May 8, 1928. 1,668,610

I. A. SEMENOV

CIGARETTE MAKING MACHINE

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Fig.1

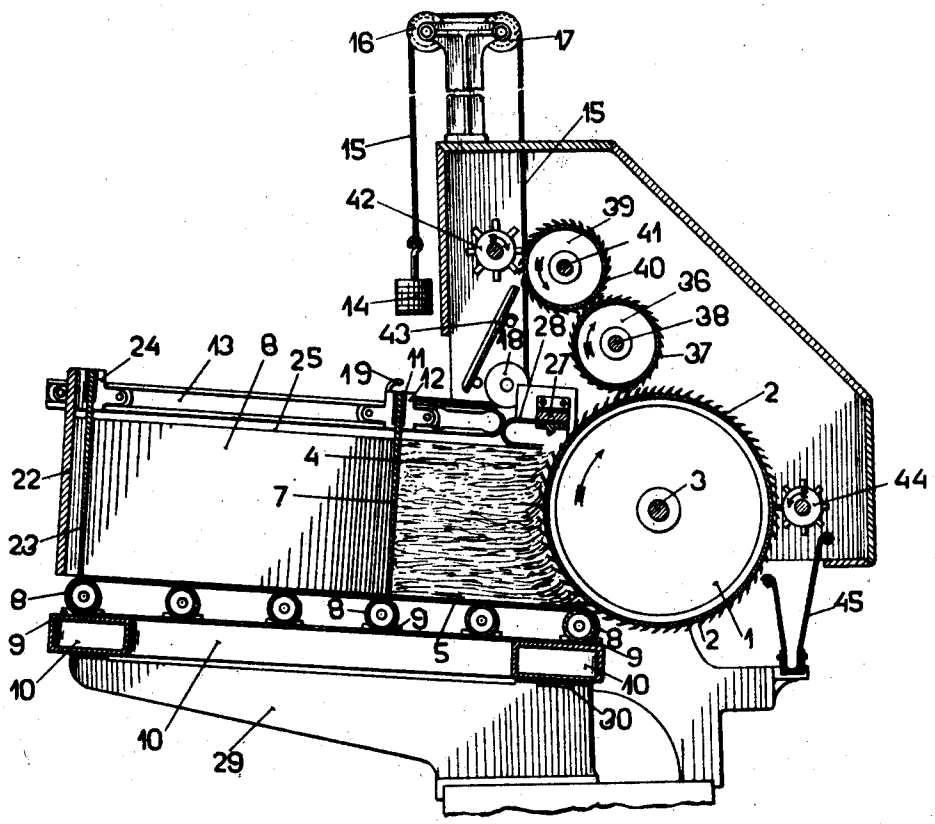
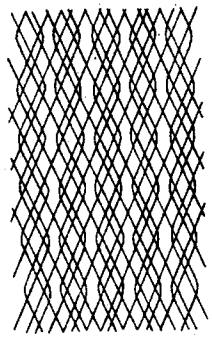


