

No. 671,402.

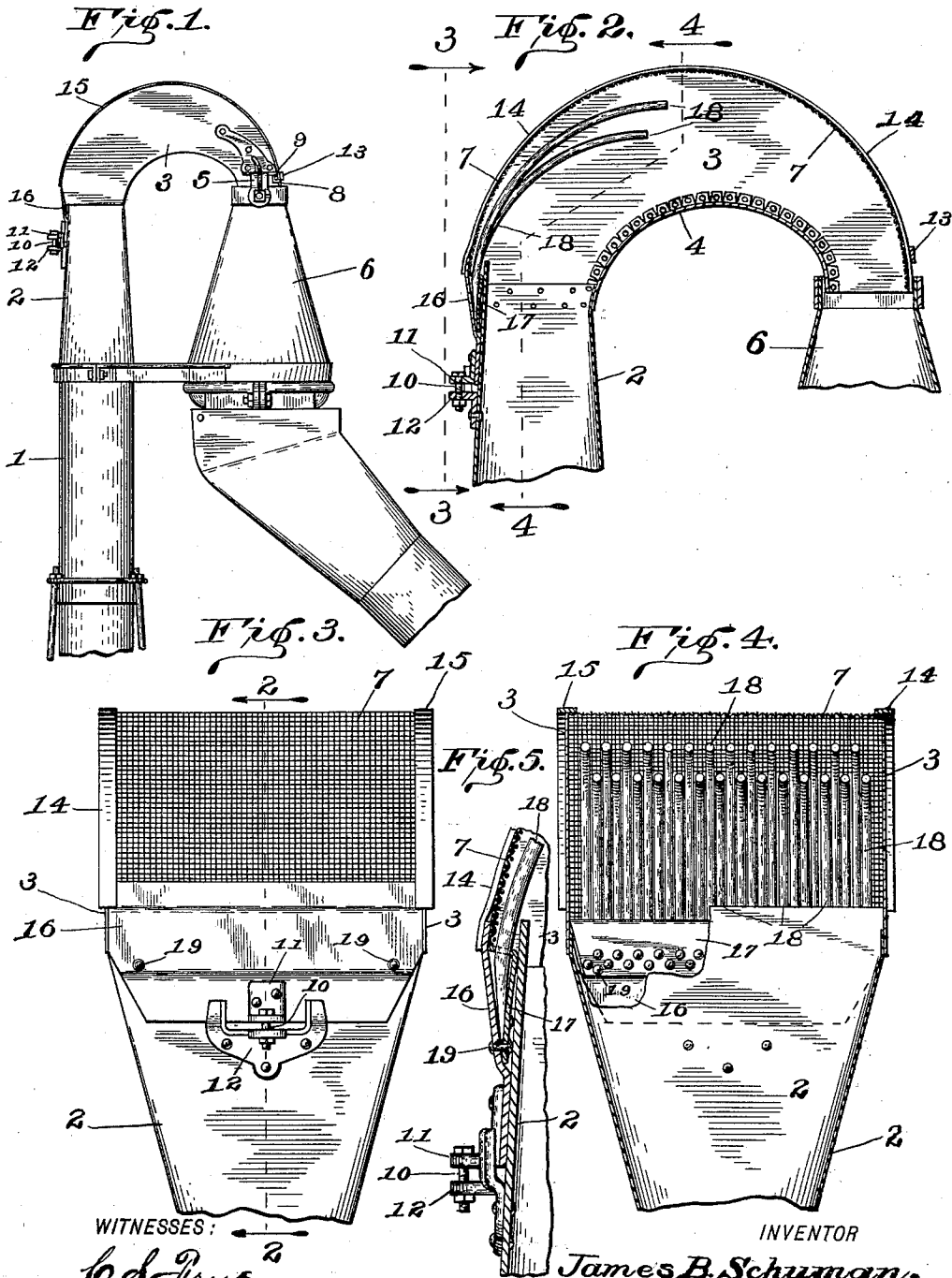
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J. B. SCHUMAN.

SEPARATING HEAD FOR PNEUMATIC ELEVATORS.

(Application filed Apr. 16, 1900.)

(No Model.)



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SEPARATING-HEAD FOR PNEUMATIC ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 671,402, dated April 2, 1901.

Application filed April 16, 1900. Serial No. 13,081. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. SCHUMAN, a citizen of the United States, residing at Columbia City, in the county of Whitley and State of Indiana, have invented certain new and useful Improvements in Separating-Heads for Pneumatic Elevators, of which the following is a specification.

It has been a matter of some difficulty to secure the requisite durability to the perforated or reticulated upper or outer sides of separating-heads of pneumatic elevators, the same being subject continuously to the impact of the grain being elevated, and consequently also subject to severe wear. The best material for forming the outer and upper sides of these heads is screen-wire. This must be fine enough so that the grain will not escape through the meshes thereof, and this fact has rendered it impracticable to make such screens very heavy. I have discovered that the wear can be much reduced, while the efficiency of the machine is not lessened by inserting a guard, such as a series of steel fingers, just below the wire screen, against which the grain will first strike, so that its force is much reduced before it comes in contact with the screen itself.

