

March 28, 1961

M. S. FAIN
AIR CLEANER

2,976,558

Filed June 24, 1959

2 Sheets-Sheet 1

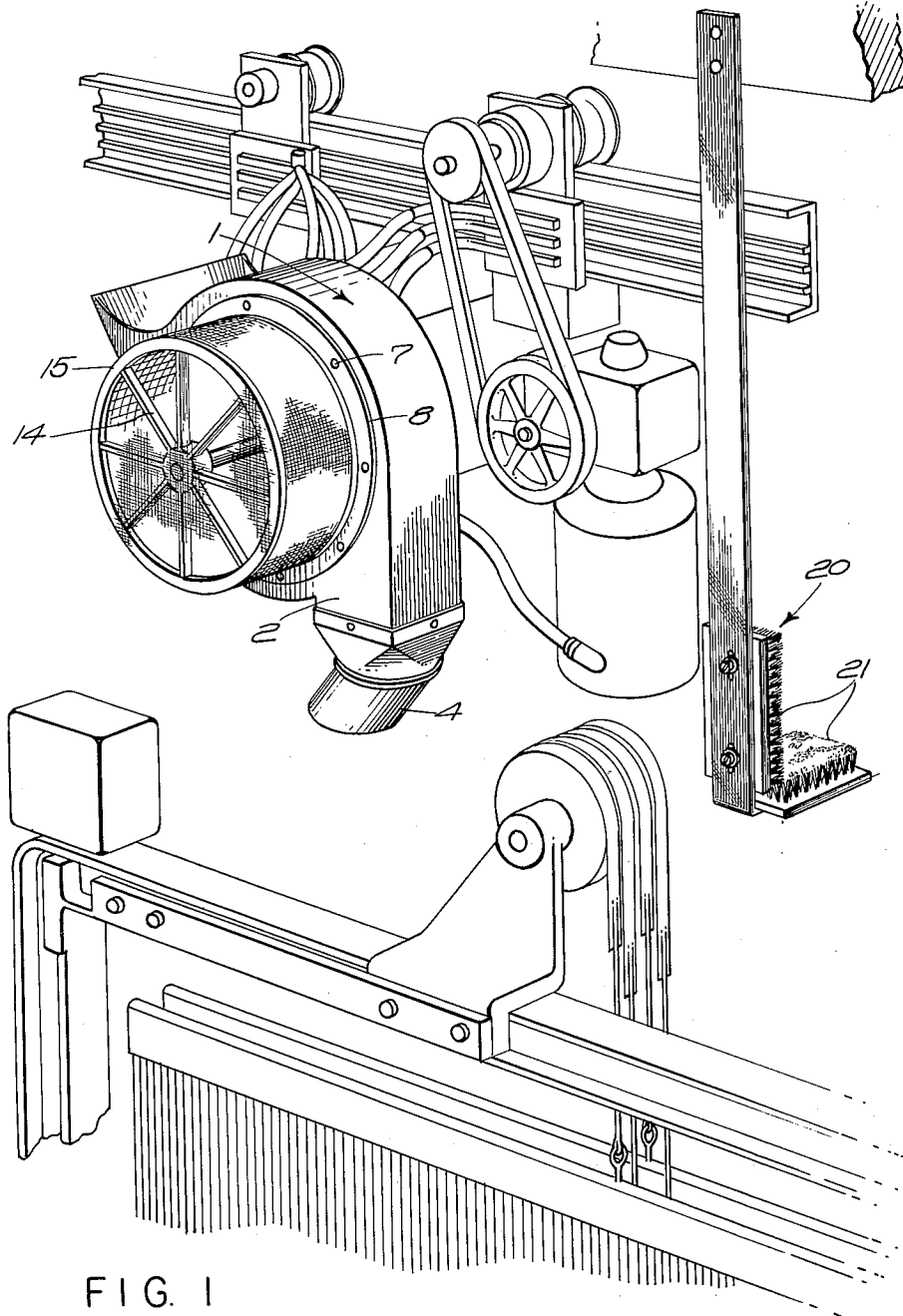


FIG. 1

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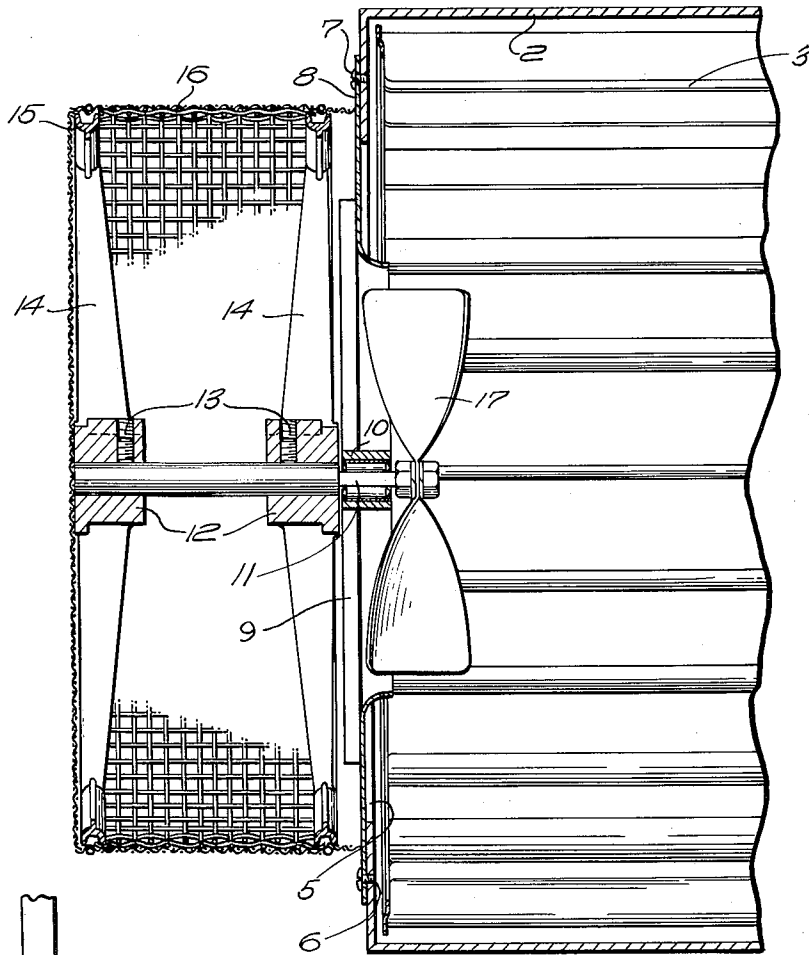


FIG. 2

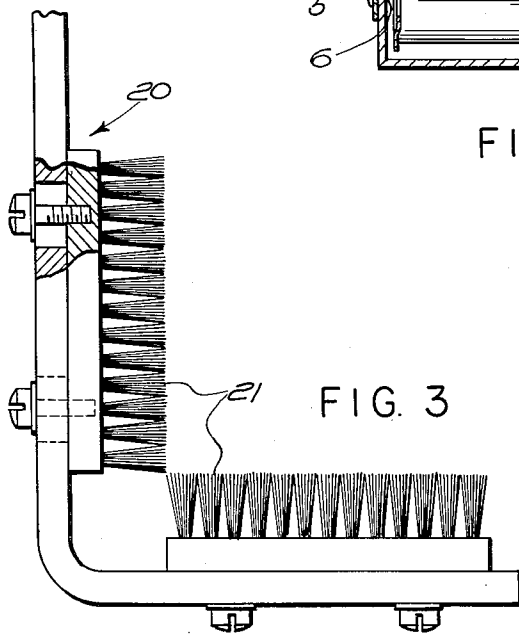


FIG. 3

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AIR CLEANER

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5 Claims. (Cl. 15—312)

This invention relates to an improvement in loom cleaners and more particularly to an improved air cleaner and moisture evaporator for placement over the intake of a loom cleaner blower.

