller 70 is carried out of this offset, thus permitting shaft 41 to rotate as the clutch action is produced, placing roller 70 against the circumferential portion of the cam face, and locking the twisting mechanisms in their advanced positions, since rods 63 cannot return while roller 70 is in such contact. As shaft 41 approaches the end of its revolution, offset 69ᵇ is reached by the roller whereupon rods 63 are returned through the action of spring 67, breaking the clutch engagement and stopping twister rotation. This insures that the number of turns will be similar in each operation.

Return movement of rods 63 carries shaft 58 and cam 56 to their outer positions. Shaft 48, however, is temporarily held against return movement by the tension of spring 57 permitting shaft 58 to move outwardly and bring pin 59 at the outer end of slot 48ᵇ, after which both shafts travel in unison. This temporary holding of shaft 48 also permits cams 56 to move outwardly to release rollers 54ª, permitting fingers 55 to open under the action of springs 55ª (Fig. 2) this action taking place while the fingers are in advanced position and further eliminating liability of damaging the tissue wrapper. This places rollers 54ª in proper relation to cam 56 and the remaining outward movement simply carries the mechanism to its inactive position with the parts ready for the succeeding operation.

From the above it will be readily understood that while the specific mechanism will operate to provide a wrapper with twisted ends to articles of other characteristics and with wrappers other than tissue paper, it is specifically adapted to produce an inclosing wrapper under conditions more or less onerous, such for example, as indicated herein. For instance, the general type of cigar has its opposite ends differing more or less in configurations; and in addition small variations may be present in the ends of successive cigars. To therefore provide an effi-

cient wrapper, where such differences affect the twisting action to a greater or less extent is a material condition to be met. Obviously this is increased where the inclosing wrapper is of tissue character and the cigar wrapper is readily damaged with a resulting loss of the salability of the article.

As cigars are of different lengths, provision is made for adjusting the position of the fingers. This adjustment is had by shifting supports 53 and cams 56 on shaft 48, and shifting arms 64 on rods 63. If desired indicating mechanisms 71 may be provided for readily locating the parts in proper position.

In Figs. 15 to 18 I have shown diagrammatically the approximate action which takes place during the end-twisting operation.

In Fig. 15 the fingers have collapsed and closed on to the projecting tube-like ends of the wrapper, thus producing the gripping relation. The wrapper is indicated at *a*, the end at *a'*, and the cigar at *b*. Closing of the fingers provides a face contact between the wrapper end and the finger faces, decreasing in width toward the point of twist formation.

When relative rotation between the wrapper end and body takes place, the twist is developed, and while the untwisted portion of the end may tend to curl about the fingers to a more or less extent, due to the tendency of the twist to extend beyond the actual development point, the presence of the fingers will prevent complete curling, the finger faces defining the extent of actual gripping contact, the edges of the fingers—the boundaries of the gripping faces—tending to control any curl formation in a manner to aid in the twist development. In this action the greater width of contact at the outer end of the untwisted portion acts as a check.

As will be seen by referring to Figs. 15 to 18, inclusive, the gripping faces of the fingers therein shown are of less width than the width of the wrapper ends when the latter are collapsed between the pairs of fingers preparatory to the twisting operation. Fingers having such a width relative to the width of the wrapper ends are of advantage, since by their use it is possible to continue the twisting operation, so that the twist will extend throughout the length of the wrapper ends, and are also of advantage in the twisting operation, since they permit a longitudinal portion or portions of each gripped wrapper end to assume an embryonic twist formation about the gripper fingers. This will be better understood when it is considered that upon bringing a pair of the fingers into gripping relation with a tubular wrapper end and longitudinally thereof, the end will be collapsed leaving ungripped, a portion or portions of the wrapper end at the side or sides of the gripped portion, so that upon causing a relative rotation between the body portion of the wrapper and its gripped end, the wrapper will not only be twisted upon itself between the gripped portion and the body portion, but the said ungripped portion or portions will be allowed to assume an embryonic twist formation about the portion gripped by the fingers.

