

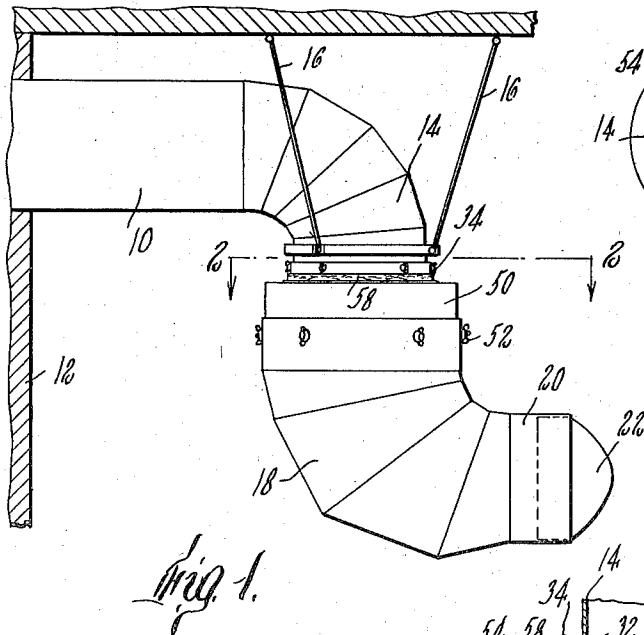
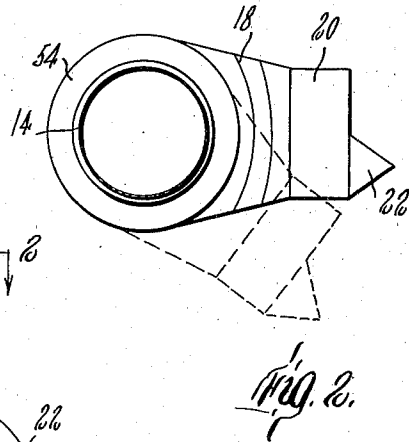
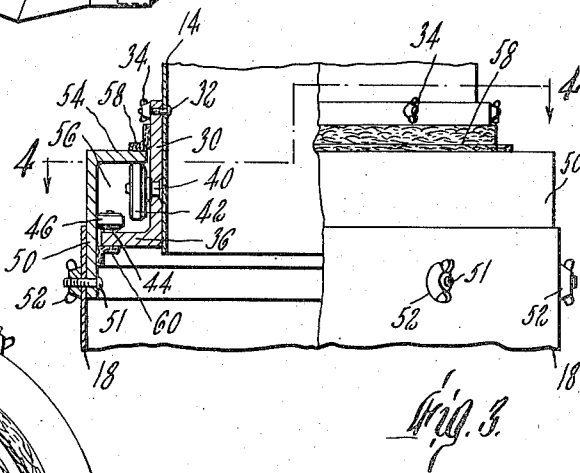
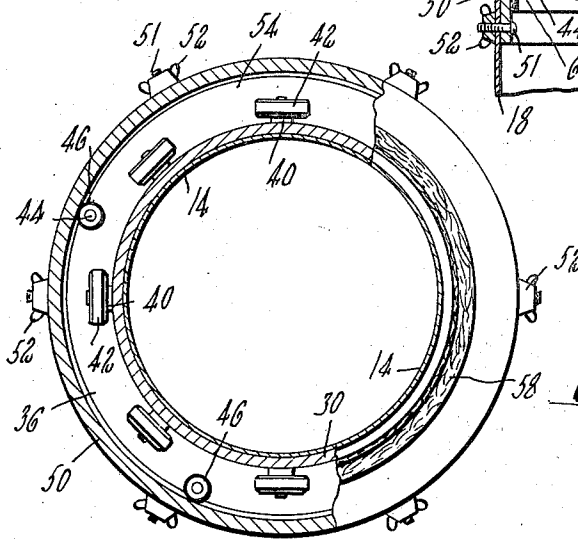
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2,449,592

DISTRIBUTOR FOR AIR-BORNE FIBERS

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## UNITED STATES PATENT OFFICE

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## DISTRIBUTOR FOR AIR-BORNE FIBERS

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2 Claims. (Cl. 19-146)

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This invention relates to a device for effectively distributing air-borne fibers which are blown into a blending room for the purpose of making uniform mixtures of different kinds of fibers to be made up into yarns.

