F. GIROUD.

PACKAGE WRAPPING MACHINE.

APPLICATION FILED JUNE 13, 1908.

942,636.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 1.

FIG. 2.

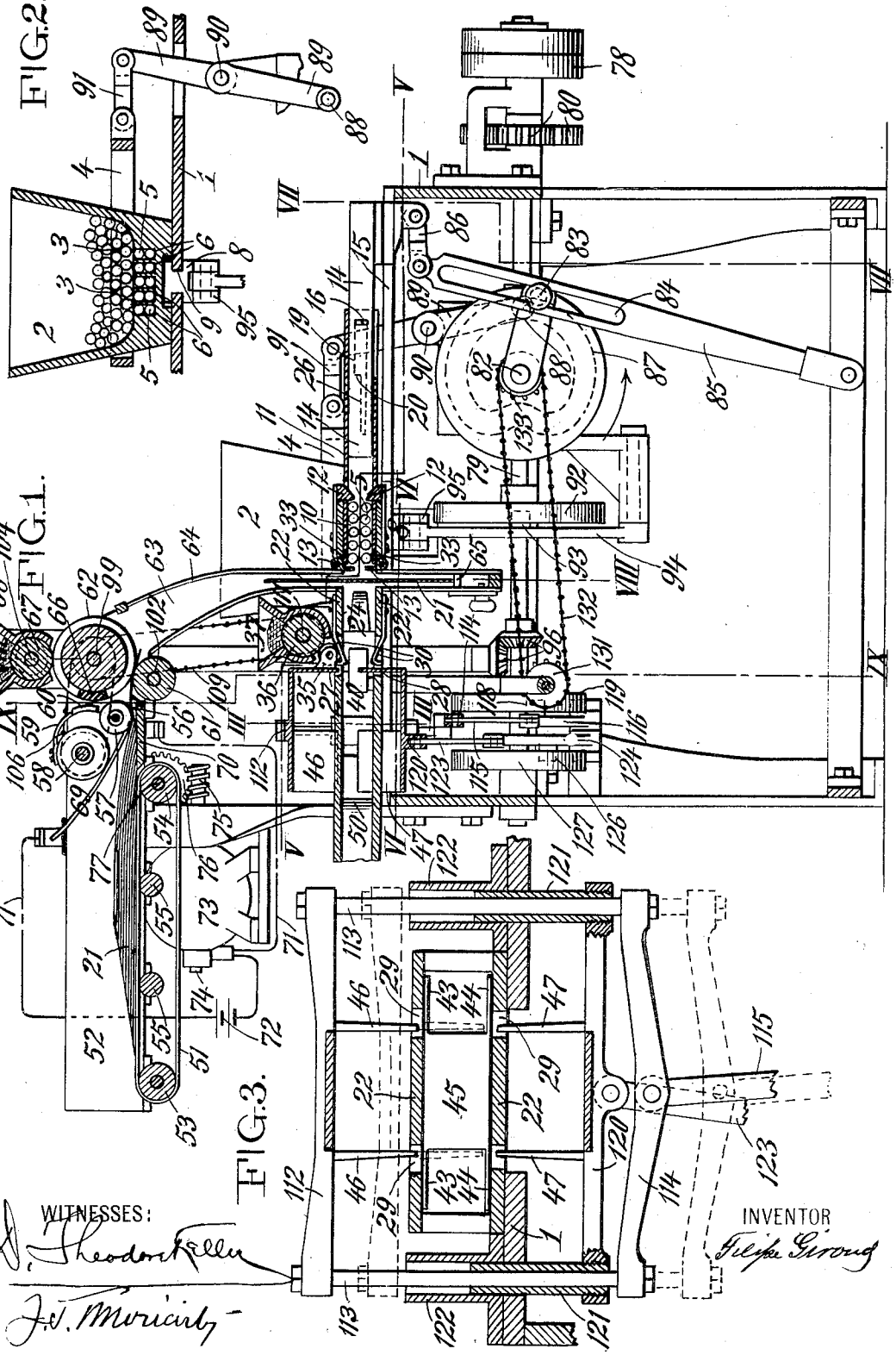

FIG. 1.

FIG. 3.

WITNESSES:

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4 SHEETS—SHEET 2.

FIG. 4.

