

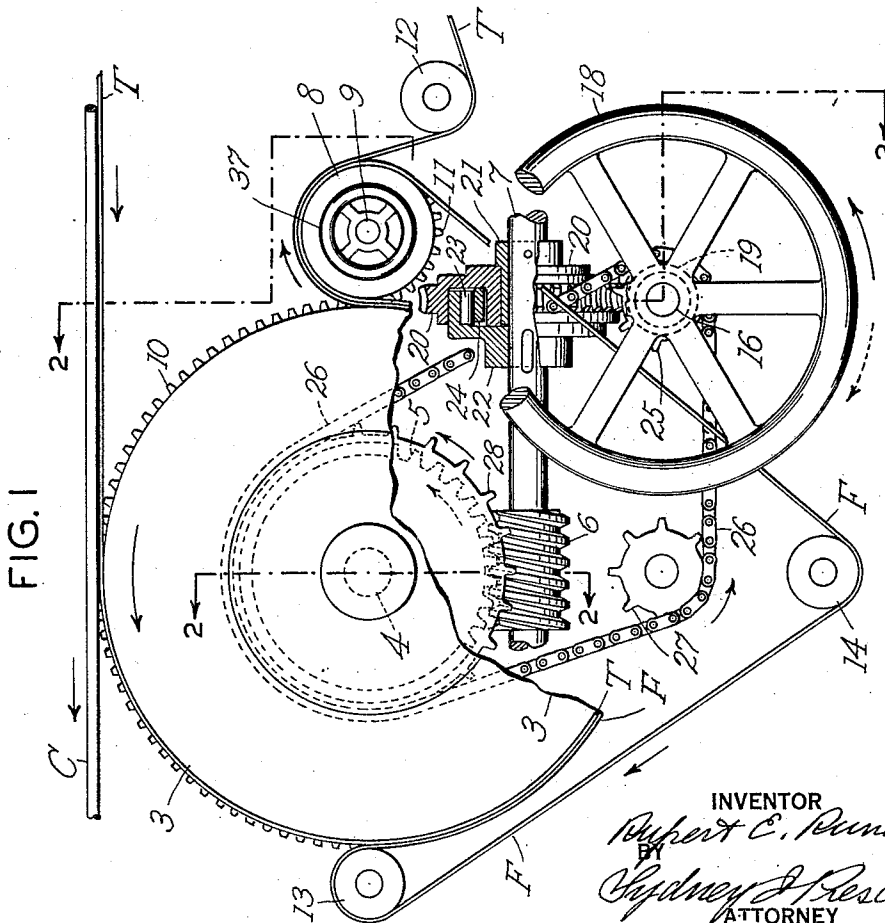
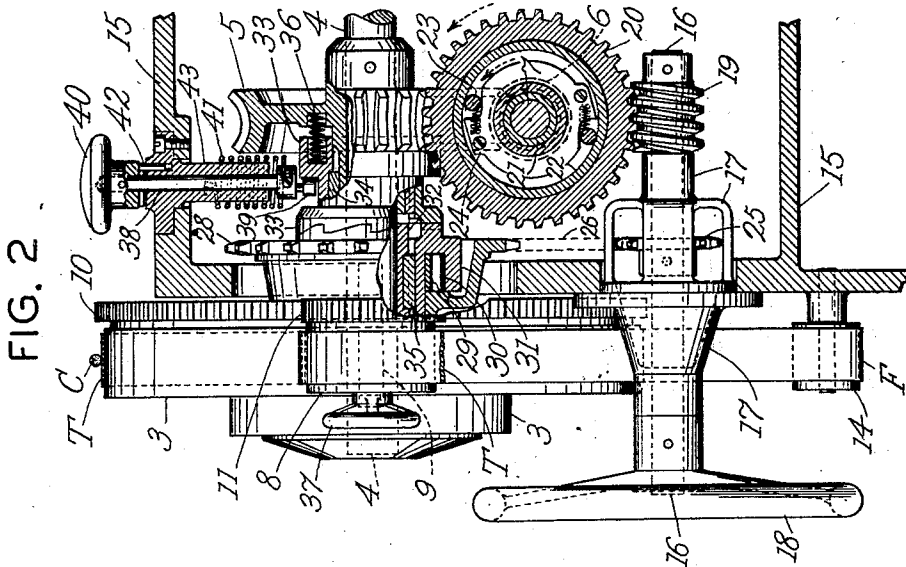
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ADJUSTING DEVICE FOR CIGARETTE MACHINES

