Oct. 20, 1925. 1,558,398

W. ROSE

APPARATUS FOR FEEDING CIGARETTES

Filed June 5, 1924 4 Sheets-Sheet 1

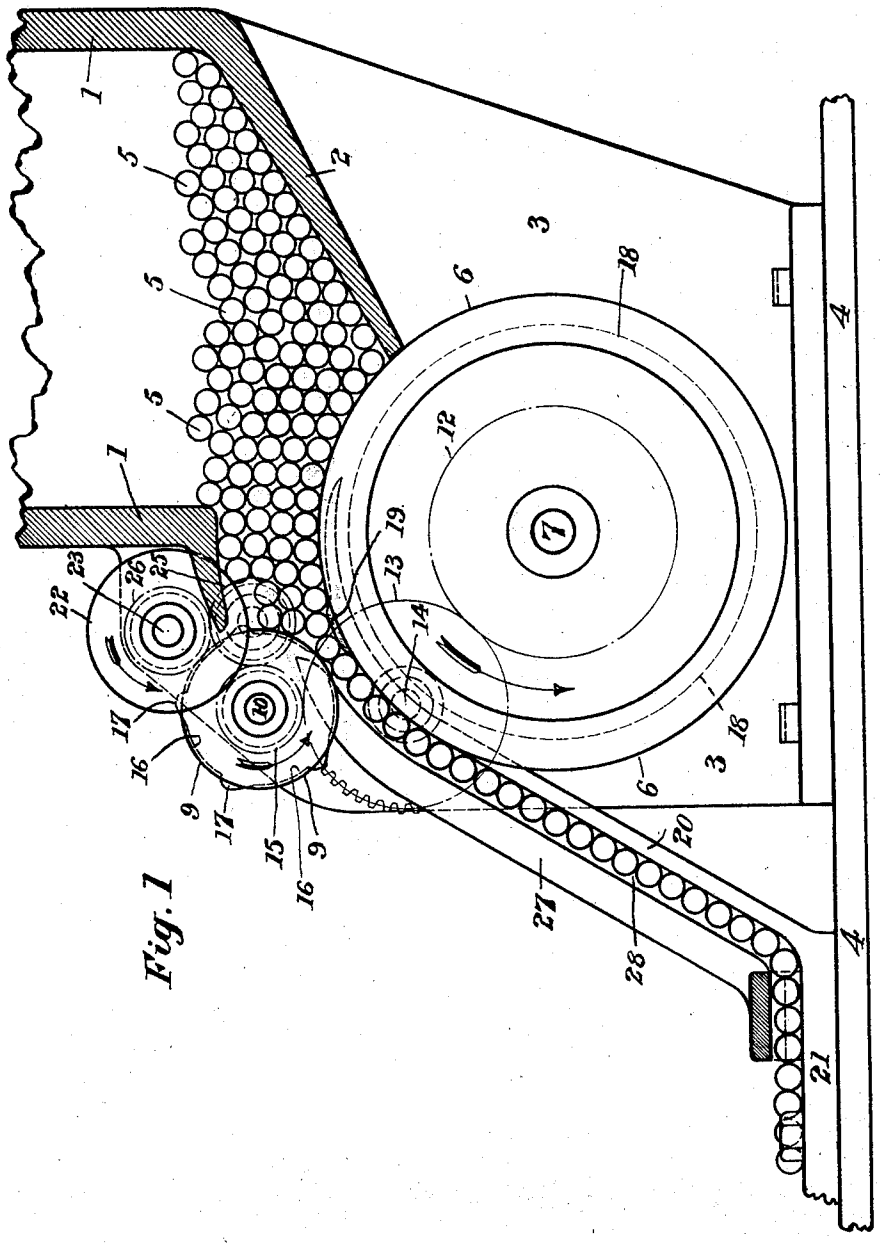


Fig. 1

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