F. J. STOKES.

METHOD OF FEEDING MATERIAL TO AND FROM VACUUM DRIERS.

APPLICATION FILED MAR. 19, 1909.

1,080,602.

Patented Dec. 9, 1913.

2 SHEETS—SHEET 1.

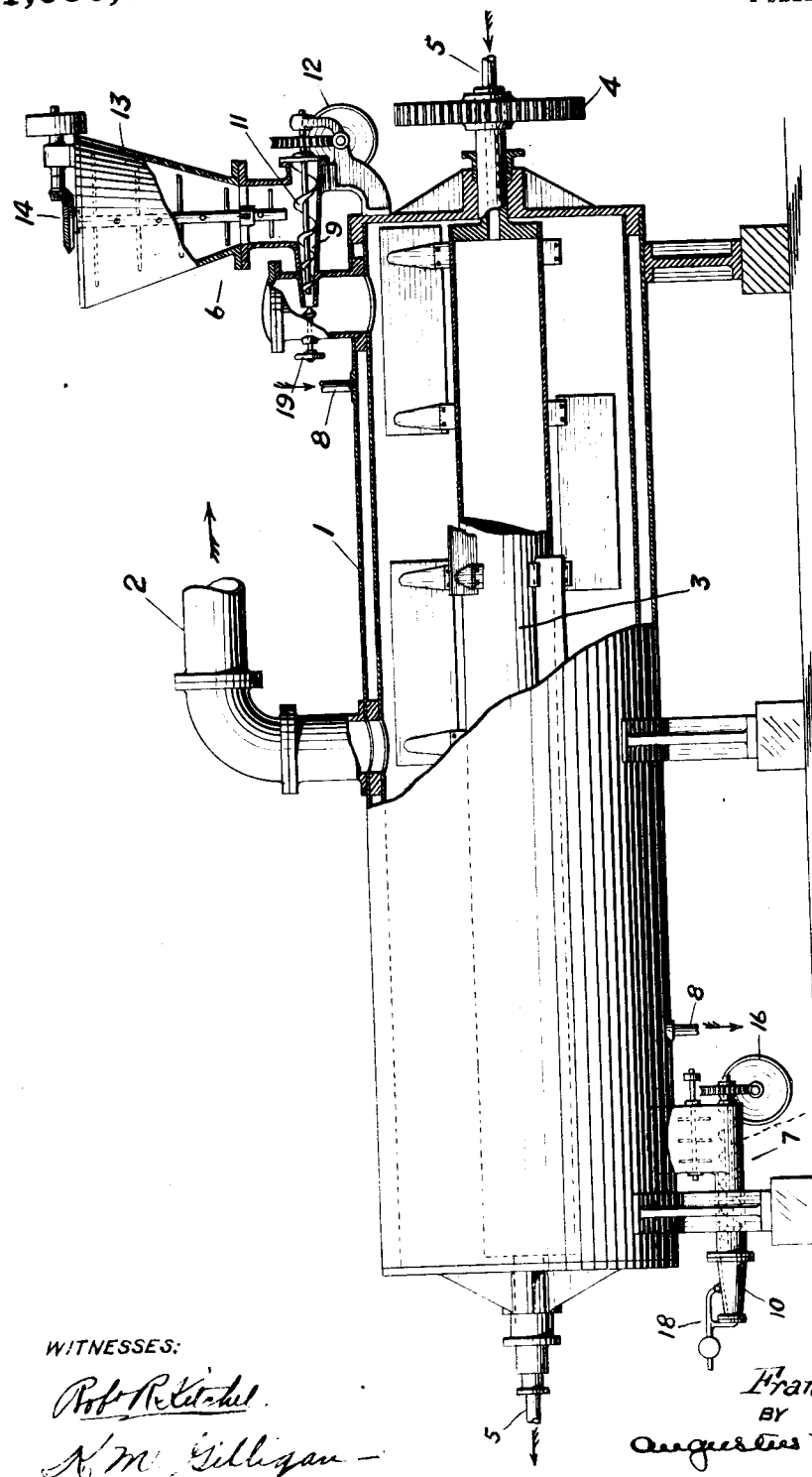



FIG. 1.