My present invention therefore consists in providing the separating-heads of pneumatic elevators with guards, whereby they are protected from wear. Said invention is applicable to such machines as are shown in Patent No. 641,045, issued January 9, 1900, upon my application, in my pending application, Serial No. 715,303, filed May 2, 1899, and also in Patent No. 623,109, issued April 11, 1899, upon my application.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a side elevation of the separating-head and adjacent parts of such a machine as is shown in my Patent No. 641,045, above referred to; Fig. 2, a central sectional view thereof, on an enlarged scale, on the dotted line 2 2 in Fig. 3, showing the relation of the screen-guard structure to the screen; Fig. 3, a rear elevation of the separating-head as seen from the dotted line 3 3 alongside Fig.

2, some portions being broken away to show the construction more clearly; Fig. 4, a vertical sectional view as seen from the dotted line 4 4 in Fig. 2, showing the guard in front elevation; and Fig. 5, a detail sectional view similar to a portion of Fig. 2, but on a still further enlarged scale.

As in my Patent No. 641,045, above mentioned, the separating-head is mounted on the upper end of the conveyer pipe or tube and consists of an outwardly-flaring structure 2, having cheek-pieces 3 and a throat-piece 4, which are riveted or otherwise strongly secured together and form a substantially unitary structure. To the cheek-pieces 3 are secured hangers 5, to which a hopper 6 or other grain-receiving structure is suspended. So far these parts are the same as shown in my said Patent No. 641,045.

The screen 7 is composed of perforated or reticulated material, preferably flattened screen-wire, and is removably secured to the other parts by means of hooks 8, engaging with projections 9 on the cheek-pieces, and a bolt 10, extending through an angle-piece 11, secured to said screen, and an angle-piece 12, secured to the flaring portion 2 of the head. It is bordered with flat metal strips 13, 14, 15, and 16 and differs only from the screen shown in my said Patent No. 641,045, in that I prefer to have the flat metal piece 16 of considerably greater width than heretofore for the purposes of receiving the guard structure more conveniently.

The guard structure consists of a base-piece 17 and numerous fingers 18, which are preferably formed of steel wire and which preferably are of a very hard quality, and thus capable of resisting much wear. In making this guard I form the base with holes to receive the fingers and the rivets by which the fingers are secured thereto. I then flatten the ends of the fingers, form holes in said flattened ends, and rivet the same to the base. I then secure the complete guard to the screen by means of other rivets or bolts 19, as best shown in Figs. 3 and 5. The fingers are curved to conform substantially to the contour of the screen itself, the curvature being preferably slightly greater than that of said screen, in

order that the space between the guard and the screen may be of increasing size in the direction of the travel of the grain through the machine, so that there shall be no danger
 5 of clogging should straw or other fibrous matter get into the machine. The base 17 of the guard is preferably arranged behind the upper edge of the part 2 of the head structure, the sides or cheek-pieces 3 being widened sufficiently at the point of union with the part 2
 10 to leave a pocket to receive this base, so that it shall be protected from the wear of the material passing through the elevator, said wear being thus first and mostly received by the
 15 fingers 18, as will be readily understood. The guard does not impair the efficiency of the machine, however, as it freely permits the passage of material-laden air, the operation being mainly to break or reduce the effect
 20 thereof at the point of change of direction of motion, where the adjacent portion of the structure would otherwise be subject to an undue proportion of the wearing force.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a pneumatic elevator, of the separating-head the outer portion of which at the turn therein is composed
 30 of perforated or reticulated material, and a guard therefor located in the path of the air under said perforated or reticulated material consisting of a base and curved fingers mounted in said base, the curvature in said fingers
 35 approximating the curvature of the outer portion of the head but diverging slightly therefrom, whereby the space between the guard and the outer surface of the head increases in the direction of the passage of the mate-

rial through the elevator, substantially as and 40 for the purposes set forth.

2. The combination, in a pneumatic elevator, with the separating-head, on the pneumatic elevating-tube, formed with a bend the outer side of which has a portion of perforated or reticulated material, of a guard composed of a base and fingers mounted on said base and secured to the inner side of the upper portion of the separating-head under said
 45 perforated or reticulated material, whereby the same is protected from excessive wear. 50

3. The combination, in a pneumatic elevator, with the separating-head the outer side of which is formed of perforated or reticulated material, of a guard embodying fingers
 55 which extend below said outer side and into the path of the material passing through the elevator, whereby the force of said material is broken, and the perforated or reticulated part guarded against wear, substantially as
 60 set forth.

4. The combination, in a pneumatic elevator, of the pneumatic tube having a bend with a perforated or reticulated portion on its outer side, a guard secured beneath the perforated or reticulated portion in the path of
 65 the air which passes therethrough, said guard being formed to receive and break the impact of the material, and thus protect said portion, while permitting the free passage of
 70 the air, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 13th day of April, A. D. 1900.

JAMES B. SCHUMAN. [L. S.]

Witnesses:

CHESTER BRADFORD,
 JAMES A. WALSH.