

May 2, 1961

L. A. SZYMAN ET AL
AIR LOCK CLEANING DEVICE

2,982,449

Filed April 17, 1958

2 Sheets-Sheet 1

Fig. 1.

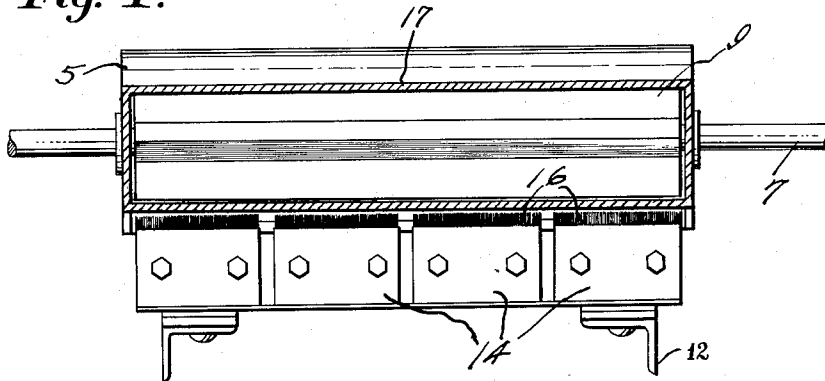


Fig. 2.

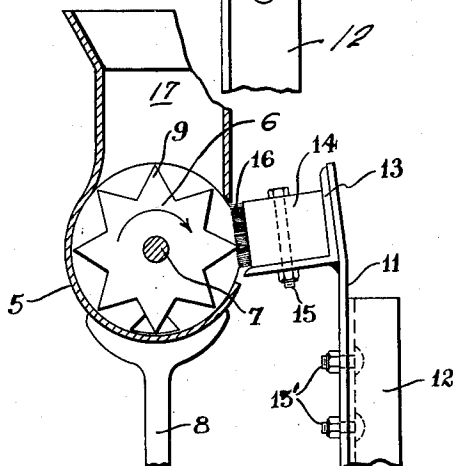
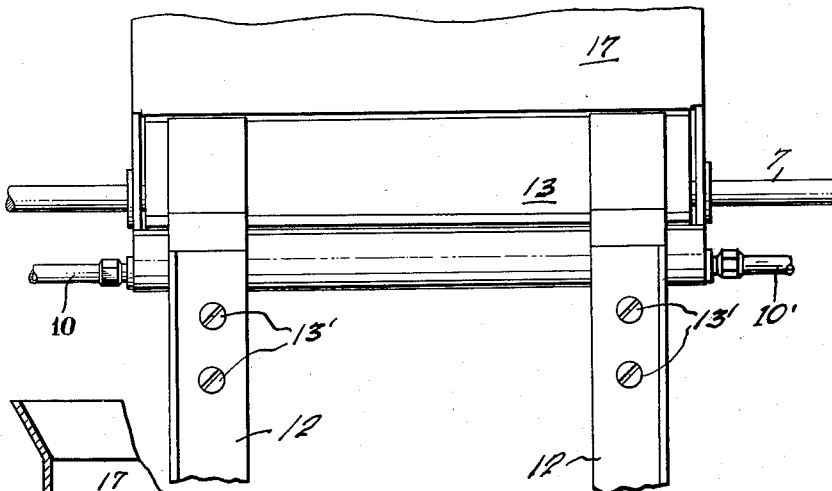


Fig. 3.

INVENTOR

Leonard A. Szyman
Florian F. Gosselin

BY

Chas. H. Brown & Co.

ATTORNEY

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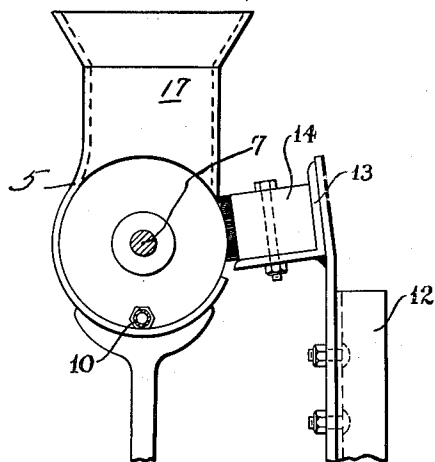


Fig. 4.

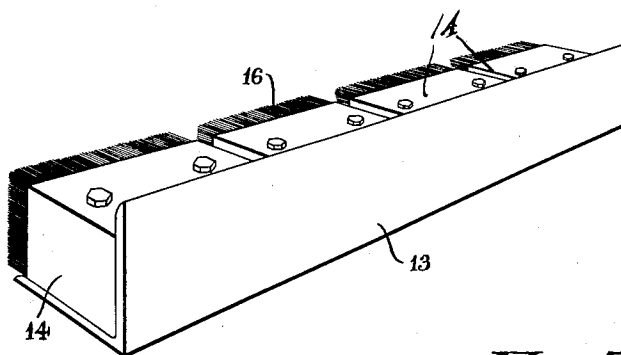


Fig. 5.

INVENTOR

Leonard A. Szyman
Florien F. Gosselin

BY

W. H. W. Co.

ATTORNEY

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2,982,449

AIR LOCK CLEANING DEVICE

Leonard A. Szyman, Claremont, N.H., and Florian F. Gosselin, Claremont, N.H. (Newport, N.H.)