WITNESSES:

Robt. R. Ketchel.

K. M. Gilligan.

INVENTOR

Francis J. Stokes

BY

Augustus B. Stoughton

ATTORNEY.

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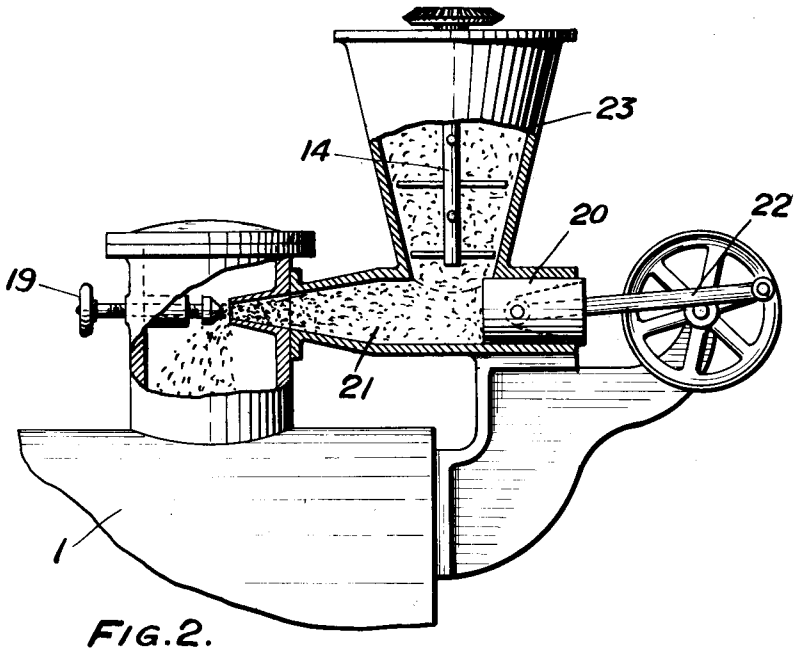



FIG. 2.

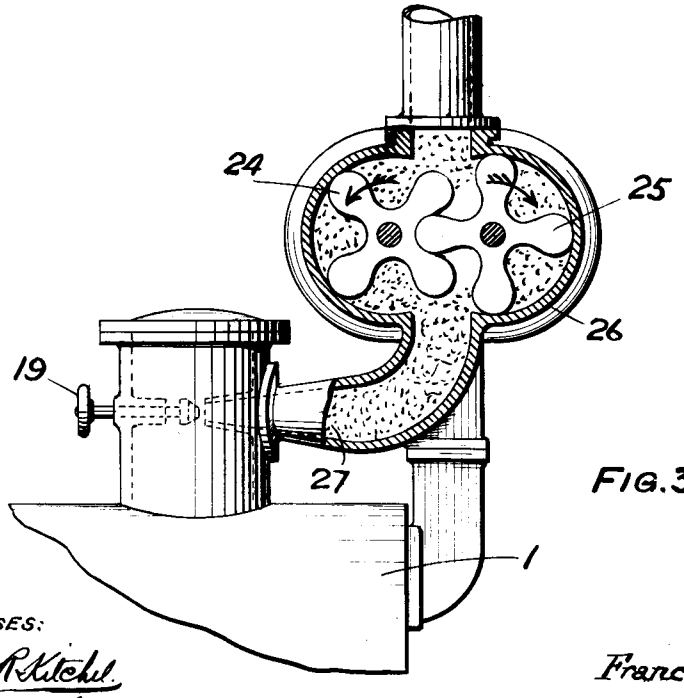



FIG. 3.

WITNESSES:

Robt. R. Kitchel

K. M. Gilligan

INVENTOR

Francis J. Stokes

BY

Augustus B. Stoughton

ATTORNEY.

# UNITED STATES PATENT OFFICE.

FRANCIS J. STOKES, OF PHILADELPHIA, PENNSYLVANIA.

## METHOD OF FEEDING MATERIAL TO AND FROM VACUUM-DRIERS.

1,080,602. Specification of Letters Patent. Patented Dec. 9, 1913.

