

May 26, 1925.

E. G. KERLIN ET AL

1,539,745

MECHANISM FOR PACKAGING CIGARETTES AND SIMILAR ARTICLES

Filed June 7, 1922

5 Sheets-Sheet 1

Fig. 1.

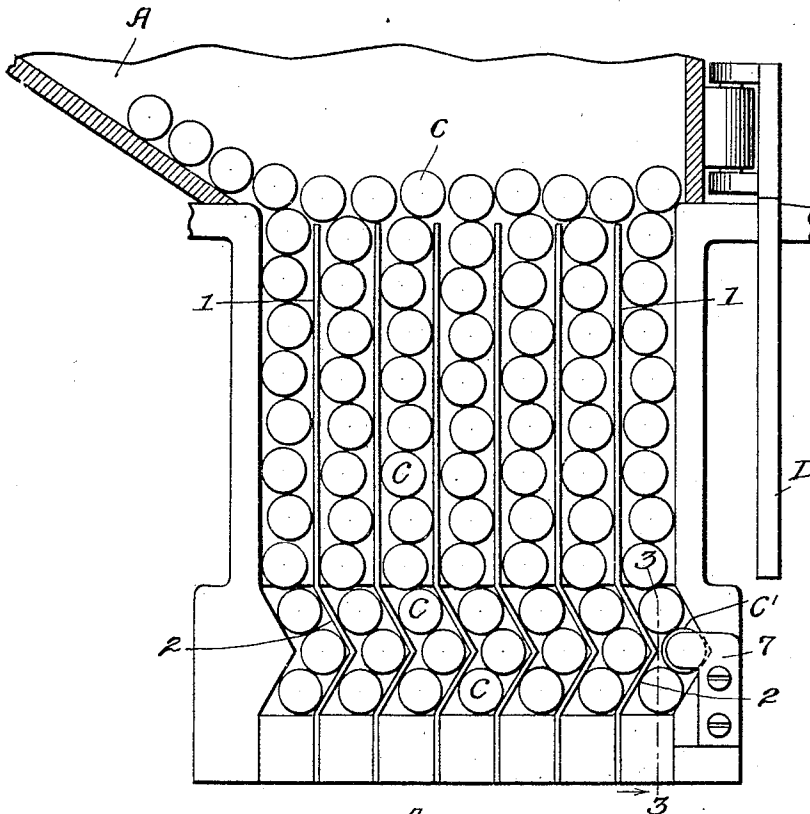
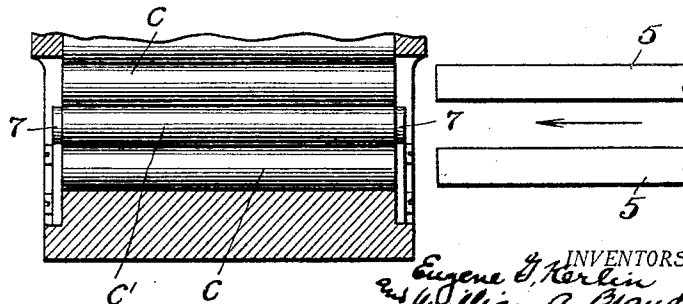


Fig. 2.



Fig. 3.



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Fig. 4.

