

Nov. 1, 1932.

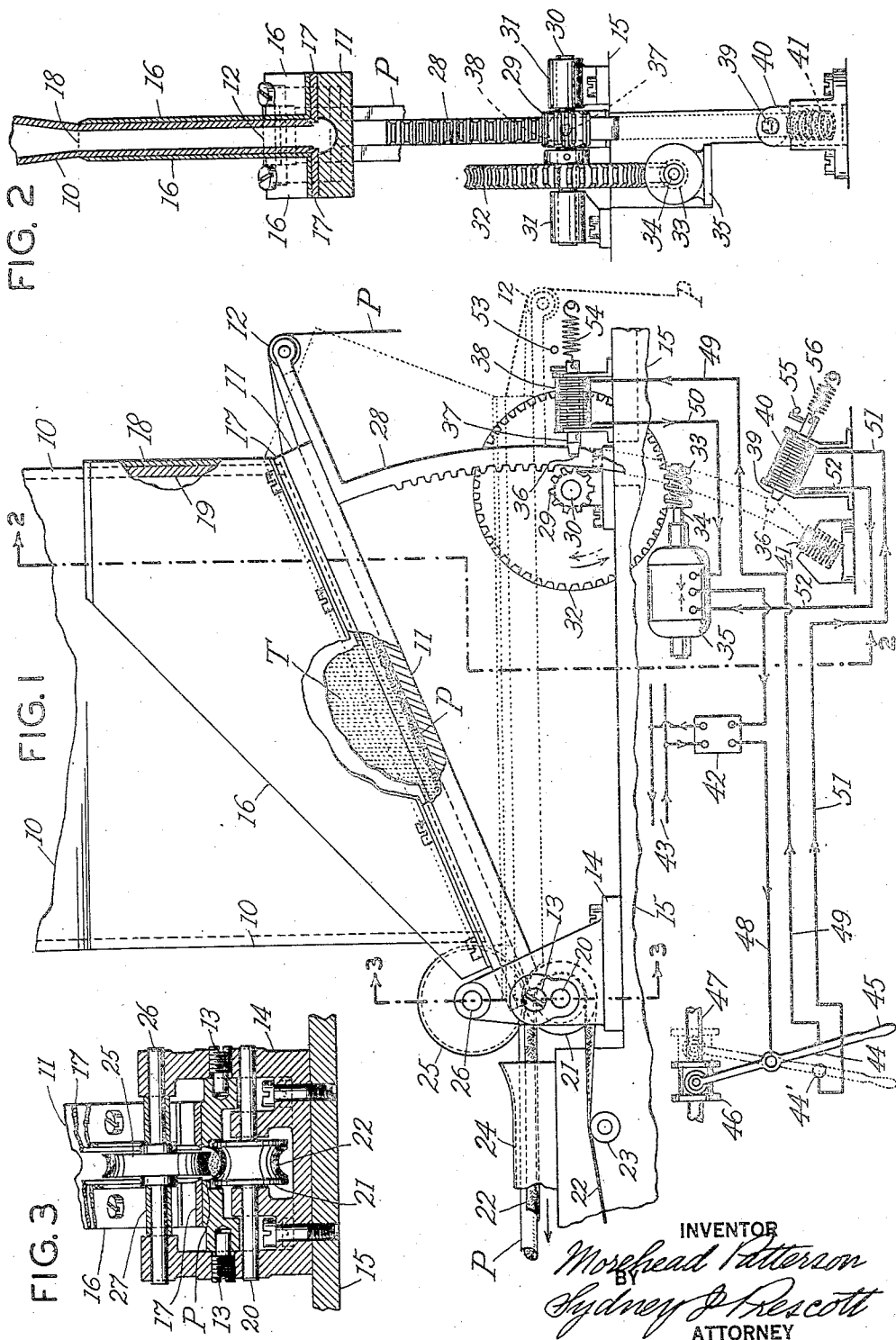
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1,885,943

INCLINED FEED FOR CIGARETTE MACHINES

Filed May 28, 1931

2 Sheets-Sheet 1



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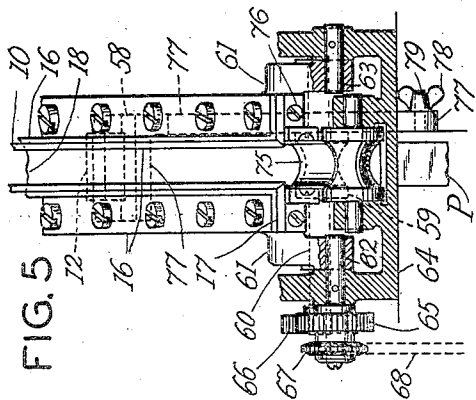


