(No Model.) 3 Sheets—Sheet 1.

C. W. VAN VLEET.

DEVICE FOR PACKING CIGARETTES.

No. 507,696. Patented Oct. 31, 1893.

Fig. 1.

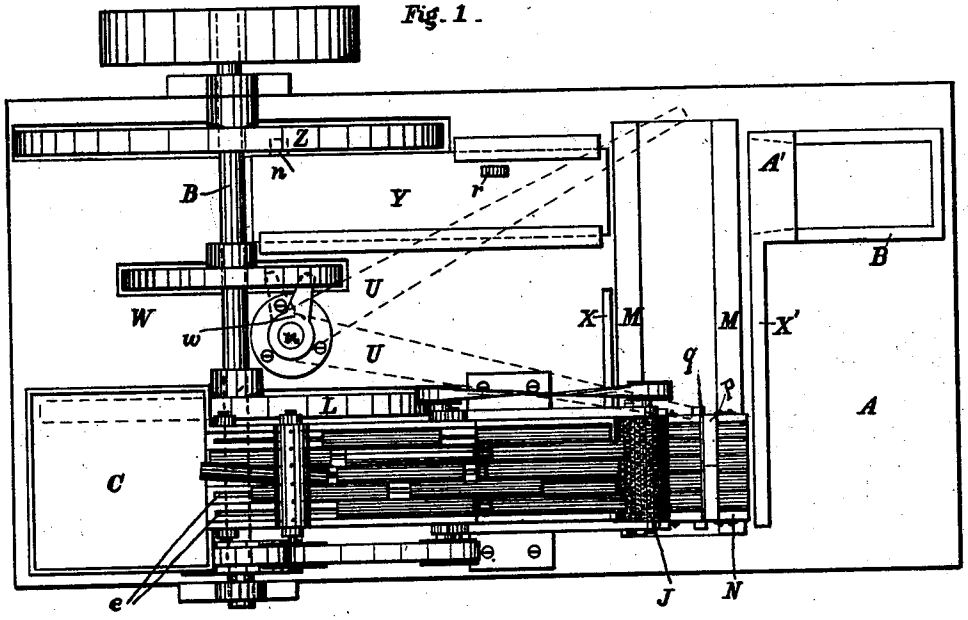
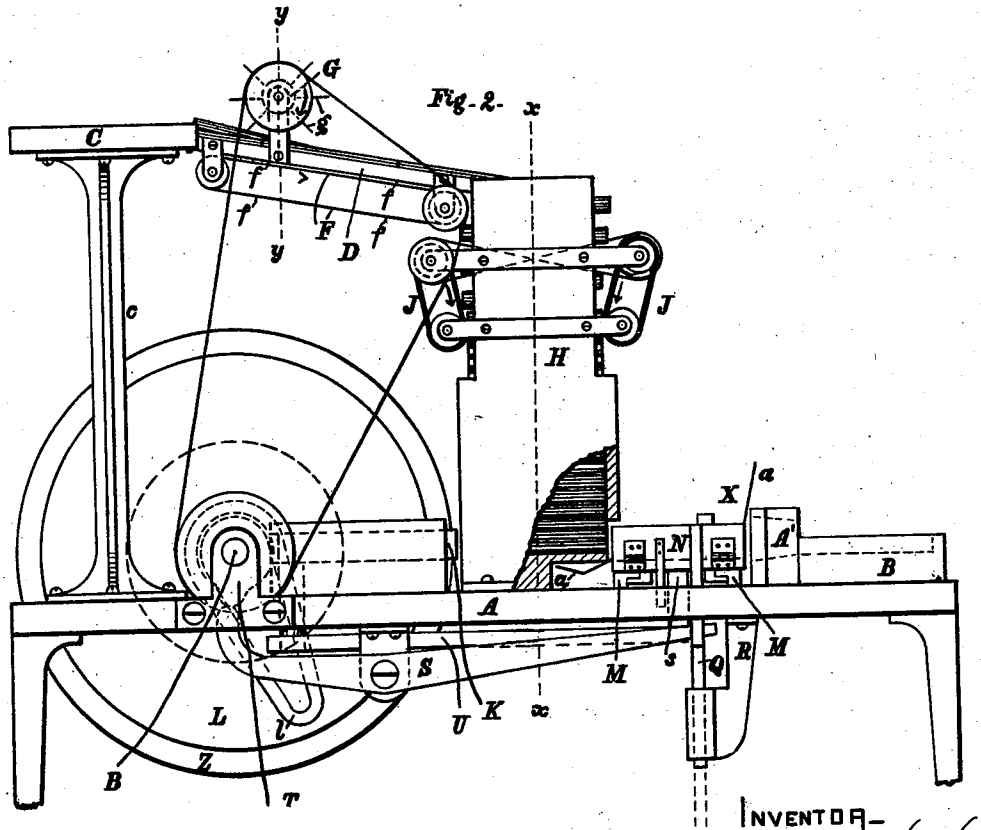


Fig. 2.



