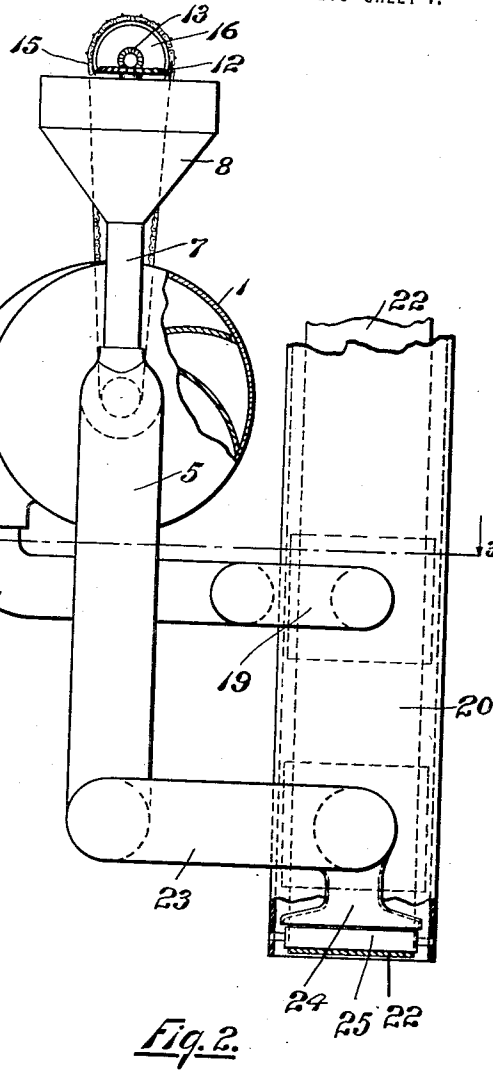
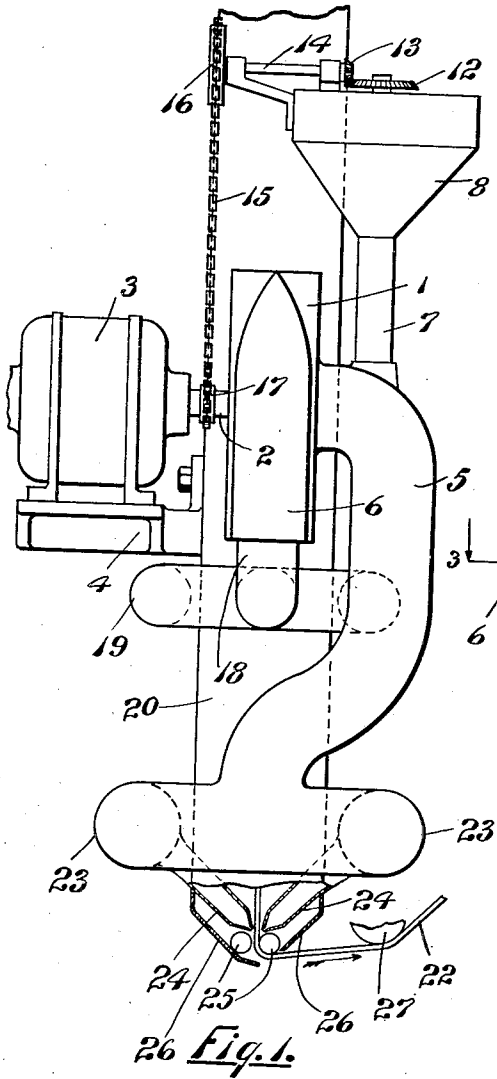


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APPLICATION FILED SEPT. 29, 1919.

1,337,619.

Patented Apr. 20, 1920.