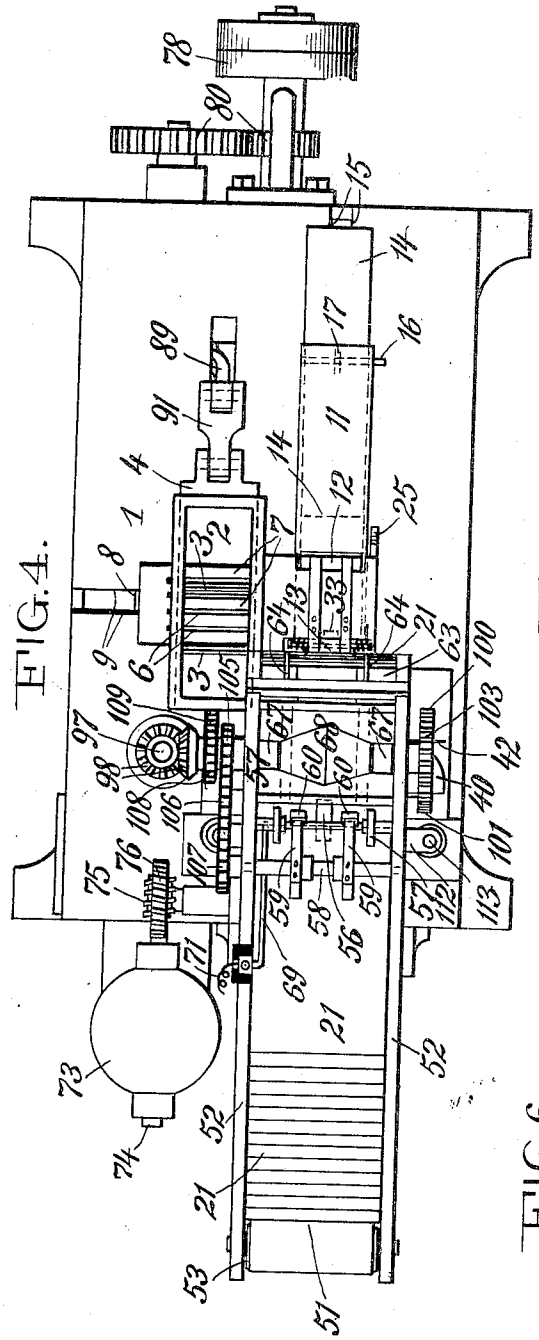


FIG. 5.

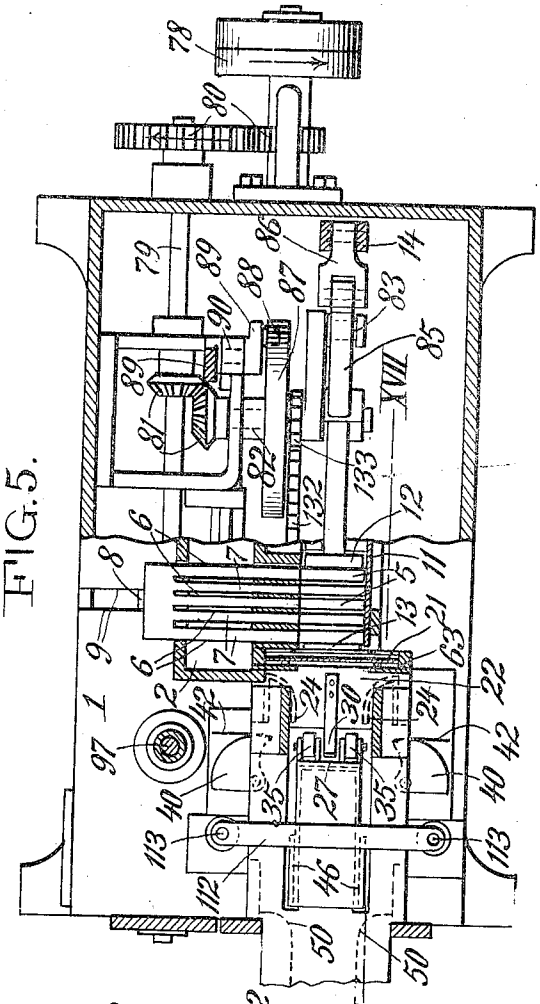
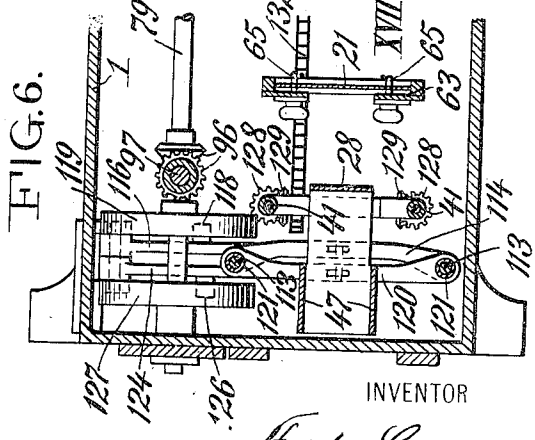


FIG. 6.



WITNESSES:

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4 SHEETS—SHEET 3.

FIG. 7.

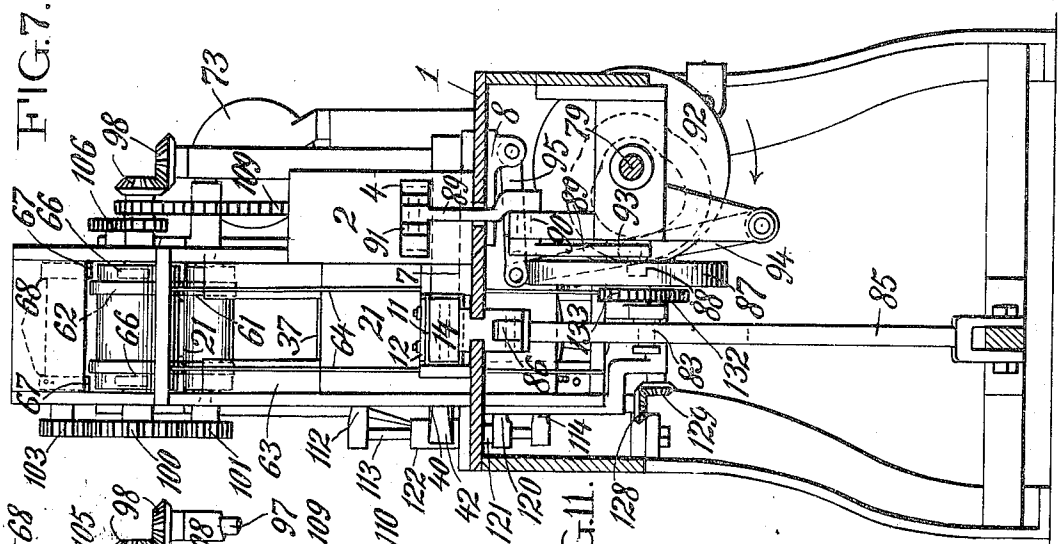


FIG. 8.

