

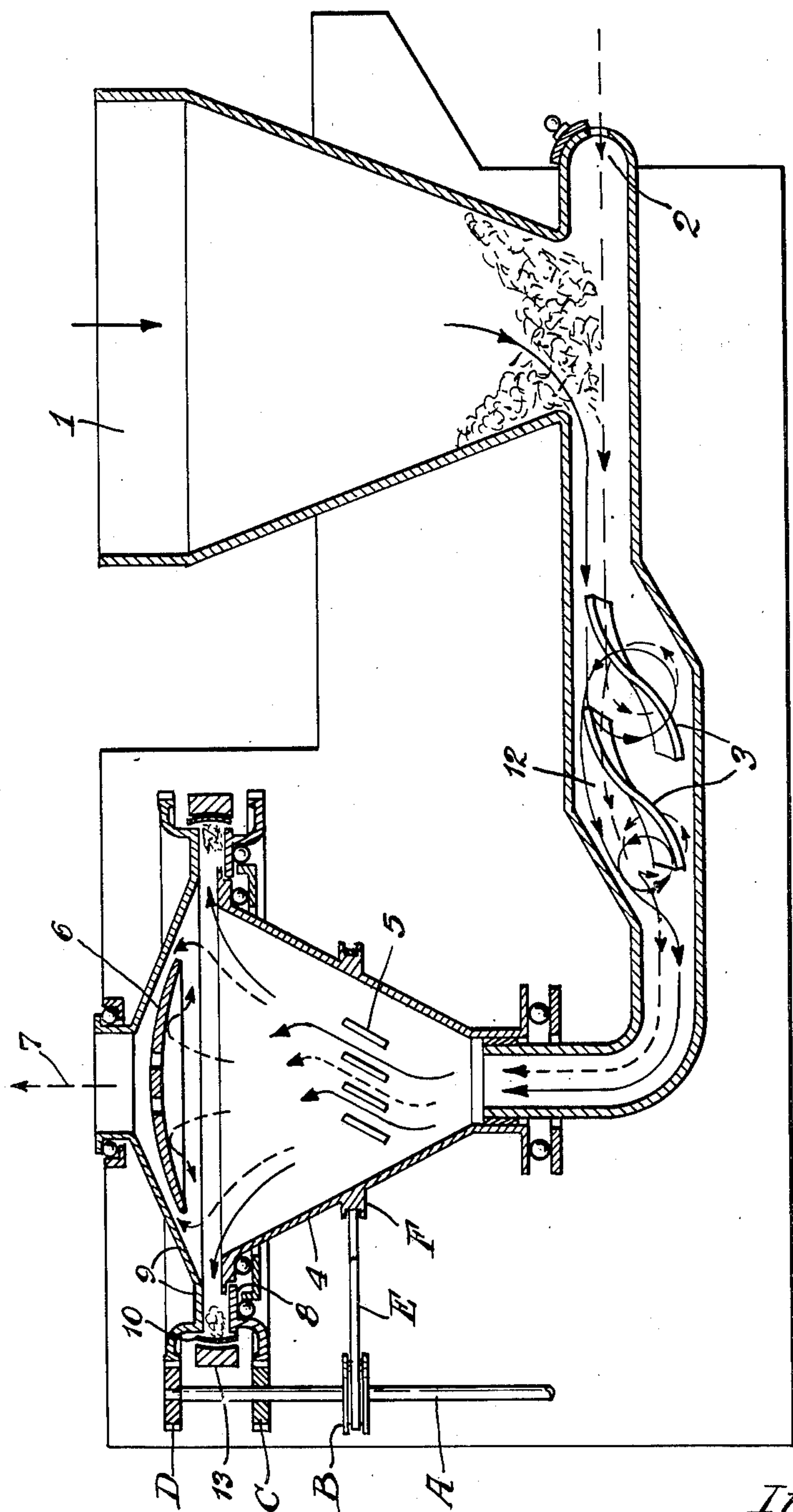
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DEVICE FOR LOOSENING AND DISTRIBUTING TOBACCO

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DEVICE FOR LOOSENING AND
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1

This invention relates to a device for loosening compacted tobacco and arranging the loosened tobacco into a tobacco string or rod as required for the subsequent operations in the manufacture of cigarettes. More particularly, this invention relates to such a device for applying for the above purpose pneumatical rather than mechanical means.

At present, compressed tobacco is usually loosened and distributed by mechanical implements such as combs, steel wire brushes, or the like which are mechanically brought into contact with the tobacco leaves to pull the tobacco particles apart. This method has considerable disadvantages as it involves the breaking and the shattering of the structure of the relatively fragile and brittle tobacco thus impairing its quality and causing loss of tobacco material.

An object of the present invention is to provide a device which overcomes the above disadvantages of applying mechanical forces to the tobacco structure, by subjecting the compact tobacco to a whirling stream of air which loosens the tobacco sufficiently for all subsequent operations. Another object of the invention is to subject the so loosened tobacco particles immediately to centrifugal forces which cause the same to be arranged into a tobacco rod or string as required in cigarette manufacturing. Still another object of the invention is to provide a device in which compacted tobacco is brought into contact with an air stream which in turn carries the tobacco into a duct with helical guide plates to impart whirling motion to the tobacco, whereupon the air-tobacco composite enters a rotating separator drum wherein centrifugal forces are imparted on the heavier tobacco particles which are thereby radially hurled into a tobacco rod or string, whereas the carrying air escapes axially.