2 SHEETS—SHEET 1.

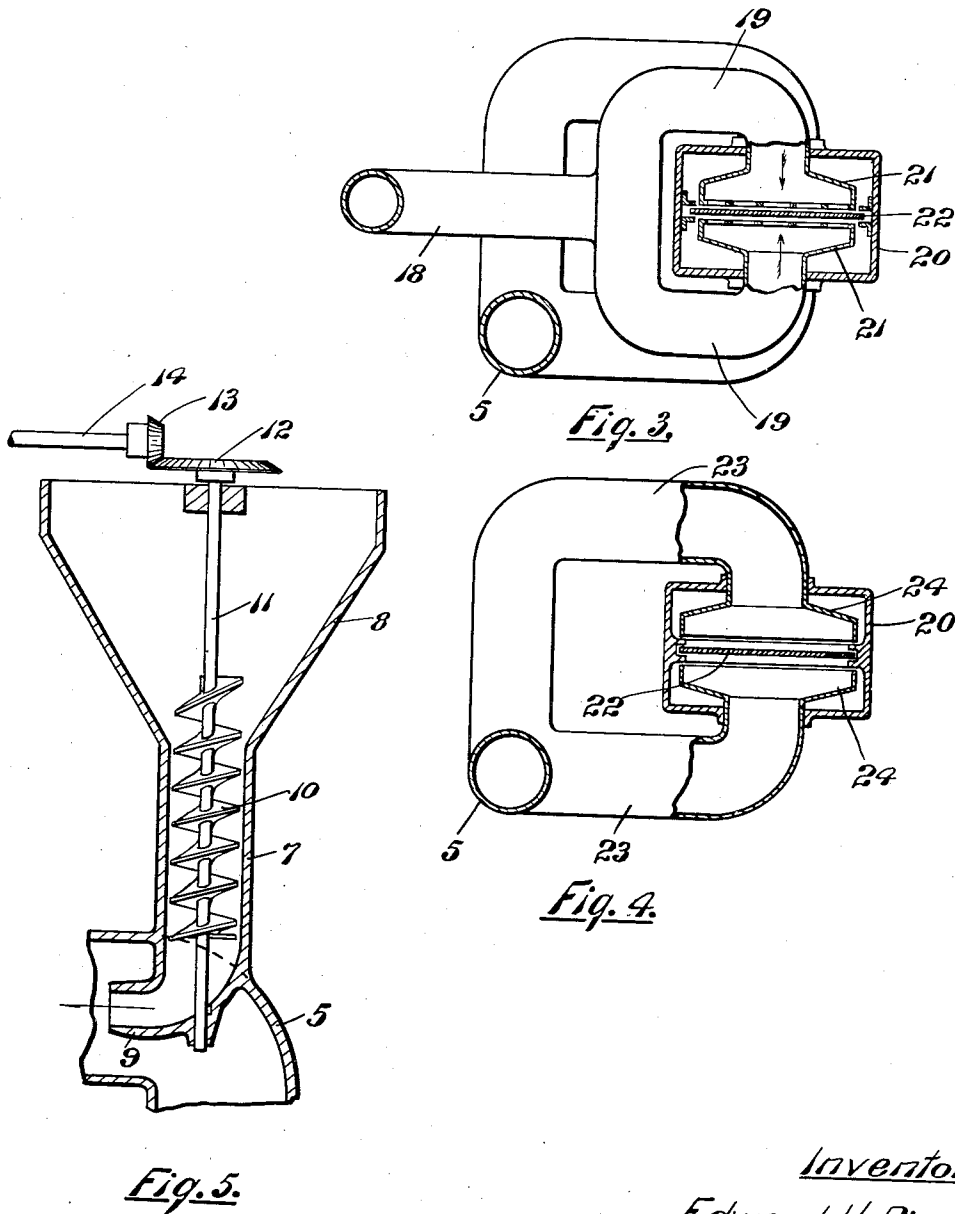


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# UNITED STATES PATENT OFFICE.

EDWARD H. PIPE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ACME CEMENT PLASTER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF ILLINOIS.

## POWDER-HANDLING MACHINE.

1,337,619.

Specification of Letters Patent. Patented Apr. 20, 1920.

Application filed September 29, 1919. Serial No. 327,121.

*To all whom it may concern:*

Be it known that I, EDWARD H. PIPE, a citizen of the United States of America, residing at St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Powder-Handling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a machine for handling powdered material and for applying it to sheets of material covered with an adhesive plastic composition, the powdered material more or less sticking to the composition. The excess of powdered material falls from the sheet to a lower level and is there removed by suction by the machine and again directed against the sheet of material, there being little or no waste of the powdered material used as any not adhering is recovered and used again. The powdered material may be of any desired kind and applied to tarred roofing or other building paper or the like. Preferably, the powdered material will be of plaster of Paris or gypsum rock origin but the machine is not limited in use to any one kind. It is a primary object and purpose of the invention to make a machine which will readily and efficiently handle the powdered material and apply it without loss or waste, any excess being gathered and used again in the working of the machine. Many other objects and purposes will appear as understanding of the invention is had from the following description, taken in connection with the accompanying drawings, in which,

Figure 1 is a front elevation of the machine, parts being broken away and in section.

Fig. 2 is a side view thereof.

Fig. 3 is a horizontal section taken substantially on the line 3—3, of Fig. 2.

Fig. 4 is a similar section at a lower plane, and

Fig. 5 is a vertical section through the hopper in which the powdered material is held and from which it is fed by the screw feeding mechanism shown.

Like reference characters refer to like parts in the different views of the drawings.

In construction a fan is mounted within

the casing 1, the shaft 2 of the fan being directly connected with a motor 3 for driving the shaft. The motor may be carried on a suitable supporting bracket 4. The casing 1 has the usual inlet pipe 5 and an outlet 6.

A pipe 7 leads into the inlet 5 at its upper side and near the casing 1. A hopper 8 adapted to contain a quantity of powdered material such as plaster of Paris or the like is fixed at the upper end of the pipe 7. The material normally drops by gravity and may also be fed into the inlet pipe 5 through the curved lower end 9 of the pipe 7 by a screw 10 which is mounted on or formed integral with a shaft 11 mounted vertically in pipe 7 and hopper 8. A beveled gear 12 is fixed at the upper end of shaft 11, in mesh with which is a similar pinion 13 on the end of a shaft 14. A sprocket chain 15 passes around a sprocket wheel 16 on the opposite end of the shaft 14 and also around a sprocket wheel 17 on shaft 2 whereby it is apparent that the screw 10 is continuously operated whenever the machine is in operation and powdered material forced into the inlet pipe 5 so as to be delivered by the fan through the outlet at 6.