In this view the withdrawal effect is more or less exaggerated to illustrate the action. It will be seen, however, that such withdrawal not only decreases the length of contact between the faces of the fingers and the untwisted end but also decreases the width of such contact. As a result, the natural tendency of the untwisted portion of the end to decrease in width as the successive twist developments take place and approach the outer portion of the end, is compensated by the gradual decrease in width of contact provided by the gradual withdrawal movement, and yet maintaining sufficient gripping contact to insure continuance of the relative rotation of wrapper parts which produces the twist. Figs. 17 and 18 indicate the action as the twist formation is developed. Obviously, continuation of the rotation will gradually withdraw the entire end and approximately complete the twist.

The particular action may be demonstrated by the use of a pair of fingers, arranged similar to a pair of tweezers the fingers having smooth and flat inner faces with the general edge configuration, and being closed onto the wrapper end. By rotating the wrapper body manually while holding the tweezer fingers in a fixed position, the general twisting operation will be apparent.

The operation of the mechanism will be readily understood. During the end twisting operation the operator can select the succeeding tissue sheet and bring it to and position it on the wrapping plate. When the twisting operation is completed, the wrapped cigar is removed, permitting the suction and pasting mechanisms to become active, leaving the sheet properly prepared and ready to receive the cigar to be wrapped, both hands being free to provide the wrapping action. Hence, the time required to complete each cigar is materially reduced from that required to produce a similar result under the methods heretofore employed, as known to me.

As will be clear, the end-twisting operation is applicable for use where a plurality of objects are to form the package, the wrapper forming the inclosure, and it is to be understood that such operation is contemplated by the present invention, such plurality of objects serving as the equivalent

of the single object in producing the package.

The apparatus is simple in character, having a low cost of manufacture and maintenance, and is efficient in operation.

While I have herein shown and described one or more forms in which my invention may be embodied, together with a preferred manner of use, it is to be understood that the same may have other embodiments and uses without departing from the spirit of the invention, and it is to be understood that such disclosure is not intended to define the precise limits of the invention, all rights to make any and all such changes or modifications as may be found desirable or necessary and which may fall within the scope of the invention pointed out in the claims, being specifically reserved.

What I claim is:

1. In the art of applying wrappers to articles the method of twisting the wrapper ends which consists in producing a tube-like wrapper end projecting beyond the article, then collapsing such end by a pair of fingers having opposing gripping faces of extended length and of a width insufficient to receive the entire width of the end to place an intermediate portion of the opposing faces of the wrapper end in gripped relation, and then moving the wrapper body and end relatively to each other rotatively to produce the twist, the gripping resistance of the fingers being insufficient to prevent shifting of the wrapper end under the twist-forming action in a direction to withdraw the end from the fingers.

2. In the art of applying wrappers to articles, the method of twisting the wrapper ends consisting in subjecting a collapsed end of the wrapper to the gripping pressure of opposing faces decreasing in active facial width, and then producing a twist formation in advance of such faces and decreasing the width of the zones of contact of the gripping faces and the untwisted portion of the end by the formation of successive twists.

3. In the art of applying wrappers to articles, the method of twisting tubular wrapper ends, consisting in gripping opposite faces of one of said tubular ends along a line extending longitudinally thereof leaving ungripped a portion of the wrapper end at the side of the gripped portion, causing relative rotation between the body portion of the wrapper and the gripped end, so that the wrapper is twisted upon itself between the gripped portion and the body portion, and the said ungripped portion is allowed to assume a twist formation about the gripped portion.

4. In the art of applying wrappers to articles, the method of twisting the wrapper ends consisting in subjecting a collapsed end of the wrapper to the gripping pressure of opposing faces decreasing in active facial width toward the point of twist-development, with the faces extending substantially to such point, and then producing the twist formation at such point by relative rotative movements of wrapper body and end.

5. In the art of applying wrappers to articles, the method of twisting the wrapper ends consisting in subjecting a collapsed end of the wrapper to the gripping pressure of opposing faces decreasing in width toward the point of twist-development, and then producing the twist formation at such point by relative rotative movement of wrapper body and end, development of the twist formation by successive rotations acting to shift the untwisted portion of the end in a direction to decrease the width of contact of the gripping faces and such untwisted portion.

