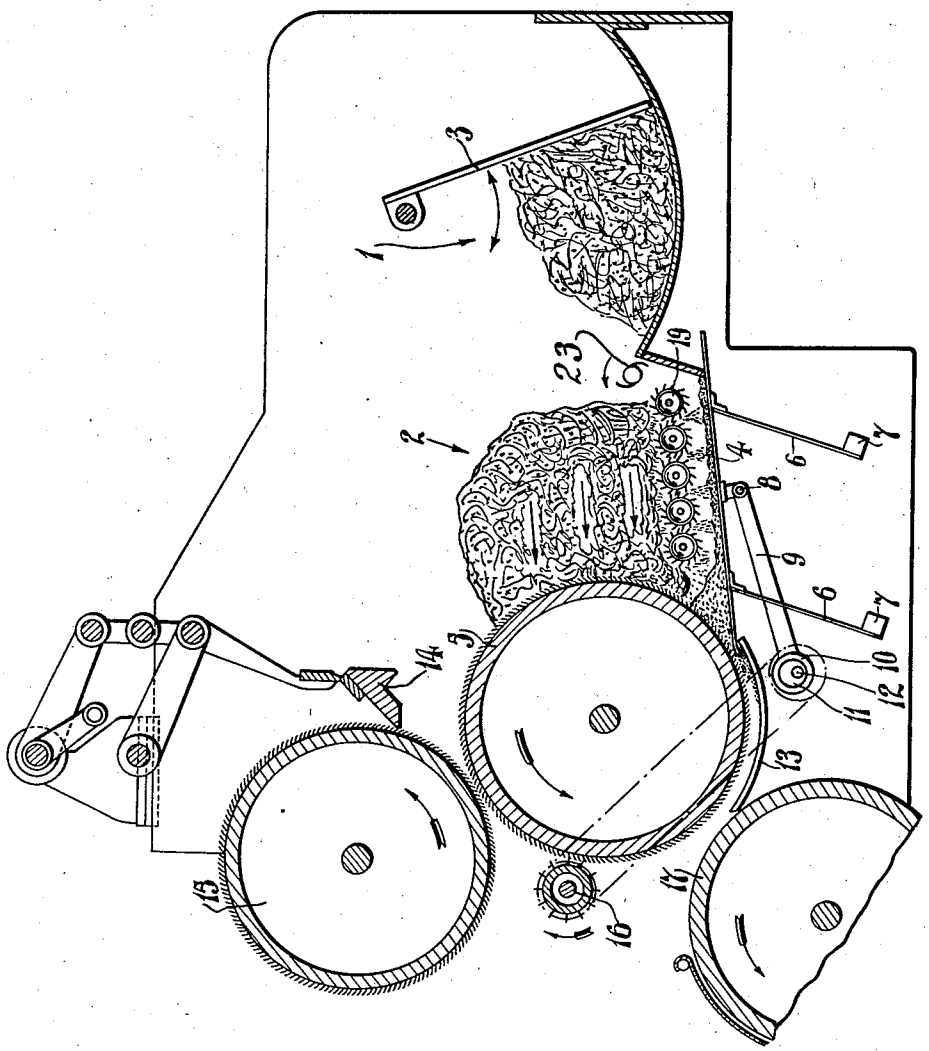
Jan. 9, 1945. F. F. RUAU 2,367,060

APPARATUS FOR FEEDING CUT TOBACCO

Filed July 17, 1942



Inventor
Felix F. Ruau
By Watson, Cole, Grindle & Watson
Attorneys

Patented Jan. 9, 1945 2,367,060

UNITED STATES PATENT OFFICE

2,367,060

APPARATUS FOR FEEDING CUT TOBACCO

Félix Frédéric Ruau, Deptford, London, England, assignor to Molins Machine Company, Limited, Deptford, London, England

Application July 17, 1942, Serial No. 451,339
In Great Britain July 22, 1941

6 Claims. (Cl. 131—109)

This invention concerns improvements in or relating to apparatus for feeding cut tobacco, for example, apparatus for feeding cut tobacco to cigarette making or tobacco packing machines of the kind in which a mass of cut tobacco is placed in a hopper or box from which it is removed by a carded conveyor or combing member such as a carded roller or a carded belt (and hereinafter called a combing member) and in which a feeding device is provided to urge the tobacco towards such carded member. Such apparatus is referred to hereinafter as apparatus of the kind described.