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ADJUSTING DEVICE FOR CIGARETTE MACHINES

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This invention relates to tape drives for continuous rod cigarette machines, its object being to provide a device for conveniently turning the machine over by hand as well as for separately adjusting the tape wheel without disturbing the adjustment of any other part of the machine.

In setting up for production a continuous rod cigarette machine, it is necessary, upon threading the cigarette paper through the rod forming and sealing mechanisms, to so turn the tape wheel which controls the travel of the cigarette rod, that the paper propelling tape moves in the forward direction only, as otherwise the part of the paper already strung would be interfered with. If the tape wheel is declutched from the drive and turned by hand, which is the method used heretofore, such slipbacks are possible and will be sure to happen, especially with less experienced operators. It is therefore one of the objects of the present invention to so control the tape wheel by means of a hand wheel that it can be turned in the forward direction only; turning in the backward direction, which may be desired to clear the machine from a jam, being accomplished by providing a second hand-wheel on the drive shaft of the friction tape which is usually employed to prevent slippage of the tape on the tape wheel. In order to enable the employment of the same hand wheel for all other adjusting purposes also, it is a further object of this invention to so arrange the interconnection of the tape controlling hand wheel with the cigarette machine drive and with the tape wheel that by turning the said hand wheel in the opposite direction from that for the forward movement of the tape while the machine is stopped, it will actuate the entire cigarette machine including the tape wheel in the forward direction, but that when the machine runs under power the hand wheel will stand still and its turning by hand in either direction will have no effect on any part whatsoever.

These objects in the present invention are achieved by means of a one-way clutch placed on the main drive shaft and forming the link between the latter and a separate hand wheel

shaft provided for the control of the tape wheel, and by a chain connection between the said hand wheel shaft and the tape wheel shaft, the tape wheel itself being coupled both to its drive shaft and to the said chain drive by separate one-way clutches. With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a front elevation of a portion of a continuous rod cigarette machine, showing the tape wheel drive equipped with the improved adjusting device; and

Fig. 2 is a sectional side elevation of the adjusting mechanism on lines 2—2 of Fig. 1.

In carrying the invention into effect, there is provided a tape wheel of a continuous rod cigarette machine, manually operable means operative only when the machine is stopped for turning said machine and tape wheel in the forward direction only, and manually operable mechanism independent of said means for turning the tape wheel in either direction. In the best forms of construction contemplated, said means includes the main drive shaft of the machine, a gear loosely mounted on the drive shaft, a hand-wheel geared to said gear, a one-way clutch between the gear and the drive shaft, gearing between the drive shaft and the tape wheel shaft, sprockets on the tape wheel shaft and the hand-wheel shaft, a chain running over said sprockets, a one-way clutch between said tape wheel sprocket and tape wheel shaft, and a one-way clutch between said gearing and said tape wheel sprocket. In the preferred form of construction said mechanism includes a hand-wheel spaced from the tape wheel hand-wheel and geared to the tape wheel and a device for disengaging the one-way clutch between said gearing and the tape wheel sprocket. These various means and parts may be widely varied in construction within

the scope of the claims, for the particular machine selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention, therefore, is not to be restricted to the specific construction shown and described.