Application filed March 19, 1909. Serial No. 484,484.

*To all whom it may concern:*

Be it known that I, FRANCIS J. STOKES, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Method of Feeding Material to or from Vacuum-Driers, of which the following is a specification.

The principal object of the present invention is to provide for continuously or intermittently feeding pulverulent or powdered material past a wall or partition, upon opposite sides of which there is a difference of pressure or atmospheric condition, without disturbing such difference and without the use of valves and the like, or more specifically stated, to provide for continuously feeding pulverulent or powdered material into and out of a vacuum drier without materially interfering with the vacuum.

To this and other ends hereinafter set forth the invention stated in general terms comprises the method of feeding pulverulent material past a partition, upon opposite sides of which there is a difference of pressure or atmospheric condition, which consists in establishing a suitable or restricted opening or passage through the partition and sealing the opening or passage to maintain such difference by packing the material therein as it is passed or fed therethrough. This method may be applied to various uses and it may be practised by various instrumentalities, however.

In the accompanying drawings Figure 1, is a view principally in section illustrating the invention in application to a so-called rotary vacuum drier, and Figs. 2 and 3, are views principally in central section, drawn to an enlarged scale, and illustrating types of apparatus by means of which the invention can be practised.

Referring to Fig. 1, 1 is the shell of a rotary vacuum drier, 2 is a connection by means of which a more or less perfect vacuum is maintained in the shell or casing 1. 3, is a revoluble stirrer which is turned by means of the connection 4 and through which steam or the like is passed by means of the connections 5. 6, is the inlet and 7, is the outlet. The shell or casing 1 is shown as jacketed and steam heated by means of the connections 8. In this machine there is a difference of atmospheric pressure between the inside and outside of the shell or casing 1 which shell or casing therefore constitutes a partition upon opposite sides of which there is a difference in pressure. In accordance with my invention this shell is provided at the inlet and outlet with a passage or opening. Referring to the inlet this passage or opening is shown at 9 and referring to the outlet it is shown at 10. The pulverulent material entering at the inlet is fed continuously and in passing through the passage or opening 9 packs and seals it so that the vacuum or difference of atmospheric pressure between the inside and outside of the shell or casing is maintained. A screw 11, mounted for revolution and driven continuously as by means of the worm, worm-wheel and driving pulley 12, is an appropriate means for continuously feeding the pulverulent material and packing it to cause it to seal the passage or opening through which it passes. 13, is a hopper fitted with suitable stirring mechanism as 14 and is an example of means for supplying the pulverulent material to the screw. At the discharge end the screw is shown at 15 as driven by the worm-wheel, worm and pulley 16, so that the screw 15 continuously feeds pulverulent material from the vacuum chamber to the outside and at the same time packs it in passing through the passage or opening, thus causing it to seal the same. A weighted normally closed valve 18, may be provided for sealing the outlet until such time as the pulverulent material commences to be discharged therefrom. Similarly a valve 19 may be provided for closing the inlet while the material contained in the drier is discharged therefrom.

In Fig. 2, a plunger 20 reciprocated by means of the pitman 22, is another means for continuously feeding the pulverulent material from the hopper 23 and packing it in the opening or passage 21, so as to seal the same. The revoluble toothed wheels 24 and 25, arranged in the casing 26, (Fig. 3) are another means for continuously feeding and packing the pulverulent material in the passage or opening 27, so as to seal the same.

What I claim is,

1. The process of feeding powdered material from the chamber of a vacuum drier through a passage sealed by an automatically closing valve adapted to open outwardly, which consists in packing or crowding the material in said passage against the

inlet side of the valve so as to normally hold the automatic valve open and act in lieu thereof to seal the passage.

2. The process of feeding powdered material to and from the chamber of a vacuum drier through a valved passage which consists in packing or crowding the material in said passage against the inlet side of the valve so as to compact the material, holding said valve open, and permitting the compacted material to act in lieu thereof to seal the passage.

In testimony whereof I have hereunto signed my name.

FRANCIS J. STOKES.

In the presence of—
CLIFFORD H. CASSEL,
K. M. GILLIGAN.