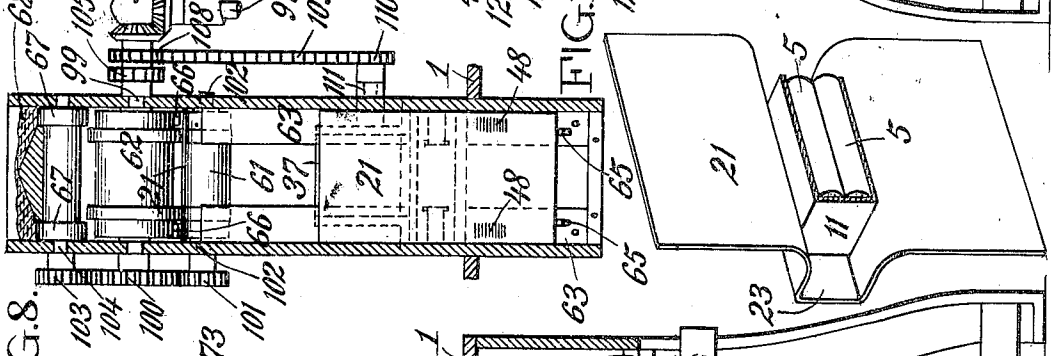


FIG. 11.

FIG. 9.

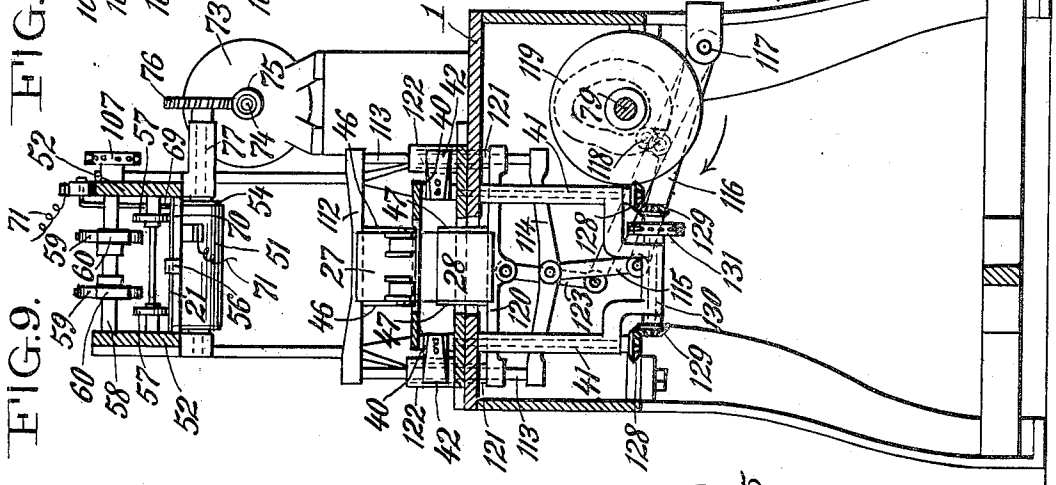
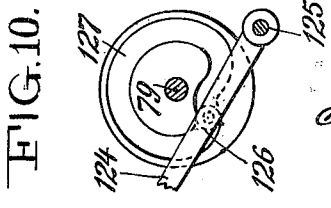


FIG. 10.



WITNESSES:

M. Theodore Kelly

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4 SHEETS—SHEET 4.

FIG. 12.

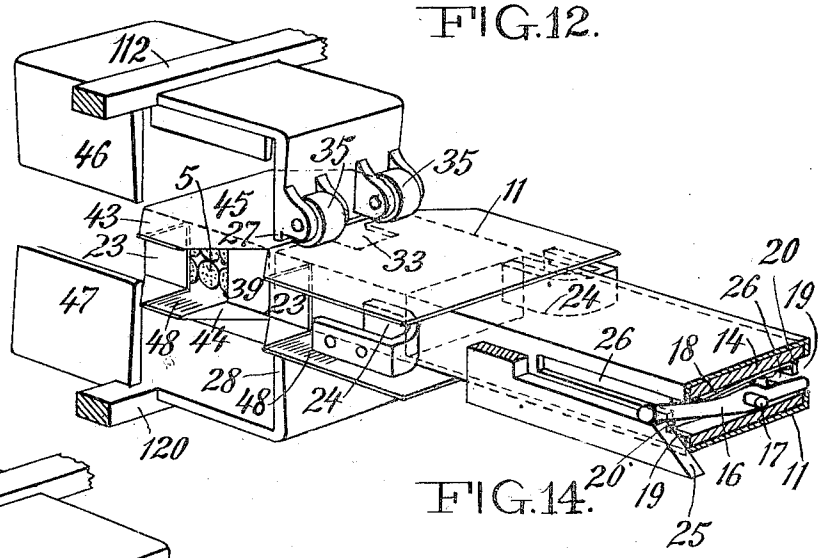


FIG. 13.