A pipe 18 connects with the outlet 6 and leads therefrom for a distance and then branches to make two branch pipes 19 which pass to each side of and through the sides of an elongated vertical casing 20. Each branch pipe terminates within the casing in a head or nozzle 21, said nozzles being located in direct opposition to each other, one at each side of a continuous sheet 22 which is drawn through the casing. This sheet is covered on both sides with a soft plastic composition, such as tar or the like and the powdered material delivered through the nozzles 21 strikes against the same, it being evident that some of it adheres and remains with the sheet and dries and more or less solidifies the tarry composition, while the excess drops alongside of the sheet on each side thereof.

The inlet pipe 5 also is branched to make two branch pipes 23 one passing to each side of and through each side of the casing 20 near the lower end thereof, each terminating in a suction nozzle 24 which comes directly above a roller 25 located in the lower end of the casing, between which rollers the sheet 22 is continuously fed. The lower end of the casing has inclined bottom por-

tions 26 one at each side of the slot through which the sheet passes to where it is carried around a guide roller 27 as shown.

The excess of powdered material which does not stick to the sheet falls to points directly in front of the ends of the suction nozzles 24 and is taken up thereby and returned through the inlet pipe 5 so that it may again be directed against the continuously moving sheet 22. In this way there is always more than enough of the material supplied to the sheet but the excess is not lost but can again be used. The powdered material is delivered with force against the sheet 22 and a considerable quantity thereof penetrates and covers the sticky plastic composition on the sheet. There is a continuous feed of the necessary material from the hopper and with this machine the coating of tarred or similar sheets with a dry non-adhesive powdered substance is readily accomplished.

I claim:

1. In a machine of the character described, a casing, a fan rotatably mounted therein, means to drive the fan, a vertically positioned housing through which sheets of material are adapted to pass downwardly, an outlet pipe to the casing, branches thereto passing one to each side of and through the sides of the housing, nozzles located one at each end of the branches at each side of said sheets of material in the housing, rollers in the lower end of the housing between which said sheets pass, an inlet pipe to the casing, branches thereto leading one to each side of and through the sides of the housing, suction nozzles connected at the ends of the branches to the inlet pipe, the ends of said suction nozzles being located directly over said rollers, a pipe leading into the inlet pipe, a hopper for holding powdered material at the upper end of said pipe, a screw feeding appliance rotatably mounted vertically in said pipe, and means to rotate said feeding appliance when the fan is operated, substantially as and for the purposes described.

2. In a machine of the character described, a fan blower mounted in a casing having inlet and outlet pipes thereto, means for operating the blower, a housing through which a length of material in sheet form is adapted to pass, means for directing material in powdered form through the outlet pipe to and against each side of said sheet of material as it passes through the housing, means for feeding powdered material into the inlet pipe of the blower, and means for collecting and returning any excess of powdered material which drops to the lower end of the housing through the inlet pipe, substantially as described.

3. In a machine of the character described, a fan blower casing having inlet and outlet pipes, means for holding a quantity of powdered material at a point above the inlet pipe, a connecting pipe between said means and the inlet pipe and adapted to carry the powdered material into the inlet pipe, means for forcing the said powdered material into the inlet pipe, means for simultaneously operating the said forcing means and a fan within the casing, a vertically positioned housing, means for drawing a continuous length of sheet material downwardly through the housing, said sheet material being adapted to be covered with an adhesive substance, an outlet nozzle on the outlet pipe located within the housing and adapted to direct the powdered material against said sheet material, and an inlet suction nozzle to the inlet pipe below the outlet nozzle for recovering any excess of powdered material which may not adhere to the sheet material and returning it for use through the inlet pipe, substantially as described.

4. In a machine of the character described, a housing through which a continuous length of sheet material may be drawn downwardly, said sheet material having an adhesive substance applied to a side thereof, means for directing powdered material against the sheet material in excess, the excess falling to the lower end of the housing, and means for removing said excess of powdered material and again using the same against the sheet material, substantially as and for the purposes described.

5. In a machine of the character described, a housing through which a continuous length of sheet material may be drawn downwardly, said sheet material having an adhesive substance applied to both sides thereof, means for simultaneously directing powdered material against both sides of the sheet material in excess, said excess not adhering to the sheet material falling to the lower end of the housing, and means for removing and again using said excess of powdered material, substantially as described.

6. In a machine of the character described, means for moving a continuous length of sheet material having an adhesive substance applied thereto vertically and in a downward direction, means for directing powdered material against the sides of said sheet material in excess, said excess not adhering dropping by gravity to a lower point, and means for recovering and again using said excess of powdered material by directing against the sheet material, substantially as described.

In testimony whereof I affix my signature.

EDWARD H. PIPE.