FIG. 5

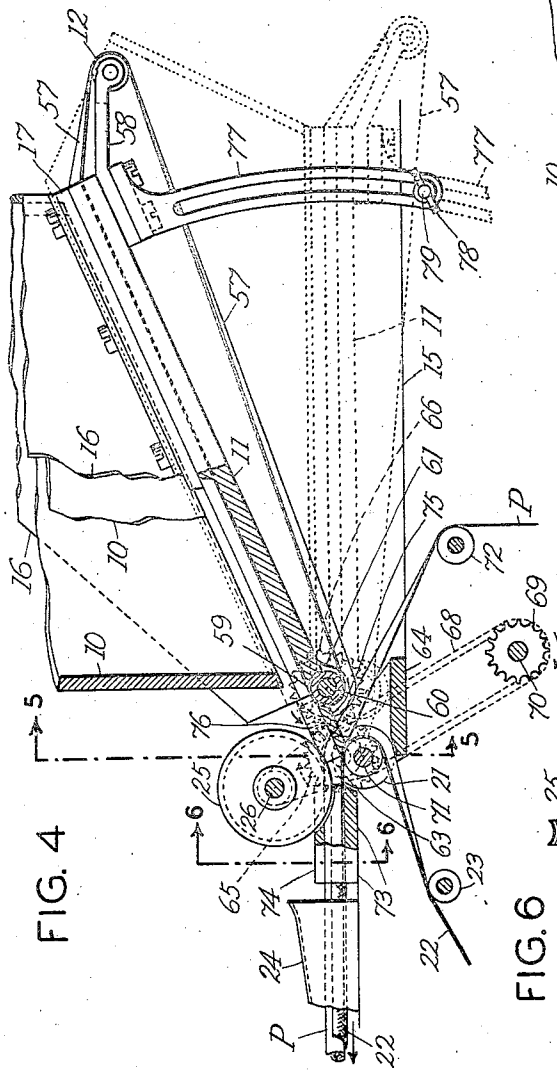


FIG. 4

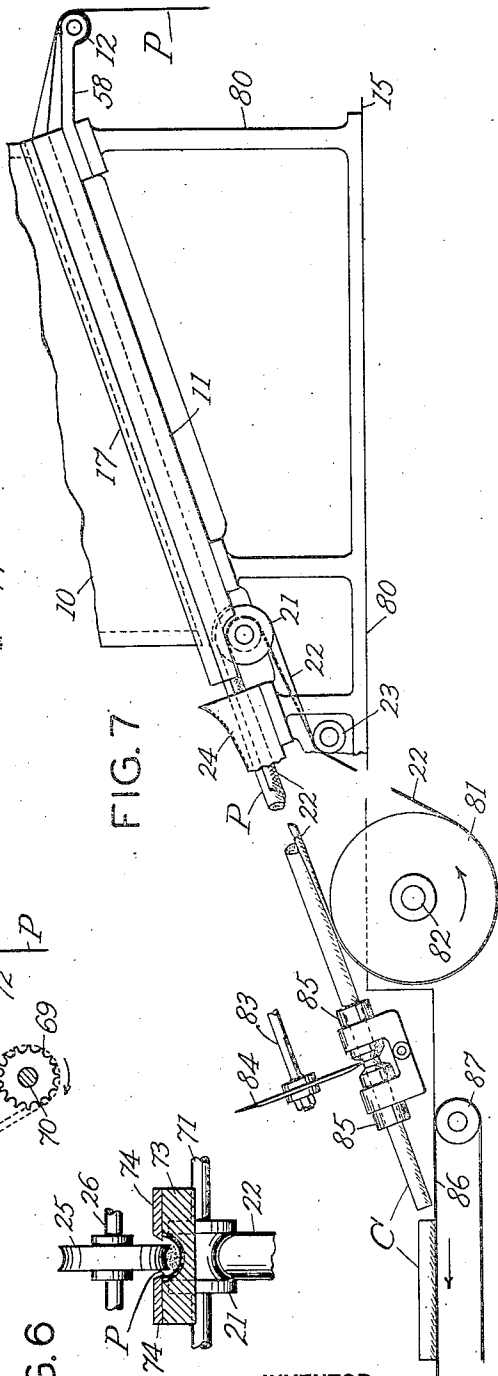
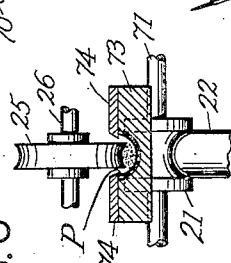


FIG. 7

FIG. 6



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INCLINED FEED FOR CIGARETTE MACHINES

Application filed May 28, 1931. Serial No. 540,718.

