Dec. 22, 1931. E. R. POWELL 1,837,836

FILTERING BLOW CHAMBER

Filed July 20. 1928

FIG. 1

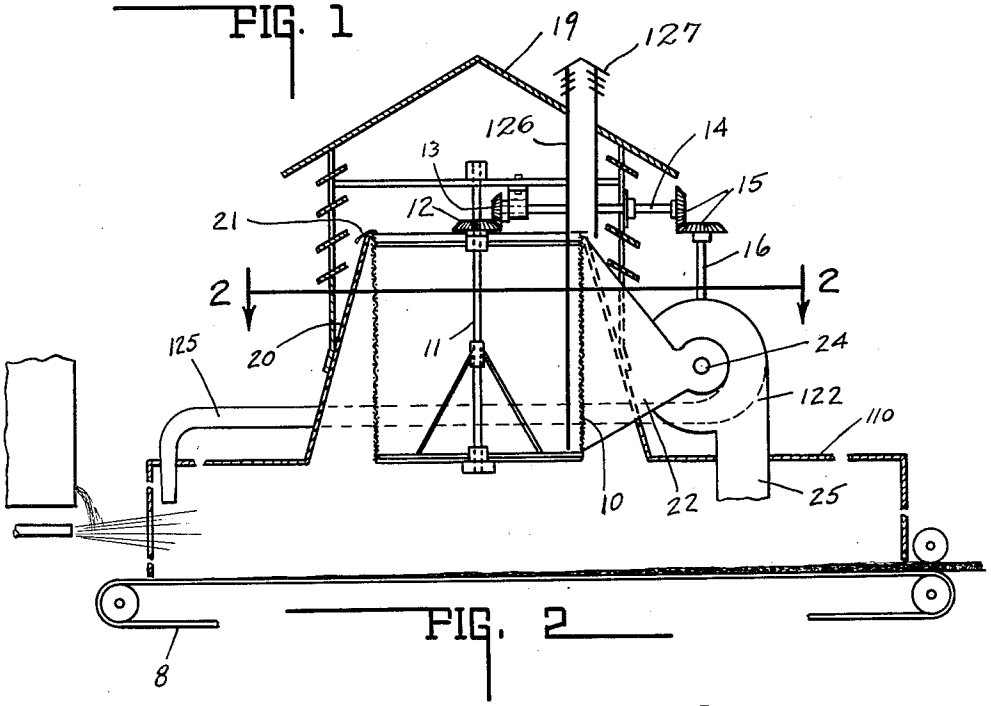
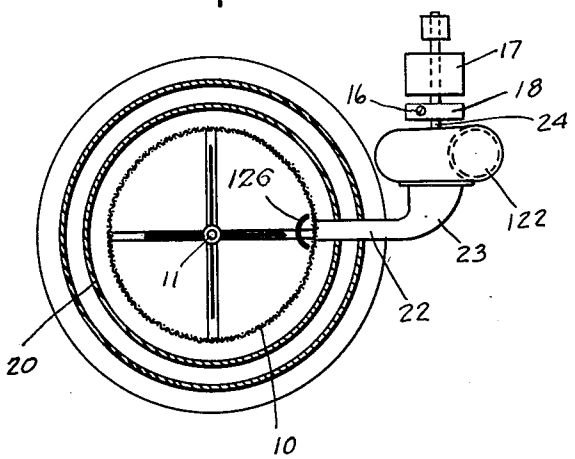



FIG. 2




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# UNITED STATES PATENT OFFICE

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## FILTERING BLOW CHAMBER

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This invention relates to the recovery of waste fiber from the air vent of a mineral wool blow chamber or the like.

One of the objects of this invention is to remove from a mineral fiber plant a nuisance which consists in the relatively light portions of the wool discharged from the blow chamber of the plant through the air vent thereof. This waste generally comprising about five per cent of the out-put. This waste causes irritation to the workmen in the plant, clogs drains and settles on everything in and around the plant requiring frequent and substantially constant cleaning up. The waste thus collected is commercially useless inasmuch as large quantities of extraneous dirt that is deleterious to the products.

The present invention therefore contemplates the separation of this waste and retention thereof in a clean form suitable for addition to the other portion of the product from whence it came, thereby increasing the out-put to the extent of the waste recovered.

The chief feature of the invention consists in the addition to a blow chamber utilized in the formation of mineral fiber or wool of a substantially automatic self-cleaning filter arrangement for removing from the exhaust steam and air employed in the production of the wool the relatively small or fine fiber in a condition suitable for subsequent incorporation with the normal run of material.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims;

Fig. 1 is a diagrammatic elevation of an automatic self-cleaning filtering ventilator and blow chamber embodying the invention. Fig. 2 is a diagrammatic plan view of the same.

In the drawings 110 indicates a portion of the main body of a blow chamber used in the production of mineral fiber such as mineral wool. In producing this fiber molten rock is blown by a steam and air blast 9 into the fiber and small globules, and for collection purposes the same is blown into what is commonly known as a blow chamber 110. The air and steam are vented generally through the roof and the chamber is of settling character so that the fiber thus formed collects at the base of the chamber and is suitably handled thereafter as by conveyor 8. The vented steam and air carries with it the light fluffy-like or feathery portion of the mineral wool, and this passes out with the steam and air except that portion of the same light material which may be entrapped with the larger fibers and settle down with them.

