No. 815,070. PATENTED MAR. 13, 1906.

W. W. CULVER.

GRAIN SEPARATOR.

APPLICATION FILED JAN. 9, 1905.

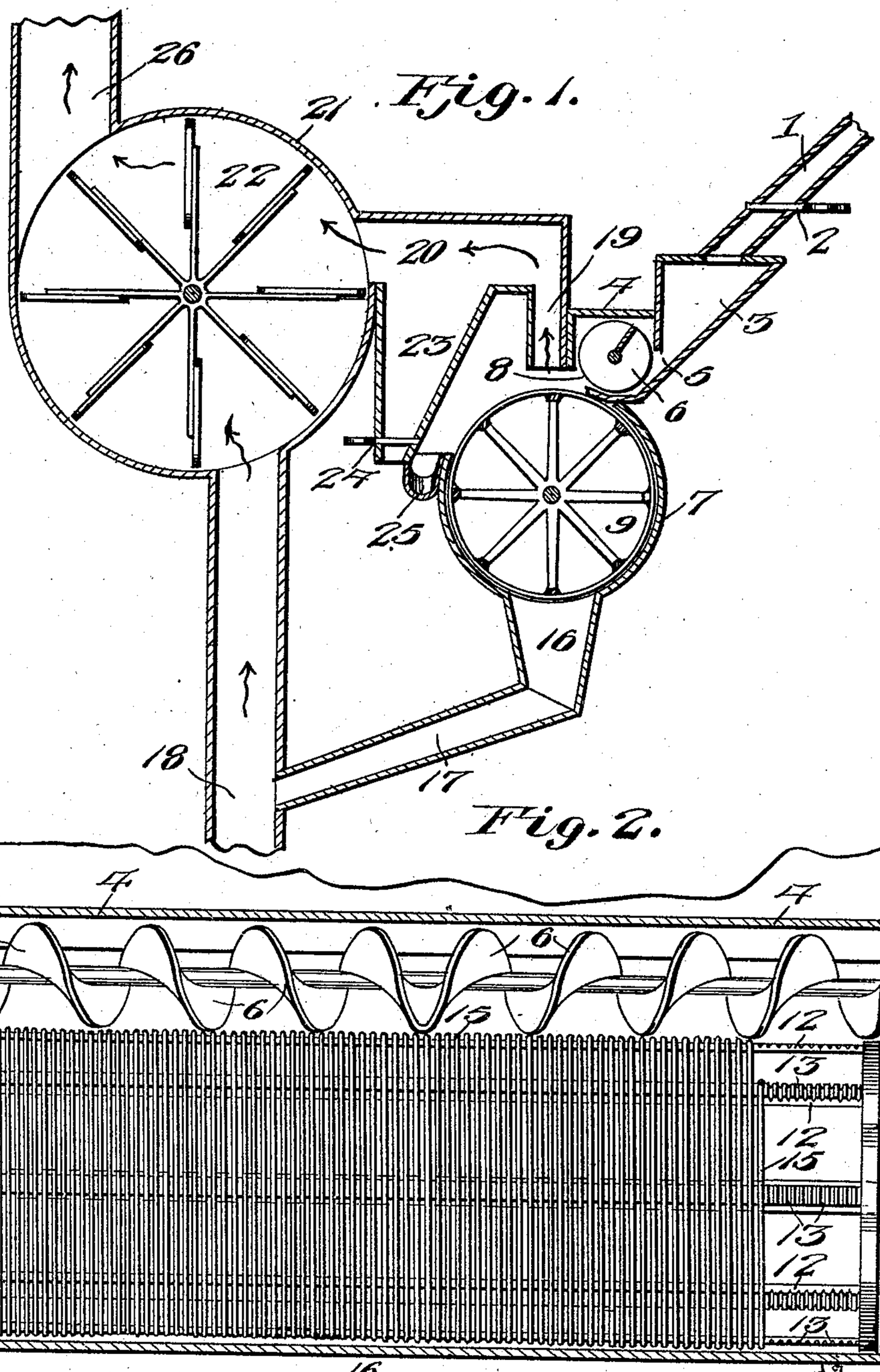

Fig. 1.

Fig. 2.

Witnesses

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GRAIN-SEPARATOR.

No. 815,070. Specification of Letters Patent. Patented March 13, 1906.

Application filed January 9, 1905. Serial No. 240,366.

To all whom it may concern:

Be it known that I, WILLIAM W. CULVER, a citizen of Wichita, in the county of Sedgwick, in the State of Kansas, have invented certain new and useful Improvements in Grain-Separators, of which the following specification gives a full, clear, and exact description, reference being had to the accompanying drawings.

The invention relates to an improvement in grain-separators of the type designed to separate the trash and chaff from the grain.

The main object of the present invention is the production of means whereby the mass of material is subjected to the action of a suction-fan a number of times during its course of travel through the machine, whereby to effectively remove all trash possible from the material.

Another object of the invention is the production of a cylindrical screen so constructed as to permit the passage of the grain therethrough and prevent passage of the chaff, thereby materially lightening the weight to which revolving screens are ordinarily subjected and enabling the operating parts of the apparatus to effect a maximum result with a minimum of power.