6. In the art of applying wrappers to articles, the method of twisting tubular wrapper ends, which consists in gripping opposite faces of said tubular ends along a line extending longitudinally thereof, leaving ungripped a portion of each wrapper end at the side of the gripped portion, causing a relative rotation between the body portion of the wrapper and its gripped ends, and gradually releasing the gripping action during the twisting operation, so that each wrapper end is twisted upon itself between the gripped portion and the body portion and the said ungripped portions are each allowed to assume an embryonic twist formation about its gripped portion.

7. In wrapping mechanism, a pair of coacting twister fingers each having a relatively long and narrow gripping face, the face of one finger being adapted to be brought into substantial contiguous relation with the companion face of the other finger throughout substantially the length of the gripping faces of the fingers, said fingers when brought together having a combined end configuration of such proportions as to permit the twist formation to take place in immediate proximity to the active portions of the finger ends.

8. In wrapping mechanism, a pair of coacting twister fingers each having a relatively long and narrow gripping face, the face of one finger being adapted to be brought into substantial contiguous relation with the companion face of the other finger throughout substantially the length of the gripping faces of the fingers, and said fingers when brought together having an end configuration of such relatively small dimensions as to be substantially inclosed by an embryo twist formation.

9. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanism op-

posite the ends of the support and including fingers increasing in width of face from their advance ends and adapted to grip the free ends of the wrapper, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers, said fingers having a gripping resistance insufficient to prevent shifting of the wrapper ends in a direction to withdraw them under such twist developments.

10. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanism opposite the ends of the support and including fingers adapted to grip the free ends of the wrapper, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers, said fingers having gripping faces decreasing in active facial width toward their advanced ends.

11. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanism opposite the ends of the support and including fingers adapted to grip the free ends of the wrapper, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers, said mechanisms having means for advancing the fingers to gripping position prior to gripping action and of such relative rotating movements and for maintaining them in such advanced position and against endwise movement during such rotating movements.

12. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanism opposite the ends of the support and including fingers adapted to grip the free ends of the wrapper, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers, said mechanisms having means for advancing the fingers to gripping position prior to such relative rotating movements and for maintaining them in such advanced position and against endwise movement during such rotating movements, said fingers having gripping faces decreasing in width toward their advanced ends.

13. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a table on which the article is adapted to be wrapped with untwisted ends, a support in rear of said table for receiving the wrapped article from said table, gripping mechanisms opposite the ends of said support and having fingers adapted to grip the untwisted ends, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of the fingers, whereby the article may be wrapped and placed in end-twisting position by a substantially continuous movement.

14. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a table on which the article is adapted to be wrapped with untwisted ends, pasting mechanism operative to apply a paste stripe to said wrapper prior to wrapping to "tack" the wrapper in inclosing relation to the object, a support in rear of said table for receiving the wrapped article from said table, gripping mechanisms opposite the ends of said support and having fingers adapted to grip the untwisted ends, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of the fingers, whereby the article may be wrapped and placed in end-twisting position by a substantially continuous movement.

15. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a table on which the article is adapted to be wrapped with untwisted ends, pasting mechanism operative to apply a paste stripe to said wrapper prior to wrapping to "tack" the wrapper in inclosing relation to the object, a support in rear of said table for receiving the wrapped article from said table, gripping mechanisms opposite the ends of said support and having fingers adapted to grip the untwisted ends, means for rendering said pasting mechanism active at will, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of the fingers, whereby the article may be wrapped and placed in end-twisting position by a substantially continuous movement.

16. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a table on which the article is adapted to be wrapped with untwisted ends, pasting mechanism operative to apply a paste stripe to said wrapper prior to wrapping to "tack" the wrapper in inclosing relation to the object, a support in rear of said table for receiving the wrapped article from said table, gripping mechanisms op-

posite the ends of said support and having fingers adapted to grip the untwisted ends, means rendered active at will for producing relative rotation between the body of the wrapper and its gripped ends during a predetermined length of movement to develop an end twist in advance of the fingers, and means for rendering said pasting mechanism active at will.

17. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanisms opposite the ends of the support and including fingers having gripping faces of extended length and adapted to grip the free ends of the wrapper, said fingers having a width less than the gripped ends of the wrapper and being held against endwise movement during gripping activity, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers, said means being rendered active at will and including mechanism for maintaining such activity to produce a predetermined number of twist-developing rotations.

18. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanisms opposite the ends of the support and including fingers having gripping faces of extended length and adapted to grip the free ends of the wrapper, said fingers having a width less than the gripped end of the wrapper and being held against endwise movement during gripping activity, operative connections between said mechanisms to cause them to be made operative in unison, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers.

19. In mechanism for inclosing articles in wrappers with twisted ends and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for receiving the wrapped article, gripping mechanisms opposite the ends of the support and including fingers adapted to grip the free ends of the wrapper, said fingers having an inactive position out of the path of movement of the wrapped article while being positioned relative to said support, said mechanisms also including means for successively advancing the fingers in an endwise direction, closing the fingers on to the free ends of the wrapper, and maintaining the fingers in such advanced position and against endwise movement during the twisting operation, and means for producing relative rotation between the body of the wrapper and its gripped ends to develop an end twist in advance of such fingers.

20. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and suction mechanism for maintaining the blank in position while locating the object on the blank and during the wrapping operation, said suction mechanism including means operable at will for rendering such mechanism active.

21. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and means for applying a stripe of adhesive to such blank while positioned on the table, whereby the wrapper will be "tacked" in advance of the positioning of the object on the support.

22. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, mechanism for temporarily maintaining the blank in position on the table, and means for applying a stripe of adhesive to said wrapper while so positioned.

23. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article dur-

ing the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, suction mechanism for temporarily maintaining the blank in position on the table, and pasting mechanism for applying a stripe of adhesive to the blank while so positioned, said pasting mechanism being operative at will.

24. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, suction mechanism for temporarily maintaining the blank in position on the table, and pasting mechanism for applying a stripe of adhesive to the blank while so positioned, said pasting mechanism being operative at will, said suction and pasting mechanisms being operatively connected to cause the pasting mechanism to act as a time control in rendering the suction mechanism active.

25. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, suction mechanism for temporarily maintaining the blank in position on the table, and pasting mechanism for applying a stripe of adhesive to the blank while so positioned, said pasting mechanism being operative at will, and operating connections between the suction and pasting mechanisms to provide concurrent activity of said mechanisms with the suction mechanism rendered active in advance of the stripe application.

26. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into proper wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and mechanism for applying a stripe of adhesive to the blank while so positioned to permit "tacking" of the blank in wrapped position, said latter mechanism including an element carrying the adhesive, and means to successively cause said element to initially contact with the blank at a point spaced from an edge of the blank and move toward said edge, whereby the character of the stripe may be controlled.

27. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into proper wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and mechanism for applying a stripe of adhesive to the blank while so positioned to permit "tacking" of the blank in wrapped position, said latter mechanism including an element carrying the adhesive, an adhesive-supply, and means operative at will for moving said element between supply and stripe-applying positions, said supply being rendered active automatically during the end-twisting operation and during inactivity of the element-moving means.

28. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, suction mechanism for maintaining the blank in position, mechanism for applying a stripe of adhesive to the blank while so positioned to permit "tacking" of the blank in wrapped position, such suction and stripe-applying mechanisms being operatively connected to render the suction mechanism active in advance of stripe-application, and means independent of the stripe-applying mechanism for controlling the duration of suction activity.

29. In wrapping mechanism for applying inclosing wrappers to articles and

adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and means for applying a stripe of adhesive to an intermediate portion of the length of the blank, whereby the blank will be "tacked" in position when wrapped on the object.

30. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and means for applying a stripe of adhesive to an intermediate portion of the blank, whereby the blank will be "tacked" in position when wrapped on the object, said latter means including an element having an adhesive-applying length equal to the length of the stripe.

31. In wrapping mechanism for applying inclosing wrappers to articles and adapted to apply tissue wrappers to cigars, etc., and in combination, a support for positioning the wrapped article relative to mechanisms operative in producing end-twists to the wrapper and for supporting the article during the operations of such mechanisms, and means in advance of such support whereby the object and its wrapper may be brought into wrapped relation preliminary to such positioning, said means including a wrapping table to receive the blank, and means for applying a stripe of adhesive to an intermediate portion of the blank, whereby the blank will be "tacked" in position when wrapped on the object, said latter means including an element having an adhesive-applying length equal to the length of the stripe, and means for moving said element in contact with the blank to produce the stripe width.