In cleaning looms and the cloth being woven thereby it has been found that under certain conditions of lint particle content in the weave room a loom cleaner blower when passing over a loom during its cleaning operation will, at times, draw in lint laden air and blow the particles of lint down on the warp and cloth thus causing imperfections in the cloth being woven. The condition under which the above mentioned situation occurs is one where the yarn being processed sheds a great deal of lint during the weave operation and the blower unit passing overhead has a sufficiently powerful airstream to blow this lint from the cloth and loom and swirl it up into the upper reaches of the room as the airstream rebounds from the floor and machinery.

In weave rooms which have spray nozzles for controlling humidity, these nozzles are usually located near the ceiling of the room. The blower units, during their operation, are normally run on a track also placed near the ceiling. Many times the track will lie in close propinquity to the nozzles resulting in a situation where the humidifier nozzles may be discharging a spray of water just as the cleaner passes. A certain amount of this spray is therefore likely to be drawn into the intake of the cleaner blower, then discharged in the form of droplets, with the airstream, upon the materials and machinery below and thereby impair the quality of the cloth being produced.

An object of the present invention is to provide an improved easily maintained cleaning system for a weave room.

Another object is to provide a cleaner of the class described which constantly rotates during its operation.

Still another object is to provide a rotating air cleaner of the class described which may be easily cleaned.

A further object is to provide an air cleaner of the class described which will aid in maintaining even humidification in a weave room and prevent the blowing of water droplets by a loom cleaner blower.

These and other objects will become apparent from the following description of a preferred embodiment of my invention and the annexed drawing in which:

Figure 1 is a perspective showing a loom cleaner blower with the attached air-cleaner and a brush station for removing lint from said cleaner.

Figure 2 is an enlarged cross section of the cleaner and a portion of the blower.

Figure 3 is an enlarged view of the brush arrangement.

Referring now in detail to the drawings in which like numbers refer to like parts, the loom cleaner blower unit is indicated by numeral 1 and consists of a casing 2 enclosing, the blower wheel 3 which is connected to a drive motor, preferably an induction motor (not shown). At the bottom of the casing is outlet nozzle 4 for direct-

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ing a cleaning air stream toward the looms. The inlet opening 5 in the casing is surrounded by bolt holes 6 through which bolts 7 are secured to hold orifice plate 8 in place. Fastened to the orifice plate are a plurality (in this case, four) of arms 9 supporting a central hub 10. Extending through said hub is a rotatable shaft 11 with spaced hubs 12 fastened thereto by set screws 13. Spokes 14, extending from said hubs are joined to rim portions 15 to form the framework of a drum. A cover 16 of foraminous material, such as screening, is placed about said frame, the result being a rotatable filter drum. At the end of the shaft 11, opposite to that having the drum, a propeller vane 17 is fastened by means of a nut.

The apparatus operates in the following manner:

As the blower cleaner unit 1 travels along the track with blower wheel 3 being driven, air is drawn into inlet 5 and expelled through the nozzle 4. As the air enters the blower it must pass through the foraminous material 16. As it does it deposits any lint and fly carried in the air, on the outer surface of the filter drum. The air, as it continues, impinges on blades 17 causing them, and in turn the filter drum, to rotate. As it travels along the track, the blower unit will pass, at times, through clouds of water droplets being discharged by humidifying nozzles. When this occurs, the droplets will be absorbed by the lint coating on the filter drum. The blower unit continuing along the track will then pass through portions of the room having comparatively low relative humidity. In these portions, the water in the lint on the filter drum will evaporate, due in large measure, to the rapid rotation of the drum. Thus the humidity of the room will tend to be maintained in an equalized state and the air being blown down on the loom for cleaning purposes, will be free of lint, fly and water droplets.

At selected intervals along the track are filter cleaning stations such as 20 which are composed of brushes 21 appropriately fastened to a supporting rod and so oriented that the rotating filter drum will be swept by the brushes as the blower unit passes. The motion of the filter, both linear and rotary, permits the cleaning stations to be constructed and utilized in their simplest form since the cleaning force is imposed by the filter rather than the brushes. Due to the ever present pressure caused by the air being sucked through the filter and inlet of the blower, a thin layer of lint and fly will always be retained on the filter surface to act as an absorbent medium for the water droplets. Of course other forms of cleaning stations apparent to those skilled in the art, which permit a retention of a thin layer of lint on the filter, may be used in place of the brushes.