The vent including the invention includes a cylindrical screen 10 of relatively fine mesh and having a closed bottom and an open upper end. The screen is mounted upon shaft 11, which mounts a beveled gear 12 for rotating the same. Gear 12 meshes with gear 13, driven by shaft 14 and shaft 14 is driven by a pair of beveled gears 15 one of which is carried by shaft 16 and in turn driven by a motor 17 through a suitable connection 18 such as a worm and wheel drive.

The open end of the cylinder discharges into the hood 19 and the air passes from the chamber 110 through the cylinder 10 and thence through the hood 19 to the atmosphere. The restraining plate or deflecting wall 20 insures such travel.

If desired a sealing member 21 may be interposed between the cylinder 10 and the wall 20. The cylinder traps the fine feathery fiber and permits the air to pass through the screen. The screen in its rotation passes in front of a hood 22 which partially encircles the screen upon its exterior and extends substantially the full length thereof. The hood communicates with a fan 122 by means of conduit 23 and the fan 122 is driven by shaft 24 of motor 17, which shaft 24 mounts the driving wheel of the connection 18. If necessary, to insure proper air circulation through the chamber, and not to interfere with the normal operation or settling of the fiber from the out-going air and steam, an auxiliary intake 126 is provided which extends into the cylindrical screen and for substantially the full length thereof and is positioned opposite the hood 22. The intake 126 has an inlet 127 for supplying air from the atmosphere to the screen adjacent the hood 22. Suction applied to the screen by the fan 122 will draw the air through the inlet 127, in-

take 126 and through the screen to release the fiber trapped thereon. The fiber passes through the hood 22 and out through the fan and is discharged through from outlet 25 thereof into the blow chamber where it mixes with the falling fiber and becomes incorporated therewith.

With this type of separation the normally lost mineral fiber is separated, collected and returned to the main body of fiber without the addition of any adulterants or objectionable additions, and in addition to recovering what heretofore was a partially lost portion of the product, the apparatus removes the irritant and objectionable deposit about the plant. The mechanism automatically discharges the collected material to the normal run of product without any manual handling or the requirement of any additional reservoirs or the requirement of special sales which this relatively light product if disposed of separately would require. In addition to the foregoing advantages the return of this light fraction of the product to the product insures a better final product in respect to lightness and insulating value.

Instead of the outlet 25 of the blower 122 discharging at the end of the blow chamber opposite from the blast intake end, the blower may discharge into the blow chamber immediately adjacent the blast or at any intermediate point as desired or preferred, as illustrated at numeral 125. Either or both outlets 25 and 125 may be used.

The location of the discharge from the blower is material to this extent that the character of the strip produced can but vary as follows: When the discharge is at the far end of the blow chamber as indicated at 25 the strip will have a light fluffy-like surface layer and pronounced in character, but if the discharge is through line 125 the finer material becomes intermittently mixed with the coarser and a substantially uniform product is obtained in the strip. All grades and variation therebetween can be obtained as afore suggested by varying the position of the outlet of the blower 122.

The invention claimed is:

1. An apparatus for producing a mineral fiber strip including a blow chamber, a fiber blast discharging therein, an endless conveyor exposed to said blow chamber for receiving gravity settled fiber therefrom, a mechanical separator interposed within the vent of said blow chamber, and means for receiving the fiber separated by said mechanical separator and discharging the same into said blow chamber at the opposite end from said blast and beyond said vent, for obtaining a fiber strip upon said conveyor of predetermined character.

2. In combination, a blow chamber, means for forming fibres therein, an exhaust vent associated with said chamber, separating means in said vent comprising a rotatable cylindrical screen with a closed bottom and open top, deflectors in said vent adapted to direct fibre-laden air against said cylindrical screen, said screen being of a fineness adapted to filter from the air substantially all of the fibres, means for removing said fibres from said screen comprising a suction hood positioned axially of the cylindrical screen on the convex side thereof and a directing air inlet positioned axially of the screen on the concave side thereof substantially opposite said suction hood and a conduit from said suction hood to said blow chamber for returning the fibres thereto.

3. In combination, a blow chamber, means for forming fibres therein, an exhaust vent associated with said chamber, separating means in said vent comprising a rotatable cylindrical screen with a closed bottom and open top, means for rotating said cylindrical screen, deflectors in said vent adapted to direct fibre-laden air against said cylindrical screen, said screen being of a fineness adapted to filter from the air substantially all of the fibres, means for removing said fibres from said screen comprising a suction hood positioned axially of the cylindrical screen on the convex side thereof and a directing air inlet positioned axially of the screen on the concave side thereof substantially opposite said suction hood and a conduit from said suction hood to said blow chamber for returning the fibres thereto.

In witness whereof, I have hereunto affixed my signature.

EDWARD R. POWELL.