Fig.5



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Fig.2

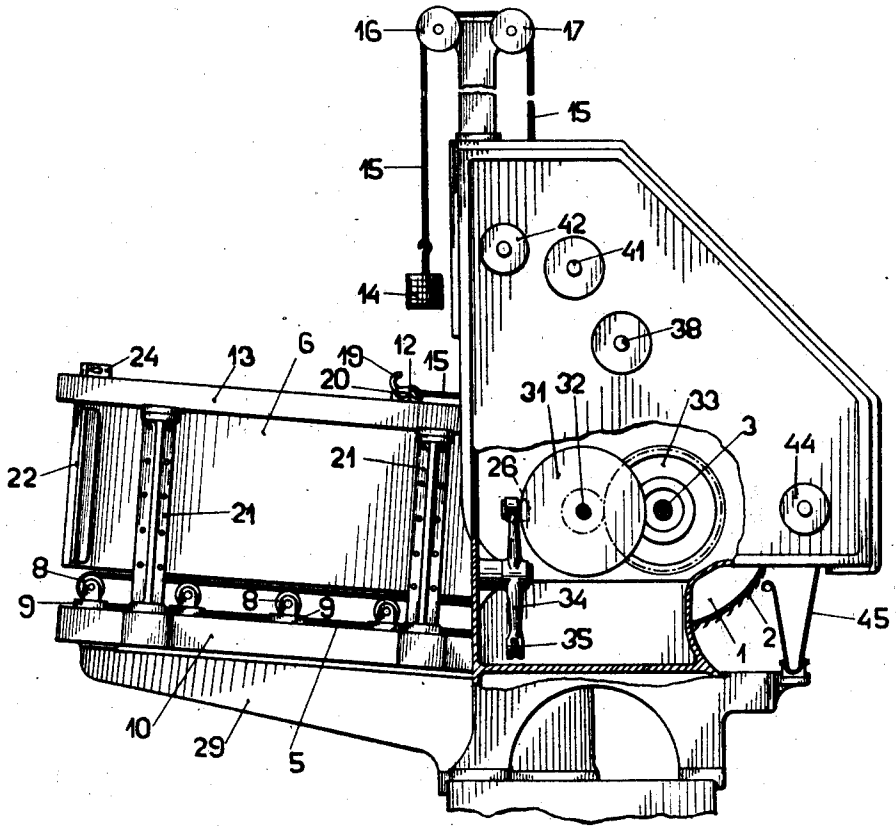


Fig.6

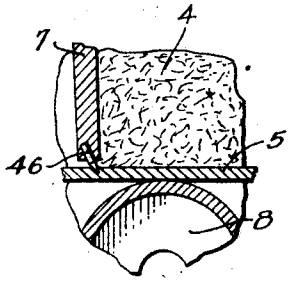
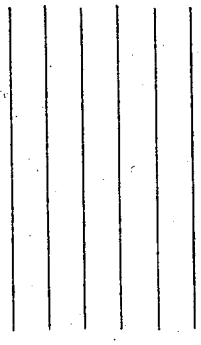


Fig. 7.



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Fig.3

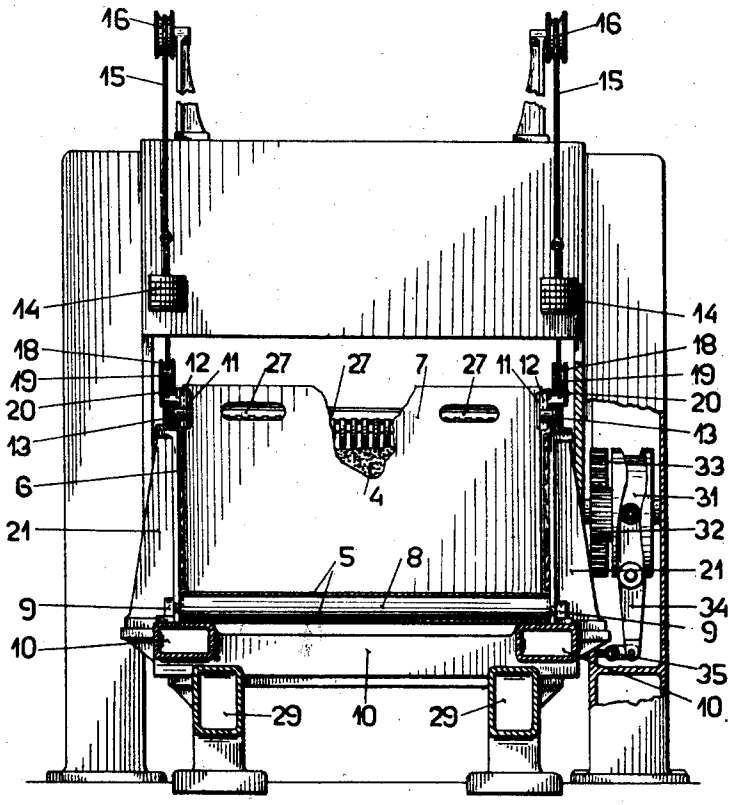
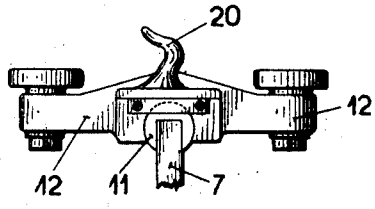


Fig.4



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Patented May 8, 1928. 1,668,610

UNITED STATES PATENT OFFICE.

IWAN ALEXANDROWIČ SEMENOV, OF PLZEN, CZECHOSLOVAKIA.

CIGARETTE-MAKING MACHINE.

Application filed December 2, 1925, Serial No. 72,737, and in Germany December 6, 1924.

The devices hitherto used for uniformly filling up with tobacco the pin covered surface of a picking cylinder have various faults. Thus, for instance, the area of contact between the picking cylinder and the quantity of tobacco fed to it and the force pressing the latter against the former during the operation of the cylinder are not constant and vary periodically, which causes an unequal filling of the pin covered surface of the picking cylinder. This drawback is found more particularly in those devices in common use, in which the rear wall of the box filled with tobacco performs a rocking motion towards and away from the picking cylinder. Owing to the fact that the rows of pins on the picking cylinder are arranged in parallel planes perpendicular to the axis of the cylinder, the said rows of pins after having formed grooves in the mass of tobacco (see Fig. 6) will no longer catch the tobacco fibres with the pin points, but will carry the fibres along by the tobacco becoming wedged between the rows of needles, which results in the tobacco being picked unevenly from the whole mass. The second picking cylinder provided above the main picking cylinder for the purpose of overcoming this drawback does not fulfill its purpose for the reason that the pins on its surface usually have an inclination opposite to their direction of rotation, so that they do not strip the tobacco fibres from the surface of the main picking cylinder, but press them between the pins of the main packing cylinder.