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by Howard L. Osgood
his atty

WITNESSES—
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A. P. Selden.

(No Model.) 3 Sheets—Sheet 2.

C. W. VAN VLEET.

DEVICE FOR PACKING CIGARETTES.

No. 507,696. Patented Oct. 31, 1893.

Fig. 10.

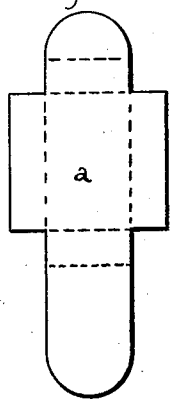


Fig. 11.

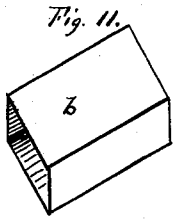


Fig 3

Fig. 7.

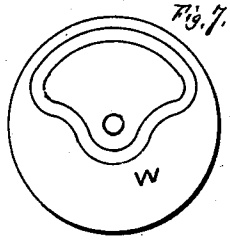


Fig. 4.

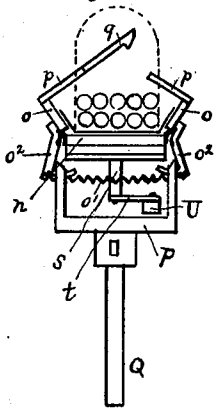


Fig. 5.

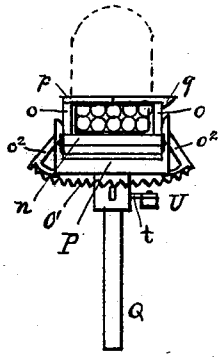


Fig. 6.

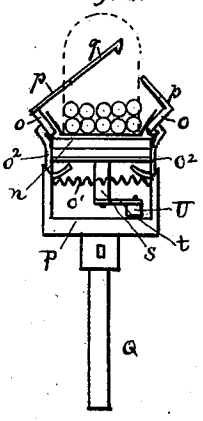


Fig. 8.

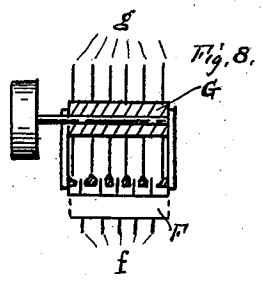
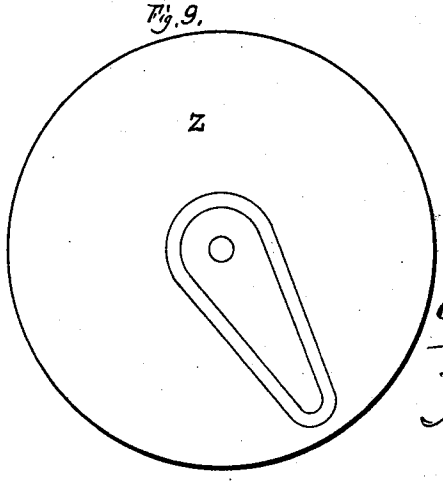


Fig. 9.



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(No Model.) 3 Sheets—Sheet 3.

C. W. VAN VLEET.

DEVICE FOR PACKING CIGARETTES.

No. 507,696. Patented Oct. 31, 1893.

Fig. 12.