The invention consists in certain details of construction which will be described in the following specification, reference being had particularly to the accompanying drawings, in which—

Figure 1 is a longitudinal section through a separator constructed in accordance with my invention. Fig. 2 is a transverse section taken through the feed-box and screen-casing, the screen being shown in elevation.

Referring to the drawings, my improved separator comprises a suitable shaft 1, controlled through the medium of a sliding gate 2 and delivering the material to a feed-hopper 3. A feed-box 4 is in open communication with the hopper through a narrow or longitudinally-arranged opening 5, and in the feed-box is revolubly mounted the feed-screw 6. The feed-screw is of peculiar construction in that the spiral blades thereof extend in opposite directions from the feed-point, so that in the revolution of the screw the material is fed toward the center of the box.

7 represents a screen-casing supported below the feed-box and in direct communication therewith through a longitudinal opening 8. Within the casing 7 is mounted a revolving screen 9. This screen comprises heads 10, supported in the sides of the screen by journals 11, said heads being joined by transverse bars 12, formed on their edges with a series of regularly-arranged notches 13. The endless band, preferably a single length of wire 15, is wound in concentric and successive circular formation around the bars 12, each strand of the material seating in the circumferentially-alined notches 13 of the respective bars. By this construction an open-work screen is provided having a series of elongated openings arranged regularly and circumferentially of the screen, the notches 13 of course being spaced to provide openings between the wire strands of the desired width. The casing 7 communicates at its lower end with a transversely-arranged chute 16, preferably inclining toward and terminating in a feedway 17, leading to and in communication with the discharge-chute 18. Immediately forward of the opening 8 between the feed-box and screen-casing is arranged the open mouth of an elongated passage 19, communicating at the upper end in a transverse passage 20, leading to and in open communication with a fan 21, in which latter is suitably mounted a suction-fan 22. The passage 20 forward of the passage 19 is in communication with a well 23, closed at the lower end by a sliding door 24

The lower side of the fan-casing terminates about on alinement with the lower end of the well 23, a gutter 25 being supported by the casing and well adjacent its terminal of the casing-wall. The grain-discharge chute 18 extends above the feedway 17 and is in open communication with the fan-casing, said casing discharging in a passage 26, as clearly shown in Fig. 1.

In operation the grain finding its way into the feed-box through the restricted opening 5 is fed directly onto the screen-cylinder, the grain particles falling through the openings in said cylinder and into the chute 16. Immediately the material is received upon the revolving screen it is subjected to suction action through the passage 19, thereby removing a considerable portion of the chaff and trash therefrom. The heavier particles, however, of the trash are carried forward in the revolution of the cylinder and delivered to the gutter 25, from which they may be discharged into any suitable refuse heap. The heavier particles taken up by suction through passage 19 will in their travel through pas-

sage 20 fall into the well 23, from which they may be discharged by a suitable operation of the door 24. The grain finding its way through the feedway 17 into the discharge-chute is comparatively free from foreign matter, the lighter particles only of such matter, if any, being retained. As the discharge-chute 18 is open to the action of the suction-fan, such particles of foreign matter will be removed at this point. It will be noted that the entire material is subjected to the suction action of the fan at the point of its delivery through the screening-cylinder and that the screened material is again subjected to the action of the fan previous to its delivery through the discharge-chute.

The screening-cylinder is of novel construction and particularly adapted for the separation incident to an apparatus of this character. Its construction is simple, and the openings between the strands of wire 15 are sufficient to permit the passage of grain and prevent the passage of larger foreign matter. The heavier particles of this matter are delivered directly to the gutter 25, thereby relieving the cylinder of their weight and permitting the operation of the apparatus with less power than is usual in devices of this character.

It is to be understood that the screening-cylinder, feed-screw, and suction-fan are to be separately or collectively operated by the use of any mechanical elements, as such form no material part of the present invention.

Having thus described the invention, what is claimed as new is—

1. A grain-separator comprising a feed-box, a feed-screw therein having spiral coils extending in reverse directions from the center, and a revolving screen mounted forward of the feed-box, the operative surface of said screen being formed of a single length of material wound in concentric coils about the screen-body, the screw being arranged longitudinally of and above the screen and adapted to deliver the material longitudinally of the screen.

2. A grain-separator comprising a feed-box, means for delivering the material therefrom, a revolving screen mounted forward of the feed-box, a suction-fan, an open-ended passage leading to said fan and terminating immediately above the delivery from the feed-box to the screen, and a discharge-chute communicating with the delivery from the screen, said discharge-chute being in open communication with the fan-casing.

3. A grain-separator comprising a feed-box, a revolving screen, a casing for the screen terminating adjacent the feed-box in the direction of rotation of the screen, a discharge-gutter supported adjacent the terminal of the screen-casing, a fan-casing, a fan therein, an open-ended passage communicating with the fan and terminating above the delivery to the screen, a well in said passage between its end and the fan-casing, and a discharge-chute communicating with the delivery from the screen, said discharge-chute being in open communication with the fan-casing.

In testimony whereof I have hereunto set my hand, at Wichita, Kansas, December 22d, 1904, in presence of two subscribing witnesses.

W. W. CULVER.

Witnesses:
C. B. GAUNT,
ADELE ROTH.