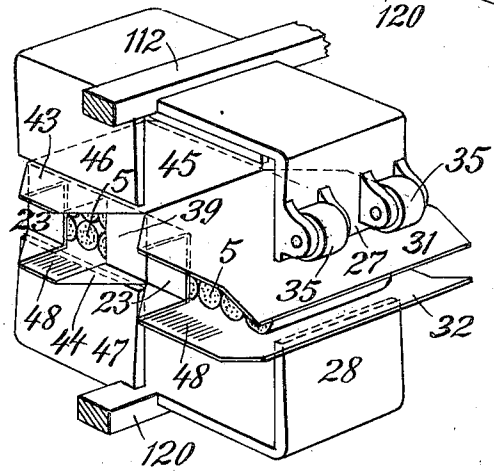


FIG. 14.

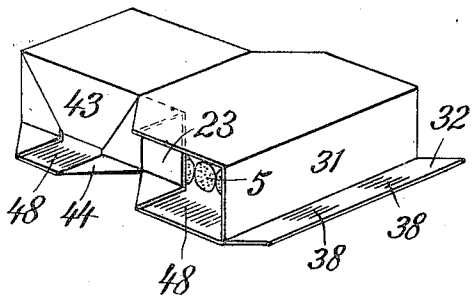


FIG. 15.

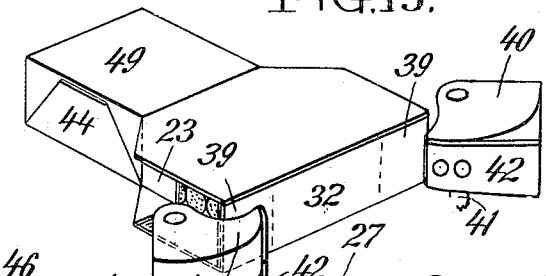


FIG. 16.

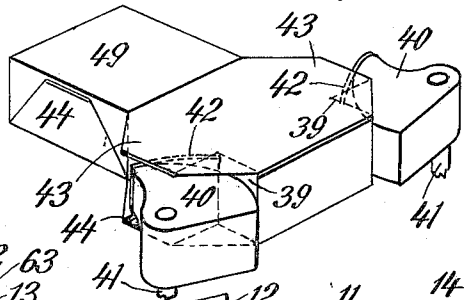
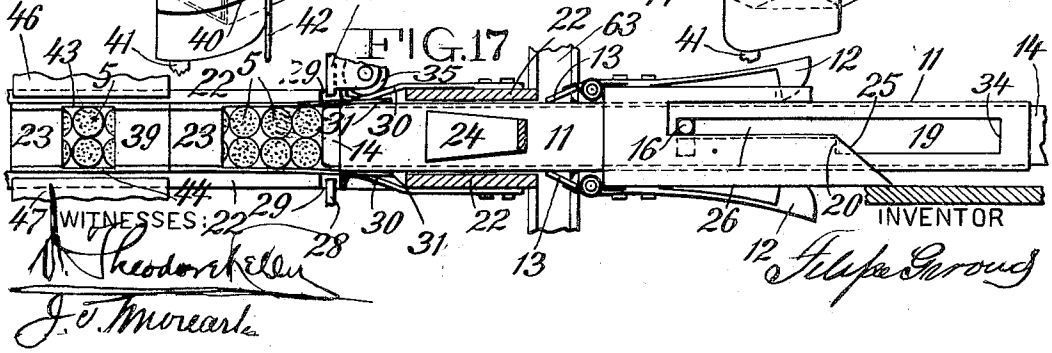


FIG. 17.



WITNESSES:

J. Theodor Keller

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UNITED STATES PATENT OFFICE.

FELIPE GIROUD, OF NEW YORK, N. Y.

PACKAGE-WRAPPING MACHINE.

942,636. Specification of Letters Patent. Patented Dec. 7, 1909.

Application filed June 13, 1908. Serial No. 438,278.

To all whom it may concern:

Be it known that I, FELIPE GIROUD, a citizen of Cuba, and a resident of the city of New York, in the county of New York and State of New York, have invented a certain new and useful Package-Wrapping Machine, of which the following is a specification.

This invention relates to machines for packing various articles, and for wrapping the articles so packed.

The object of the invention is to eject articles from a hopper, and after compressing the ejected articles into a compact package, force the package and a wrapper into devices which fold the wrapper upon the package.

The invention consists of certain novel features relating to the devices for folding the wrapper, and a novel device for feeding the wrapper to the folding devices.

The invention further consists of novel means for applying paste to the wrapper.

In the accompanying drawings is shown a machine for packing and wrapping cigarettes.