It is an object of the invention to provide a device which is simple in structure, is reliable in operation, and is particularly adapted for the special purpose for which it is designed. The device hereinafter described has a rotatable member with a discharge spout from which a stream of air issues, the stream being directed from the spout in such a manner that the reaction force from the stream causes the member to rotate and thus to distribute the fibers which are carried by the air stream. According to the invention, frictional resistance to rotation of the rotatable member is reduced to a minimum by the employment of especially effective anti-friction bearings and these bearings are protected from being clogged by lint or other foreign matter by rings of flexible material which span the clearances between the stationary and rotatable members but which do not cause any appreciable amount of frictional drag between the members.

For a more complete understanding of the invention, reference may be had to the following description thereof and to the drawing, of which:

Figure 1 is an elevational view of an embodiment of the invention;

Figure 2 is a section on the line 2-2 of Figure 1;

Figure 3 is a fragmentary elevational view of a portion of the apparatus shown in Figure 1, this portion being shown on a larger scale with parts broken away to show in section;

Figure 4 is a section on the line 4-4 of Figure 3.

As indicated in Figure 1, the invention may be embodied in a delivery pipe 10 which enters a blending room through a wall 12 thereof. The delivery pipe 10 terminates in a vertical section 14 which opens downward. If required, suitable supports 16 may be attached to this end section so as to support it adequately from the ceiling of the blending room. An extension in the form of a pipe elbow 18 is rotatably mounted at the end of the delivery pipe. This pipe elbow curves 90° so that its orifice is adapted to project a horizontal stream of air therefrom. The end section 20 of the elbow may, if desired, be of smaller diameter than the remainder of the elbow 18, the diameter of the end section 20 being shown as substantially equal to that of the delivery pipe 10. Thus, the air stream will emerge from the

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orifice of the end section 20 with approximately the same velocity as it had in the delivery pipe 10.

At the orifice of the end section 20 is a visor or deflector 22 which is preferably a short lip in the shape of a lune extending about half-way around the rim of the orifice and thus being in the path of a portion of the air stream issuing from the orifice. This deflector is slidable about the axis of the section 20 and can be manually turned about as one of its edges slides along the end edge of the section. By such sliding adjustment, the air stream can be deflected at a definite angle with respect to the axis of the end of the elbow section 20 but in any desired direction from this axis. Thus the stream can be directed upward from the axis or downward or toward either side. By manual adjustment of the deflector 22, the speed of rotation of the elbow can be controlled and the manner of distribution of the air-borne fibers can be varied to some extent by directing the stream with an upward or downward component from the horizontal plane.

Since it is desirable in distributing air-borne fibers to rotate the elbow by relatively small forces derived from comparatively gentle air streams, special anti-friction bearings between the delivery pipe and the elbow are provided, such bearings being intended to reduce frictional resistance to a minimum. For this purpose, a collar 30 is secured to the lower end of the pipe section 14 by any suitable means such as bolts 32 with wing nuts 34 thereon. The collar 30 has at its lower end an outturned radial flange 36. Projecting radially from the collar 30 at spaced intervals and in a horizontal plane are a number of studs 40. On each stud is rotatably mounted a roller 42, each roller being provided with a set of ball bearings between itself and the stud 40 on which it is mounted so that each roller 42 is capable of rotating with a very small frictional resistance. The rollers 42 and their bearings may conveniently be similar to the rollers and bearings on high-grade roller skates. Projecting up from the flange 36 at spaced points near the margin thereof are a number of studs 44 on each of which is rotatably mounted a roller 46 disposed in a horizontal plane. Each roller 46 is preferably provided with ball bearings so that it rolls freely with minimum resistance on its stud. Each of the horizontal rollers 46 is located with reference to the periphery of the flange 36 so that a portion of the periphery of each roller projects slightly beyond the periphery of the flange.

