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PNEUMATIC CONVEYORS FOR LEAFY OR FIBROUS MATERIAL, PARTICULARLY TOBACCO

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Fig. 1

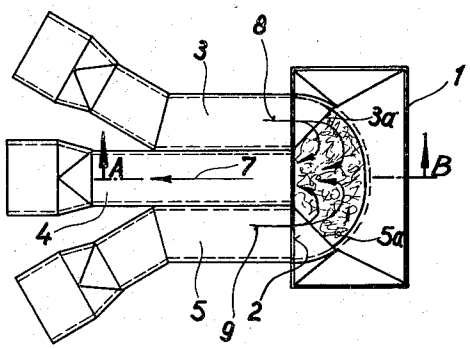

Fig. 2

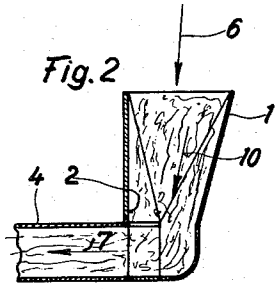

Fig. 3

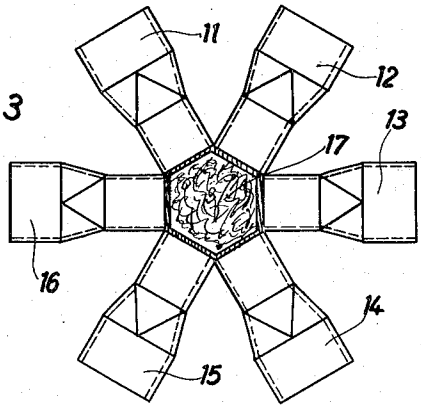

Fig. 4

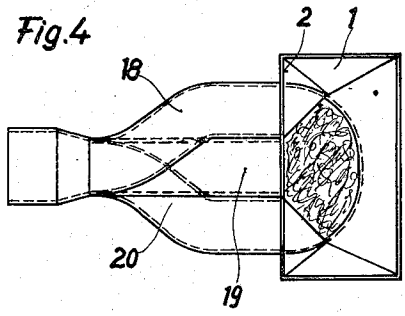

Fig. 5

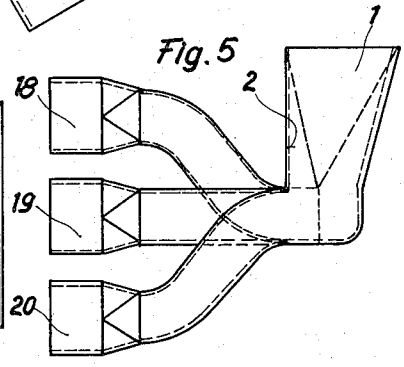

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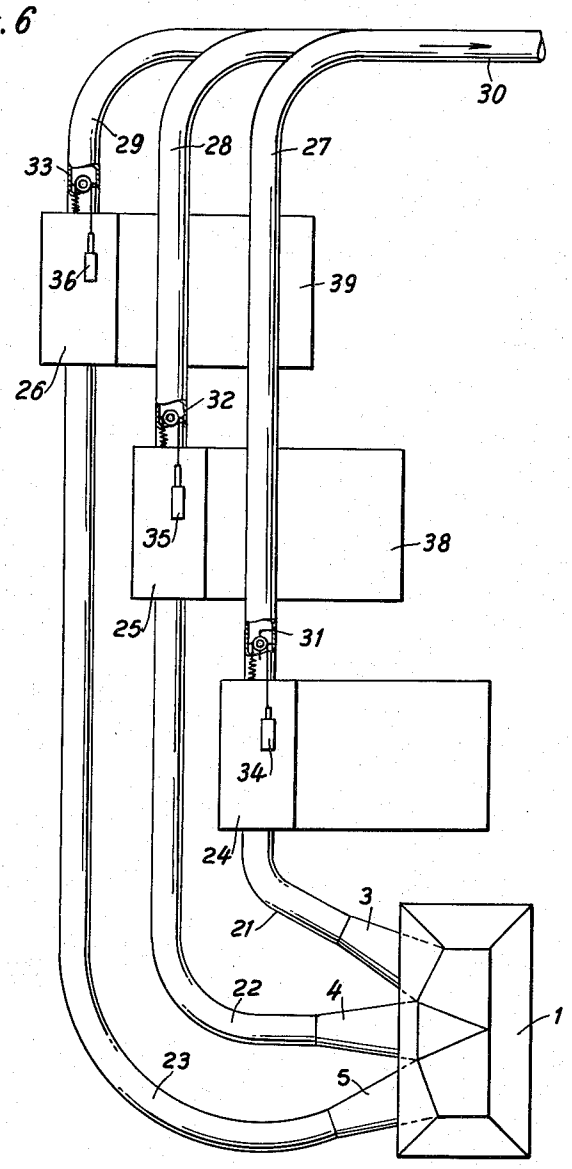
Fig. 6



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2,995,404

PNEUMATIC CONVEYORS FOR LEAFY OR FIBROUS MATERIAL, PARTICULARLY TOBACCO

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Claims priority, application Germany May 23, 1958
2 Claims. (Cl. 302—28)

The invention relates to improvements in pneumatic conveyors for leafy or fibrous material, particularly tobacco. The tobacco is to be conveyed to a plurality of tobacco processing machines, for instance to a cigarette making machine. The tobacco is alternately removed by suction lines from a distributor device. Devices of this type are known in which mechanical switches or guides are employed which connect the tobacco conveyor line with the respective tobacco processing machines. Such mechanical switches and guides are, however, subject to break-downs, because they become clogged after longer use and this has the result that the moving parts become jammed.