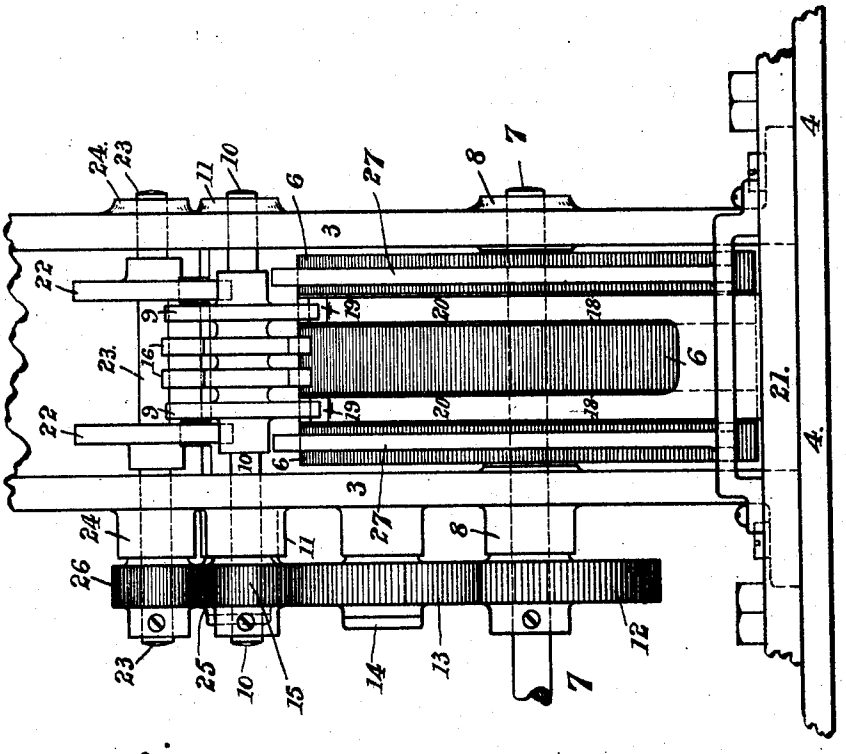


Fig. 2.

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Fig. 4.

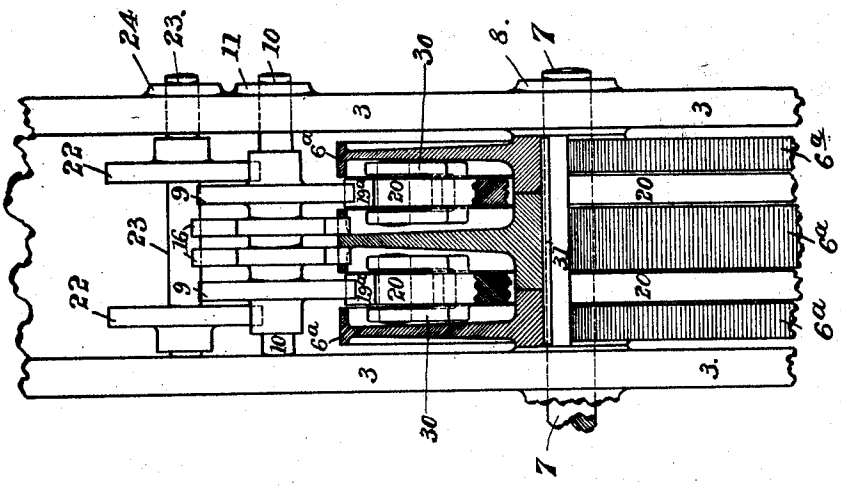
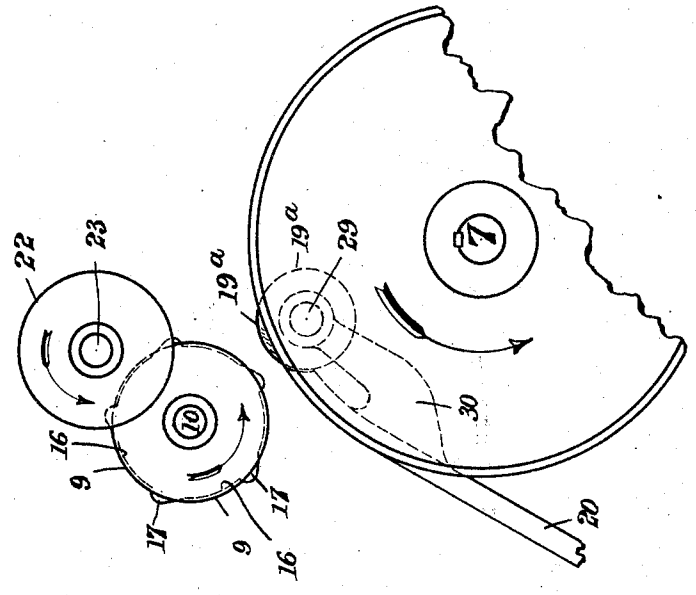


