

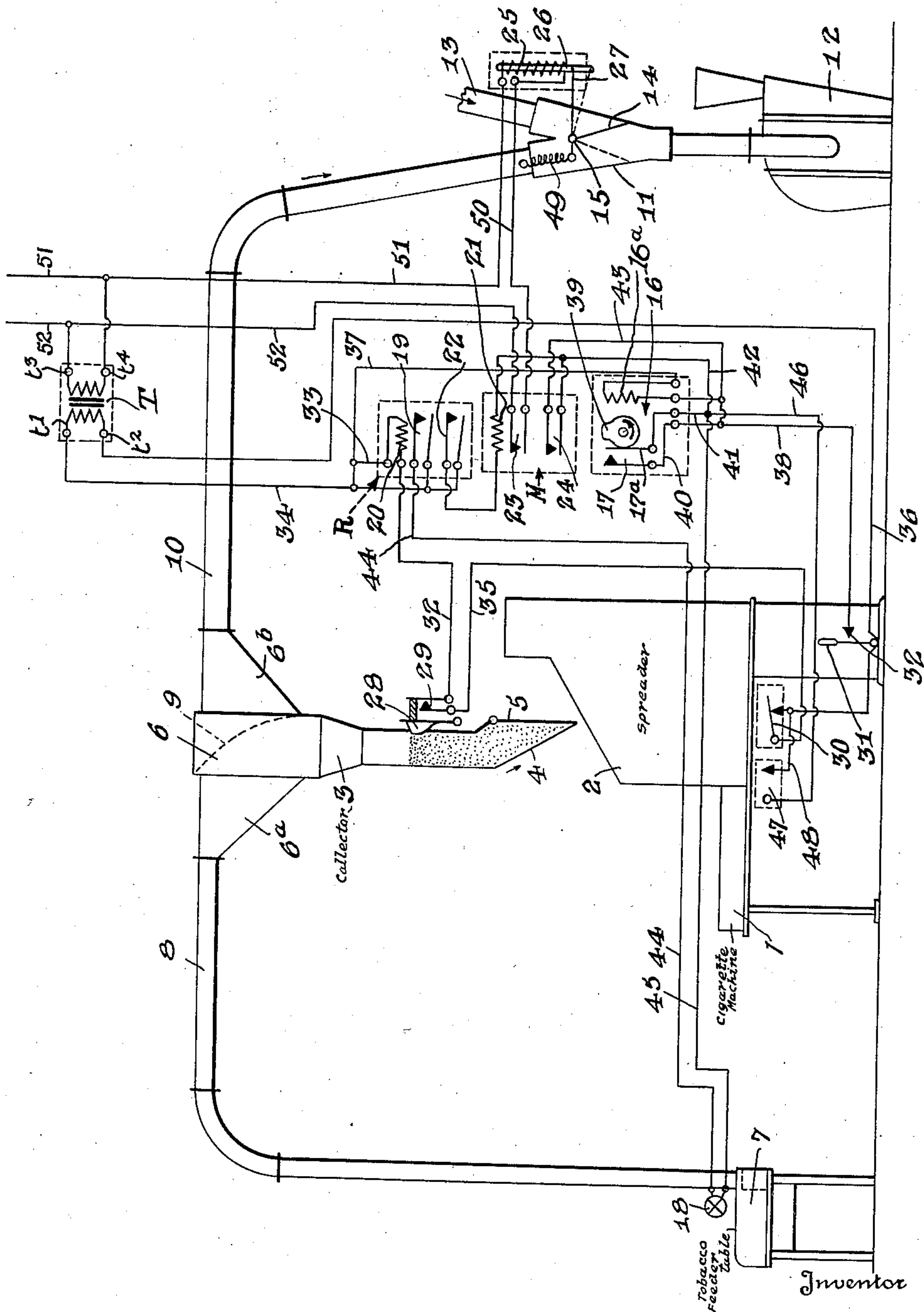
Feb. 28, 1939.