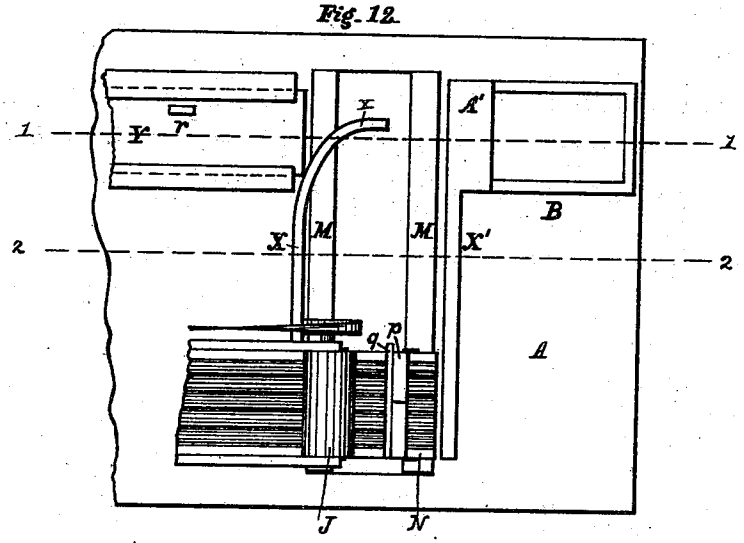


Fig. 13.

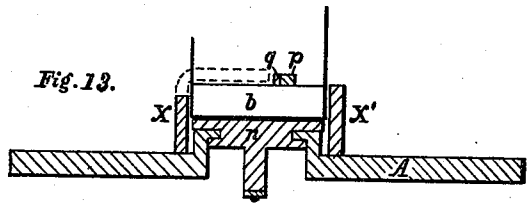


Fig. 14.

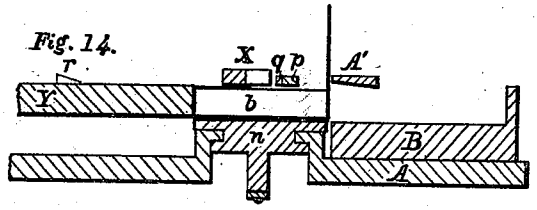


Fig. 15.

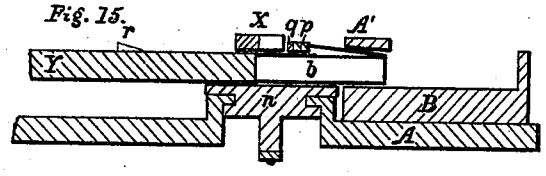
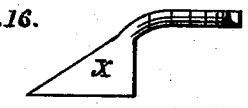


Fig. 16.



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UNITED STATES PATENT OFFICE.

CHARLES W. VAN VLEET, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO JAMES P. OSBORNE, OF SAME PLACE.

DEVICE FOR PACKING CIGARETTES.

SPECIFICATION forming part of Letters Patent No. 507,696, dated October 31, 1893.

Application filed December 15, 1891. Serial No. 415,418. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. VAN VLEET, a citizen of the United States, and a resident of the city of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Devices for Packing Cigarettes or other Cylindrical Objects of Similar Form, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of my device. Fig. 2 is a side elevation thereof. Fig. 3 is a cross sectional view on the line *x*—*x* of Fig. 2. Fig. 4 is an end view of the box-holder when partly open. Fig. 5 is an end view of the box-holder when shut. Fig. 6 is a view of the box-holder when wide open. Fig. 7 is a face view of the cam wheel to operate the lever for oscillating the box-holder. Fig. 8 is a cross sectional view of the straightening wheel on the line *y*—*y* of Fig. 2. Fig. 9 is a face view of the cam wheel to operate the plunger for filling the cigarette box. Fig. 10 is a plan view of the slide of the cigarette box lying flat. Fig. 11 is a perspective view of the cover of the cigarette box. Fig. 12 is a top plan view of part of my device. Fig. 13 is a sectional view on the line 2—2 of Fig. 12. Fig. 14 is a sectional view on the line 1—1 of Fig. 12. Fig. 15 is a sectional view on the line 1—1 of Fig. 12, after the plunger Y has advanced. Fig. 16 is a side view of the folder.

My invention relates to the devices hereinafter described and claimed for packing cigarettes or any other cylindrical objects of similar form, but in this specification the machine will be described as applied to packing cigarettes.

The objects of my invention are to provide automatic devices for arranging and for counting out a pre-determined number of cigarettes, placing them regularly into a box and inserting such box into a cover.

The machine is composed of a device for placing irregularly laid cigarettes in regular order in a delivery device; a device for holding a drawer or box in position to receive the cigarettes; a device for counting out a predetermined number of such cigarettes and removing them from the delivery device; a device for placing the cigarettes in a drawer or box, and devices for inserting such drawer or box in a cover. These devices may be used separately or in combination.

In the drawings A represents the bed of the machine.

B represents the driving shaft which is supported in suitable boxes and has upon it a suitable driving pulley and also a series of cam wheels and a pulley as hereinafter described.

