April 26, 1927. 1,626,339

S. W. HOWARTH

MEANS FOR EXTRACTING DUST FROM AND SETTLING FUR, HAIR, AND THE LIKE MATERIAL

Filed April 5, 1926 2 Sheets-Sheet 1

Fig. 1.

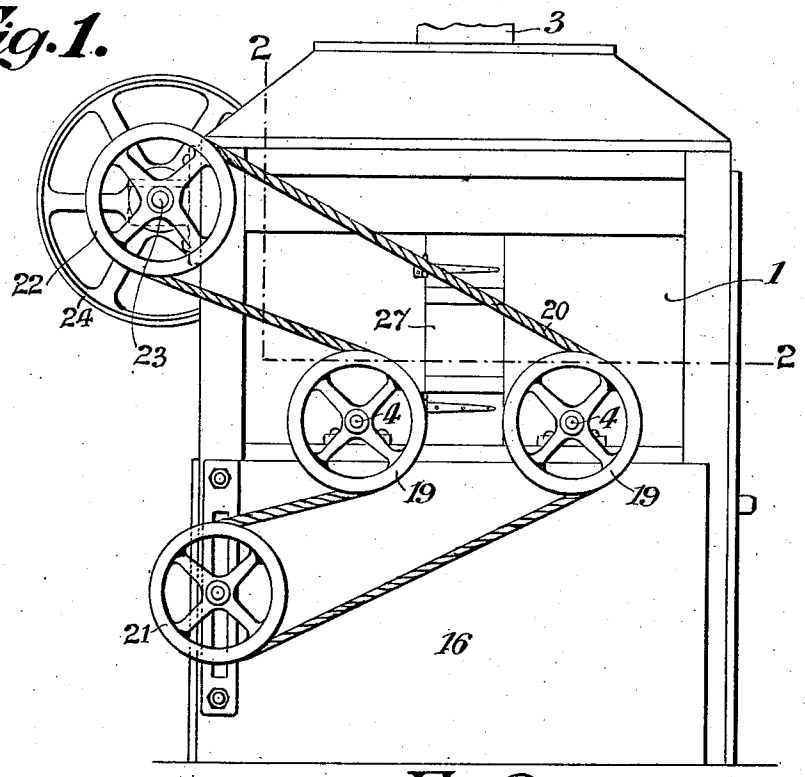
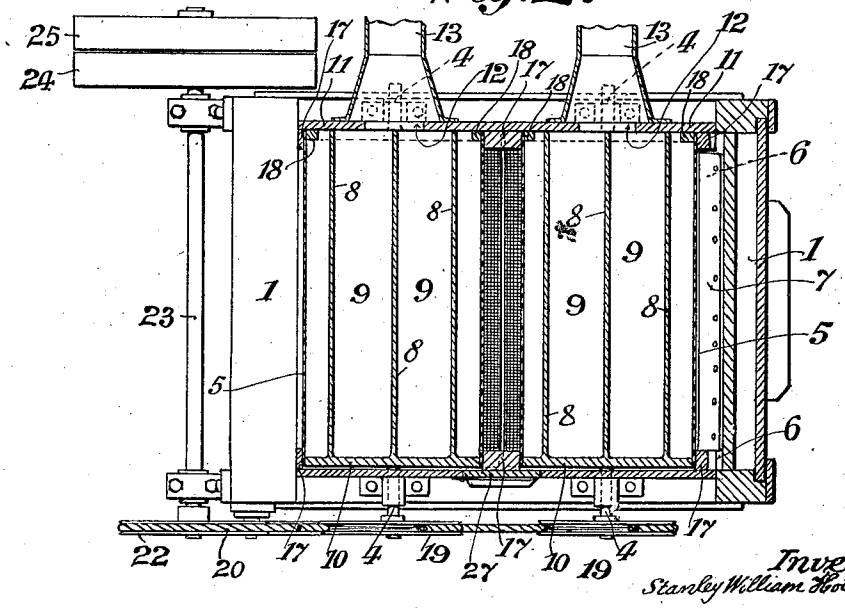


Fig. 2.



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Fig. 3.