As is well known, cut tobacco contains numerous short fragments of leaf which are included in the trade term "shorts." In manipulating and feeding cut tobacco, these shorts tend to fall away from the main tobacco mass and it is important for commercial reasons that they should be incorporated within the finished product of the machine.

According to the present invention there is provided apparatus of the kind described wherein the said feeding device comprises a carded feeder disposed within the hopper at a suitable distance above the base of the hopper and arranged to permit shorts to fall therethrough on to said base which comprises a shaking or vibrating plate conveyor adapted to urge the shorts towards said carded combing member. Preferably the feeder consists of a number of carded rollers mounted for rotation in the same direction. The upper surfaces of the rollers are preferably tangential to a straight line which slopes downwards towards the combing member and the rollers are so disposed that their carding intermeshes and prevents any appreciable quantity of tobacco, other than shorts, from falling through.

The vibrating conveyor may comprise a plate or support forming the bottom of the hopper and preferably the plate is arranged to slope downwards slightly towards the combing member to which the tobacco is fed. The slope of the plate may be parallel to the above-mentioned straight line. The plate of the vibrating conveyor is subjected to vibrating or shaking movements and preferably these movements are of short amplitude while the mechanism operating the conveyor is arranged to give the plate a considerable number of vibrations (about 1,000) per minute.

One way of carrying the invention into effect will be described with reference to the accompanying drawing which shows apparatus for feeding cut tobacco to a cigarette making machine.

Referring to the drawing, the tobacco is placed in a container 1 adjacent to the hopper 2 of the tobacco feeding apparatus and an oscillating flap 3 is provided (such as is described in prior United States patent specification No. 1,955,012) which flap periodically sweeps tobacco into the hopper and then recedes to permit the surplus tobacco to pass back into the container. If desired, the masses of tobacco in the container and the hopper are kept separate by a vaned rotating member 23 positioned intermediate the container and hopper.

The base of the hopper consists of a plate 4, constituting part of a shaking or vibrating conveyor, which slopes downwardly towards a carded combing member 5 which in the present instant consists of a carded combing roller. This base plate extends from the container to the combing roller and above it there is mounted a carded feeding device which forms a false bottom to the hopper and extends from the container to a position a few inches away from the combing roller. The carded feeding device shown comprises five carded rollers 19 of equal diameter. They are journalled for rotation in the hopper frames and arranged with their carding intermeshing to form the false bottom above mentioned. The rollers are also so arranged that their upper surfaces are tangential to a straight line parallel to the downwardly sloping conveyor plate 4 which constitutes the true bottom of the hopper.

The carded rollers which all rotate in the same direction urge the tobacco mass towards the combing roller and during this feeding movement shorts drop through the intermeshing carding on to the conveyor plate. In the space between the combing roller and the nearest carded feeding roller the tobacco mass is raised up by the movement of the carding of the combing roller and only shorts and perhaps a few strands of tobacco fall down on to the conveyor plate.

The conveyor plate is attached to two support members 6 which project downwardly from the lower surface of the plate. These members may be pivoted levers but are preferably, and as shown, flat springs and the ends of these springs remote from the plate are fixed to support bars 7 mounted in the hopper frame. The springs are substantially parallel and their upper ends are disposed as shown so that as the conveyor plate is oscillated or vibrated it urges the shorts forwardly towards the carded combing roller 5.

Owing to the sloping disposition of the plate and the arrangement of the springs the top surface of the plate moves upwardly on the forward movement of the plate, thereby feeding the shorts to the combing roller.

In this way the shorts are removed by the carding of the combing roller and become fairly evenly mixed with the other tobacco which is later removed from the hopper by the carding of the combing roller as above described.

Beneath the conveyor plate there is fixed a bearing bracket 8 to which is pivoted one end of a connecting rod 9, the other end of said rod comprising an eccentric strap 10 which embraces an eccentric 11 mounted on a shaft 12 journalled in the hopper frames. The shaft is rotated from the driving mechanism of the tobacco feeding apparatus at such a rate that the plate of the shaking conveyor will be oscillated or vibrated a considerable number of times per minute (for example 1,000 to 1,200 times per minute). The total movement or oscillation of the conveyor plate may be ⅛ of an inch. The drive to the shaft 12 may be by chain or belt, for example, from a picker roller 16 as shown in the drawing.