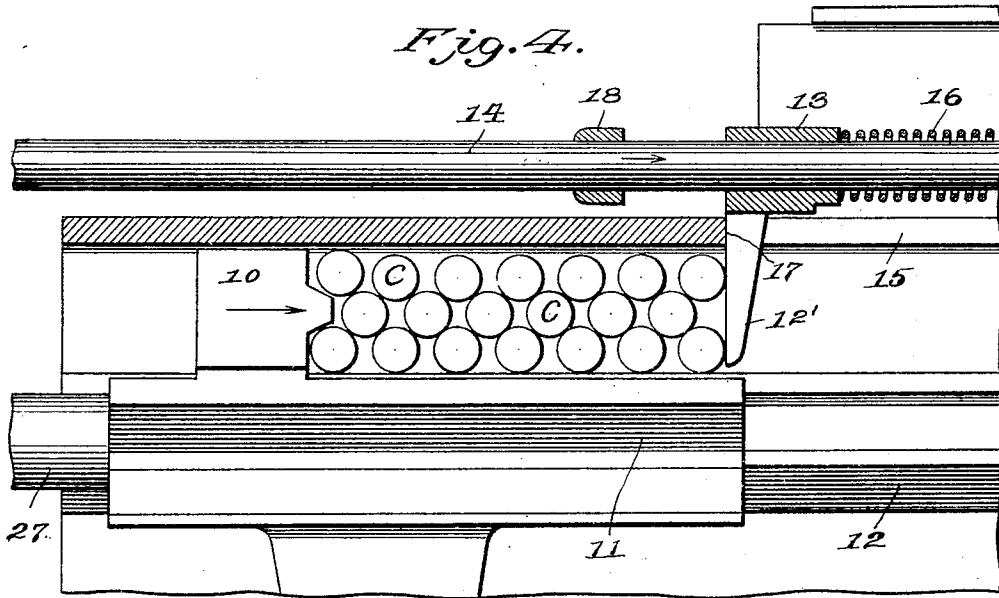
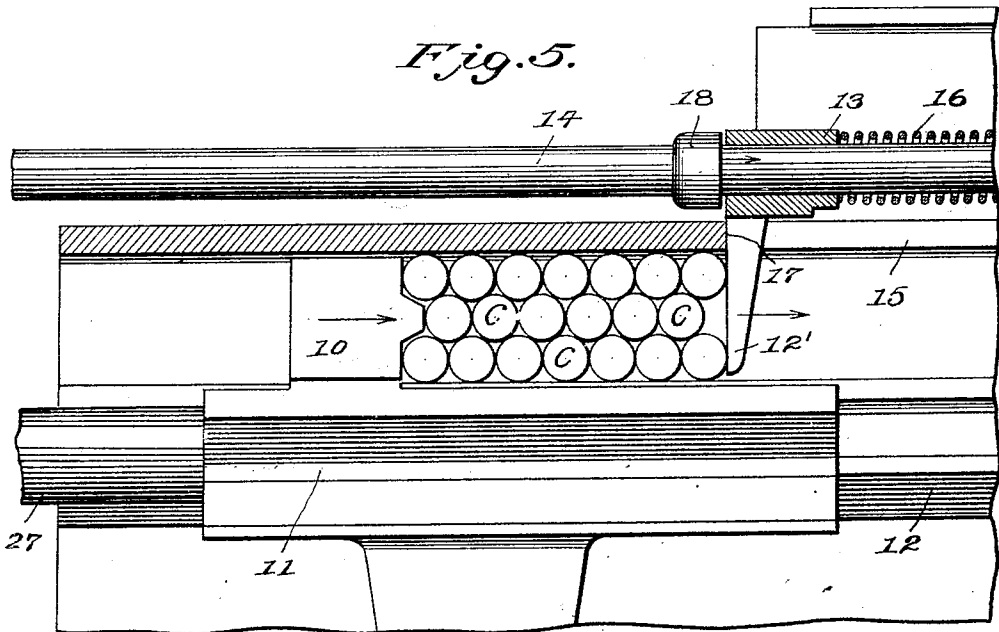


Fig. 5.