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1 Claim. (Cl. 222—352)

By way of explanation it might be stated that in the conventional form of air system designed for conveying material, such as grain, flour or grain products from one location to another, embodies an air compressor or air lock and piping, the material being discharged into the air lock which circulates the flow of material into the stream of compressed air, to the end that regulated quantities of material are delivered to a desired location.

The air lock forming a part of the system comprises a cylinder within which a second cylinder operates, the inner cylinder carrying a plurality of blades or fins spaced apart and projecting therefrom, the blades or fins operating in such proximity to the inner surface of the main cylinder as to provide a small clearance therebetween. This small clearance frequently becomes clogged with the materials being transferred, particularly when the device is used in conveying wet, sticky dairy feeds,

It is, therefore, the primary object of the present invention to provide means for removing material from the edges of the blades or fins to maintain the small air space open to insure the operation of the system.

Another object of the invention is to provide an air lock cleaning mechanism which may be readily and easily attached to an air lock of a conventional construction, without the necessity of making extensive alterations in the construction of the air lock to mount the cleaner.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings:

Figure 1 is a plan view of an air lock equipped with a cleaning mechanism constructed in accordance with the invention.

Fig. 2 is an elevational view thereof.

Fig. 3 is an elevational view, one end of the air lock having been removed, illustrating the operation of the inner cylinder,

Fig. 4 is an end elevational view of the cleaning device as mounted adjacent to the air lock cylinder.

Fig. 5 is a perspective view of the cleaner.

Referring to the drawings in detail, the reference character 5 indicates the outer cylinder forming a part of the air lock of a pneumatic conveying system, in which the inner cylinder 6 of the air lock operates, the inner cylinder being mounted on shaft 7 rotated by suitable machinery (not shown).

The outer cylinder of the air lock is supported on the bracket 8, to which the cylinder is secured, the bracket holding the air lock against undue vibrations, during operation.

As better shown by Fig. 3 of the drawings, the inner cylinder is provided with blades 9, which are disposed in spaced relation with respect to each other, and extend longitudinally of the inner cylinder 6, the widths of the

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blades being such that they will operate in close proximity to the inner surface of the outer cylinder 5, leaving a small air space between the outer edges of the blades 9 and cylinder 5. The spaces between the blades 9 provide compartments with the outer cylinder 5 into which material, such as grain, flour or other grain products may be conveyed in predetermined quantities into the delivery system, the blades acting to prevent the material in the adjacent compartments from being blown back into the material opening of the outer cylinder 5.

The reference character 10 indicates a compressed air supply pipe which connects with one end of the outer cylinder 5 and is designed to discharge air under pressure into the various compartments between the blades 9, as the inner cylinder rotates in discharging material deposited therein.

The air under pressure delivered into the compartments to remove the grain or material deposited therein, will be discharged through the pipe 10' at the opposite end of the outer cylinder 5.

The cleaner constituting the subject matter of the present invention comprises supporting arms 11 that are bolted to the uprights 12 of the frame of the machine, by means of bolts 13'. These arms 11 extend upwardly, terminating a substantial distance above the upper ends of the uprights 12 where they provide a support for the bracket 13 which is in the form of an angle bar welded to the supporting arms, the bracket 13 extending the entire distance between the supporting arms 11.

A plurality of brushes 14 extend throughout the length of the bracket 13 and are bolted to the bracket 13 by bolts 15. The bristles 16 of the brushes 14 are of such lengths that they will contact the outer edges of the blades 9, and since the brushes are held stationary on the bracket 13, it is obvious that material which is being conveyed by the pneumatic system, and which collects on the outer surfaces of the blades 9, will be removed by contact of the longitudinal edges of the blades with the brushes 14 as they move thereover, thereby eliminating any possibility of material collecting on the longitudinal edges of the blades to close the space between the longitudinal edges of the blades and outer cylinder 5.

Since the brushes are secured independently of each other to the bracket 13, it is obvious that they may be readily removed and replaced when they become clogged and inoperative.

A hopper 17 forms a part of the outer cylinder 5, into which material is deposited, the material passing into the cylinder 5 from said hopper 17.

From the foregoing it will be seen that due to the construction shown and described, I have provided a cleaner for cleaning the longitudinal edges of the blades of the air lock of a pneumatic conveying apparatus, maintaining the air lock operative, regardless of the material being transferred by the pneumatic system.

Having thus described the invention, what is claimed is:

The combination with the frame of an air lock comprising a horizontal stationary cylinder having an opening in the wall thereof and a rotary cylinder with peripheral blades operating within said stationary cylinder, of a blade cleaning apparatus comprising a horizontal angle bar extending throughout the length of said opening of said air lock with the open side of the angle bar disposed towards said opening of the stationary cylinder, a plurality of spaced apart independent substantially wide stationary brush members mounted on said angle bar, the bristles of said wide brush members extending into said opening of said cylinder contacting the longitudinal edges only of said blades, adjacent thereto, substantially closing one side of said opening as said rotary cylinder operates in said stationary cylinder, removing material from the outer

edges of said blades, and said blades operating to remove material from said brushes.

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