The present invention overcomes the above drawbacks of such devices and is characterized in this, that the tobacco is laid in the trough which is at right angles to the axis of the picking cylinder and on the bottom of which an endless band travels, on which is rigidly fixed a plate at right angles to the trough, which feeds the tobacco to the surface of the picking cylinder uniformly and under invariable pressure. The trough together with the band, the transverse plate and the tobacco lying in the trough are given a reciprocating motion in the axial direction of the picking cylinder. Consequently the pins on the picking cylinder will move in the contact plane of the tobacco and the pin covered surface of the picking cylinder in the paths, the course of which is due to the motion resulting from the motion of the trough and the rotation of the picking cylinder (see Fig. 5). The combination of these two motions ensures the tobacco fibres being caught in the uniform manner.

An arrangement working according to the method described above is illustrated in the accompanying drawings,

Fig. 1 being a section at right angles to the axis of the picking cylinder, Fig. 2 the corresponding side elevation partly in section, Fig. 3 a vertical section parallel to the axis of the picking cylinder and Fig. 4 a plan view of the carriage for the transverse plate of the tobacco trough. Figs. 5 and 6 are diagrams showing the paths traced by the pins of the picking cylinder on the tobacco as it is fed forward, Fig. 5 according to the present invention and Fig. 6 in the machine as used hitherto. Fig. 7 is a sectional view of a detail.

In the example shown in the drawings the picking cylinder 1 has a surface 2 set with pins, the said pins being inclined in the direction of rotation of the cylinder and the cylinder being rotated about its shaft 3 in any suitable manner in the direction indicated by the arrow. The side walls 6, 6 together with the endless band 5 form a trough into which the tobacco 4 is led up to the line 25. The endless band 5 lies on rollers 8, 8 . . . which are held in bearings 9, 9 . . . fixed to a common frame 10. On the same frame are mounted standards 21 and to the latter the side walls 6, 6 are fixed. The plate 7 which stands transversely in the trough is slid loosely into the grooves 11 of the carriages 12 (Figs. 1, 3 and 4) and by means of the latter the plate 7 can be moved along the rails 13, 13 which are fixed to the standards 21. Along the lower edge of the plate 7 are short pins or spikes 46 (Fig. 7) which on the plate being lowered, penetrate into the band 5, thus ensuring that the relative position of the band 5 and the plate 7 cannot be altered.

The band 5 together with the plate 7 are moved continuously forward along the trough in the direction towards the picking cylinder 1 which movement may be effected in any suitable manner, for instance by the positive movement of the roller 8 lying closest to the picking cylinder 1 being transmitted to them or by means of weights 14 suspended by cords 15 and guided over the pulleys 16, 17 and 18. The other ends of the cords 15 are attached by hooks 19 to the hooks 20 of the carriages 12.

Besides the plate 7 and the carriages 12 the apparatus is also provided with a reserve plate 23 and reserve carriages 24 for the purpose of rendering it unnecessary to interrupt the operation of the machine during the filling of the trough with tobacco, which takes place when the plate 7 is approached to the cylinder 1 and a space is created between the said plate and the reserve plate 23. As soon as this space has been filled with tobacco up to the line 25, the hooks 19 are detached from the hooks 20 on the carriages 12 and the hooks 19 are connected to the hooks on the reserve carriages 24. The plate 7 together with the carriages 12 is thereupon lifted out of the trough and placed in the position originally occupied by the wall 23, in which position it represents the reserve wall until the trough has been freshly filled with tobacco.

Above the stacked up tobacco near the surface of the picking cylinder 1 is a set of flat springs 28 which are screwed to the transverse bar 27 fixed to the side walls 6. The ends of the springs 28 are in the immediate proximity of the pins 2 on the cylinder and press quite lightly on the top of the stacked tobacco 4 filling the space in the trough between the plate 7 and the surface of the cylinder 1. The object of these springs 28 is to prevent the tobacco lifting which might be caused by the action of the pins 2, thus ensuring that the size of the contact surface between the surface of the cylinder 1 and the stacked tobacco 4 shall be invariable.