Referring to the drawings, C is a cigarette rod propelled through the rod forming and sealing mechanisms of a continuous rod cigarette machine by the endless tape belt T running over the tape wheel 3 on shaft 4 which is driven by a worm wheel 5 meshing with a worm 6 on the drive shaft 7 of the cigarette machine. The tape T is led around wheel 3 by a roller 8 on shaft 9, the roller 8 being driven by a gear 10 on tape wheel 3 meshing with a gear 11 on roller 8 on the pitch line of the tape T which is kept in tension by a tightener roller 12. To prevent slipping of the tape T on wheel 3, a friction tape F driven by roller 8 is led partly around wheel 3 by means of rollers 13 and 14. The shafts 4, 7 and 9 as well as the shafts of rollers 12, 13 and 14 are supported by the frame 15 of the cigarette machine.

To turn the machine over by hand when it is not running, a shaft 16 supported by bracket 17 attached to frame 15 and provided with a hand wheel 18, is connected with the main drive of the cigarette machine by a worm 19 meshing with a worm wheel 20 loosely turning on a bushing 21 on the main drive shaft 7 and coupled with shaft 7 by a one-way clutch of well known construction comprising a clutch member 22 fixed on the shaft 7, and rollers 23 supported by holders 24 fastened to worm wheel 20 and resiliently pressed against the clutch member 22.

Fixedly mounted on hand wheel shaft 16 is a sprocket 25 having a chain 26 running over the idle sprocket 27 and the sprocket 28, which is connected to the tape wheel 3 by a one-way clutch of well known construction comprising the holders 29, rollers 30, and the coupling member 31 which is fixed to the hub 32 of tape wheel 3 by a key 35. One end of the coupling member 31 is provided with a ratchet which is engaged by a ratchet on the coupling member 33 splined to the hub of the worm wheel 5 and resiliently pressed into engagement by the springs 36, whereby a one-way clutch is provided between the sprocket 28 and the worm wheel 5.

When the hand wheel 18 is turned in the clockwise direction when the machine is stopped, as indicated by the dotted arrow in Fig. 1, the worm wheel 20 and the holders 24 turn counter-clockwise, thereby jamming the rollers 23 against the inner periphery of the clutch member 22 and thus turning this member and with it, the shaft 7 and worm wheel 5 in the counter-clockwise direction, which in the arrangement illustrated is the forward direction of the machine.

The coupling members 31 and 33 being

arranged as a one-way clutch for forward motion of the machine only, the turning of worm wheel 5 in a counter-clockwise direction moves the tape wheel 3 in the forward direction shown by the arrow. The sprocket 28 under these conditions turns loosely on the coupling member 31 as the counter-clockwise turning of coupling member 31 disengages it from the rollers 30.

When turning the hand wheel 18 in the counter-clockwise direction while the machine is stopped, as indicated by the full arrow in Fig. 1, the chain 26 turns the sprocket 28 and the holders 29 in the counter-clockwise direction, thereby causing the rollers 30 to jam against the coupling member 31 which then drives the tape wheel 3 in the forward direction. The coupling member 31 in turning in the forward direction slips on the coupling member 33 by compressing the springs 36, thus releasing worm wheel 5, while rotation in the counter-clockwise direction of worm 19 on shaft 16 turns the worm wheel 20 in a clockwise direction and disengages the rollers 23 from the clutch member 22, and thus releases the shaft 7. Thus it is apparent that the turning of hand wheel 18 in either direction turns the tape wheel 3 in the forward direction only.

For the purpose of turning the tape wheel backwards, which may be required in case of a jam or for removing foreign matter accidentally present in the cigarette rod, a hand wheel 37 is mounted on shaft 9 of roller 8 and a shaft 38 with an eccentric pin 39 is provided, the eccentric pin 39 engaging with a slot in the hub of clutch member 33 and being turnable by means of a knob 40 against the tension of a spring 41 when lifted out of engagement with a pin 42 in stationary holder 43 attached to frame 15. The spring 41 is coiled around holder 43 having one end fastened to the latter and the other end to a shoulder of pin 38. By turning knob 40, the coupling member 33 can be temporarily moved out of engagement with the member 31 so that the shaft 9 is free to move, and the hand wheel 37 then will, through gears 11 and 10, move the tape wheel 3 in either direction. When releasing knob 40 upon turning hand wheel 37, spring 41 returns pin 38 to its normal position, thus permitting the springs 36 to re-engage the coupling members 31 and 33.