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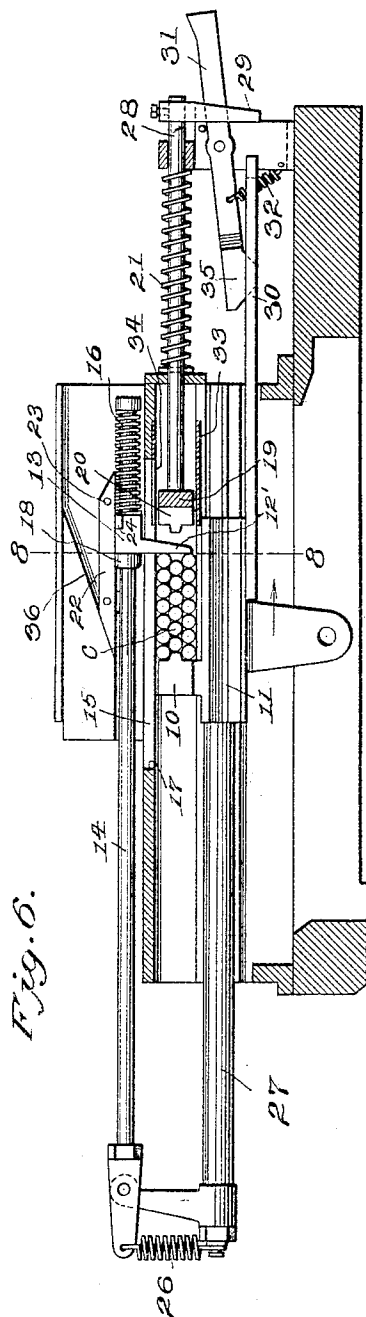
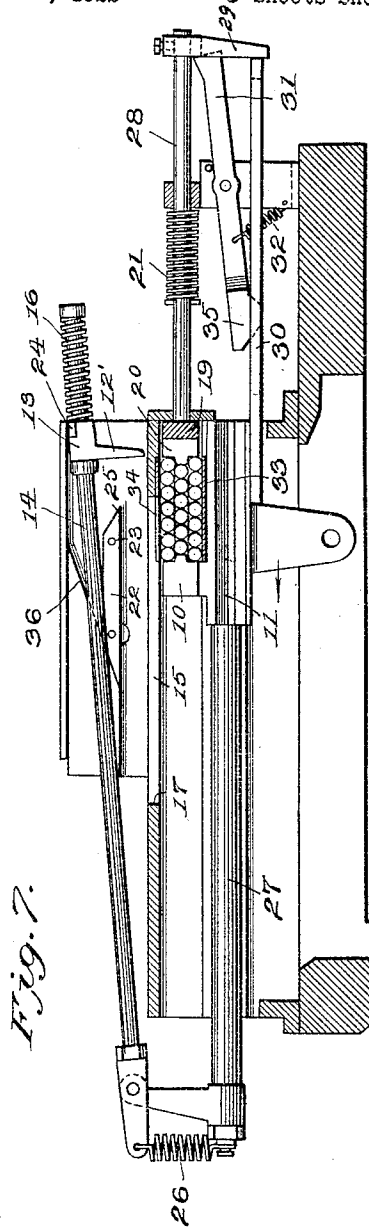
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MECHANISM FOR PACKAGING CIGARETTES AND SIMILAR ARTICLES

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5 Sheets-Sheet 3



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MECHANISM FOR PACKAGING CIGARETTES AND SIMILAR ARTICLES

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5 Sheets-Sheet 4

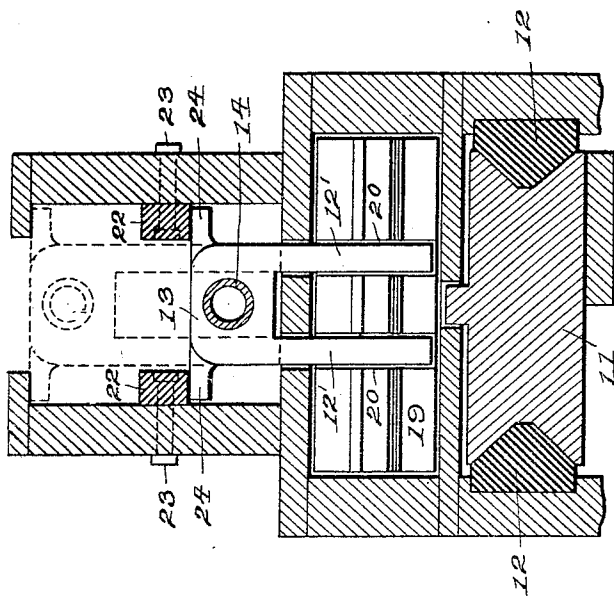


Fig. 8.