Upon the bed A is placed a standard *c* upon which is placed a small table C. This serves to receive cigarettes after they have been completely manufactured and have been inspected as is usual in cigarette factories. From the table C the cigarettes are moved to an inclined plane or chute D having longitudinal slots in the bottom thereof. Underneath this chute travels the belt F the upper side of which is caused to move in a direction from the higher or receiving end of the chute to the lower or delivery end. From the outer surface of this belt protrude short pins *f f* which pass through the slots in the chute. This chute is preferably grooved longitudinally as shown in Fig. 8, each groove thereof being shaped to allow the cigarettes to lie therein (see Fig. 8) and there is a slot *e* at the bottom of each groove extending through the bottom of the chute. The pins *f f* extend a short distance into these grooves through the slots *e e* and when the belt is moved in the direction above described, the cigarettes lying in the grooves will be moved by the pins *f f* downward toward the end of the chute. Above the chute and near the upper end thereof is a transverse wheel G having a series of teeth *g g* which are so spaced upon said wheel as to permit a cigarette lying in one of the grooves of the chute to pass between the teeth. This wheel revolves in the direction shown by the arrow in Fig. 2 and serves to straighten the cigarettes which are delivered from the table C, by a combing action, as shown in Fig. 1. Care must be taken that the pins on the belt F and on the wheel G are blunt and that the wheel and belt do not move so fast as to tear the covers of the cigarettes. By the motion of the belt F the cigarettes are delivered straightened and in regular order, at the delivery end of the chute.

They then pass into a tower or hopper H which consists of a box of transverse dimensions great enough to receive a suitable number of cigarettes in a layer. The tower is preferably placed vertically. The upper part of the tower is divided by a series of thin vertical partitions *h h* (see Fig. 3), into as many spaces as may be selected for the number of cigarettes to be finally delivered in a layer and the partitions are separated by about the diameter of a cigarette, so as to permit the same to descend freely. The number of partitions correspond to the number of grooves in the chute D, and to the number of spaces between the teeth of the wheel G, so that the cigarettes in each groove will be delivered into corresponding divisions in the tower.

While the cigarettes may be delivered to the tower with great regularity as regards parallelism, there will still be some irregularity as to their complete superposition, or in other words the ends of some cigarettes may extend beyond the ends of the others. Irregularity in position of the cigarettes will clog their delivery. In order to straighten these protruding cigarettes, I provide a pair of belts J J which are set on pulleys on opposite sides of the tower H and opposite the two open sides thereof. These belts are slightly inclined to each other as shown in Fig. 2 and are caused to move in the direction shown by the arrows. The motion of these belts will move or gently wipe the cigarettes into position so that they will become completely superimposed and lie with perfect regularity in the tower H. The partitions *h h* do not extend to the very bottom of the tower, see Fig. 3. As shown in the drawings ten cigarettes are the number selected to be placed in a box, and with that in view the tower and the chute are divided into five divisions each so that two layers of five cigarettes each will constitute the number to be placed in a box; and the partitions *h h* extend so far toward the bottom of the tower as to leave the two lowest layers of five cigarettes each without partitions. On one side of the tower, at the bottom and opposite the ends of the ten lowest cigarettes is an aperture about equal to the cross section of the mass of cigarettes to be pressed out. This aperture is adapted to receive the end of a plunger K which is operated by a suitable cam *l* upon a suitable wheel L which is fixed upon the driving shaft B. The cam *l* produces a reciprocating motion of the plunger, and at each forward movement (the stroke being properly regulated) ten cigarettes will be pressed through the aperture in the tower opposite the aperture at which the plunger K enters. These apertures and also the plunger are proportioned so that only a selected number of cigarettes, ten or more or less, will be moved from the base of the mass in the tower. In front of the tower and across the bed A of the machine is a guide-way having suitable guides M M on either side thereof. Upon these guides moves the box holder N. This box holder is composed of a bed piece *n* see Figs. 4 and 5, and the two side pieces *o o*. The side pieces are hinged to the bed piece in such a way as to be capable of opening to a proper extent, (see Figs. 4 and 6.) Two fingers *p p* are attached to the top edge of the side-pieces *o o* and extend over the contents of the box-holder when the sides *o o* are closed and brought into the position shown in Fig. 5. A suitable spring catch *q* is attached to the box-holder in order to fasten the sides in the position shown in Fig. 5 and thus to hold them until the box is removed from the holder. In order to close the side pieces *o o* at the proper times, I provide a fork P which is fixed upon a rod Q. This rod moves vertically in the support R Fig. 2, and is operated by the lever S which is moved by the solid cam T, Fig. 2, on the shaft B. The support R is fixed rigidly to the bottom of the bed A, and the motion of the lever to cause the fork P to rise or fall is so adjusted that the fork rises as soon as the box-holder N is brought opposite the aperture in the tower H, and immediately falls away from the box-holder so as to permit the transverse movement of the latter across the bed. A spring *o'* fastened to suitable levers o^2 o^2, opens the two side pieces *o o* when the catch *q* is released. From the bottom of the box-holder there extends downward through the slot in the bed A, a stud *s*, the bottom of which is fastened to a connecting rod *t* connecting the stud to a lever U. This lever is pivoted under the table by the vertical pivot *u*, which, above the table, engages with the cam W, Figs. 1 and 6, through the arm *w*. The motion of this cam, which is fastened upon the driving shaft B will cause the lever U to oscillate backward and forward, and this oscillation will move the box-holder N upon the guides M M from one side of the table to the other.

