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J. A. B. SMIT

1,757,341

SCREW CONVEYER

Filed Nov. 3, 1927

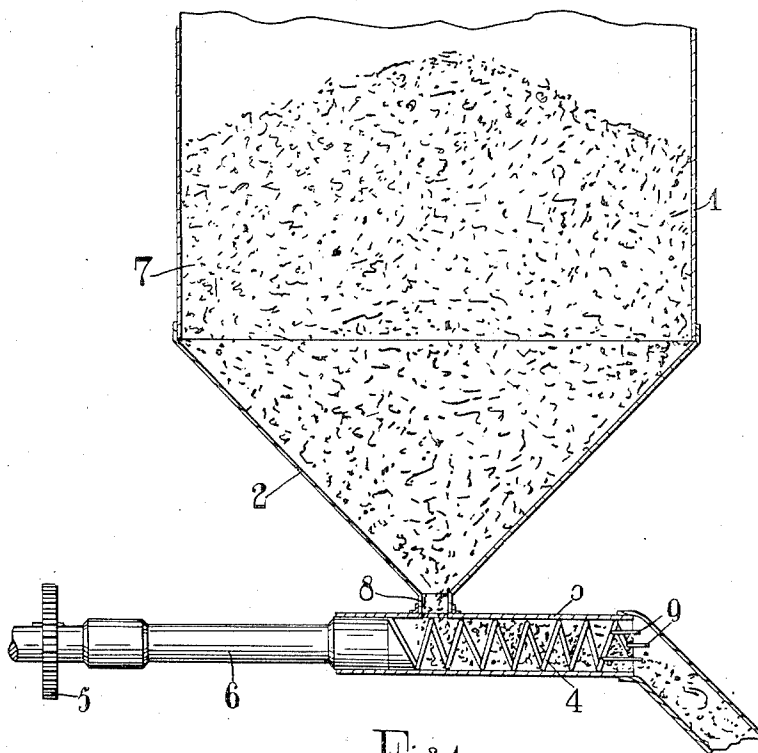


Fig. 1.

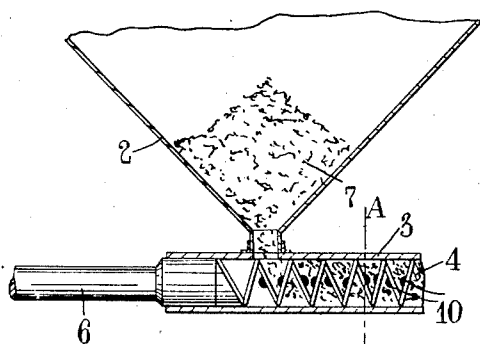


Fig. 2.

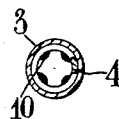


Fig. 3.

J. A. B. Smit
INVENTOR

By: *Marks & Clark*
ATTY'S

UNITED STATES PATENT OFFICE

JAN ADRIAAN BARTEL SMIT, OF DEVENTER, NETHERLANDS, ASSIGNOR TO NAAM-
LOOZE VENNOOTSCHAP INTERNATIONALE OXYGENIUM MAATSCHAPPIJ NOVADIEL,
OF DEVENTER, NETHERLANDS

SCREW CONVEYER

Application filed November 3, 1927, Serial No. 230,855, and in the Netherlands May 13, 1927.

This invention relates to conveyers for dispensing finely divided powdrous material and more particularly to a feeding conveyer for ensuring continuous and regular flow of the material in constant relatively small quantities.

In apparatus for this purpose usually employed, it has been found very difficult to obtain a regular and uniform addition of such material on a constant feed over any given period. This difficulty has been especially realized when adding solid substances to flour, either for the purpose of bleaching, improving the baking qualities or for manufacturing flour containing baking powder. It is difficult to regulate the flow of such powdrous material through a restricted aperture, the material tending to choke the aperture under certain conditions and at other times to flow intermittently and in various amounts.

It is an object of the present invention to provide a conveyer in the form of a helical wire having projections thereon for improving the conveying action and for making the delivery more regular.

Quite against expectation, such a wire does not rotate in the mass without conveying the powder; on the contrary the displacement of the substance to the outlet takes place regularly and continuously, the substance being dispensed in a very loose state so that its particles do not adhere together.

It is a matter of course that the thickness of the wire and the pitch of the windings will be determined by the diameter of the screw, the rate of feed and the nature of the substance to be conveyed.

The invention will be understood from the following description of a complete feeding apparatus containing the improved conveyer taken in connection with the accompanying drawings in which:—

Figure 1 is an elevation, partly in section, of a hopper provided with a preferred form of the conveyer wire;

Figure 2 is a modification illustrating additional means on the wire for conveying the mass, and

Figure 3 is a vertical cross section taken on the line A—B of Figure 2.

A hopper 1 is provided with an inclined bottom 2, the conveyer 4 rotating in a horizontal passage 3 communicating with the hopper at 8. The conveyer is rotated by a suitable driving device such as a spur wheel 5 on the shaft 6. The material 7 within the hopper 1 is delivered into the horizontal passage 3 and conveyed by the rotating helical wire to the outlet where it is delivered in regular constant relatively small quantities.

It has been found that excellent results have been obtained with a wire having a diameter of 2 mm., the pitch of the helix being 10 mm., and the diameter of the helix 16 mm. A continuous and regular flow of material was obtained when the conveyer rotated at the rate of ten revolutions per minute. The quantity of material delivered does not, however, seem to be dependent on the pitch of the windings. It has moreover been found that the regularity of the feed is improved if there is arranged at the last convolution of the screw one or more pins such as 9, these pins being arranged parallel with the axes of the spindle and conveyer and are arranged within the enveloping surface of the helix. The pins 9 have nearly the same thickness as the spiral wire and may be of a length of for example 5 to 20 millimetres.

While the preferred form of the helix is circular, satisfactory results have been obtained using a helical wire of elliptical or angular formation, also the wire may be provided with local enlargements or protuberances such as 10, also pins or such like which extend inwards of the convolutions may be added to improve the conveying capacity of the device. The material from which the wire is made depends, of course, on the nature of the powdrous substance acted upon. Steel, bronze, aluminium, nickel or alloys for example V 2A-steel, chrome nickel steel, Monel-metal and such like have successfully been used. If the substance be of a corrosive nature it is necessary to give the wire a coating of a resistant material, or to make the wire from a resistant material. From the above description it will be understood that

the improved screw conveyer has considerable advantages owing to its extreme simplicity following from its bearing at one side only while furthermore the lack of a central shaft makes its construction very simple.

Although a preferred embodiment of the invention has been described, it is to be understood that it may be modified within the limits of the appended claim.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

A device for feeding powderous material, comprising in combination, a receptacle containing the said material, and having a discharge opening, a rotating helical wire conveyer adjacent such opening, and one or more cylindrical pins at one end of the said wire arranged within the enveloping surface of said helical wire and parallel with the axis thereof, for the purpose of delivering the powderous material in uniform and regular quantity.

In testimony whereof I have signed my name to this specification.

JAN ADRIAAN BARTEL SMIT.

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