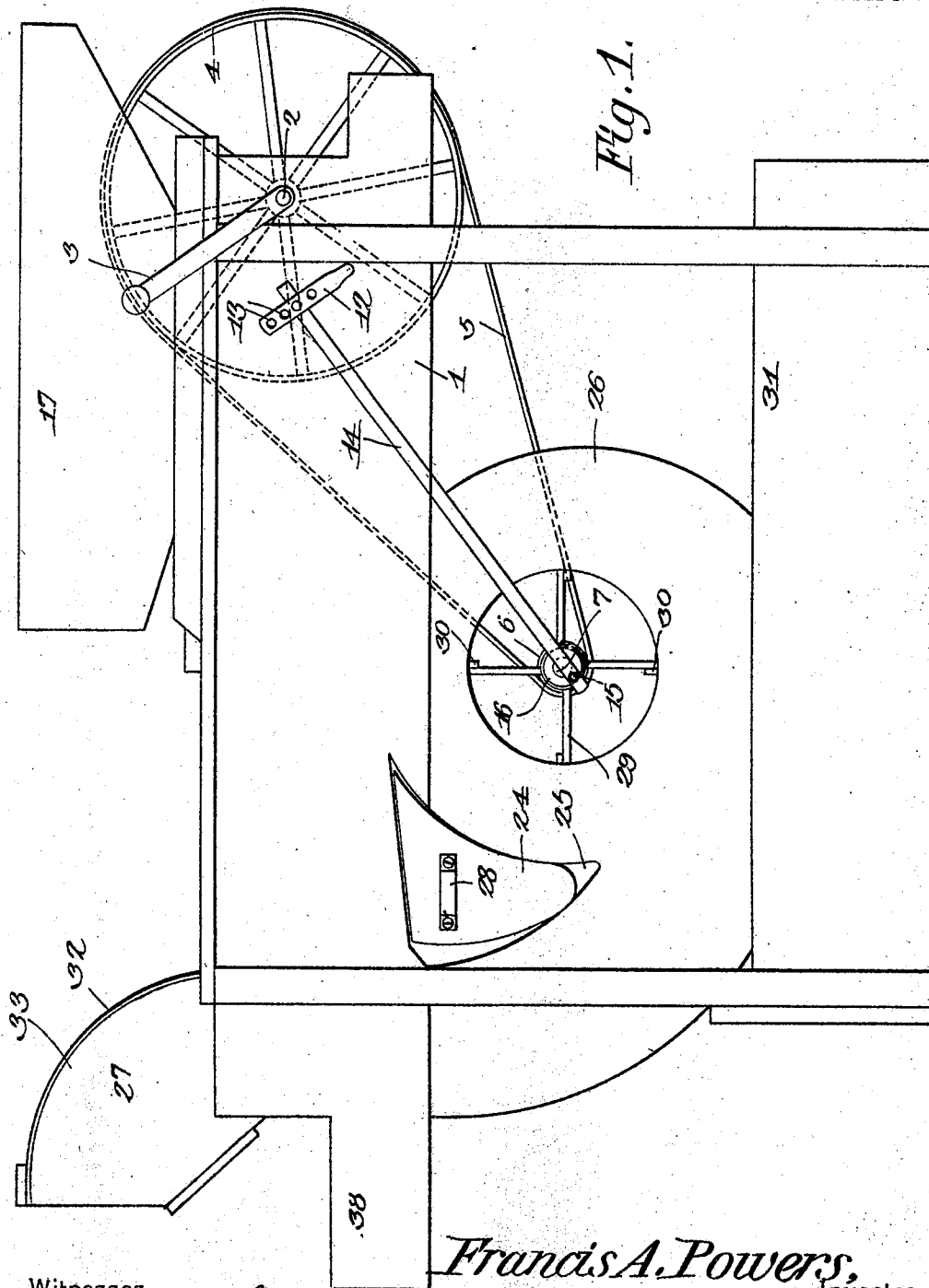


No. 814,918.