This invention relates to an improvement in feeds for continuous rod cigarette machines, its main object being to provide forwarding means traveling in a direction at an acute angle to the direction of movement in which the tobacco falls. In this manner, the change in direction of the tobacco when it falls on and follows the forwarding means is made less with the result that the natural tendency of the tobacco to resist a sudden change of direction is decreased and any hesitation of the tobacco before following the forwarding means, which hesitation is likely to be irregular and different for different sized tobacco particles and thus a source of irregularity in feeding, is largely eliminated. Also by this arrangement part of the force with which the tobacco falls goes toward carrying the tobacco along the forwarding means in the direction of movement thereof instead of causing uncontrolled rebounding of the tobacco, particularly of the heavier tobacco shreds, such as is likely to occur when the tobacco sheds strike the forwarding means at right angles.

In the present invention the cigarette paper strip or an endless belt is threaded through the feed trough and can be inclined at the proper angle to intercept the shower of tobacco by inclining the feed trough at the desired angle when the machine is started for production and returning it to its horizontal position upon stopping the machine. Thus, when the machine is cranked by hand for threading the cigarette paper strip and for adjustment of the parts previous to starting, the tobacco falls on the stationary or slow moving cigarette paper strip or endless belt at right angles and therefore has no forward inertia, while at production speed, when the trough has been raised to a predetermined angle corresponding with the velocity of the paper strip or endless belt, the forward inertia of the tobacco compensates for the inertia of the tobacco relative to the moving paper strip or endless belt. The trough may also be inclined at a predetermined fixed angle in accordance with the velocity of the paper strip running therethrough.

In the accompanying drawings which show

various means for carrying out the invention in practice,

Fig. 1 is a side elevation of an inclined paper feed trough under the open bottom of the feed chute, showing the mechanism for automatically raising and lowering the trough;

Fig. 2 is a sectional end elevation on line 2—2 of Fig. 1;

Fig. 3 is a cross section on line 3—3 of Fig. 1;

Fig. 4 is a similar side elevation of a manually adjustable inclined feed trough in which the tobacco is deposited upon a separate endless belt from which it is subsequently transferred onto the horizontally moving cigarette paper strip;

Fig. 5 is a vertical end elevation on line 5—5 of Fig. 4;

Fig. 6 is a vertical end elevation on line 6—6 of Fig. 4; and

Fig. 7 is a similar side elevation of a stationary inclined feed trough delivering the tobacco-filled paper strip to rod form and cutting devices which are likewise inclined at the same angle.

In carrying the invention into effect there is provided a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower, means traveling under the bottom of the chute and angularly intercepting the falling tobacco and forwarding it out of the range of action of the chute. In the best forms of construction contemplated the traveling means may include the cigarette paper strip or an endless belt. In the best forms of construction, also, there is provided a pivoted trough which may be automatically or manually adjusted to incline the paper strip or endless belt to intercept the showered tobacco at the desired angle, or the trough may be inclined at a fixed angle by a stationary frame. These various means and parts may be widely varied in construction within the scope of the claims for the particular device selected to illustrate the invention is but one of many possible concrete embodiments of the same. The inven-

tion, therefore, is not to be restricted to the specific construction shown and described.

Referring now to Figs. 1, 2 and 3 of the drawings, the tobacco T in the feed chute 10 which has an open bottom inclined from the horizontal is adapted to confine the tobacco in a shower which falls on the cigarette paper strip P fed from a reel, not shown, through the feed trough 11 under the bottom of the chute. The trough 11 carries a projecting roller 12 for guiding the paper strip and is pivoted on screw studs 13 in a pedestal 14 attached to the frame 15 of the cigarette machine, and has side guards 16 attached to its cover strips 17 which guide the edges of the paper strip P. At the free end of the trough the side guards 16 are connected by a cross wall 18 which comes to lie against the end wall 19 of the feed chute 10 when the trough is raised into inclined position.

On a shaft 20, supported in vertical alignment with the studs 13 in pedestal 14, is mounted a concave roller 21 on which turns a tape belt 22 guided thereto by a roller 23, this tape belt encircling the lower part of the paper strip P and propelling the same through the rod former 24 and subsequent parts of the cigarette machine in the direction of the arrow shown. To facilitate the turning of the paper from the inclined to the horizontal position, a concave compression wheel 25 is mounted vertically above the studs 13 on a shaft 26 supported in pedestal 14. Spacers 27 on shaft 26 hold wheel 25 in alignment with roller 21 so that the tobacco on strip P must pass through the oval space between roller 21 and wheel 25 in all positions of trough 11, the paper being pressed down into tape 22 by the tobacco under the compression wheel at the delivery end of trough 11 while its edges are guided by the projecting points of the cover strips 17 as shown in Fig. 3.