Figure 1 represents a sectional elevation of the machine. Fig. 2 is a sectional view of the hopper containing the cigarettes. Fig. 3 is a section on the line III—III of Fig. 1, showing wrapper folding devices. Fig. 4 is a plan view of the entire machine. Fig. 5 is a sectional plan view on the line V—V of Fig. 1. Fig. 6 is a sectional plan view on the line VI—VI of Fig. 1. Fig. 7 is a cross section on the line VII—VII of Fig. 1. Fig. 8 is a cross section on the line VIII—VIII of Fig. 1. Fig. 9 is a cross section on the line IX—IX of Fig. 1. Fig. 10 is a detail view showing a cam form actuating a folder for the wrapper. Fig. 11 is a perspective view showing the position the wrapper assumes when the wrapper and package are entering the wrapper folding devices. Figs. 12, 13, 14, 15 and 16 are perspective views, showing successive positions of the package and wrapper during the operation of folding the wrapper. Fig. 17 is a section on the line XVII—XVII of Fig. 5, showing the devices which force the package and wrapper between the wrapper folding devices.

On the frame 1 of the machine is a hopper 2 containing the cigarettes to be packed. Cross rods 3 forming part of a reciprocating agitator 4, cause the cigarettes 5 to fall into a series of channels 6, extending parallel with the long axes of the cigarettes. The cigarettes fall in front of reciprocating plunger fingers 7, with their long axes in line with said fingers. Plunger fingers 7 are secured to a slide 8 having reciprocating movement in guides 9, parallel with the long axes of the cigarettes and parallel with the plunger fingers. Forward movement of plunger fingers 7 causes two layers of cigarettes to be forced out of channels 6 into a compressing chamber 10, which is formed by a rectangular tube 11, spring closed gates 12, and spring closed swinging doors 13.

Tube 11 contains a reciprocating plunger 14 attached to a slide, which rides in guides 15 on frame 1. The reciprocating movement of plunger 14 is transversely of the long axes of the cigarettes and also transversely of the line of travel of plunger fingers 7. Extending transversely of plunger 14 is a lever 16, centrally pivoted at 17 to the plunger, and held, by means of a spring 18, in engagement with recesses 19 formed on opposite sides of tube 11. Recesses 19 are made of a length to permit sufficient movement of plunger 14, acting upon inclined faces of spring closed gates 12, to open said gates, and cause the cigarettes standing lengthwise across the line of travel of said plunger to be compressed against the spring closed doors 13. Lever 16 then takes against the shoulder 20, causing the tube 11 to move with the plunger 14 and open the swinging doors 13. The doors 13 then hold the cigarettes against the wrapper 21, until the tube and the cigarettes are moved between upper and lower plates 22, which fold the wrapper upon the outside of the tube, as shown in Fig. 11. Further movement of tube 11 causes the center flaps 23 of the wrapper to be folded by means of the side arms 24, as shown in Fig. 12.

When the wrapper, tube 11, and the package of cigarettes have reached the position shown in Fig. 12, a stationary incline 25 will have caused lever 16 to be moved out of engagement with shoulder 20, and permit free movement of lever 16 along the slots 26. Further forward movement of plunger 14 will then force the package of cigarettes out of tube 11, and carry the wrapper, by means of the package, between an upper folder 27 and a lower folder 28, said holders having vertical reciprocating movement through openings 29 formed in plates 22. When return movement of the plunger occurs, springs 30 will turn the side flaps 31 and 32

of the wrapper into slots 33, formed in tube 11, in order that the cigarettes shall be held in place. When return movement of the plunger causes lever 16 to take against the end 34 of recesses 19, further return movement of the plunger will carry tube 11 back to the position shown in Fig. 1. A wrapper 21 will then be fed into position and the operations previously described will be repeated.

When the vertically reciprocating folder 27 is in the position shown in Fig. 1, rollers 35 mounted on the folder come in contact with a drum 36 rotating in a paste hopper 37, so that when downward movement of the folder causes the upper side flap 31 to be turned down, the rollers 35 will apply paste 38 to the lower side flap 32, as shown in Fig. 14. Upward movement of folder 27 is followed by upward movement of folder 28, causing the lower side flap 32 to be turned up to the position shown in Fig. 15. Downward movement of folder 28 is followed by turning of the end flaps 39 by means of rotating folders 40 secured to revolving vertical shafts 41. A spring 42 is attached to each of the folders 40, said spring serving to complete the folding of flap 39 after the folder 40 has begun it. The wrapper will then have the unfolded end flaps 43 and 44, as shown in Fig. 16, and will occupy the position shown by the partially completed package 45 in Fig. 12. The partially completed package 45 will be moved by the succeeding package, so that the end flaps 43 and 44 will be in range with folders 46 and 47 forming part of the corresponding vertically reciprocating folders 27 and 28, as shown in Fig. 13. When downward movement of folder 27 turns upper side flap 31 down, folder 46 forming part of folder 31, also turns down the upper end flap 43 of package 45. When upward movement of folder 28 turns the lower side flaps 32 up, folder 47 forming part of folder 28 also turns up the lower end flap 44 of package 45. Paste 48 applied in a manner hereinafter described, to the lower end flap 44, causes flap 44 to adhere to the turned down upper end flap 43.

The wrappers 21 are placed on an endless belt 51 at the bottom of the wrapper magazine 52, said belt passing over rollers 53 and 54, and the upper run of the belt riding on rollers 55. The wrappers are so placed in the magazine, that the upper wrapper is in advance of the next lower wrapper, the latter wrapper being in advance of the next lower wrapper, and so forth, the forward end of several of the upper wrappers resting on a friction surface 56, and held against said friction surface by means of presser wheels 57.