I claim:

1. A cleaning and conditioning system for removing lint from looms and their surrounding atmosphere in a textile weave room and for conditioning said atmosphere, said system comprising a motor driven loom cleaner blower movably mounted on a track for periodically blowing lint and fly from machinery beneath said track, said blower having a casing with an inlet and a depending outlet and containing a centrifugal impeller, a filter drum rotatably mounted on the exterior of said casing over said inlet, means for rotating said drum as the air passes through, and means fastened adjacent said track for periodically removing a portion of said retained lint and fly from said drum and for permitting the unremoved portion of said lint and fly to remain on said drum in an evenly distributed layer, said layer of lint and fly being water absorbent whereby said layer as it is carried by said drum on said blower through portions of said weave room will absorb moisture from the air of those portions of the room with excessive moisture in the atmosphere and distribute it

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by evaporation aided by the linear movement of the blower and the rotary movement of the drum to other portions of said weave room with insufficient moisture in the atmosphere.

2. A cleaning and conditioning system for removing lint from looms and their surrounding atmosphere in a textile weave room and for conditioning said atmosphere, said system comprising a motor driven loom cleaner blower movably mounted on a track for periodically blowing lint and fly from machinery beneath said track, said blower having a casing with an inlet and a depending outlet and containing a centrifugal impeller, a filter drum rotatably mounted on the exterior of said casing over said inlet, a set of vanes within said inlet and fastened to said drum to rotate said drum as the air passes through, means fastened adjacent said track for periodically removing a portion of said retained lint and fly from said drum and for permitting the unremoved portion of said lint and fly to remain on said drum in an evenly distributed layer, said layer of lint and fly being water absorbent whereby said layer as it is carried by said drum on said blower through portions of said weave room will absorb moisture from the air of those portions of the room with excessive moisture in the atmosphere and distribute it by evaporation aided by the linear movement of the blower and the rotary movement of the drum to other portions of said weave room with insufficient moisture in the atmosphere.

3. A cleaning and conditioning system for removing lint from looms and their surrounding atmosphere in a textile weave room and for conditioning said atmosphere, said system comprising a motor driven loom cleaner blower movably mounted on a track for periodically blowing lint and fly from machinery beneath said track, said blower having a casing with an inlet and a depending outlet and containing a centrifugal impeller, means for filtering and retaining said lint and fly fastened to the exterior of said casing over said inlet, said means including a marginal portion fastened over

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said inlet, supporting arms fastened to said marginal portion converging to a central hub, an axle extending through said hub, said axle being rotatable, a plurality of spokes extending radially from said axle on the side of said hub furthest from the blower and joined to and supporting a circular frame, said frame being covered by a foraminous material, the frame and material thus forming a rotatable filter drum abutting said marginal portion, means for rotating said drum as the air passes through, and means fastened adjacent said track for periodically removing a portion of said retained lint and fly from said drum and for permitting the unremoved portion of said lint and fly to remain on said drum in an evenly distributed layer, said layer of lint and fly being water absorbent whereby said layer as it is carried by said drum on said blower through portions of said weave room will absorb moisture from the air of those portions of the room with excessive moisture in the atmosphere and distribute it by evaporation aided by the linear movement of the blower and the rotary movement of the drum to other portions of said weave room with insufficient moisture in the atmosphere.

4. The combination of claim 3 in which the means fastened adjacent said track for periodically removing a portion of said retained lint and fly from said drum is a pair of brushes fastened at right angles to each other to sweep the exposed exterior of said drum.

5. The apparatus of claim 3 in which the means for rotating said drum is a set of vanes fastened to said axle within said inlet of said blower whereby air being sucked into the inlet of said blower will impinge on said vanes causing said axle and said drum to rotate.

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