Near its free end the trough 11 carries a gear segment 28 adapted to engage with a pinion 29 on shaft 30 supported in bearings 31 attached to frame 15. The shaft 30 is driven in one direction or the other by a worm wheel 32 according to the turning direction of its worm 33 which is mounted on the shaft 34 of a reversible electric motor 35. The convex surface of segment 28, near its end, is provided with a groove 36 adapted to be engaged by the core 37 of a solenoid 38 when in its uppermost position, and with the core 39 of a solenoid 40 when in its lowermost position to lock it in these positions respectively. When approaching its lowermost position, the segment 28 compresses a spring 41 which serves as a buffer to the downward motion of the trough 11 and also has the purpose of raising the segment 28 into engagement with pinion 29 upon being released by the core 39 of solenoid 40 in the down position of the trough.

The motor 35, Fig. 1, is connected to the cutout 42 of an electric line circuit 43 through

a two-point switch 44 formed by the lever 45 of the clutch shifting sleeve 46 on main shaft 47, the current flowing by way of wires 48, 49 and 50 through the "forward" winding of the motor when the clutch lever 45 is in the full line "in" position on contact 44, and by the way of wires 48, 51 and 52 through the "reverse" winding, when the lever 45 is in the dotted "out" position on contact 44'. The wires 49 and 50 of the "in"-circuit lead the current through the upper solenoid 38, and the wires 51 and 52 of the "out" circuit carry the current through the lower solenoid 40. Thus, when the machine is started, the "forward" winding of motor 35 and the solenoid 38 are energized, thereby turning pinion 29 in the counter-clockwise direction, raising segment 28, and pulling core 37 away from stop 53 against which it is held by spring 54. The core 37 then bears against the convex surface of segment 28 and, when trough 11 is in its uppermost position with segment and pinion just out of engagement, snaps into groove 36, thereby locking the trough in this position.

When the machine is stopped, the turning of lever 45 deenergizes the "forward" motor winding and solenoid 38, and energizes the "reverse" winding and lower solenoid 40. The solenoid core 37 is thereby pulled back against stop 53 by spring 54 and the solenoid core 39 is pulled away from stop 55 by the action of solenoid 40 against the tension of spring 56. The weight of trough 11 will then bring the first tooth of segment 28 back into engagement with pinion 29 so that the reverse motion of motor 35, causing the clockwise rotation of pinion 29, will lower the trough until, after the passing of the last tooth of segment 28, the point of core 39, guided by the tapered end of the segment, snaps into groove 36 and locks the segment. In this position of the trough, shown in dotted lines, the buffer spring 41 is compressed, so that, upon the release of core 39 in restarting the machine, it will lift the last tooth of segment 28 back into engagement with pinion 29.

In the modification shown in Figs. 4, 5 and 6, the feed trough 11 carries an endless belt 57 made of linen or other suitable material which travels through the trough at the required speed and receives the tobacco charge from the feed chute. The belt 57 runs over guide roller 12 in bracket 58 and over concave driving pulley or roller 59 on shaft 60 which is supported in the lugs 61 by which the trough is pivoted on studs 62 and 63 in pedestal 64. On an extension of stud 62 is loosely mounted a gear 65 meshing with a gear 66 on shaft 60 and driven by a sprocket 67 connected by a chain 68 with sprocket 69 on a drive shaft 70. Directly below pivot studs 62, 63, in pedestal 64 is supported a shaft 71 on which is mounted the concave guide roller 21 for the tape belt 22, and the

paper strip P is fed onto tape belt 22 over guide roller 72 from a reel, not shown. From roller 21, the tape 22 with the paper strip P passes through a horizontal rod former tube 73, Fig. 6, having a cross-section identical with trough 11 and being provided with wrapper guiding strips 74 between which enters the compression wheel 25a supported on shaft 26a in pedestal 64.

Between the convex rollers 21 and 59 is suspended the concave bridge piece 75 attached by brackets 76 to trough 11 so that the bridge 75 is in alignment with belt 57 and with the paper strip on tape 22 in all positions of the trough. The compression wheel 25 guides the tobacco layer from bridge 75 onto the paper strip P. The trough in this case is shown with a slotted adjusting segment 77 for manually adjusting the trough, the wing nut 78, associated with a screw stud 79 in frame 15, holding the trough in the desired position.