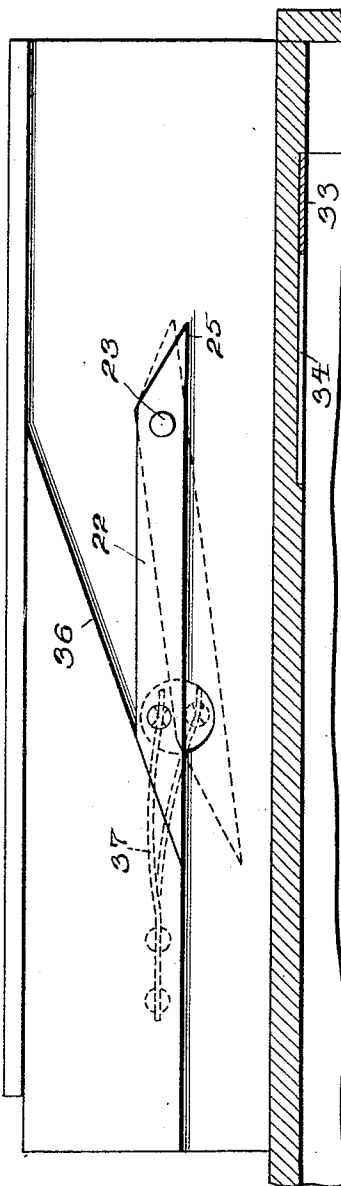


Fig. 9.

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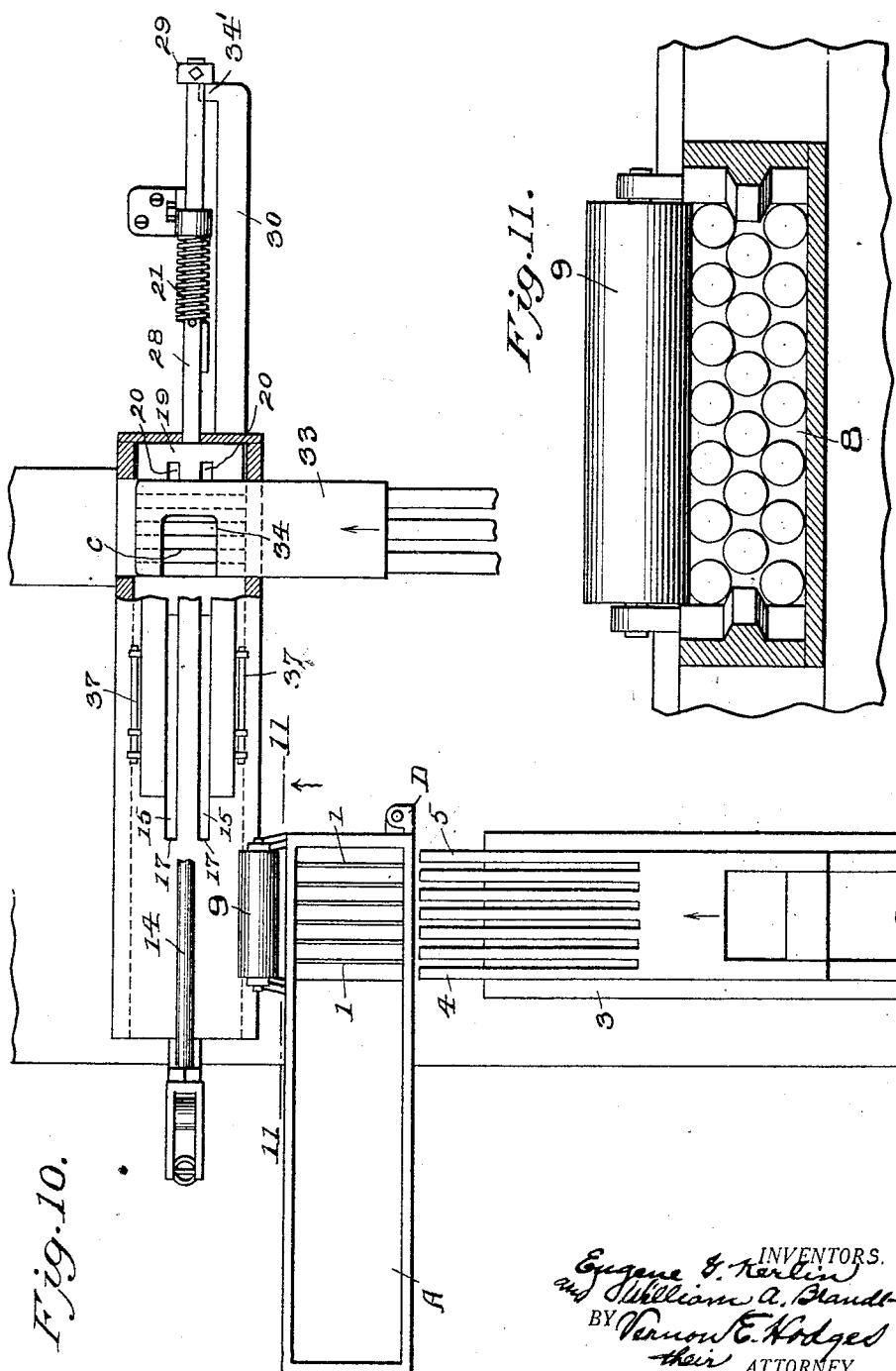
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MECHANISM FOR PACKAGING CIGARETTES AND SIMILAR ARTICLES