Fig. 3.



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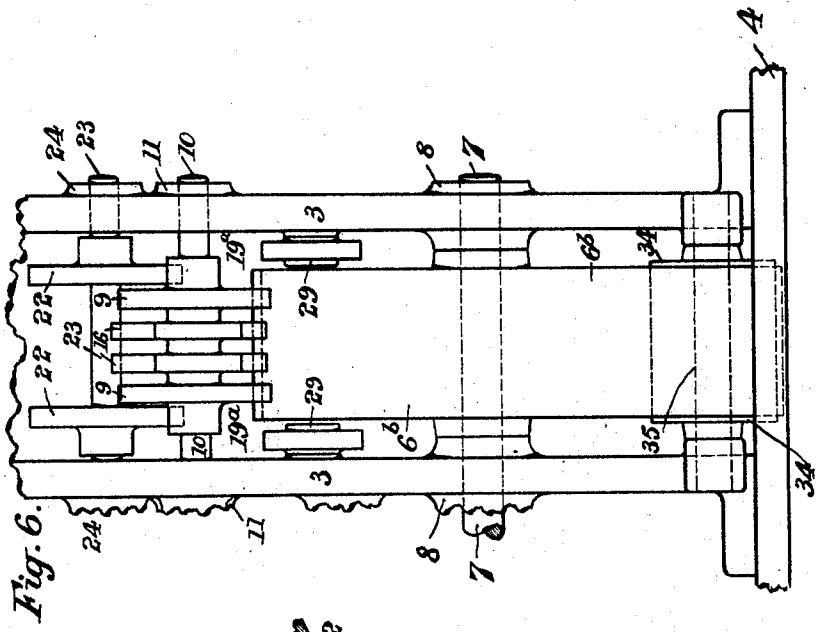


Fig. 6.