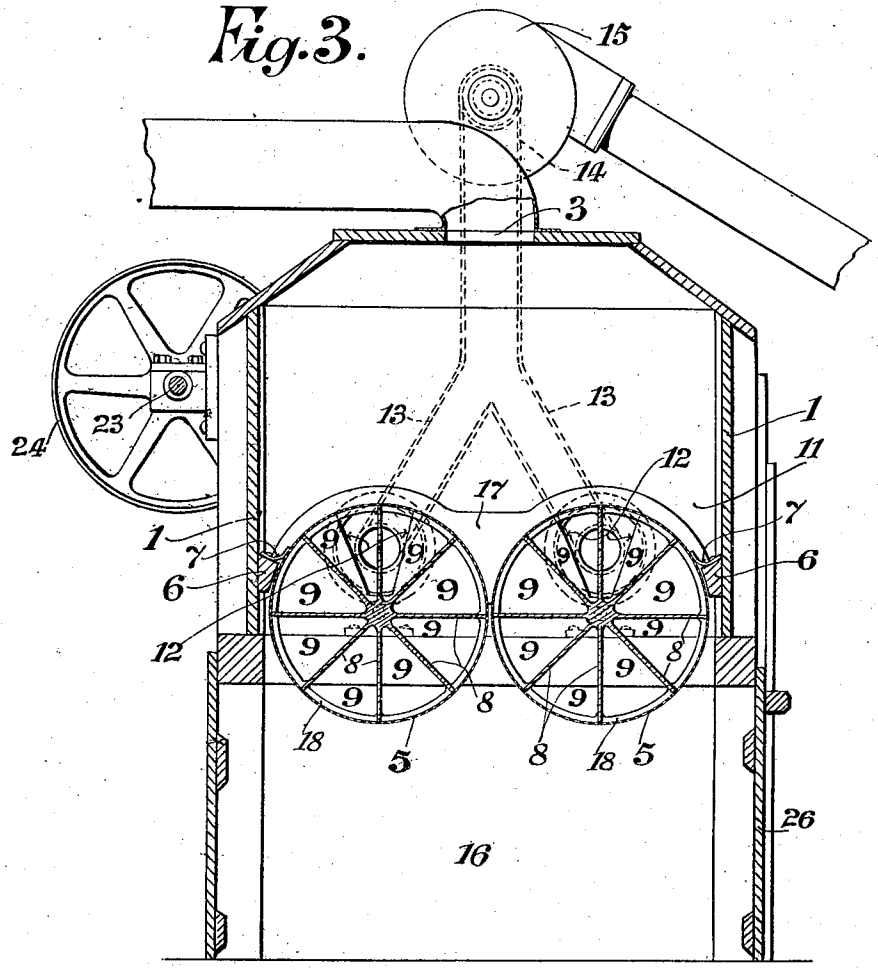
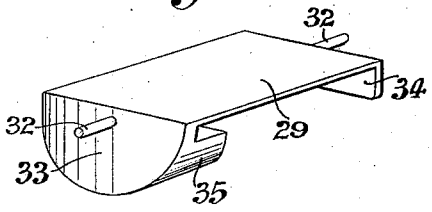


Fig. 4.



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Patented Apr. 26, 1927. 1,626,339

UNITED STATES PATENT OFFICE.

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MEANS FOR EXTRACTING DUST FROM AND SETTLING FUR, HAIR, AND THE LIKE MATERIAL.

Application filed April 5, 1926, Serial No. 99,960, and in Great Britain February 17, 1926.

This invention relates to means for extracting dust from and settling fur, hair or the like and the main object thereof is to enable the operation or operations to be effected without detrimental effects on the operatives and more quickly than hitherto.

I attain this object by the means illustrated in the accompanying two sheets of drawings, wherein—

Figure 1 is a side elevation of a machine for extracting dust and settling fur, hair or the like.

Figure 2 is a view in section on line 2—2 of Figure 1.

Figure 3 is a view in vertical section of the said apparatus.

Figure 4 is a perspective view of a detail and illustrates a modification.