Filed June 7, 1922

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE.

EUGENE G. KERLIN AND WILLIAM A. BRANDT, OF SALEM, VIRGINIA, ASSIGNORS TO COMAS CIGARETTE MACHINE COMPANY, OF SALEM, VIRGINIA, A CORPORATION OF VIRGINIA.

MECHANISM FOR PACKAGING CIGARETTES AND SIMILAR ARTICLES.

Application filed June 7, 1922. Serial No. 566,457.

To all whom it may concern:

Be it known that we, EUGENE G. KERLIN and WILLIAM A. BRANDT, citizens of the United States, residing at Salem, in the county of Roanoke and State of Virginia, have invented certain new and useful Improvements in Mechanism for Packaging Cigarettes and Similar Articles, of which the following is a specification.

This invention relates to an improvement in mechanism for packaging cigarettes and similar articles.

Hitherto, in packing twenty cigarettes in a wrapper, it has generally been customary to make one outside row and a center row of seven cigarettes each, and the other outside row of six cigarettes, and the package in consequence is of more or less irregular form with sloping or converging edges. One of the objects of the present invention is to obviate this objection, and form a regular package with the opposite edges approximately parallel with each other, all of which is done by making the center row of six, and the two outer rows of seven cigarettes each. The present machinery has been designed so as to insure this arrangement and formation of a package of this character, that is to say of regular and approximately rectangular cross-sectional outline, and is more easily packed for shipment and sale, and presents in general a much neater appearance to the trade.

Other objects are to simplify the machinery hitherto in use and to provide means for feeding, selecting, arranging and in fact packaging the cigarettes or other articles.

In the accompanying drawings:—

Fig. 1 is a view in front elevation with the door open and looking into the feed-hopper, a portion being in section;

Fig. 2 is a transverse section through the ejector fingers;

Fig. 3 is a section on line 3—3 of Fig. 1 looking in the direction of the arrow;

Fig. 4 is an enlarged view showing a full complement of cigarettes for filling and packing after they have been carried part way through the machine, and before being forced together into a compact mass;

Fig. 5 is a similar view after the ciga-

rettes have been forced into more compact form;

Fig. 6 is a view just prior to the removal of the fingers and their replacement with the former-head;

Fig. 7 shows the cigarettes after a full complement of twenty has been forced in through the open-sided plunger;

Fig. 8 is an enlarged transverse section on the line 8—8 of Fig. 6;

Fig. 9 is an enlarged detail;

Fig. 10 is a plan view, parts being broken away;

Fig. 11 is an enlarged section on the line 11—11 of Fig. 10.

A, represents a hopper in which the cigarettes are placed, and in the bottom of the hopper transverse vertically-disposed partitions 1 are formed between which the cigarettes are received as they feed down by gravity from the hopper as shown in Fig. 1. At their extreme lower ends, these partitions and the walls of the lower end of the hopper have zigzag or herringbone form, as shown at 2, in order to position properly the three lowermost rows of cigarettes. There are seven cigarettes C in each of these rows, and they take a prescribed staggered formation as viewed in Fig. 1 with seven cigarettes in a row.