H. KLÜX

2,149,056

APPARATUS FOR SUPPLYING CUT TOBACCO TO CIGARETTE MACHINES

Filed March 28, 1935



HERBERT KLÜX

C. P. Joepel.
Attorney

UNITED STATES PATENT OFFICE

2,149,056

APPARATUS FOR SUPPLYING CUT TOBACCO
TO CIGARETTE MACHINESHerbert Klux, Dresden, Germany, assignor to
"Universelle" Cigarettenmaschinen-Fabrik J. C.
Mueller & Co., Dresden, GermanyApplication March 28, 1935, Serial No. 13,403
In Germany August 16, 1934

3 Claims. (Cl. 302—59)

This invention relates to the manufacture of cigarettes, and more particularly to the supply of cut tobacco to the cigarette machine.

In the manufacture of cigarettes the even weight of the tobacco is dependent upon the supplying of tobacco to the tobacco spreader which forms a part of the cigarette making machine. While various means have been used to accomplish this result the means were dependent upon so many different conditions as to render the supplying means not entirely satisfactory.

It is, therefore, an object of this invention to provide a dependable means for supplying tobacco to the spreader of the machine, which means will first retain and then deliver a predetermined supply to the spreader at stated intervals, which intervals of time may be changed at the will of the operator of the machine.

Another object of this invention is to provide a means which is automatically operable to supply tobacco to the spreader of the machine which is actuated under electric impulses controlled by a timing means.

A further object of this invention is to provide a means of this character which is operable only during the time of operation of the cigarette machine.

A still further object of this invention is to provide a device of this character in combination with a cigarette machine with means whereby the motive force for the tobacco is automatically cut off when a predetermined quantity of tobacco has been built up in the spreader supply means, the automatic cut off means being associated with a signal device so that a person or persons remote from the spreader supply means will be able to determine the status of the spreader supply means at all times during the operation of the cigarette machine.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts, there is disclosed a diagrammatic view of a cigarette machine with its associated tobacco spreader, and provided with a means constructed according to an embodiment of this invention, also shown diagrammatically, for supplying tobacco in an even manner to the tobacco spreader.

Referring now to the drawing, the numeral 1 designates a cigarette machine of suitable construction with which is associated a tobacco spreader 2. This cigarette machine 1 is under the

control of an operating lever 31 which is actuated by the operator of the machine to either start or stop the machine.

A hopper or tobacco collector 3 is disposed above the spreader 2, and is provided at its lower end with an outlet neck or nozzle 4 having a flapper valve 5. This valve 5 is gravitatingly held in closed position in addition to being held in closed position by the suction action to which the interior of the tobacco spreader is at times subjected.

The hopper or collector 3 is connected at its upper end to a separator 6 having branches 6a and 6b extending in opposite directions. The branch 6b is connected by means of a pipe 10 to a suction pump 12 which may be disposed remote from the cigarette machine 1 and the collector 3. The branch 6a is connected by means of a pipe 8 to a feeding table 7, at which point tobacco of suitable quality is delivered to the suction pipe 8 and it will be understood that the pipe 8 has an open end at the table 7.

When the suction pump 12 is started the tobacco at the feeding table 7 is drawn up through the pipe 8 and into the separator 6 which is provided with a screen 9 as shown in dotted lines. The screen 9 is downwardly inclined so that the tobacco striking this screen will slide off therefrom and drop downwardly into the collector 3.

In order to provide a means whereby the suction of the pump 12 may be automatically cut off and whereby the tobacco in the collector 3 may be released for discharge onto the spreader 2 I have provided a feeler 26 which is movable laterally of the collector 3 and is actuated under the pressure of the tobacco within the collector. This feeler or circuit breaker 28 is connected to one side of a switch 29 which is biased to a normally closed position, and the switch 29 has one side thereof connected to a relay structure R by means of a conductor 32, which in the present instance is connected to one side of the solenoid or coil 20 of the relay R.

The other side of the coil 20 is in circuit by means of a conductor 33 with one terminal t' of a transformer T through a conductor 34. The other side of the switch 29 is connected as by a conductor 35 to a normally closed switch 30 disposed closely adjacent the machine 1, and the switch 30 is connected as by a conductor 36 to the other terminal t^2 of the transformer T. The conductor 36 is also connected to the operating lever 31. The other two terminals, t^3 and t^4 , are respectively connected with the source of supply conductors 51 and 52.