At the upper end of the elbow 18 a collar 50, which may be referred to as the lower collar in

distinction to the upper collar 30, is secured by means of bolts 51 and wing nuts 52. The lower collar 50 is provided at its upper end with an intumed flange 54. This collar surrounds the flange 36 and is held out of contact therewith by the rollers 46 which project beyond the periphery of the flange 36 and engage the inner wall surface of the collar 50. The intumed flange 54 extends inward toward the outer wall surface of the collar 30 but does not touch it, the rollers 46 serving to keep the rim of the flange 54 centered with respect to the collar 30 and out of direct contact therewith. Thus a slight clearance is maintained between the rim of the flange 36 and the adjacent wall surface of the collar 50 and between the rim of the flange 54 and the adjacent wall surface of the collar 30. The flange 54 rests upon the rollers 42 so that these rollers carry the weight of the collar 50 and the elbow 18 which is secured thereto.

As is evident in Figure 3, the flanges 36 and 54, together with adjacent portions of the collars, define a chamber 56 in the shape of a ring which contains all of the rollers 42 and 46. In order to prevent the ball bearings of the rollers 42 and 46 from becoming clogged with lint or other fine dust which may be carried into the blending room by the air stream, the chamber 56 is sealed against the entrance of such foreign matter by suitable packing rings of flexible material which span the clearances between the collars and flanges. The clearance between the flange 54 and the adjacent surface of the collar 30 is spanned by a strip 58 of felt or other flexible material which extends around the collar 30 and bears against adjacent surface areas of this collar and the flange 54. In order to maintain this strip in place, it is preferably secured by an adhesive or otherwise to one or the other of these members, that is, either to the collar 30 or to the flange 54. If it is secured to the collar 30, it remains stationary with a portion thereof in light contact with the rotating flange 54, the frictional drag on the flange resulting from such contact being negligible.

In like manner a strip 60 of felt or other suitable flexible material is provided to span the clearance between the flange 36 and the adjacent wall of the lower collar 50, this strip 60 being secured either to the flange 36 or to the collar 50, the other portion of the strip being in light contact with the other member. These strips of felt effectively prevent access of lint or dust to the bearings without offering any appreciable resistance to rotation of the elbow. By reason of the special bearings employed, the elbow rotates readily in response to small reaction forces from the deflected discharge of the air stream.

#### I claim:

1. A device for distributing air-borne fibers in a blending room, comprising a delivery pipe having a vertical portion opening downward, a collar with an outturned radial flange secured to the end of said portions, a series of spaced studs projecting radially from said collar above said flange, a vertical roller rotatably mounted on each said stud with an anti-friction bearing, a series of spaced studs projecting up from said flange near the periphery thereof, a horizontal roller rotatably mounted on each said upwardly projecting studs, each said horizontal roller having a portion of its periphery projecting slightly beyond the edge of said flange, a lower collar rotatably surrounding said flange and engaging the projecting portions of said roller peripheries, said lower collar having an intumed radial flange at the upper end thereof resting on said vertical rollers, a pipe elbow extension secured to said lower collar and rotatable therewith, and an adjustable deflector at the lower end of said extension.

2. A device for distributing air-borne fibers in a blending room, comprising a delivery pipe having a vertical portion opening downward, a radial flange at the open end thereof, a series of radially projecting studs mounted above and near to said flange, a vertical roller rotatably mounted on each said stud, a series of vertical studs projecting up from said flange with a horizontal roller rotatably mounted on each said vertical stud, each said horizontal roller having a portion of its periphery projecting out beyond said flange, a pipe section rotatably supported by said delivery pipe, said pipe section having an intumed flange at its upper end bearing on said vertical rollers, and flexible sealing strips covering the clearances between the peripheries of said flanges and the pipe walls adjacent thereto.

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