PATENTED MAR. 13, 1906.

F. A. POWERS.
SEED AND GRAIN CLEANING MACHINE.
APPLICATION FILED JAN. 31, 1905.

2 SHEETS—SHEET 1.



Witnesses
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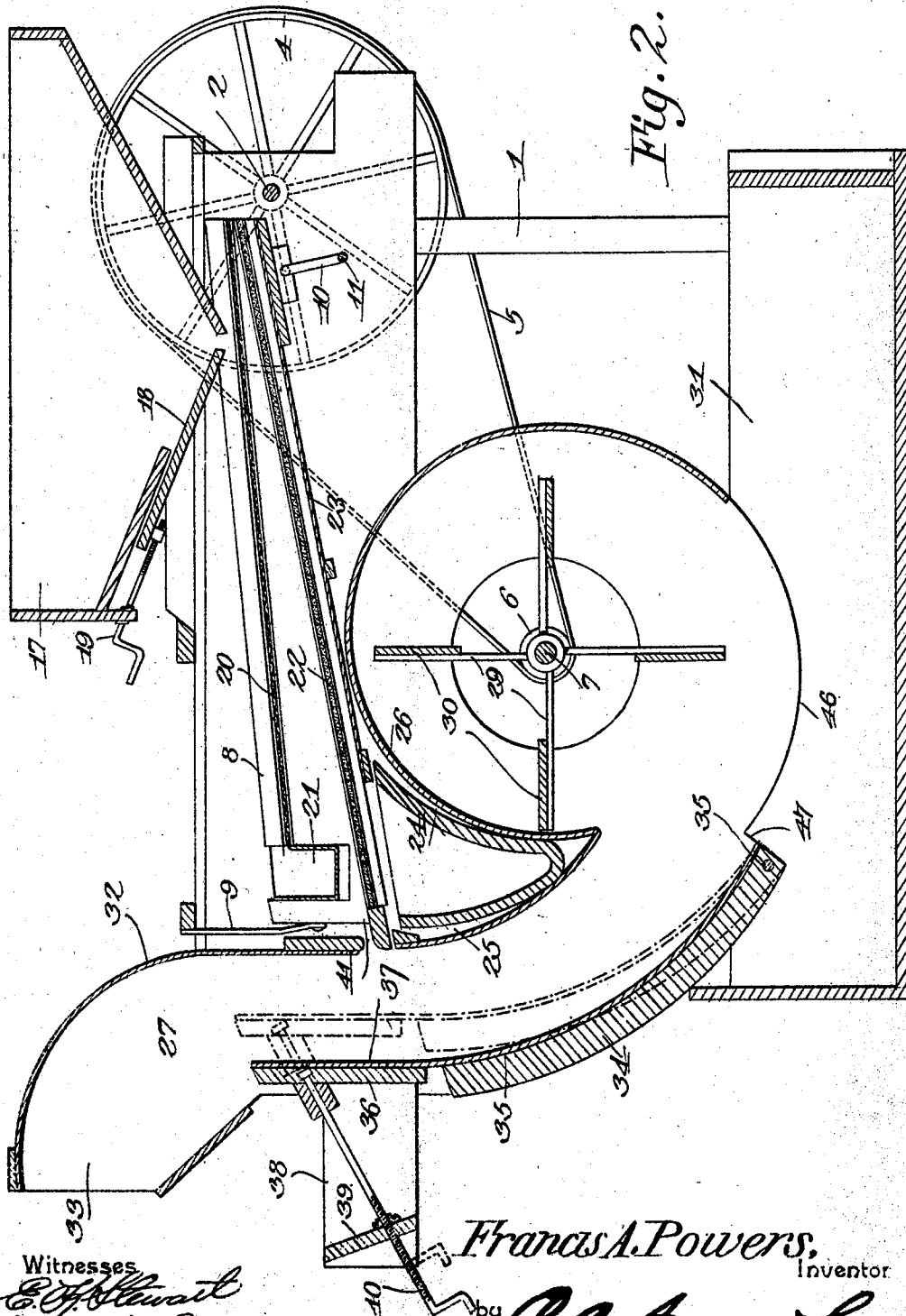
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UNITED STATES PATENT OFFICE.