Other objects of the invention will become apparent from the following detailed description and accompanying drawing showing in the only figure diagrammatically an elevational sectional view of a preferred embodiment of the invention.

Referring now more particularly to the drawing, 1 represents a hopper into which compact tobacco is introduced and within which the tobacco is brought into contact with a vigorous stream of air. The air enters at 2, passes through the tobacco and carries tobacco into a duct 12 in which fixed helical guide plates 3 cause the tobacco and air to be whirled around, loosening thereby the tobacco effectively. Thereafter, 55

2

the air carries the tobacco into a rotating funnel-shaped separator drum 4 inside of which the blower blades 5 rotate.

The composite air and tobacco having been brought into helical whirling motion by the guide plates 3 in the duct 12 is now subjected to centrifugal forces after having passed the blower blades 5, whereby the specific heavier tobacco particles leave the separator drum 4 radially at its upper rim, whereas the air, under influence of the blower action of blades 5, maintains an axial direction and blows against baffle plate 6, whereby the air stream is broken and guided through passages in and around the plate to outlet 7. Lying substantially within the plane of the upper rim of the rotating drum 4 and concentrically surrounding the rim is a rotating flat ring 8, and vertically spaced above said ring, a cover plate 9, forming in combination an annular channel. Into this channel the tobacco particles, passing over the rim of separator drum 4, are hurled and they accumulate at the outer periphery of said channel into a tobacco rod or string. The tobacco string so formed is brought into contact with a backing paper strip 10, encircling and engaging the outer circumference of the ring 8 and cover plate 9. The tobacco rod or string is then tangentially diverged and fed into a cigarette making machine. The paper strip 10 is backed by a stationary wall 13 surrounding the rotating ring 8 and cover plate 9 and forming the base of the annular channel.

As illustrated, by way of example in the drawing, the drum 4, the ring 8 and the cover plate 9 are rotated by a vertical shaft A driven in any desired manner. The shaft A has secured at its upper end two axially spaced gears C and D which are in driving engagement with gear teeth provided on the outer circumference of the ring 8 and cover plate 9 respectively. The shaft A has also mounted thereon a pulley B which by means of a belt E rotates the drum 4 provided on its circumference with a flange F having a groove for receiving the belt E. Furthermore, it is preferable to operate the funnel-shaped separator drum 4 at a different speed than the flat ring 8 and cover plate 9 which last-named two parts form the tobacco string forming channel. The speed of the string forming parts has to conform to the speed of the rod or cigarette making machine, whereas it is advantageous to make the speed of separator drum 4 changeable, to be able to adjust the centrifugal forces imparted on the tobacco. For this purpose the pulley B may be exchanged by another

3

pulley having a different diameter so that the speed with which the drum 4 is rotated is varied. By doing so, the compactness of the formed tobacco rod or string may be governed to a large extent.

On account of the whirling motion imparted on the tobacco by the helical guide plates 3 and the turbulent motion within the rotating drum 4 the tobacco is effectively loosened and uniformly mixed and distributed by the novel device of this invention just described. In order to supply the correct amount of tobacco to the rod or string forming channel, it is possible to change the speed of the blower. The baffle-plate 6 may be provided with suitable perforations or the like so the air may escape commensurate to the requirements.

Having thus described my invention, I desire to have it understood that the device shown is only illustrative and that various alterations in the details are possible without departing from the scope of the invention.

What I claim is:

1. A device for loosening and distributing tobacco comprising an air duct suitable to carry tobacco within a stream of air, means within said duct to impart helical motion to the composite air and tobacco, a vertical separator drum with a rim at its upper end and adapted to be rotated at high speed, a rotatable channel structure substantially within the plane of the upper rim of said separator drum and concentrically surrounding it into which the tobacco particles are hurled to accumulate into a tobacco string, a cover plate above said separator drum and forming a part of said channel structure, and means within said cover plate to obstruct the passage of tobacco and to permit the escapement of air.

2. A device for loosening and distributing tobacco comprising an air duct passing a source of tobacco and suitable to carry tobacco within a stream of air; means within said duct to impart whirling motion to said stream of air and tobacco; a separator drum rotatable about a vertical axis

4

and connected with its lower end to one end of said duct; a rotatable channel concentrically surrounding the upper outlet side of said drum comprising a flat ring, a vertically spaced cover plate, and a paper strip encircling said flat ring and cover plate; means for driving said separator drum and said channel at different speeds, and means within said cover plate serving to obstruct the passage of tobacco and as outlet for the stream of air.

3. A device for loosening and distributing tobacco comprising an air duct passing a source of tobacco and arranged to receive tobacco from said source and to carry tobacco within a stream of air caused to pass through said duct, a vertically disposed funnel-shaped rotatable separator drum connected to one end of said duct, a rotatable channel structure surrounding the upper outlet side of said separator drum, and a perforated baffle-plate spaced above the outlet side of said separator drum whereby the tobacco is centrifugally directed to the channel structure and the air stream is broken and guided through and around the baffle-plate to the outlet.

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