The plunger 3 has the herringbone ejectors 4, of which there are six in number, or one for, and adapted to enter, each compartment containing cigarettes, and the seventh ejector 5 is mutilated or divided into two parts with a space 6 therebetween in position to clear and straddle the guards 7 which protect and hold the center cigarette C' at the right hand end of the row, so that, as the plunger 3 with its ejectors 4 and 5 moves forward, each ejector enters the space opposite, forcing the cigarettes in its path forward endwise out of the lower end of the hopper, with the exception of the central right-hand cigarette C', which is held in place by the guards 7 at either end, and which cigarette and guards are straddled and cleared by the divided right-hand ejector 5. The object of this construction is to insure a central row of six cigarettes, and the two outer rows of seven cigarettes, each.

The plunger 3 with its ejectors 4 and 5 moves sufficiently far to advance the twenty cigarettes forward endwise through the converging throat 8, shown in Fig. 11, to receive them, and beneath the roller 9, shown in Fig. 11, where it leaves them in the path of the transferring plunger 10, which is mounted on a cross-head 11 which travels transversely in guides 12.

When the cigarettes are forced out of the hopper, the transfer plunger 10 is in the position shown in Fig. 4, and the cigarettes are left between this transferring plunger and a pair of fingers 12', which depend from above from a collar 13 loosely mounted on the rod 14 through a guide-slot 15 into the path of the cigarettes as shown in Figs. 4, 5, 6 and 7.

A spiral spring 16 sleeved upon the rod 14 normally holds these fingers 12' in the position shown in Figs. 4 and 5 against the end 17 of the slot 15, which acts as a stop, and when in this position the fingers form a yielding wall against which the twenty cigarettes are sufficiently compressed to hold them in compact formation, which is fully illustrated by contrasting Figs. 4 and 5, the first of these figures, namely No. 4, showing rows in more or less loose position between the transferring plunger 10 and the fingers 12', and Fig. 5 showing their more compact formation after the transferring plunger 10 has moved forward.

The collar 18 is secured on the rod 14 in position to impinge against fingers 12' at the moment the cigarettes have been sufficiently compressed; and as the plunger continues across the machine, this relation of plunger and fingers is maintained, and continues to be maintained until the sliding head 19 is reached, which head is fashioned on its inner face, as shown in Figs. 6 and 7, to conform to the position of the cigarettes.

This sliding head 19 is provided with slots 20 to provide clearance space for the retreat of the fingers 12' and the sliding head 19 is timed in its movement to receive the on-coming cigarettes against it, while still held by the fingers, and when the latter are pushed back into the slots 20, the sliding head is in position to hold the cigarettes in place between it and the transferring plunger 10, and as the latter is moved on across the machine both the fingers 12' and the sliding head 10 are pushed back against the action of the springs 16 and 21.

During this movement, the fingers 12' have been held in place in the path of the cigarettes by a switch 22 pivoted on the pin 23 by means of lugs 24 on the collar 13, which lugs on being forced back beyond the end 25 of the switch immediately withdraw or lift out of the path of the cigarettes as shown in Fig. 7, leaving them walled in by the sliding-head 19 and the transverse plun-

ger 10, due to the action of a spring 26 at the outer end of the stem 27 extending from the cross-head 11, one end of which spring is connected with one end of the rod 14 ready to raise the rod and the fingers the moment they are released by the lugs 24 passing beyond the switch.

The sliding-head 19 is secured to one end of a rod 28, on the outer end of which an arm 29 extends downwardly in the path of a bar 30 carried by the cross-head 11. This bar 30 is of such a length and so placed that it just reaches the arm 29 as the cigarettes reach the sliding-head 19, and by so doing force the head 19 forward as the transverse plunger 10 moves forward, in other words maintaining the same relative position of parts, simply holding the cigarettes walled in, the cigarettes, transferring-plunger and sliding-head all moving together without compressing the cigarettes.

A pivoted catch 31 actuated by the spring 32 is in position to catch and hold the sliding-head 19 in its extreme forward position, as when pushed aside as shown in Fig. 7. While the cigarettes are being thus transferred across the machine, the open-sided plunger 33 has moved forward into the path of the cigarettes as shown in Figs. 6, 7, and 10 in position to receive them, and by being open-sided this plunger 33 forms no obstruction to the sliding-head 19 of the cigarettes, which move transversely therethrough as illustrated in Figs. 6 and 7.