FRANCIS A. POWERS, OF PARMA, IDAHO, ASSIGNOR OF ONE-HALF TO
FRANK GAHLEY, OF PARMA, IDAHO.

SEED AND GRAIN CLEANING MACHINE.

No. 814,918.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed January 31, 1905. Serial No. 243,521.

To all whom it may concern:

Be it known that I, FRANCIS A. POWERS, a citizen of the United States, residing at Parma, in the county of Canyon and State of Idaho, have invented a new and useful Seed and Grain Cleaning Machine, of which the following is a specification.

This invention relates to cleaning and separating machines for grain and seeds; and it has among its objects to simplify and improve the construction and operation of this class of devices.

Another object of the invention is to facilitate the adjustment of the direction and the intensity of the blast while the machine is either stationary or in operation.

Another object of the invention is to improve the means for generating and directing the blast.

Still another object is to provide a convenient detachable receptacle for small seeds and other heavy substances separated from grain.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a side elevation of a machine constructed in accordance with the principles of the invention. Fig. 2 is a longitudinal vertical sectional view of the same.

Corresponding parts in both figures are indicated throughout by like characters of reference.

The invention has in the accompanying drawings been shown applied to a well-known type of grain-separator, 1 designating the frame; 2, a transversely-disposed power-

shaft having a crank 3 and a band-wheel 4, from which a belt or band 5 leads over a pulley 6 upon the fan-shaft 7. 8 is the shaking-shoe, which is supported at one end by springs, one of which is shown at 9. The other end of the shoe is supported upon an intermediate crank portion 10 of a shaft 11, supported for oscillation in the sides of the frame and provided at one end with a crank 12, having a plurality of perforations 13 for adjustable connection with one end of a pitman 14, the other end of which is journaled upon a wrist-pin 15, projecting from a disk 16 upon the crank-shaft. Motion is thus transmitted from the latter to the shaking-shoe, the extent of the throw of the latter being gaged by shifting the connecting-point of the pitman 14 with the crank-arm 12 toward or from the axis of the rock-shaft 11.

The shaking-shoe is fed from a hopper 17, the feed being regulated by means of a slide 18, operable by a hand-screw 19. The shoe contains a cleaning-screen 20 of a mesh suitable for the passage of the seeds or grain that is being operated upon, the coarse material, such as bits of straw and the like, which is separated by said screen, being discharged into a transversely-disposed spout 21, which is inclined in the direction of one of the sides of the frame or casing through which its discharge end projects in the usual manner. (Not shown.) The shoe also carries a separating-screen 22 for the purpose of separating from the material that is being operated upon fine heavy particles—such as small seeds, sand, and the like—the same dropping upon the bottom 23, which discharges into a drawer or receptacle 24, which is supported detachably in the recess 25 between the fan-casing 26 and the discharge-spout 27 of the same. Said drawer or receptacle is provided at its outer end with a handle 28, enabling it to be readily removed and emptied.

The fan carried by the shaft 7 is of ordinary construction, being composed of radiating arms 29, carrying blades or wings 30. The fan-casing, however, instead of being of the usual circular or drum-shaped form is made spiral, the discharge-flue 27 being made to project from the rear portion of the casing, which is nearest the fan-shaft, the distance of the perimeter of the fan-casing increasing

gradually from the point of connection with the front wall of the flue 27. The lower portion of the fan-casing communicates with a grain or seed receptacle 31. The discharge-flue is composed of the front wall 32, the side members 33, and the back wall or breast 34, the lower end of which is pivoted upon a shaft or pin 35 between the side members 33. The discharge-flue is curved to approximate S shape, and the breast 34, which is suitably curved to correspond with the general outline of the flue, is preferably composed of two separate members 35 and 36, connected by means of a lining 37 of sheet metal or other flexible material. The sides of the frame or casing are extended to form brackets 38, connected by a cross-piece 39, through which operates a hand-screw 40, the inner end of which is swiveled in the upper member 36 of the breast of the flue. It will be readily seen how by manipulating the said hand-screw the breast of the flue may be adjusted to various positions, one of which is indicated in dotted lines in Fig. 2.