32. In wrapping mechanism for applying inclosing wrappers to articles with the wrapper having twisted ends, and in combination, a support adapted to receive the wrapped article and support it during twist development, and mechanism for producing relative movements between the wrapper body and ends, said mechanism including opposing fingers positioned opposite the ends of the support and adapted to grip the free ends of the wrapper during the twisting operation, and means for moving said fingers from positions of inactivity to such gripping positions, said means including connections whereby the fingers at the opposite ends will move endwise in substantial unison, and means operative in said connections for rendering the fingers active at will.

33. In wrapping mechanism for applying inclosing wrappers to articles with the wrapper having twisted ends, and in combination, a support adapted to receive the wrapped article and support it during twist development, and mechanism for producing relative movements between the wrapper body and ends, said mechanism including opposing fingers positioned opposite the ends of the support and adapted to grip the free ends of the wrapper during the twisting operation, and means for moving said fingers in substantial unison from positions of inactivity to such gripping positions, said means operating successively to advance each set of fingers endwise toward the support, to close the fingers when in such advanced positions, and to maintain them in such positions and against endwise movement during the twist-developing operation.

34. In wrapping mechanism for applying inclosing wrappers to articles with the wrapper having twisted ends, and in combination, a support adapted to receive the wrapped article and support it during twist development, and mechanism for producing relative movements between the wrapper body and ends, said mechanism including opposing fingers positioned opposite the ends of the support and adapted to grip the free ends of the wrapper during the twisting operation, and means for moving said fingers from positions of inactivity to such gripping positions, said means including an endwise movable support for each set of fingers, means for limiting the length of movement of each support, cam mechanism for closing the fingers of each set, and mechanism operative from a single point rendering said cam mechanisms active to close the fingers when said support is at one extreme of its endwise movement.

35. In wrapping mechanism for applying inclosing wrappers to articles with the wrapper having twisted ends, and in combination, a support adapted to receive the wrapped article and support it during twist development, and mechanism for producing relative movements between the wrapper body and ends, said mechanism including opposing fingers positioned opposite the ends of the support and adapted to grip the free

ends of the wrapper during twisting operation, and means for moving said fingers from positions of inactivity to such gripping positions, said means including an endwise-movable support for each set of fingers, means for limiting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping positions when each support is in its advance position, a shaft, and means operatively connected with said shaft for maintaining the supports in advanced position and against endwise movement while the fingers are in closed position.

36. In wrapping mechanism for applying inclosing wrappers to articles with the wrapper ends twisted, and in combination, a support adapted to receive the wrapped article and support it during the twist development, and mechanisms for producing relative movements between the wrapper body and ends, said mechanisms including opposing fingers positioned opposite the ends of the support, means for advancing each set of fingers toward the support and closing the fingers to gripping position when in such advanced position, a drive member, means for rendering the drive member active when the fingers are closed, operative connections between said member and each set of fingers to rotate the sets for a predetermined period, and means for locking said fingers against rotation when the drive member is inactive.

37. In wrapping mechanism and in combination, a support for the wrapped articles, and wrapper-end twisting mechanism including twisting units having opposing fingers positioned opposite the ends of the support, an endwise-movable support for each set of fingers, means for limiting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping position when each support is at one extreme of its endwise movement, a shiftable rod for each unit and adapted to provide support and cam-mechanism movements, and means for operatively connecting said rods to provide finger movements in unison.

38. In wrapping mechanism and in combination, a support for the wrapped articles, and wrapper-end twisting mechanism including twisting units having opposing fingers positioned opposite the ends of the support, an endwise-movable support for each set of fingers, means for limiting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping position when each support is at one extreme of its endwise movement, a shiftable rod for each unit and adapted to provide support and cam-mechanism movements, a drive member, means for operatively connecting the supports of each unit to rotate said supports in unison, means for operatively connecting said rods, and means rendered active by rod-shifting movements for rendering the drive member active to rotate the supports.