The frame 10 rests freely on the brackets 29 the projections 30 engaging in the corresponding recess in the brackets 29, so that the frame 10 can perform a reciprocating motion in the direction of the axis of the picking cylinder 1. This motion is transmitted to the frame 10 from the shaft 3 of the picking cylinder 1 by means of the toothed wheels 33 and 32 and the cam 31. The cam 31 has a suitable groove in its surface, in which is guided a roller 26 on one arm of the lever 34, the other forked arm of which is connected to the connecting rod 35 which is attached in any suitable manner to the frame 10. Hence, on the cylinder 1 rotating, the cam 31 will also rotate and the lever 34 will have a rocking motion imparted to it, which is transmitted by means of the connecting rod 35 to the frame 10. The same motion as that given to the frame is imparted to the trough filled with tobacco and all the arrangements connected thereto and owing to this motion the points of the pins trace paths in the plane of contact with the stacked tobacco 4, which continuously intersect one another (see Fig. 5).

Above the picking cylinder 1 is the equalizing drum 36 which is also provided with pins 37, the points of which with respect to the surface of the drum are inclined in the direction of rotation of the same. The drum 36 is rotated about its shaft 38 in any suitable manner in the direction indicated by the arrow and has for its object to remove the excess of tobacco fibres from the surface of the cylinder 1. From the surface of the equalizing drum the tobacco fibres are stripped by means of the stripping drum 39 located above the drum 36. The surface of the stripping drum 39 is also set with pins the points of which are inclined in the direction of rotation of the same, as indicated in Fig. 1 by the arrow. The drum 39 rotates about its shaft 41 much more rapidly than the drum 36, so that with its pins it removes all the tobacco fibres from the pins of the drum 36.

The tobacco fibres which have been caught by the pins on the surface of the stripping drum 39 are usually removed by a beating drum 42 provided with radial pins and fall down along the plate 43 back into the tobacco trough. The tobacco fibres remaining on the pins of the cylinder are removed by another beating drum 44 which is also provided with radial pins and fall into the trough 35, from where they are removed from being further dealt with.

What I claim is:

1. Apparatus for uniformly filling the pin covered surface of a picking cylinder in a cigarette making machine with tobacco, comprising in combination with the said cylinder a tobacco trough, an endless band capable of travelling at the bottom of the trough longitudinally of the same, a plate in the said trough and at right angles to the same, carriages at either side of the machine, grooves in the said carriages, into which the plate can be slid, means at the lower edge of the plate for connecting it to the endless band, for preventing relative movement between the plate and the band and means for imparting to the plate, the band and the tobacco laid in the trough a forward motion along the trough towards the surface of the picking cylinder, as and for the purpose set forth.

2. Apparatus for uniformly filling the pin covered surface of a picking cylinder in a cigarette making machine with tobacco, comprising in combination with the said cylinder a tobacco trough, an endless band capable of travelling at the bottom of the trough longitudinally of the same, a plate in the said trough and at right angles to the same, carriages at either side of the machine, grooves in the said carriages, into which the plate can be slid, means at the lower edge of the plate for connecting it to the endless band, for preventing relative movement between the plate and the band, means for imparting to the plate, the band and the tobacco laid in the trough a for-

ward motion along the trough towards the surface of the picking cylinder, and a set of flat springs located above the surface of the tobacco in the trough, each spring lying in the direction of motion of the tobacco, for preventing the tobacco lifting in the trough, as set forth.

3. An apparatus as claimed in claim 2, and comprising means for imparting a reciprocating motion parallel to the axis of the picking cylinder to the tobacco trough, the tobacco, the transverse plate, the endless band and the springs, as and for the purpose set forth.

4. An apparatus as claimed in claim 1, and comprising a drum capable of rotating in the same direction as the picking cylinder, and having its surface set with pins inclined in the direction of rotation of the drum, for directly stripping the superfluous tobacco fibres from the picking cylinder, a second drum capable of rotating in the opposite direction to the first drum and having its surface set with pins inclined in the direction of rotation of the drum for removing the tobacco from the first drum and a third drum having its surface set with radial pins for removing all the tobacco from the second drum and throwing it back into the tobacco trough, as set forth.

5. Apparatus for uniformly filling the pin covered surface of a picking cylinder in a cigarette making machine with tobacco, comprising in combination with the said cylinder, a tobacco trough and means for pushing the tobacco towards the surface of the picking cylinder, said means comprising an endless band capable of travelling at the bottom of said trough, a transverse plate in said trough and operatively connected to said endless band for preventing relative movement between the plate and the band and means for moving said band and plate, as and for the purposes set forth.

6. Apparatus for uniformly filling the pin-covered surface of a picking cylinder in a cigarette making machine with tobacco as set forth in claim 5, and comprising means for imparting to the trough a reciprocating motion parallel to the axis of the picking cylinder, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification.

IWAN ALEXANDROWIČ SEMENOV.