When the machine runs under power, the drive shaft 7 turns in the counter-clockwise direction, taking along member 22 and disengaging rollers 23, thereby releasing worm wheel 20; and shaft 4 also turns counter-clockwise, disengaging, through key 35 and clutch member 31, the rollers 30 and releasing sprocket 28. The hand wheel shaft 16 thus is entirely disconnected from the drive and therefore stands still when the machine is running, and when the hand wheel 18 is

then turned in either direction, it will not affect any other part.

What is claimed is:

1. The combination with a continuous rod cigarette machine having a tape wheel, of manually operable means operative only when the machine is stopped for turning said machine and tape wheel in the forward direction only, and manually operable mechanism independent of said means for turning said tape wheel in either direction.

2. The combination with a continuous rod cigarette machine having a tape wheel, of manually operable means operative only when the machine is stopped for turning said machine and tape wheel in the forward direction only, and manually operable mechanism independent of said means for turning said tape wheel in either direction, said means including the main drive shaft of the machine, a gear loosely mounted on said drive shaft, a hand-wheel geared to said gear, a one-way clutch between said gear and said drive shaft, and gearing between said drive shaft and the tape wheel.

3. The combination with a continuous rod cigarette machine having a tape wheel, of manually operable means operative only when the machine is stopped for turning said machine and tape wheel in the forward direction only, and manually operable mechanism independent of said means for turning said tape wheel in either direction, said means including a hand-wheel shaft, a hand-wheel and a sprocket on said hand-wheel shaft, a shaft on which the tape wheel is mounted, a sprocket on said tape wheel shaft, a one-way clutch between said tape wheel sprocket and said tape wheel shaft, and a chain running over said sprockets.

4. The combination with a continuous rod cigarette machine having a tape wheel, of manually operable means operative only when the machine is stopped for turning said machine and tape wheel in the forward direction only, and manually operable mechanism independent of said means for turning said tape wheel in either direction, said means including the main drive shaft of the machine, a gear loosely mounted on said drive shaft, a hand-wheel geared to said gear, a one-way clutch between said gear and said drive shaft, a shaft on which the tape wheel is mounted, gearing between said drive shaft and the tape wheel shaft, a hand-wheel shaft, a sprocket and a hand-wheel on said hand-wheel shaft, a sprocket on said tape wheel shaft, a one-way clutch between said tape wheel sprocket and said tape wheel shaft, a chain running over said sprockets, and a one-way clutch between said gearing and said tape wheel sprocket.

5. The combination with a continuous rod cigarette machine having a tape wheel, of manually operable means operative only

when the machine is stopped for turning said machine and tape wheel in the forward direction only, and manually operable mechanism independent of said means for turning said tape wheel in either direction, said means including a hand-wheel, a shaft on which the tape wheel is mounted, gearing between said hand-wheel and said tape wheel shaft, a sprocket connected to said hand wheel, a sprocket loosely mounted on said tape wheel shaft, a chain running over said sprockets, a one-way clutch between said gearing and tape wheel sprocket, and said mechanism including a hand-wheel spaced from said first named hand-wheel and geared to said tape wheel, and a device for disengaging said one-way clutch.

6. In a continuous rod cigarette machine, the combination with a tape wheel for driving the cigarette rod, of a main drive shaft for the cigarette machine from which the tape wheel is driven, clutch means between the main drive shaft and the tape wheel for disconnecting the tape wheel from the shaft, and means including a hand device for rotating the tape wheel forward or backward when it is disconnected from said shaft.

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

RUPERT E. RUNDELL.