39. In wrapping mechanism and in combination, a support for the wrapped article, and wrapper-end twisting mechanism including twisting units having opposing fingers positioned opposite the ends of the support, an endwise-movable support for each set of fingers, means for lifting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping position when each support is at one extreme of its endwise movement, a shiftable rod for each unit and adapted to provide support and cam-mechanism movements, a shaft, drive connections between the shaft and each support whereby said supports may be rotated in unison, a drive member adapted to be operatively connected to the support of one unit by rod movements, and means for operatively connecting said rods.

40. In wrapping mechanism and in combination, a support for the wrapped article, and wrapper-end twisting mechanism including twisting units having opposing fingers positioned opposite the ends of the support, an endwise-movable support for each set of fingers, means for limiting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping position when each support is at one extreme of its endwise movement, a shiftable rod for each unit and adapted to provide support and cam-mechanism movements, a shaft, drive connections between the shaft and each support whereby said supports may be rotated in unison, a drive member adapted to be operatively connected to the support of one unit by rod movements, means for operatively connecting said rods, and means rendered active by shaft movements for maintaining the advanced positions of said supports.

41. In wrapping mechanism and in combination, a support for the wrapped article, and wrapper-end twisting mechanism including twisting units having opposing fingers positioned opposite the ends of the support, an endwise-movable support for each set of fingers, means for limiting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping position when each support is at one extreme of its endwise movement, a shiftable rod for each unit and adapted to provide support and cam-mechanism movements, a shaft, drive connections between the shaft and each support whereby said supports may be rotated in unison, a drive member adapted to be operatively connected to the support of one unit by rod movements, means for operatively connecting said rods, and means on said shaft and operative in controlling rod

positions for maintaining said drive member active during a predetermined period.

42. In wrapping mechanism and in combination, a support for the wrapped article, and wrapper-end twisting mechanism including twisting units having opposing fingers positioned opposite the ends of the support, an endwise-movable support for each set of fingers, means for limiting the extent of such endwise movement, cam mechanisms for closing the fingers to gripping position when each support is at one extreme of its endwise movement, a shiftable rod for each unit and adapted to provide support and cam-mechanism movements, a shaft, drive connections between the shaft and each support whereby said supports may be rotated in unison, a drive member adapted to be operatively connected to the support of one unit by rod movements, means for operatively connecting said rods, and means on said shaft and operative in controlling rod positions for maintaining said drive member active during a predetermined period, said latter means also being operative to prevent support rotation when the drive member is inactive.

43. In mechanism for twisting ends of wrapped articles and in combination, an endwise-movable rotatable support, gripping fingers carried thereby and operative in the twist-development operations, cam mechanism axially movable on the support for closing said fingers, means for limiting the extent of support endwise movement, and means for moving said cam mechanism axially when said support has reached one extreme of its movement.

44. In mechanism for twisting ends of wrapped articles and in combination, an endwise-movable rotatable support, gripping fingers carried thereby and operative in the twist-development operations, cam mechanism axially movable on the support for closing said fingers, means for limiting the extent of support endwise movement, means for moving said cam mechanism axially when said support has reached one extreme of its movement, and means for moving said support to the opposite extreme of its endwise movement upon completion of the twisting action.

45. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers operative in the twist-development operations, a rotatable endwise-movable support therefor, cam mechanism axially movable on said support, means for limiting the extent of support endwise-movement, means for moving said cam mechanism with said support during support movements in one direction and for continuing cam mechanism movements to close the fingers to gripping position, and means for rotating the support when the fingers have been positioned.

46. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers operative in the twist-development operations, a rotatable endwise-movable support therefor, cam mechanism axially movable on said support, means for limiting the extent of support endwise-movement, means for moving said cam mechanism with said support throughout the length of support movement in one direction and for continuing cam mechanism movements to close the fingers to gripping position, and means for rotating the support when the fingers have been positioned.

47. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers operative in the twist-development operations, an endwise-movable and rotatable support therefor, means for limiting the advance movement of said support, cam mechanism and power-applying mechanism correlated with said support and movable relative thereto axially, and means whereby said mechanisms will move with said support during its movement to advanced position, said means continuing mechanism movements after the support has reached such position.

48. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers, an endwise-movable and rotatable support therefor, means for limiting the advance movement of said support, cam mechanism and power-applying mechanism correlated with said support and movable relative thereto axially, and means whereby said mechanisms will move with said support during its movement to advanced position, said means continuing mechanism movements after the support has reached such position, said mechanisms being relatively positioned to cause cam mechanism activity to close the fingers to gripping position in advance of power-application to rotate the support.

49. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers, an endwise-movable and rotatable support therefor, means for limiting the advance movement of said support, cam mechanism and power-applying mechanism correlated with said support and movable relative thereto axially, a reciprocatory rod, elements operatively connecting said mechanisms to said rod to provide mechanism movements in unison, the length of movement of said rod being in excess of that permitted the support, whereby mechanism activity may continue after completion of support advance.

50. In mechanism for twisting the ends of wrapped articles and in combination, a

pair of pivoted gripping fingers, an endwise-movable and rotatable support therefor, means for limiting the advance movement of said support, cam mechanism and power-applying mechanism correlated with said support and movable relative thereto axially, a reciprocatory rod, elements operatively connecting said mechanisms to said rod to provide mechanism movements in unison, the length of movement of said rod being in excess of that permitted the support, whereby mechanism activity may continue after completion of support advance, and means whereby said rod and support will travel in unison throughout the advance movement of the support.

51. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers, a rotatable support therefor movable longitudinally between predetermined positions, means for limiting the advance movements of the support, cam and power-applying mechanisms each movable axially relative to and rotatably with the support, means for moving said mechanisms with said support during its advance movement and for continuing the mechanism movements to produce cam mechanism activity to set the fingers in gripping position and to provide power-application by the power-applying mechanism, and means for temporarily maintaining the support in its advance position during return movement of the cam mechanism, whereby the fingers will be released prior to movement of the support.

52. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers, a rotatable support therefor movable longitudinally between predetermined positions, means for limiting the advance movements of the support, cam and power-applying mechanisms each movable axially relative to and rotatably with the support, means for moving said mechanisms with said support during its advance movement and for continuing the mechanism movements to produce cam mechanism activity to set the fingers in gripping position and to provide power-application by the power-applying mechanism and means whereby the cam-mechanism will be withdrawn in advance of support movement in the return direction.

53. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers, a rotatable support therefor movable longitudinally between predetermined positions, means for limiting the advance movements of the support, cam and power-applying mechanisms each movable axially relative to and rotatably with the support, means for moving said mechanisms with said support during its advance movement and for continuing the mechanism movements to produce cam mechanism activity to set the fingers in gripping position and to provide power application by the power-applying mechanism, and means for temporarily maintaining the support in its advance position during return movement of the cam and power-applying mechanisms, whereby power-application will be discontinued and the fingers be released prior to return movement of the support.

54. In mechanism for twisting the ends of wrapped articles and in combination, a pair of pivoted gripping fingers, a rotatable support movable longitudinally between predetermined positions, cam mechanism rotatable with said support and movable longitudinally thereof, to control the opening and closing movements of the fingers, an element operatively connected to the support to rotate therewith and move longitudinally thereof within predetermined limits, said element being adapted to act as a drive member for the support, a spring for maintaining said element at one extreme of its movements, stop mechanism for limiting the advance movement of the support, and means for moving said cam mechanism and element in unison with the support, said cam mechanism and element being free to continue such movement when said stop mechanism is rendered active.

55. In wrapping mechanism, a finger for twisting mechanisms, said finger having its active gripping face decreased in width at its advanced end.

56. In wrapping mechanism, a finger for twisting mechanisms, said finger having its active gripping face decreasing in width toward its advance end.

In testimony whereof I affix my signature.

GEORGE M. WILLIAMS.

Correction in Letters Patent No. 1,271,403.

It is hereby certified that in Letters Patent No. 1,271,403, granted July 2, 1918, upon the application of George M. Williams, of Elizabeth, New Jersey, for an improvement in "The Art of Applying Tissue Wrappers to Cigars, &c.," an error appears in the printed specification requiring correction as follows: Page 14, line 75, claim 39, for the word "lifting" read *limiting;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 23d day of July, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.

Cl. 93—5.