An electrically operated timing device 16 is connected as by a conductor 37 to the conductor 34, and is also connected as by a conductor 38 to a fixed contact 32 which is engaged by the switch lever 31 when the switch lever 31 is moved to operative position in contact with the fixed contact 32 to start the machine 1. A cam 39 is continually rotated by the timing device 16 and engages one side of a normally open switch 17. The switch 17 has one side thereof connected as by a conductor 40 to the conductor 38, and the other side of the switch 17 is connected by a conductor 41 to a conductor 42 which is connected to one side of a second relay structure M, the conductor 42 being connected to one side of the coil 21 of the relay M. A relay switch 22 is actuated or moved to closed position when the coil 20 is energized, one side of the switch 22 being connected to the conductor 34 and the other side to the coil 21, so that when the coil 20 is energized the switch 22 will be closed and current may flow through the coil 21 to one side of the switch 17.

When the coil 21 is energized a switch 24 is closed thereby, this switch 24 being connected on one side to the conductor 42 and on the other side to the conductor 33 by means of a conductor 43. This switch 24 will maintain a closed circuit to the magnet coil 21 until the tobacco in the collector 3 has been discharged onto the spreader irrespective of the position of the timing switch 17.

A signal switch 19 is connected at one side to the conductor 34 and at the other side to a conductor 44 which latter conductor is connected to one side of a signal light or member 18 disposed closely adjacent the feeding table 7. The other side of the signal light or member 18 is connected as by a conductor 45 to the conductor 42. This conductor 42 is connected to a conductor 46 which in turn is connected to one side of a normally open switch 47. The other side of the switch 47 is connected as by a conductor 48 to the conductor 36.

The suction pipe line 10 has interposed therein a substantially Y-shaped connection, one branch of which is connected to the pipe 10 and the other branch of which is connected to a pipe 13 which latter pipe may be open to the atmosphere or may be connected to another collector for an adjoining cigarette machine. A damper or valve 14 is mounted in the connection 11, being mounted on a shaft 15 in a position to control the suction to either branch of the connection. A lever 27 is secured intermediate its ends to the shaft 15. A spring 49 is connected to one end of the lever 27 and constantly urges the damper to the position shown in dotted lines whereby suction will be provided in the pipe 13. The other end of the lever 27 is connected to a core member 26 associated with a solenoid 25.

The solenoid 25 has one side thereof connected as by a conductor 50 to one side of a switch 23 associated with the relay M and closed by energization of the coil 21, and the other side of the solenoid 25 is connected by a conductor 51 to one pole of a source of current supply, preferably the main source of current supply. The switch 23 has the other side thereof connected as by a conductor 52 to the other pole of the main source of current supply. The conductor 51 is connected to the terminal t^4 of the transformer T, and the conductor 52 is connected to the terminal t^3 of the transformer T.

In the operation of this device, the operating

lever 31 is rocked or moved to operative position so as to close the switch 32, and thereby the cigarette machine is operated and the electrical circuit described and about to be described, is energized. When this switch 32 is closed the timing device 16 is set in operation, and it operates in the known manner under continuous rotation, the current of coil 16a causing the rotation of the cam 39, so that the switch 17 is intermittently closed, for example, every two minutes. It will be understood that the suction pump 12 is in operation at the time the lever 31 is moved to said operative position, and that the pump 12 may be operated independently of the machine 1, or if desired may be connected in circuit with the switch 32. Switch 29 is initially closed. With this switch 29 initially closed, as a consequence coil 20 is energized, and the two relay operated switches 19 and 22 are maintained in closed position. The collector 3 will initially be empty, but under the action of the suction pump 12 tobacco from the table 7 will be drawn through the suction line 8, and this suction in the line 8 will also have the effect of maintaining the flapper valve 5 closed. When the amount of the tobacco in the hopper or collector 3 is sufficient to move the feeler or circuit breaker 28 to a position to open the switch 29 then valve 14 is moved to its dotted line position and the suction terminated.