Secured to a revolving shaft 58 extending transversely of the magazine 52 are springs 59 having a friction surface 60 attached to their free ends. Revolution of shaft 58 causes the friction surfaces 60 to be pressed upon the upper wrapper, which latter being least impeded by the stationary friction surface 56, is carried by means of friction surfaces 60, forward away from the rest of the wrappers. As the wrapper is moved forward, it passes between feed rollers 61 and 62 which carry the wrapper into a chute 63, having guides 64 which cause the wrapper to assume a vertical position between the doors 13 and the ends of plates 22, the wrapper finally coming to rest upon pins 65.

As the wrapper passes between feed rollers 61 and 62, pasting segments 66 attached to rollers 62, apply paste to the wrapper at 48, as previously described. Rotation of feed roller 62 causes segments 66 to engage paste wheels 67 rotating in a paste hopper 68.

The forward ends of the wrappers in the magazine cause an insulated contact 69 to be held away from a metal plate 70 supporting the forward ends of the wrappers. When repeated feeding of wrappers from the magazine causes contact 69 to touch the plate 70, an electric circuit will be closed through the conductors 71, battery 72, and the electric motor 73. Rotation of the motor shaft 74 causes a worm 75 in mesh with a worm wheel 76, to rotate a shaft 77 secured to the worm wheel, and to the roller 54 carrying the endless belt 51. This will cause movement of the belt, and forward movement of the wrappers resting on it, the forward ends of the wrappers finally lifting the contact 69, and causing the electric motor to stop moving the wrappers.

For actuating the mechanism other than that actuated by the electric motor 73, power is applied to the pulley 78, causing rotation of the main drive shaft 79, by means of the speed reducing gear wheels 80. By means of bevel gearing 81, a shaft 82 provided with the crank 83 is rotated, causing crank 83 riding in a slot 84 of a pivoted lever 85, to actuate said lever and cause reciprocating movement of plunger 14, to which the free end of lever 85 is connected by means of a link 86.

To shaft 82 is secured a grooved cam 87 which is engaged by a roller 88 attached to a lever 89 pivoted at 90, said lever being connected by a link 91 to the cigarette agitator 4.

To main shaft 79 is secured a grooved cam 92, which is engaged by a roller 93 attached to a pivoted lever 94, causing reciprocating movement of slide 8, to which the free end of lever 94 is connected by means of a link 95.

By means of bevel gearing 96, a vertical shaft 97 is rotated, said vertical shaft, by means of bevel gearing 98, actuating the shaft 99 of feed roller 62. To feed roller shaft 99 is secured a gear wheel 100 in mesh

with a gear wheel 101 secured to the shaft 102 of feed roller 61. In mesh with gear wheel 100 is a gear wheel 103 secured to the shaft 104 of paste wheels 67. To shaft 99 is secured a chain wheel 105, which by means of a chain 106, and a chain wheel 107 secured to shaft 58, causes rotation of springs 59 and friction surfaces 60. To shaft 99 is also secured a chain wheel 108, which by means of a chain 109, and a chain wheel 110 secured to shaft 111 causes rotation of paste roller 36, to which shaft 111 is secured.

Forming part of the upper vertically reciprocating folders 27, 46 is a cross bar 112 to the ends of which are secured vertical rods 113, attached at their lower ends to a cross bar 114. The cross bar 114 is connected by a link 115 to the free end of a lever 116 pivoted at 117. A roller 118 near the center of lever 116 engages a grooved cam 119 secured to main shaft 79.

Forming part of the lower vertically reciprocating folder 28, 47 is a cross bar 120, to the ends of which are secured vertical tubes 121, through which the vertical rods 113 have reciprocating movement. The vertical tubes 121 have reciprocating movement in stationary vertical tubes 122. Cross bar 120 is connected by a link 123 to the free end of a lever 124 pivoted at 125. A roller 126 near the center of lever 124 engages a grooved cam 127 secured to main shaft 79.

Bevel gear wheels 128 are secured to the lower ends of the vertical shafts 41 to which the rotating folders 40 are secured, and in mesh with bevel gear wheels 128 are bevel gear wheels 129 secured to a shaft 130. To shaft 130 is secured a chain wheel 131, which is driven by means of a chain 132 passing over a chain wheel 133, secured to shaft 82.

I claim as my invention:—

1. A wrapping machine comprising devices for folding the wrapper, a reciprocating plunger, means for depositing a wrapper between the wrapper folding devices and the plunger, a hopper containing the articles to be wrapped, a finger plunger moving transversely of the first mentioned plunger, said finger plunger serving to transfer a limited number of articles from the hopper to a position between said wrapper and the first mentioned plunger, means whereby forward movement of the first mentioned plunger, first compresses said articles into a compact package and then forces the package together with the wrapper into the devices which fold the wrapper upon the package.

2. A wrapping machine comprising devices for folding the wrapper, a reciprocating plunger, and continuously revolving feed rollers, one of said feed rollers carrying segments adapted to apply paste to parts of a wrapper, means for feeding a wrapper to said feed rollers and paste applying segments, means whereby the partially pasted wrapper is deposited between the folding devices and the plunger, means for depositing a limited number of articles between said wrapper and the plunger, and means whereby forward movement of the plunger, first compresses the articles into a compact package, and then forces the package together with the wrapper into the devices which fold the wrapper upon the package.