It has also been proposed heretofore to connect to a tobacco conveyor line a plurality of distributing lines by means of the interconnection of a switch or a plurality of switches. In such devices there is provided a throttle flap in the suction air line of the tobacco conveyor line to be supplied with tobacco and at the same time the tobacco conveyor line is connected by means of a switch to the main conveyor line.

The principal object of the invention is a device in which a suction air line is alternately connected with a plurality of conveyor lines and the novelty consists in this that the suction fittings of the tobacco conveyor lines are connected to a common distributor hopper.

It was discovered that the device of the present invention has the surprising advantage that the conveyor lines which are not connected with the suction line will admit to the conveyor line, which is connected to the supply hopper, a certain amount of auxiliary air and that this auxiliary air will favorably influence the tobacco supply to the conveyor line connected with the supply. Heretofore it was believed that, if only auxiliary air passes through the not connected lines, the tobacco would remain simply in its rest position. According to the discovery made by the present invention, however, it is now possible to connect without any additional mechanical means a plurality of conveyor lines alternately with a source of supply.

The drawing shows diagrammatically a number of embodiments of the device of the invention.

FIG. 1 illustrates in a top plan view an embodiment of a distributor hopper provided with three connections.

FIG. 2 is a sectional view of the distributor hopper along the line A—B of FIG. 1.

FIG. 3 illustrates in a top plan view a distributor hopper provided with six connections.

FIG. 4 illustrates still another top plan view of a modification in which a distributor hopper is provided with three connections.

FIG. 5 illustrates an elevation view of a distributor hopper shown in FIG. 4, and

FIG. 6 is a diagrammatic view of an arrangement of the distributor device in connection with a suction line serving three cigarette machines.

In the arrangement shown as an example in FIG. 6, a distributor device **1** has three suction fittings **3**, **4**, **5** separately connected through tobacco conveyor ducts **21**, **22**, **23** to discharge chambers **24**, **25**, **26**, each serving a cigarette machine **37**, **38**, **39**, respectively. Each of the discharge chambers **24**, **25**, **26** is connected through a suction duct **27**, **28**, **29** to a common suction line **30** which is in communication with a vacuum source (not shown). The discharge chambers **24**, **25**, **26** may be of any suitable kind such, for example, as disclosed in Patent 2,812,217, and of the discharge chambers only one at a time is made active by means of the throttle flaps **31**, **32**, **33** which are operated by the magnets **34**, **35**, and **36**, respectively.

The distributor device comprises a hopper **1**, the lower end or bottom of which is closed. The sidewall **2** in the lower portion of this hopper **1** is provided with apertures to which are connected the three suction fittings **3**, **4** and **5** which in turn are attached to the three conveyor ducts **21**, **22**, and **23**, respectively. The inlet ends *3a* and *5a* of the suction fittings **3** and **5** are cut off at an angle in order to improve the drawing of the tobacco into the conveyor lines.

According to FIG. 2, the tobacco is supplied by any desired source of supply and is dropped in the direction of the arrow **6** into the upper open end of the hopper **1**. From the interior of the hopper the tobacco enters, as a result of the suction air line, into the selected conveyor line and, of course, in doing this the tobacco moves through the respective suction fitting. If, for instance, the suction fitting **4** is connected with the suction air line, then the tobacco enters in the direction of the arrow **7** into the suction fitting **4**. In addition, the air passes through the distributor hopper **1** in the direction of the arrow **10** and also the suction fittings **3** and **5** are being used for furnishing auxiliary air into the suction fitting **4**, in that the air flows in the direction indicated by the arrows **8** and **9**.

FIG. 3 illustrates an embodiment of the invention in which the common distributor hopper **17** is connected with six pneumatic conveyor lines provided with the suction fittings **11**, **12**, **13**, **14**, **15** and **16**.

If it is desired that the width of the entire conveyor device is not much greater than the width of the tobacco feeding stream, then one may employ the modification illustrated in FIG. 4. In this last named embodiment the suction fittings are connected to the sidewall **2** of the hopper **1** in the same manner as shown in FIG. **1**. The two outer conveyor lines **18** and **20**, however, are displaced with respect to the center conveyor line of the device in an upward respectively downward direction, so that the three conveyor lines **18**, **19** and **20** are arranged one above the other with the conveyor line **19** in the center, in other words, the center axes in the conveyor lines **18**, **19** and **20** are arranged in a common vertical plane. The connection to a common suction line is according to U.S. Patent 2,843,429.

What I claim is:

1. A tobacco distributor device for selectively supplying tobacco to a plurality of cigarette machines through separate conveyor ducts alternately connectible to a common suction line, comprising a gravity feed hopper having an open upper end and a closed lower end and adapted to receive the tobacco to be distributed through the conveyor ducts, and a plurality of suction fittings in communication with the lower portion of said hopper and each connected to one of said conveyor ducts whereby, when suction is applied to one of said fittings through the corresponding conveyor duct by said suction line, air is sucked into said conveyor duct through the falling tobacco in the hopper from the open top of the hopper and from the other conveyor ducts.

2. The tobacco distributor as set forth in claim 1 provided with three conveyor ducts connected side by side to the hopper, in which the ends of the two outer ducts are inclined towards the middle duct within the hopper to facilitate the passage of air from one duct to another within said hopper.

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