Referring to Figures 1 to 3 of the drawings, in the construction shown therein, I provide a chamber 1 having an inlet 3 through which the fur, hair or the like is blown. Two drums are mounted on horizontal trunnions 4 and adapted to be rotated towards each other, these drums being arranged side by side, and forming the bottom or a part of the bottom of the chamber 1.

The drums are arranged as near together as is convenient for the passage of fur, hair or the like between them without rendering possible the escape of an inconvenient amount of air between them. The peripheral surfaces 5 of the drums are formed of gauze or other suitable material adapted to act as a sieve to prevent fur, hair or the like from passing into the interior of the drum, but allow the passage of dust thereinto.

Where the said drums do not form the whole of the bottom of the chamber, suitable members, such as laths 6 having strips 7 of flexible material, for example leather, attached to the upper sides, are provided to complete the said bottom.

Each drum has eight imperforate radial partitions 8 in its interior extending from one end to the other end thereby dividing the interior of the drum into eight cylinder-sector-like compartments 9 which are completely shut off from one another. The curved side of each compartment 9 is formed by a cylinder-sector-like part of the peripheral sieve surface 5 of the drum.

The ends 10 of the drums are formed closed and the other ends are open and lie in close contact with the side 11 of the chamber 1. The side 11 is provided with sector-like parts 12, one for each drum, disposed above the axes of the drums and connected by conduits 13 and 14 to an air-suction fan 15 or other suitable suction means. Where the pressure of the air which blows the fur, hair or the like into the chamber 1 is sufficiently high, the conduit 14 may lead to atmosphere. In all cases dust intercepting means is preferably provided to catch the dust after it has passed through the conduit 14.

In operation, as the drums rotate, one or two of the compartments 9 of each drum come into communication with the corresponding port 12. The compartment 9 or compartments 9 momentarily in communication with the port 12 are however always situated higher than the place where the peripheries 5 of the drums lie nearest together. Therefore any difference of pressure existing between the interior of the chamber 1 and the conduit 14 acts only on the compartment 9 or compartments 9 communicating with the port 12.

Fur, hair or the like blown into the chamber 1 settles and falls on to those parts of the peripheries 5 of the drums which are momentarily situated higher than the said place and are caused to adhere to those parts of the sieve-like peripheries 5 which belong to the compartments 9 momentarily in communication with the ports 12, the dust being drawn through the said parts of the peripheries 5 into the said compartments 9 and from thence through the ports 12 into the conduits 13 and 14. As the drums continue to rotate the said parts of the peripheries 5 move towards each other and pass to the undersides of the drums, and are replaced by other parts of the peripheries 5. As the first named parts of the peripheries 5 move towards the undersides of the drums, the compartments 9 of which they form a portion come out of communication with the ports 12 and therefore the pressures existing on the outer and inner sides of the peripheries 5 become equalized and the fur, hair or the like which has settled on the one drum meets and clings to the fur, hair or the like which has settled on the other drum. The hair, fur or the like of both drums thus unites into a single web which separates from the drums and falls by gravity. Thus the said drums not only extract

the dust, but also performs the necessary settling of the fur, hair or the like consisting in collecting the freely floating fur, hair or the like and forming it into a web for further manipulation.

A closed chamber 16 is provided beneath the chamber 1 to receive the web of hair, fur or the like as it leaves the drums.

In order to prevent or reduce the passage of air from the chamber 1 into the chamber 16 between the ends of the drums and the walls of the chamber 1 opposed thereto, pieces 17 are provided attached to the said walls and projecting over the peripheries 5 of the drums. To assist in supporting the peripheries 5 at the open ends of the drums, the partitions 8 are joined together at the said end by ring segments 10 which form together continuous rings to which the peripheries 5 are attached at the said open end.

The drums are rotated at uniform speeds, for example by means of pulleys 19 provided on the trunnions 4 and driven by a rope 20 passing over a jockey pulley 21 and over a driving pulley 22, the latter being mounted on a shaft 23 provided with fast and loose pulleys 24 and 25.

A sliding door 26 is provided on the chamber 16 for the purpose of removing the fur, hair or the like therefrom. Inspection windows may be provided on the chamber 1. Furthermore a door 27 may be provided on the chamber 1 for obtaining access thereto.