3. A wrapping machine comprising devices for folding the wrapper, a reciprocating plunger, and continuously revolving feed rollers, one of said feed rollers carrying segments adapted to apply paste to parts of a wrapper, a wrapper magazine, and means for feeding a wrapper therefrom to said feed rollers and paste applying segments, means whereby the partially pasted wrapper is deposited between the folding devices and the plunger, means for depositing a limited number of articles between said wrapper and the plunger, and means whereby forward movement of the plunger, first compresses the articles into a compact package and then forces the package together with the wrapper into the devices which fold the wrapper upon the package.

4. A wrapping machine comprising devices for folding the wrapper, a reciprocating plunger, means for depositing a wrapper between the wrapper folding devices and the plunger, means for depositing a limited number of articles between said wrapper and the plunger, and means whereby forward movement of the plunger, first compresses the articles into a compact package, and then forces the package together with the wrapper into the devices which fold the wrapper upon the package.

5. A cigarette wrapping machine comprising a reciprocating plunger, devices for folding the wrapper, means for depositing a wrapper between the wrapper folding devices and the plunger, channels for holding a limited number of cigarettes with the long axes of said cigarettes extending transversely of the line of travel of said plunger, plunger fingers adapted to move said cigarettes to rest lengthwise across the line of travel of the first mentioned plunger, and means whereby forward movement of the first mentioned plunger first compresses the cigarettes into a compact package and then forces the package together with the wrapper into the devices which fold the wrapper upon the package.

6. A wrapping machine comprising stationary upper and lower plates and vertically reciprocating folders, one of said reciprocating folders carrying a paste applying device, a hopper containing the articles to be wrapped, means for ejecting articles from the hopper, and means for depositing

a wrapper in front of the ejected articles, a plunger to compress the ejected articles into a compact package, said plunger being adapted to force the package and the wrapper between said stationary upper and lower plates, whereby the wrapper is folded to form flaps which overhang the package in range with the vertically reciprocating folders, means for actuating said reciprocating folders, whereby downward movement of one folder causes an upper side flap to be turned down, and causes paste to be applied to a lower side flap, the upward movement of another folder causing said pasted lower side flap to be turned up, whereby vertical end flaps are formed; in combination with horizontally moving folders which turn said vertical end flaps, substantially as described.

7. A wrapping machine comprising stationary upper and lower plates, two stationary side arms, and two vertically reciprocating folders, said folders having forward plates pointing toward each other, the back end of the folders having plates at each side half the length of the folders and pointing toward each other; a hopper containing the articles to be wrapped, means for ejecting articles from the hopper, and means for depositing a wrapper in front of the ejected articles, a plunger to compress the ejected articles into a compact package, said plunger being adapted to force the package and the wrapper between said stationary upper and lower plates and between said stationary side arms, whereby the wrapper is folded to form flaps which overhang the package, said plunger being also adapted to force said package and wrapper, together with a previously formed package having a partially folded wrapper, into range with the plates of said vertically reciprocating folders, means for actuating said folders, whereby the back side plates of one folder causes the end flaps of the previously formed package to be turned down, and the forward plate of said folder causes an upper side flap of the succeeding package to be turned down, the back side plates of the other folder causing the lower end flaps of the previously formed package to be turned up, and the forward plate of the last mentioned folder causing a lower side flap of the succeeding package to be turned up.

8. A wrapping machine comprising stationary upper and lower plates, two stationary side arms, and two vertically reciprocating folders, a hopper containing the articles to be wrapped, means for ejecting articles from the hopper, and means for depositing a wrapper in front of the ejected articles, a plunger to compress the ejected articles into a compact package, said plunger being adapted to force the package and the wrapper between said stationary upper and lower plates, whereby horizontal side flaps and vertical end flaps are formed, said plunger being also adapted to force the package and wrapper forward between said stationary side arms, whereby said vertical end flaps are folded upon the package and the horizontal side flaps are moved into range with said vertically reciprocating folders, means for actuating said folders, whereby downward movement of one folder causes an upper side flap to be turned down, and upward movement of the other folder causes a lower side flap to be turned up.

9. A wrapping machine comprising stationary upper and lower plates, two stationary side arms, and two vertically reciprocating folders, a hopper containing the articles to be wrapped, means for ejecting articles from the hopper, and means for depositing a wrapper in front of the ejected articles, a plunger to compress the ejected article into a compact package, said plunger being adapted to force the package and the wrapper between said stationary upper and lower plates whereby horizontal side flaps and vertical end flaps are formed, said plunger being also adapted to force the package and wrapper forward between said stationary side arms, whereby said vertical end flaps are folded upon the package, and the horizontal side flaps are moved into range with said vertically reciprocating folders, means for actuating said folders, whereby downward movement of one folder causes an upper side flap to be turned down, and upward movement of the other folder causes a lower side flap to be turned up, whereby vertical end flaps are formed; in combination with horizontally moving folders which turn the last mentioned vertical end flaps.

10. A wrapping machine comprising devices for folding the wrapper, a reciprocating plunger, a hopper containing the articles to be wrapped, means for ejecting a limited number of articles from the hopper, a device to receive the ejected articles, means for depositing a wrapper between the receiver and the folding devices, means whereby forward movement of said plunger, first compresses the articles into a compact package in the receiver, and then forces the receiver and the package against the wrapper; means whereby further forward movement of said plunger causes the package together with the wrapper to be forced from the receiver into the devices which fold the wrapper upon the package.