Beneath the combing roller there is mounted a shield 13 concentric with the periphery of said roller and which extends through an arc of about 90°. One end of said shield is so positioned that the forward edge of the conveyor plate slightly overhangs the shield, thus preventing the escape of any tobacco or shorts from between the combing roller and the edge of the plate.

The combing roller thereafter conveys the tobacco, fed to it as above described, forwardly and upwardly in such manner that the tobacco is arranged over the surface of the combing roller in the form of a rough carpet. The tobacco may then be treated in any desired manner.

As shown, by way of example, the tobacco on the combing roller is operated on by a tamping device 14 which works in the manner described in United States patent specification No. 1,962,-036. The tobacco is then brushed by a brushing roller 15 and removed from the combing roller by a picker roller 16 and showered on to a distributor 17 from which it is delivered into the trough of the cigarette making machine in any suitable manner. Or the feeding apparatus may be constructed as described in United States Patent 2,326,793, granted August 17, 1943, to which reference should be made.

What I claim as my invention and desire to secure by Letters Patent is:

1. In tobacco feeding apparatus, the combination with a hopper, of a combing member receiving tobacco from said hopper and conveying the same upwardly, means including a carded feeder for moving the tobacco toward said combing member, said feeder being constructed and arranged to permit shorts to fall therethrough, and a vibrating conveyor disposed beneath said feeder to receive the shorts and to urge the same toward said combing member.

2. In tobacco feeding apparatus, the combination with a hopper, of a combing member receiving tobacco from said hopper and conveying the same upwardly, means including a carded feeder for moving the tobacco toward said combing member, said feeder being constructed and arranged to permit shorts to fall therethrough, and a conveyor disposed beneath said feeder to receive the shorts and to forward the same to said combing member at a lower point.

3. In tobacco feeding apparatus, the combination with a hopper, of a combing member receiving tobacco from said hopper and conveying the same upwardly, means including a carded feeder for moving the tobacco toward said combing member, said feeder being constructed and arranged to permit shorts to fall therethrough, said feeder comprising a plurality of carded rollers mounted for rotation in the same direction and so disposed that their carding intermeshes and prevents any appreciable quantity of tobacco, other than shorts, from falling through, and a conveyor disposed beneath said feeder to receive the shorts and to forward the same to said combing member at a lower point.

4. In tobacco feeding apparatus, the combination with a hopper, of a combing member receiving tobacco from said hopper and conveying the same upwardly, means including a carded feeder for moving the tobacco toward said combing member, said feeder being constructed and arranged to permit shorts to fall therethrough, said feeder comprising a plurality of carded rollers mounted for rotation in the same direction and so disposed that their carding intermeshes and prevents any appreciable quantity of tobacco, other than shorts, from falling through, the upper surfaces of said rollers being tangential to a plane inclined downwardly toward the combing member, and a vibrating conveyor disposed beneath said feeder to receive the shorts and to urge the same toward said combing member.

5. In tobacco feeding apparatus, the combination with a hopper, of a combing member receiving tobacco from said hopper and conveying the same upwardly, means including a carded feeder for moving the tobacco toward said combing member, said feeder being constructed and arranged to permit shorts to fall therethrough, and a vibrating support disposed beneath said feeder to receive the shorts and to urge the same toward said combing member, said support being inclined downwardly toward said combing member and forming a portion of the bottom of the hopper.

6. In tobacco feeding apparatus, the combination with a hopper, of a combing member receiving tobacco from said hopper and conveying the same upwardly, means including a carded feeder for moving the tobacco toward said combing member, said feeder being constructed and arranged to permit shorts to fall therethrough, a vibrating conveyor disposed beneath said feeder to receive the shorts and to urge the same toward said combing member, and a shield disposed beneath and about the lower portion of said combing member and extending into proximity with the discharge end of the vibrating conveyor for preventing escape of shorts from the latter.

FÉLIX FRÉDÉRIC RUAU.