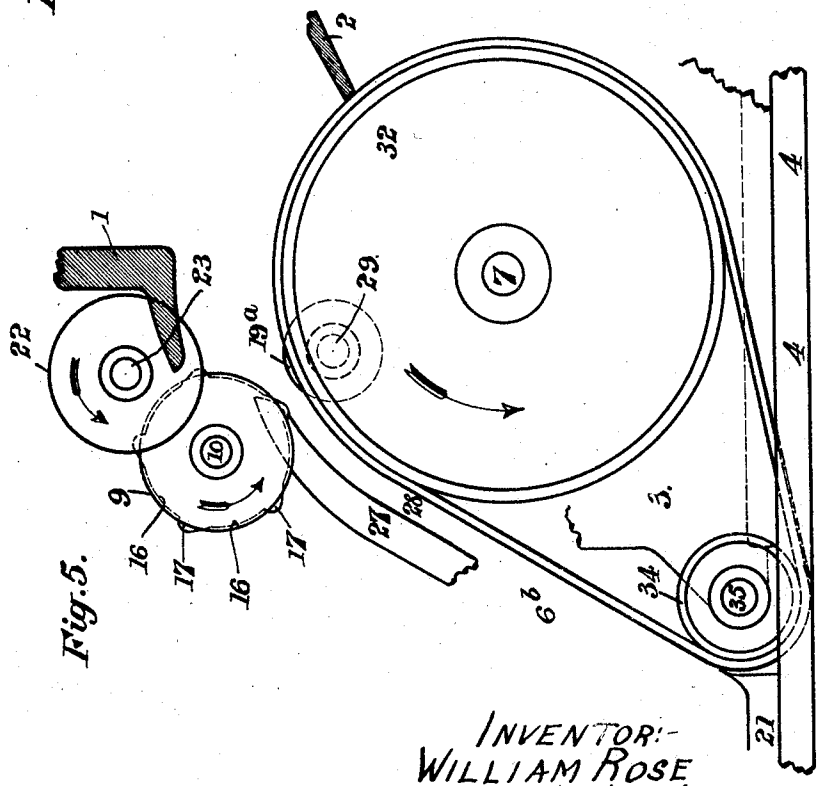


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM ROSE, OF GAINSBOROUGH, ENGLAND.

APPARATUS FOR FEEDING CIGARETTES.

Application filed June 5, 1924. Serial No. 718,184.

To all whom it may concern:

Be it known that I, WILLIAM ROSE, a subject of the King of Great Britain, residing at Albion Works, Gainsborough, in the county of Lincoln, England, have invented new and useful Improvements in Apparatus for Feeding Cigarettes, of which the following is a specification.

This invention relates to apparatus for feeding cigarettes, or like articles, said apparatus being of the kind in which feeding means is caused to move continuously in proximity to a clearance roller, whereby said feeding means acts to convey the cylindrical articles through a gap, or space, provided between the opposed surfaces of the feeding means and the clearance roller, while the clearance roller operates to push back any excess number of cigarettes which may have a tendency to crowd, or wedge, their way in other than single file into, and through, the aforesaid gap, or space.

This invention has for its object to provide improved apparatus whereby cigarettes or like articles may be fed to a packing machine, or other desired place or receptacle, with regularity and efficiency and at a relatively high rate of speed, and without the liability of the cigarettes being thereby damaged by an objectionable amount of rolling, or vibrating, movements, or by jamming, or wedging, of the cigarettes between the opposed surfaces of the feeding means and the clearance roller.

The articles to be fed will hereinafter be referred to as cigarettes, although it will be understood that any cylindrical object, such as chalk, candy rolls, pencils, etc., may be fed by a machine of the type described.

I will describe my invention with reference to the accompanying drawings in which Figure 1 illustrates in sectional elevation a cigarette feeding apparatus constructed in accordance with this invention.

Figure 2 is an end elevation of the apparatus.

Figure 3 is a side elevational view showing a modified arrangement of apparatus in accordance with this invention.

Figure 4 is an end elevation of said modified arrangement.

Figure 5 shows in side elevation another modification of the apparatus shown in Figures 1 and 2.

Figure 6 is an end view of Figure 5.

Referring more particularly to Figures 1 and 2 a feeding hopper 1 for containing a quantity of cigarettes is provided, with an inclined bottom 2, and is supported by side-frames 3, secured to a base 4.

A quantity of cigarettes 5 are contained in the hopper 1.

In proximity to the lower portion of the hopper 1, there are feeding means, as a feed-drum 6 secured to a spindle 7, carried in bearings 8, on the side-frames 3.

Rotative movement in an anti-clockwise direction is imparted by any suitable means, such as for example an electric motor, to the spindle 7, and thence to the feed-drum 6.

Cooperating with the feed-drum is a revolving body of suitable design. A preferred form consists of a pair of clearance discs.

Two clearance rollers or discs 9 are secured to a spindle 10, carried in bearings 11, on the side-frames 3, and are adapted to rotate in an anti-clockwise direction, so that they rotate in the same direction as that in which the surface of the feed-drum 6 moves.