Closing of the switch 22 will energize the relay M. When the coil 21 of the relay M is energized the two switches 23 and 24 will be maintained closed. As soon as the switch 23 is closed the solenoid 25 will be energized and the core 26 moved to swing the lever 27 to a position whereby the damper or valve will be in the position shown in full lines, in which position the suction from the pump will draw air through the pipe 10. The switch 24 is provided so that irrespective of the timing of the timing device 16 and the opening of the switch 17, in the event the switch 29 is not opened by the tobacco pressing on the circuit breaker 28 the tobacco will continue to be drawn through the pipe 8 and deposited into the collector 3, as the switch 24 will maintain the coil 21 energized so long as the switch 29 is closed.

As soon as the amount of the tobacco in the collector 3 is sufficient to have the weight of the tobacco act upon the feeler or circuit breaker 28 so as to move it, the switch 29 is opened, thus breaking the circuit to the relay R, and at this time the switches 19 and 22 will move to open position. The opening of the switch 19 cannot flash the signal 18, whereas the opening of the switch 22 will de-energize the coil 21 of the relay M and permit the switches 23 and 24 to move to their normally open position. Opening of the switch 23 will break the circuit in the conductors 50 and 51 to the solenoid 25 so that the spring 49 will be permitted to swing the damper or valve 14 to the dotted line position and cut off suction through the pipe line 10. When the suction in the line 10 is cut off the valve 5 will be moved to open position by the weight of the tobacco in the hopper or collector 3, thus permitting the tobacco in the collector 3 to fall down onto the spreader 2. At this time, the switch 17 cannot energize the solenoid 25, as the net or circuit is broken by the switch 29.

Under the action of the timing device 16 the cam 39 will move the switch 17 to closed position, and if sufficient tobacco has been discharged from the collector 3 to permit the closing of the switch 29, this switch 29 being normally biased

to closed position, the closing of the switch 17 will actuate the relays M and R. When the relay M is energized the valve 14 is swung to draw air through the pipe 10.

5 In the event the operator of the machine 1 desires to stop the feeding of tobacco to the spreader without stopping the machine 1, this may be done by moving the switch 30 to open position which will break the circuit to the switch 29 10 through the conductor 35. If, however, the operator desires to maintain a feeding of tobacco to the collector 3, the switch 47 may be moved to closed position, thus shunting out the switch 17 and energizing the relays M and R, the switch 15 29 being of course in closed position at this time.

In view of the foregoing, the operation is as follows:

The switch handle 31 is moved to the contact 32 to close the circuit and operate the cigarette 20 machine, and at the same time the electrical circuit or net is energized.

The coil 16a of timing device 16 is energized by the circuit, and the timing device continually rotates the cam 39, and at each revolution of 25 the cam 39, it presses the switch member 17a against the member 17. By the closing of the switch 17—17a, two circuits are actuated by the net connected with the transformer. The first circuit includes the signal lamp 18 on the table 30 7, and the contact 19 of the relay R (the parts 17a, 41, 45, 18, 44, 19, 34, 36, 38, 40 and 17). The second circuit includes the coil 21 of the relay M, and the contact 22 of the relay R (the parts 17a, 42, 21, 22, 34, 36, 38, 40 and 17). As, how- 35 ever, the current passes through the coil 21 of the relay M, the two contacts 23 and 24 of the relay M are closed. This closing of the contact 23 consequently causes the energization of the solenoid 25 connected with the net. Thereby, 40 the valve 14 is swung into full line position as shown in the drawing, and the suction in the pipe 10, hopper 3 and pipe 9 is active.

As, however, the closing of switch 17—17a is only momentary (about five seconds in respect 45 to a two minute rotation of cam 39), it is necessary to keep the solenoid 25 energized, in order to suck the tobacco on the table 7 through the pipe 8. For this purpose, there is provided a second contact 24 on the relay M, through which 50 contact 24, when the relay M has once been energized, the exciter current of the relay continues to flow. The energization of the solenoid 25 is continued. The tobacco on table 7 is continued to be drawn up by pipe 8 against sieve 55 9 and continues to drop into the hopper 3. As soon as the tobacco in the hopper is sufficient to actuate the feeler 28 outwardly, the switch 29 is opened. Thereby the exciter current in the exciter current circuit of the relay R is interrupted, 60 and this exciter current circuit includes the normally closed switch 30. As soon as the excitation of the relay R stops, the contacts 19 and 22, belonging thereto, open, whereby the currents for the signal lamp 18, and the exciter current circuit of the relay M, are interrupted. The latter 65 has the consequence that the contact 23 opens, and the solenoid 25 is without current, so that valve 14, due to the action of the spring 49, takes the dotted line position shown in the drawing, 70 in which position the pipe to the suction device or exhauster, is closed. As soon as the suction in the pipes 8 and 10 is interrupted, the valve 5, which has been held closed by the suction, can open, due to the weight of the tobacco thereon, so 75 that the tobacco can be discharged into the