The front wall 32 of the flue 27 has an opening 41 for the passage of the separating-screen 22, over which the material operated upon passes into the flue. It is to be understood that a so-called "blank" screen or solid plate of sheet metal or other material may be substituted for the open screen 22.

The operation and advantages of this device will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed, by those skilled in the art to which it appertains. In order to operate profitably upon various kinds and grades of grains and seeds, it is of the utmost importance to be able to regulate the blast so as to concentrate or diffuse the same, as may be required by circumstances. Where a cylindrical fan-casing is employed a powerful blast may be generated; but the air-current usually leaves the fan-casing with a velocity and in a state of concentration which hinders the regulation thereof, except by conducting it through devious and circuitous courses, which naturally increase the complexity and expense of the machine and render it liable to get out of order. With a spiral fan-casing as herein employed a blast of no less intensity may be generated—that is, an equal or even a greater volume of air may be set in motion—than with the employment of a cylindrical fan-case of equal dimensions; but the air-current leaves the casing in a more diffused state. This is especially important when, as in the present invention, a grain-receptacle is disposed beneath the open lower portion of the fan-casing. The more concentrated or highly-condensed air-current, which is driven before the blades of the fan, will rise nearly adjacent to the front wall 32 of the discharge-

spout, through the slot 41 of which the grain is discharged into said condensed or concentrated air-current. Through this current the grain slowly floats or descends, gradually passing into the more diffused air-current, which ascends adjacent to the rear wall or breast of the discharge-spout and which, while still effective to blow out chaff and the like, offers little resistance to the passage of the grain into the receptacle 31. Now by the employment of a movable breast in the discharge-flue the outlet for the air-current may be constricted, so as to increase its intensity, according to the material that is being operated upon, by simply moving the said breast in a forward direction. The outlet being thus constricted, heavy grain may be successfully operated upon, the grain passing over the screen 22 into the flue and passing through the ascending air-current to the receptacle 31, while the refuse is blown out through the spout. When small seeds or like grain is being operated upon, the breast is moved in a rearward direction, thus increasing the size of the outlet, and consequently lessening the intensity of the blast.

It is preferred that the pivotal point of the breast 34 of the discharge-spout be disposed at or below the terminal of the eccentric portion of the fan-casing. The lower portion of the fan-casing is open, as shown at 46, in order to provide for the passage of the clean grain and seed into the receptacle below. In the drawings the side members of the fan-casing are shouldered or offset, as shown at 47, to provide for the support of the pivotal pin 35, whereby the breast 34 is supported below the eccentric portion of the fan-casing, thus forming a wide outlet for the air-current and to some extent removing the upper surface of the breast beyond the influence of said air-current, so that the clean grain and seed may slide freely into the receptacle undisturbed by such current.

This device, as will be seen, is thoroughly simple and may be easily and inexpensively constructed and operated, while at the same time it is successful and effective in operation.

Having thus described the invention, what is claimed is—

1. In a machine of the class described, a spiral fan-casing, and a discharge-spout for the same, said spout including a breast supported pivotally at its lower end.

2. In a machine of the class described, a spiral fan-casing, and a discharge-spout for the same, said spout including a breast supported pivotally at its inner end between the sides of the spout; and means for adjusting the outer end of said breast to regulate the outlet of the spout.

3. In a machine of the class described, a spiral fan-casing having a discharge-spout

the cross-sectional area of which at its receiving end is greater than the eccentric portion of the fan-casing with which it is connected; said spout including a movable portion or
5 breast which is pivotally supported below the terminal of the eccentric portion of the fan-casing.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANCIS A. POWERS.

Witnesses:

HARLAND BATES,
E. H. BATES.