Toothed gears 12, (on the spindle 7,) 13, (on a stud 14, carried on one of the side-frames 3,) and 15 communicate the required rotative movements from the spindle 7, to the spindle 10, and thence to the clearance discs 9.

A pair of cams 16, each having a number of suitably shaped lobes 17, and corresponding depressions, are secured to and rotatable with the spindle 10. If preferred one cam, 16, only may be arranged on the spindle 10. The clearance discs, 9, together with the cams, 16, constitute a hold-back means at the point where the cigarettes leave the hopper.

The periphery of the feed drum 6 has two circumferential grooves, 18, formed therein, in each of which platforms, 19, are situated, the said platforms being carried by supports 20 extending upwards from a foot-plate 21 secured to the base 4.

Portions of the upper faces of the platforms 19, occupy positions which are slightly raised relatively to, and above that portion of the periphery of the feed-drum 6, which is in proximity to the platforms 19, as shown more particularly in Figure 1.

The platforms 19 are also arranged in such proximity to the clearance discs 9 that a gap or space, (slightly larger than the diametrical measurement of one of the cigarettes 5, which the hereindescribed apparatus is intended to feed,) is provided between the

lower portions of the peripheral surfaces of the clearance discs 9, and the aforesaid portions of the upper surfaces of the platforms 19. This forms a delivery opening.

The platforms 19 are adapted to support a number of those cigarettes which occupy a position of proximity to the gap or space in such manner as to render it impossible for those cigarettes which occupy that position to come into actual contact with, and to be impelled in a forward direction by actual contact with, the moving peripheral surface of the feed-drum 6.

The peripheral surfaces of the feed-drum 6, and of the clearance discs 19, are of plain rubber, steel, or any suitable material which will engage cigarettes in a frictional manner, or one or more of the said peripheral surfaces may be fluted or knurled.

A supplementary pair of clearance rollers 22, may be supported by a spindle 23, rotatably mounted in bearings 24, on the side frames, 3.

The spindle 23 is caused to rotate in the same direction as that in which the clearance rollers 9 rotate by means of a toothed wheel 25, which is driven by the toothed wheel, 15, and which engages with a toothed wheel 26 secured to the spindle 23.

A pair of guard-members 27, may be supported in convenient proximity to the channel or chute 28, along which the cigarettes are delivered, but the said guard-members 27, also do not constitute an essential feature of this invention and therefore need not be more particularly described.

Although the channel or chute 28 is shown on the accompanying drawings arranged at a relatively steep incline, the said channel or chute 28, may be arranged at any convenient angle.

In a modified construction of apparatus in accordance with my present invention, shown more particularly in Figures 3, and 4, the hereinbefore mentioned platforms are in the form of rollers 19^a rotatably mounted on spindles 29, on extensions 30, of the support elements 20 and the feed-drum is constituted by a suitable number—in the drawings three are shown—of discs or pulleys 6^a, all of which are secured to the spindle 7, by a key or spline 31.

In the further modified construction of apparatus shown in Figures 5, and 6, an endless belt 6^b, takes the place of the feed-drum 6, or of the discs or pulleys 6^a the belt passing over a pulley 32, secured to the spindle 7 and under a pulley 34 rotatably mounted on a spindle 35, carried in bearings on the side-frames 3.

A second belt supporting pulley 34, is rotatably supported by a spindle 35, carried in bearings on the side-frames 3.

In the constructions of apparatus shown respectively in Figures 3, and 4, and in Figures 5, and 6, portions of the rollers 19^a, occupy positions which are slightly raised relatively to and above those portions of the peripheries of the discs or pulleys 6^a, or that portion of the upper face of the endless belt 6^b, which are or is in proximity to the rollers 19^a.