The upper plate of the open-sided plunger 33 has a slot 34 as shown in Figs. 6, 7 and 10 to afford clearance for the fingers 12', as they lift out of the way of the cigarettes.

When the cigarettes have been received in the open-sided plunger 33, this plunger continues to move on forward in the direction of the arrow shown in Fig. 10 to the wrappers (not shown) where the package is completed.

The bar 30 has a hook 34' on the end, as shown in Fig. 10, which moves in the path of the inner end of the catch 31 when the cross-head 11 returns, and as this hook passes beneath the end 35 of this catch, it moves the catch away from the arm 29, thus releasing the rod 28 so the spring 21 shoves the head 19 back into the position shown in Fig. 6, ready for another complement of cigarettes. As the cross-head 11 continues back to the starting-point in the direction indicated by the arrow in Fig. 7, and as the rods 27 and 14 move with it, the lugs 24 on the collar 13 by striking the incline 36 above the switch 22 are forced downwardly, pushing the inner end of the switch 22 aside against the action of the springs 37, shown in full lines in Fig. 10, and dotted lines in Fig. 9, whereupon the switch returns to its normal position as shown in Figs. 7, 8 and

9, and the lugs are guided beneath its lower edge, holding the fingers 12' in the position shown in Figs. 4, 5 and 6, until they are again forced forward to the point where the lugs can clear the tip end of the switch, when the spring 26 returns the fingers 12' to the position shown in Fig. 7.

It is understood the hinged door D, as shown in Fig. 1, closes the front of the hopper when the machine is in operation, and leaves only the last three rows of cigarettes exposed to, and in the path of, the ejectors 4. The door is only provided in case of a jam or other stoppage which would seldom occur.

We claim:

1. A packaging machine including a hopper having zigzag partitions therein, and herringbone ejectors operating between said partitions for ejecting the articles therefrom.

2. A packaging machine including a hopper with means for staggering the lowermost rows or tiers of articles therein, and herringbone ejectors in position to eject the articles in their path.

3. A packaging machine including a hopper with means for staggering the lowermost rows or tiers of articles therein, and herringbone ejectors in position to eject the articles in their path, one ejector divided into two parts to clear one of the articles after which the said article drops to the bottom of the hopper.

4. A packaging machine including a hopper, means for staggering certain of the articles therein, and herringbone ejectors in position to eject articles from the hopper in staggered relation.

5. A packaging machine including a hopper, means for staggering certain of the rows of articles therein, herringbone ejectors in position to eject three rows of articles therefrom in staggered relation, and means for withholding one article from the intermediate row.

6. In a packaging machine, the combination with a hopper, means for arranging the articles therein in staggered relation and means for ejecting a plurality of rows of articles therefrom in staggered relation, a reciprocating transferring plunger, and slidable spring-actuating fingers between which the articles are temporarily held.

7. In a packing machine, the combination with a hopper, means for arranging the articles therein in staggered relation and means for ejecting a plurality of rows of articles therefrom in staggered relation, a reciprocating transferring plunger, slidable spring-actuating fingers between which the articles are temporarily held, and a sliding head between which and the transferring plunger the articles are finally held.

8. In a packaging machine, the combina-

tion with a hopper, means for arranging the articles therein in staggered relation and means for ejecting a plurality of rows of articles therefrom in staggered relation, a reciprocating transferring plunger, slidable spring-actuating fingers between which the articles are temporarily held, a sliding head between which and the transferring plunger the articles are finally held, and means for moving the fingers from the articles after being received against the sliding head.

9. In a packaging machine, the combination with a hopper, means for arranging the articles therein in staggered relation and means for ejecting a plurality of rows of articles therefrom in staggered relation, a reciprocating transferring plunger, slidable spring-actuating fingers between which and the transferring plunger the articles are finally held, and an open-sided plunger through which the articles are conducted laterally, and where they are left by the transferring plunger and the sliding head.