In Fig. 7 another modification of the arrangement of the inclined paper feed trough is shown. Here, the feed trough 11 is stationarily mounted in its inclined position by a frame or pedestal 80 supported on the machine frame 15. The paper strip P is fed into the trough by guide roller 12 and is propelled by the tape belt 22 running over rollers 21 and 23 and driven by tape wheel 81 on shaft 82 supported by frame 15. The rod former 24 and all parts of the cigarette machine up to and including the shaft 83 of the cutoff knife 84 and its associated ledger tubes 85 are mounted at the same angle as the trough 11, and the finished cigarettes C are delivered onto a horizontal collector belt 86 running over drum 87.

What is claimed is:

1. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower, of means traveling under the bottom of said chute and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute.

2. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower, of means traveling under the bottom of said chute and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute, said means including an endless belt having its upper run located in a plane inclined from the horizontal.

3. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower, of means traveling under the bottom of said chute and angularly intercepting

the falling tobacco and forwarding it out of the range of action of said chute, said means including the cigarette paper strip of the machine.

4. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower and having a trough under said bottom, of means traveling along said trough and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute.

5. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower and having a trough under said bottom, of means traveling along said trough and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute, said trough being pivoted at one end and provided with means for moving said trough about its pivot.

6. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower and having a trough under said bottom, of means traveling along said trough and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute, said trough being pivoted at one end and having a slotted adjusting segment fixed thereto.

7. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower and having a trough under said bottom, of means traveling along said trough and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute, and a stationary frame carrying said trough.

8. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower and having a trough under said bottom, of means traveling along said trough and angularly intercepting the falling tobacco and forwarding it out of the range of action of said chute, said means including an endless belt having its upper run disposed in the bottom of said trough, a pulley over which said belt runs, and gearing for driving said pulley.

9. The combination with a cigarette machine feed chute having an open bottom inclined from the horizontal and adapted to confine tobacco falling therethrough in a shower and having a trough under said bottom, of means traveling along said trough and angularly intercepting the falling to-

bacco and forwarding it out of the range of action of said chute, said means including the cigarette paper strip of the machine.

10. The combination with a pivoted feed trough for continuous rod cigarette machines, of means for swinging said trough about its pivot into operative position.

11. The combination with a pivoted feed trough for continuous rod cigarette machines, of means for swinging said trough about its pivot into operative position, said trough having a tape belt pulley mounted on its pivot and a rotatable compression wheel mounted above said roller.

12. The combination with a pivoted feed trough for continuous rod cigarette machines, of means for swinging said trough about its pivot into operative position, said means including a gear segment fixed to said trough, and a motor geared to said gear segment.

13. The combination with a pivoted feed trough for continuous rod cigarette machines, of means for swinging said trough about its pivot into operative position, said means including a gear segment fixed to said trough, a motor geared to said gear segment, two solenoids arranged respectively to engage the gear segment to lock the trough in operative and inoperative position when energized, an electrical circuit connected to said motor and solenoids, and a two point switch for said circuit to drive the motor in opposite directions and energize each of said solenoids respectively.

14. The combination with a pivoted feed trough for continuous rod cigarette machines, of an endless belt supported from said trough and having its upper run disposed in said trough, means for driving said belt, and manually operable means for moving said trough about its pivot.

15. The combination with a pivoted feed trough for continuous rod cigarette machines, of an endless belt supported from said trough and having its upper run disposed in said trough, means for driving said belt, and manually operable means for moving said trough about its pivot, said driving means including a driving pulley mounted on the pivot of said trough and gearing for driving said pulley.

16. The combination with a pivoted feed trough for continuous rod cigarette machines, of manually operable means for adjusting said trough about its pivot, a horizontal rod former tube adjacent the delivery end of said trough, and a tape belt threaded through said tube.

17. The combination with a pivoted feed trough for continuous rod cigarette machines, of manually operable means for adjusting said trough about its pivot, a horizontal rod former tube adjacent the delivery end of said trough, and a tape belt threaded through said

tube, said tube being provided with longitudinal wrapper guiding strips and a compression wheel projecting into said tube between said strips.

18. The combination with a cigarette machine feed trough located in a plane inclined from the horizontal, of a rod former and ledger tube in alignment with said trough.

19. The combination with a cigarette machine feed trough located in a plane inclined from the horizontal, of a rod former in alignment with said trough.

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

MOREHEAD PATTERSON.