The usual form of cigarette box is shown in Figs. 10 and 11, and is there shown of the proportions adapted to hold ten cigarettes. These boxes come from the manufacturer in the two parts shown in the figures, viz:—a slide *a* and a cover *b*. The slide has side wings and end pieces which fold in such a way as to form a closed box which fits into a cover *b*. The slide *a* comes from the manufacturer flat as shown in Fig. 10 and scored or indented upon the dotted lines, so that the folding of it into a suitable box form will be easily made.

When my device is in operation and before the plunger K forces the cigarettes out from the bottom of the tower H, one of these slides *a* is placed in the open box-holder N and takes the position as shown in Figs. 2 and 4 with the short end bent downward and with the opening close to the aperture in the tower. The plunger then forces a selected number of cigarettes into the slide (see Fig. 4). The fork P rises and its two prongs press the sides *o o* of the box-holder

and close the same upon the slide *a* and its contents. The catch *q* fastens the box-holder into position, holding the cigarettes therein. The revolution of the driving shaft B now causes the lever U to oscillate and this moves the box-holder N across the bed of the table A. Guides X and X′ on the bed of the table force the ends of the slide *a* into vertical positions and the guide X has a curved lip *x* which at the end of the motion turns the short end of the slide over the cigarettes. When the box-holder reaches its extreme position at the end of the guides, a cam Z on the shaft B moves a lug *z* which is fastened to and operates a plunger Y, which pushes the slide out of the box-holder N through a contracting orifice A′ and into the cover *b* which lies against the opening of the orifice and within the frame B, formed to receive it. As the plunger Y forces the slide *a*, with the inclosed cigarettes, through the orifice A′ into the cover *b*, the long end of the slide *a* is closed down upon the bundle of cigarettes, and the operation is complete. When the plunger Y reaches its extreme position in pushing the slide out of the box-holder, a lug *r* on the plunger raises the catch *q* and allows the box-holder to open ready to receive another slide, and the operations above described are repeated after the box-holder is moved back to its first position by the revolution of the cam W and the oscillation of the lever U.

Suitable gearing such as a belt is provided to connect the driving wheels of the comb G, belt F and belts J J with the main driving shaft B and a pulley thereon. A cross belt is used to connect the pulleys on which the belts J J run.

What I claim is—

1. A device for arranging cigarettes, consisting of a vertical tower or hopper having an opening in the base and vertical partitions separated from each other by about the diameter of a cigarette, and means for causing the cigarettes to lie parallel to each other and for delivering the same to the hopper and between the partitions, substantially as set forth.

2. A device for arranging cigarettes consisting of a grooved chute having longitudinal slots in its bottom, a belt placed underneath the chute and arranged to move in the direction of the length thereof, and provided with pins passing through slots in the chute substantially as set forth.

3. A device for arranging cigarettes consisting of a chute having longitudinal grooves in its bottom, and a slot in the bottom of each groove, a belt placed underneath the chute and arranged to move in the direction of the length thereof and provided with pins passing through the slots in the chute and means for guiding the cigarettes upon said chute and into the grooves, substantially as set forth.

4. A device for arranging cigarettes, consisting of a longitudinally grooved chute having longitudinal slots in its bottom, a belt placed underneath the chute and arranged to move in the direction of the length thereof and provided with pins passing through the slots in the chute and a combing device as the wheel G having pins, substantially as set forth.