The rollers 19^a, are also arranged in such proximity to the clearance discs 9, that a gap or space (slightly larger than the diametrical measurement of one of the cigarettes 5, which the hereindescribed apparatus is intended to feed), is provided between the lower portions of the peripheral surfaces of the clearance discs 9, and the aforesaid portions of the peripheries of the rollers 19^a. The rollers 19^a, are adapted to support a number of those cigarettes which occupy a position of proximity to the aforementioned gap or space in such manner as to render it impossible for those cigarettes which occupy the said position to come into actual contact with, and to be impelled in a forward direction by actual contact with the moving peripheral surfaces of the discs or pulleys 6^a, or by actual contact with the upper face of the endless belt 6^b.

The hereinbefore described apparatus operates in the following manner:

As the feed-drum 6, or the discs or pulleys 6^a, or the belt pulley 32, rotates or rotate, those cigarettes which are frictionally engaged by that portion of the peripheral surface of the feed-drum 6, or by those portions of the peripheral surfaces of the discs or pulleys 6^a, or by that portion of the upper surface of the belt 6^b, which is or are adjacent to the platforms 19, or to the rollers 19^a, are thereby delivered on to the platforms 19, or on to the rollers 19^a, and are supported thereon out of contact with the moving peripheral surfaces of the feed-drum 6, or the moving peripheral surfaces of the discs or pulleys 6^a, or the travelling upper surface of the belt 6^b.

The said cigarettes are now caused, (by the movement and pressure of those cigarettes which are still in contact with the moving peripheral surface of the feed-drum 6, or with the moving peripheral surfaces of the discs or pulleys 6^a, or with the travelling upper surface of the belt 6^b,) to travel along and over the platforms 19, or rollers 19^a, and thence to the channel or chute 28, along which the cigarettes are conveyed to a packing machine or other desired place or receptacle.

By the rotation of the cams 16, the lobes 17 thereon will engage with and impart agitating movements to those cigarettes which are in proximity thereto, and if there is a tendency for the said cigarettes to pass through the gap or space in other than single file, the lobes 17, of the cam 16, will coact with the peripheral surfaces of the

clearance discs 9, to engage with and compel any cigarettes which may have a tendency to wedge or crowd their way into the gap or space, to move away from their assumed positions of immediate proximity to the gap, the platforms 19, or rollers 19^a, at this time imparting no such forward impelling movements to those cigarettes which are supported immediately thereon as would be produced if the said cigarettes were at this time supported directly on the moving surface, or surfaces, of the feed-drum 6, or of the discs or pulleys 6^a, or of the belt 6^b.

What I claim is:—

1. In apparatus for feeding cigarettes or like articles a hopper and feed means associated with said hopper, in combination with a platform supported in proximity to the feeding means in such manner that a portion of the upper face of the platform is slightly raised relatively to and above the portion of the said feed means which is near the platform so as to render it impossible for those cigarettes which are supported by said platform to come into actual contact with, and to be impelled in a forward direction by, the feed means, and a rotatable clearance roller having its axis parallel to the axis of said feed means leaving a gap, slightly larger than the diameter of one of the cigarettes, between its surface and said portion of the upper face of the platform; all substantially as, and for the purpose, hereinbefore described.

2. In apparatus in accordance with claim 1, a rotatable cam, having its axis arranged parallel to the axis of the feed means, adapted to co-act with the periphery of the clearance roller to move away from their assumed positions of immediate proximity to the gap between the clearance roller and the platform any cigarettes which may have a tendency to wedge, or crowd, their way into the gap; substantially as, and for the purpose hereinbefore described.

3. A feeding machine comprising a hopper, a delivery chute shaped to accommodate a single file stream of articles delivered thereto, a driven feed surface upon which the articles in the hopper rest, and by which they are fed toward the chute, and hold-back means arranged at the entrance of the chute and moving in a direction opposite to the stream flow, in combination with a fixed platform on which the articles pass to the chute, said platform serving as a support for the articles at a point opposed to said hold-back means.

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

WILLIAM ROSE.