spreader 2 of the cigarette machine. As soon as the tobacco in the hopper 3 has passed the feeder 28, the feeder 28, under its spring action, will move inwardly, and the switch 29 will again close. This results in actuating the relay R and closing 5 the two contacts 19 and 22. As soon as cam 39 again closes switch 17, the cycle repeats itself.

It will, therefore, be seen that means have been provided whereby an electrically operated timing device will control the feeding of the tobacco 10 to the spreader, the timing device being, however, rendered ineffective in the event the previously determined quantity of tobacco has not been discharged to the spreader, and that the periods of discharge of the tobacco may be manu- 15 ally controlled to be either slower or faster by a shunting out of certain portions of the electrically operated means.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically 20 described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims: 25

What is claimed is:

1. In an apparatus for supplying tobacco to the spreader of a cigarette machine, the combination of a spreader for supplying tobacco to the cigarette machine, a hopper having a discharge end 30 above the spreader for supplying tobacco to the spreader, a valve for closing the discharge end of the hopper, a tobacco supply means connected with the hopper for supplying tobacco to the hopper, and means creating a suction action in said 35 supply means and in said hopper, for supplying the hopper with tobacco and holding the valve closed against the hopper during such supply of tobacco to the hopper, with an electrical circuit for operating the cigarette machine, electrically 40 operative means in said circuit to operate said suction creating means, timed means, electrically connected with said electrically operative means for periodically actuating the latter, whereby the amount of tobacco supplied by the hopper to the 45 spreader is determined by time intervals, during the operation of the cigarette machine, and electrical means, located at a predetermined point in the hopper, in said operative means to make inoperative said suction creating means, to terminate the suction action and thereby permit the opening of the valve of the hopper to feed the tobacco in the hopper to the spreader. 50

2. In an apparatus for supplying tobacco to the spreader of a cigarette machine, the combination 55 of a spreader for supplying tobacco to the cigarette machine during the operation of the same, a hopper having a discharge end above the spreader for supplying tobacco to the spreader, a valve for closing the discharge end of the hopper, a tobacco supply means connected with the 60 hopper for supplying tobacco to the hopper, and means creating a suction action in said supply means and in said hopper, for supplying the hopper with tobacco and holding the valve closed 65 against the hopper during such supply of tobacco to the hopper, with an electrical circuit for operating the cigarette machine, electrically operative means in said circuit to operate the suction creating means, timed means electrically 70 connected with said electrically operative means for periodically actuating the same, electrical means in circuit with said electrically operative means for terminating the action of the suction, and means restraining the action of said ter- 75

minating means, to prevent the suction action from being terminated, whereby an additional amount of tobacco is supplied to the hopper, being that determined by the terminating means, during the operation of the cigarette machine.

3. In an apparatus for supplying tobacco to the spreader of a cigarette machine, the combination of a spreader for supplying tobacco to the cigarette machine during the operation of the same, a hopper having a discharge end above the spreader for supplying tobacco to the spreader, a valve for closing the discharge end of the hopper, a tobacco supply means connected with the hopper for supplying tobacco to the hopper, and means creating a suction action in said supply means and in said hopper, for supplying the hopper with tobacco and holding the valve closed

against the hopper during such supply of tobacco to the hopper, with an electrical circuit for operating the cigarette machine, electrically operative means in said circuit to operate the suction creating means to supply tobacco to the hopper, timed means electrically connected with said electrically operative means for periodically actuating the same, electrical means on said hopper to terminate said suction creating means, and additional electrical means in circuit with said electrically operative means for actuating the suction creating means to terminate the suction action, prior to the first terminating means, independent of the action of said timed means and independent of said device on the hopper.

HERBERT KLÜX.