5. A device for arranging cigarettes, consisting of an inclined chute, means for causing cigarettes to lie side by side, parallel and longitudinally in the chute and a tower or hopper into which the cigarettes are delivered horizontally from the chute and side by side, substantially as set forth.

6. A device for arranging cigarettes consisting of a chute having a series of parallel, longitudinal, adjacent grooves in the bottom thereof, means for causing the cigarettes to lie longitudinally in said grooves and means for causing the same to move forward therein and a tower or hopper having a series of vertical divisions corresponding in number to said grooves whereby the cigarettes in each groove are delivered into the corresponding division in said hopper, substantially as set forth.

7. A device for arranging cigarettes, consisting of a longitudinally grooved chute, means for causing the cigarettes to lie in said grooves and to move forward therein, a hopper or tower adapted to receive said cigarettes and provided with longitudinal partitions separated from each other by about the diameter of a cigarette, substantially as set forth.

8. A device for arranging cigarettes consisting of a stationary, longitudinally grooved and slotted chute, a combing wheel as G, a movable belt as F provided with pins extending through the slots and into the grooves of said chute, a tower as H provided with vertical divisions, and belts as J J, for the purposes described, substantially as set forth.

9. In a device for packing cigarettes, a longitudinally grooved chute, means for causing the cigarettes to move forward in the grooves and for straightening the same therein, a tower or hopper adapted to receive the cigarettes, and having an aperture at the base through which a predetermined number of cigarettes may be expressed, means for causing the cigarettes to lie in regular columns in said tower as vertical partitions in said tower separated from each other by about the diameter of a cigarette, means as a reciprocating plunger, adapted to force said cigarettes through said aperture, substantially as set forth.

10. In a device for packing cigarettes, a chute having a series of parallel, longitudinal grooves in the bottom thereof, means for causing cigarettes to move forward longitudinally in said grooves and for straightening the same therein, a tower or hopper adapted to receive the cigarettes in horizontal layers, and having an aperture at the base through which a predetermined number of cigarettes may be expressed, means for causing the cigarettes

to lie in regular columns in said tower, as parallel vertical partitions in said tower separated from each other by about the diameter of a cigarette, means, as a horizontal plunger, adapted to force said cigarettes through said aperture, substantially as set forth.

11. In a device for packing cigarettes, in combination with means substantially as described for delivering a pre-determined number of regularly arranged cigarettes in a box-holder N adapted to hold the slide of an ordinary cigarette box, a box-holder N, means, as the guide X and frame A, for folding the ends of the slide over the cigarettes, and means, as the plunger Y, for forcing the folded slide into a cover, substantially as set forth.

12. In a device for packing cigarettes, in combination with means for delivering a predetermined number of regularly arranged cigarettes to a tower or hopper H, the combination of a box-holder as N, consisting of a bed piece as *n*, folding sides as *o o*, means, as the fork P, catch *q*, and lug *r*, on the plunger Y for opening and closing said sides at regular intervals, devices, as the tower H and plunger K, for forcing said number of cigarettes into the slide of a cigarette box placed in said box-holder, means, as the guide X and the frame A, for folding the ends of said slide over said cigarettes, means, as the plunger Y, for forcing the folded slide into a cover and means, as the lever U and cam W for reciprocating said box-holder between the point of delivery of said cigarettes and the point where the folded slide is forced into a cover, substantially as set forth.

13. In a device for packing cigarettes a longitudinally grooved chute, means for causing the cigarettes to move forward in the grooves and for straightening the same therein, a tower or hopper adapted to receive the cigarettes, and having an aperture at the base through which a pre-determined number of cigarettes may be expressed, means for causing the cigarettes to lie in regular columns therein as vertical partitions in said tower separated from each other by about the diameter of a cigarette, a reciprocating plunger adapted to force said cigarettes through said aperture, a box-holder adapted to open and close and formed to hold the slide of an ordinary cigarette box to receive the cigarettes expressed by said plunger, means for folding the ends of said slide over the cigarettes, and devices whereby the slide is forced into a suitable cover, substantially as set forth.

14. In a device for arranging cigarettes, a tower or hopper open at parts of two sides thereof, and guiding and compressing devices, as the inclined belts J J, operating against the ends of the cigarettes in said hopper, whereby the ends of the cigarettes are brought into alignment, substantially as set forth.

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Witnesses:
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