10. In a packaging machine, the combination with a hopper, means for arranging the articles therein in staggered relation and means for ejecting a plurality of rows of articles therefrom in staggered relation, a reciprocating transferring plunger, slidable spring-actuating fingers between which the articles are temporarily held, a sliding head between which and the transferring plunger the articles are finally held, and means moving with the transferring plunger for moving and maintaining the proper position of the sliding head.

11. In a packaging machine, the combination with a hopper, means for arranging the articles therein in staggered relation and means for ejecting a plurality of rows of articles therefrom in staggered relation, a reciprocating transferring plunger, slidable spring-actuating fingers between which the articles are temporarily held, a sliding head between which and the transferring plunger the articles are finally held, means moving with the transferring plunger for moving and maintaining the proper position of the sliding head, a spring-actuated catch, and means also moving with the transferring head for actuating the latch at a predetermined time to release the sliding head.

12. In a packaging machine, the combination of a hopper, means for staggering the articles at the bottom of the hopper, a reciprocating transferring plunger, and a slidable head, the two latter fashioned on their inner walls to correspond with and maintain the articles ejected from the hopper in the position given them in the hopper.

13. In a packaging machine, the combination of a hopper, means for staggering the articles at the bottom of the hopper, a reciprocating transferring plunger, a slidable head, the two latter fashioned on their in-

ner walls to correspond with and maintain the articles ejected from the hopper in the position given them in the hopper, a stem moving with the plunger, a rod pivotally connected with, and moving with, the stem, fingers slidably connected with the rod in position temporarily to receive the articles to be packaged between them and the transferring plunger, a pivoted spring-actuated switch, and a spring extending from the stem to the rod, which causes the removal of the fingers from the path of the packaged articles when the end of the switch has been reached.

14. In a packaging machine, the combination of a hopper, means for staggering the articles at the bottom of the hopper, a reciprocating transferring plunger, a slidable head, the two latter fashioned on their inner walls to correspond with and maintain the articles ejected from the hopper in the position given them in the hopper, a stem moving with the plunger, a rod pivotally connected with, and moving with, the stem, fingers slidably connected with the rod in position temporarily to receive the articles to be packaged between them and the transferring plunger, a pivoted spring actuated switch, a spring extending from the stem to the rod which causes the removal of the fingers from the path of the packaged articles when the end of the switch has been reached, the inclined wall and the switch constructed and arranged to return the fingers into the path of the articles to be packaged, with the return movement of the transferring plunger.

15. In a packaging machine, the combination with a reciprocating transfer plunger, a stem moving therewith, a rod pivotally connected with the stem, a spring extending from the stem to the rod, spring-actuated fingers slidably connected with the rod, a pivoted spring-actuated switch, an incline, lugs connected with the fingers in position to move along one edge of the switch when the rod is moved in one direction, and between the incline and switch when its movement is reversed, a stop for limiting the movement of the fingers in one

direction, and a collar on the rod for removing the fingers at a predetermined time from contact with the stop.

16. A packaging machine including a hopper having partitions therein, said partitions being so arranged as to stagger certain of the rows of articles therein and ejectors operating between said partitions for ejecting the articles therefrom.

17. In a packaging machine, the combination of a hopper, means for ejecting a plurality of articles therefrom, a transferring plunger, slidable fingers, and a sliding head adapted to be moved into engagement with the articles, and between which and the plunger the articles are held.

18. In a packaging machine, the combination of a hopper, means for ejecting a plurality of articles therefrom, a transferring plunger, slidable fingers, a sliding head adapted to be moved into engagement with the articles and between which and the plunger the articles are held, and means for withdrawing the fingers from engagement with the articles.

19. In a packaging machine, the combination of a hopper means for ejecting a plurality of articles therefrom, a transferring plunger, slidable fingers between which and the plunger the articles are held, a sliding head for engaging the articles, the head having slots therein to receive the fingers, and means for moving the head into engagement with the articles.

20. A packaging machine including a hopper having zigzag partitions fixed therein so arranged as to stagger certain of the rows of articles.

21. A packaging machine including a hopper having zigzag partitions therein so arranged as to stagger certain of the rows of articles, and being spaced apart a sufficient distance to receive not more than one row of articles between each two partitions.

In testimony whereof we affix our signatures.

EUGENE G. KERLIN.
WILLIAM A. BRANDT.