11. A wrapping machine comprising devices for folding the wrapper, stationary upper and lower plates, a reciprocating plunger, a hopper containing the articles to be wrapped, means for ejecting a limited number of articles from the hopper, a device to receive the ejected articles, means for

depositing a wrapper between the receiver and the folding devices, means whereby forward movement of said plunger, first compresses the articles into a compact package in the receiver and then forces the package, the receiver, and the wrapper, between said stationary upper and lower plates whereby the wrapper is folded upon the receiver; and means whereby further forward movement of said plunger causes the package together with the wrapper to be forced from the receiver into the devices which fold the wrapper upon the package.

12. A cigarette wrapping machine, comprising stationary upper and lower plates and two stationary side arms, a receiver and reciprocating plunger; channels for holding a limited number of cigarettes with the long axes of said cigarettes extending transversely of the line of travel of said plunger, plunger fingers adapted to move said cigarettes into the receiver, and to cause said cigarettes to rest lengthwise across the line of travel of the first mentioned plunger, means for depositing a wrapper between the receiver and said upper and lower plates, means whereby forward movement of the first mentioned plunger, first compresses the cigarettes into a compact package in the receiver and then forces the receiver and the package against the wrapper, and causes the wrapper, the receiver and the package to be moved between said stationary upper and lower plates and side arms, whereby the wrapper is folded upon the receiver, and means whereby further movement of the first mentioned plunger causes the package together with the wrapper to be forced out of the receiver.

13. A wrapping machine comprising a reciprocating plunger, and two vertically reciprocating folders, said folders having forward plates pointing toward each other, the back end of the folders having plates at each side half the length of the folders and pointing toward each other; a hopper containing the articles to be wrapped, means for ejecting articles from the hopper, a device to receive the ejected articles, means for depositing a wrapper between the receiver and said folders, means whereby forward movement of said plunger first compresses the articles into a compact package in the receiver, and then forces the receiver and the package against the wrapper; means whereby further forward movement of said plunger causes the package and the wrapper to be forced from the receiver, and causes said package and wrapper, together with a previously formed package having a partially folded wrapper to be moved into range with the plates of said vertically reciprocating folders, means for actuating said folders whereby the back side plates of said folders cause end flaps of the previously formed package to be folded simultaneously with folding of side flaps of the succeeding package by means of the forward plates of said folders.

14. A wrapping machine comprising a reciprocating plunger, stationary upper and lower plates, two stationary side arms, and two vertically reciprocating folders, said folders having forward plates pointing toward each other, the back end of the folders having plates at each side half the length of the folders and pointing toward each other; a hopper containing the articles to be wrapped, means for ejecting articles from the hopper, a device to receive the ejected articles, means for depositing a wrapper between the receiver and said folders, means whereby forward movement of said plunger, first compresses the articles into a compact package in the receiver, and then forces the receiver and the package against the wrapper, thereby carrying the wrapper between said stationary upper and lower plates and between said stationary side arms whereby the wrapper is folded upon the receiver, means whereby further forward movement of said plunger causes the package and the wrapper to be forced from the receiver, and causes said package and wrapper, together with a previously formed package having a partially folded wrapper to be moved into range with the plates of said vertically reciprocating folders, means for actuating said folders whereby the back side plates of said folders cause end flaps of the previously formed package to be folded simultaneously with folding of side flaps of the succeeding package by means of the forward plates of said folders.

15. A wrapping machine comprising stationary upper and lower plates, and two stationary side arms, devices for folding the wrapper, a movable plunger, a hopper containing the articles to be wrapped, means for ejecting a limited number of articles from the hopper, a device to receive the ejected articles, means for depositing a wrapper between the receiver and the folding devices, means whereby forward movement of said plunger, first compresses the articles into a compact package in the receiver, and then forces the receiver and the package against the wrapper, and causes, the wrapper, the receiver, and the package to be moved between said stationary upper and lower plates and between said stationary side arms whereby the wrapper is folded upon the receiver; and means whereby further forward movement of said plunger causes the package together with the wrapper to be forced from the receiver into the devices which fold the wrapper upon the package.

16. A wrapping machine comprising two vertically reciprocating folders said folders having forward plates pointing toward each other, one of said plates carrying a paste

applying device, the back end of the folders having plates at each side half the length of the folders, and pointing toward each other; a movable plunger, means for depositing articles between the plunger and said folders, and means for depositing a partially pasted wrapper in front of the package, means whereby said plunger forces the package and wrapper, together with a previously formed package having a partially folded wrapper, into range with the plates of said folders, means for actuating said folders, whereby the back side plates of one folder cause the end flaps of the previously formed package to be turned down, and the forward plate of said folder causes an upper side flap of the succeeding package to be turned down and paste to be applied to the lower side flap of said succeeding package, the back side plates of the other folder causing the previously pasted lower end wrapper flaps of the previously formed package to be turned up, and the forward plate of the last mentioned folder causing said pasted lower side flap of the succeeding package to be turned up.

Signed at New York city in the county of New York and State of New York this 12th day of June A. D. 1908.

FELIPE GIROUD.

Witnesses.
D. THEODORE KELLER,
J. T. MORIARTY.