It will be appreciated that more than one pair of drums may be provided.

In lieu of providing more than two compartments in each drum, a diametrical platform 29, Figure 4 may be arranged in the drum to extend from one end to the other to divide the interior of the drum into two compartments, the platform 29 being arranged, for example by the action of gravity, to remain stationary in the drum whilst the drum is rotating and thereby cut off the lower compartment of the drum from the pressure existing in the chamber or the said pressure and the reduced pressure acting to draw the dust and settle the fur, hair or the like.

In the modification shown in Figure 4, the sieve like periphery 5 of the drum is supported by an imperforate disc at one end and by a spider at the other end where the port 12 and exhaust or escape conduit 13 are situated, the disc and spider being fixed to the drum shaft 32 mounted in suitable bearings and provided with means, such as a pulley 19 for rotating the drum. The platform 29 has a semi-cylindrical member 33 situated at the open end of the drum and a flange 34 situated at the closed end of the drum, the drum shaft 32 passing through the member 33 and flange 34 and thereby supporting the platform. The member 33 is provided with an extension 35 intended to cause the centre of gravity of the platform 29, member 33 and flange 34 to lie below the shaft 32 and thereby insure that the plate remains in a horizontal position whilst allowing rotation of the drum.

If desired both ends of the drum or drums may be open and ports communicating with atmosphere or with suction means be provided at both of the said ends.

I claim—

1. Means for extracting dust from and settling fur, hair and the like material comprising a receiving chamber for the material, a pair of drum-like members projecting partly into the said chamber, means for rotating the said drum-like members in directions which cause those parts situated in the chamber to travel towards each other, sieve-like peripheries on the said drum-like members, partitions within the said drum-like members dividing the interior into a plurality of independent and separate compartments each bounded on one side by a part of the sieve-like periphery, openings in the said chamber adapted to communicate with the said compartments which are in the said chamber, and means for preventing the passage of air from the said chamber between it and the drum-like members, whereby the material entering the chamber is caught by those parts of the sieve-like drum peripheries which are passing through the chamber and the dust passes through the said parts and the said openings, and the drum-like members carry the said material outside the chamber as the compartments pass from the chamber into communication with the atmosphere and cause the material to unite to form a single web which falls by gravity from the drums.

2. Means for extracting dust from and settling fur, hair and the like material comprising a chamber into which the material is fed, a collecting chamber arranged in connection with the first named chamber, oppositely rotatable drum-like sieves provided between the said chambers, separating means within the sieves which cut off internal communication of one peripheral part of each sieve with another peripheral part of each sieve and outlets in the first named chamber which allow the escape of air and dust from the first named chamber only after they have passed through the first named peripheral parts without allowing the escape of air and dust from the said chamber through the second named peripheral parts.

3. Means for extracting dust from and settling fur, hair and the like material, comprising a chamber, means in the chamber for the introduction of the material thereinto, rotary drums forming the bottom of the said chamber and set with their peripheries near each other, driving means outside the said chamber for rotating the drums to

cause the upper parts thereof to move towards each other, stationary sealing members provided in the chamber for sealing the junctions of the drums with the chambers, sieve-like peripheries on the said drums, partitions in the said drums and ports in the chamber cooperating with the partitions to cause the passage of air through only those parts of the drum peripheries which are moving in the said chambers and a common outlet pipe connected to both of the said ports.

4. Means for extracting dust from and settling fur, hair and the like, comprising receiving chambers, a collecting chamber below the receiving chamber, rotary drum-like sieves having their axes in the same horizontal plane and forming the bottom of the receiving chamber and the top of the collecting chamber, means within the said sieves for internally isolating parts of the sieves from other parts thereof, outlet means on the receiving chamber adapted to communicate with the interior of the sieves, an emptying opening at the side of the collecting chamber and means for closing the said opening.

In testimony whereof, I have signed my name to this specification at Manchester, in the county of Lancaster, England, this 24th day of March, 1926.

STANLEY WILLIAM HOWARTH.