A. WILFORD.

GRAIN SEPARATOR AND CLEANER.

APPLICATION FILED APR. 23, 1910.

998,439.

Patented July 18, 1911.

4 SHEETS—SHEET 1.

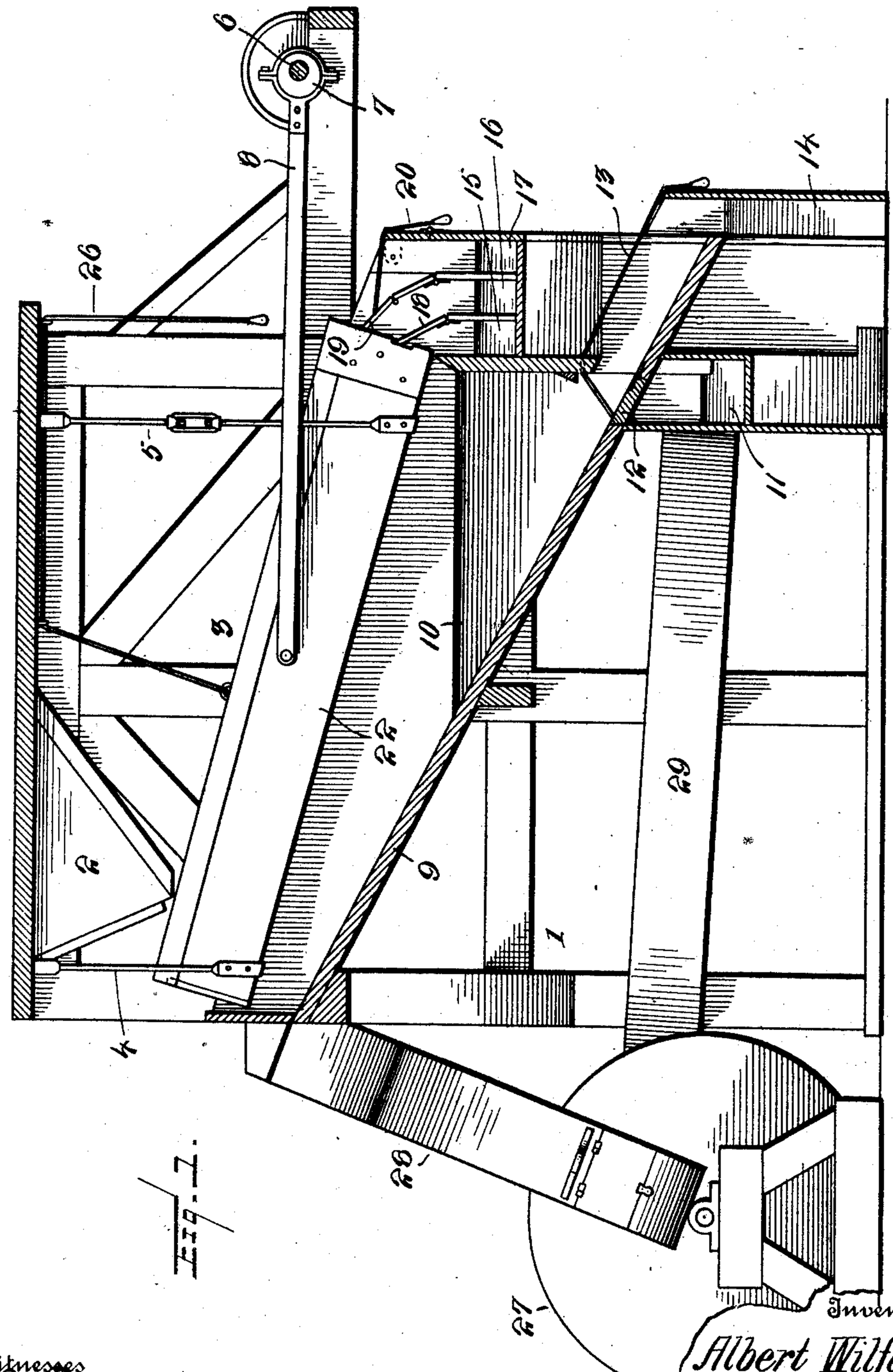

FIG. 1.

Witnesses
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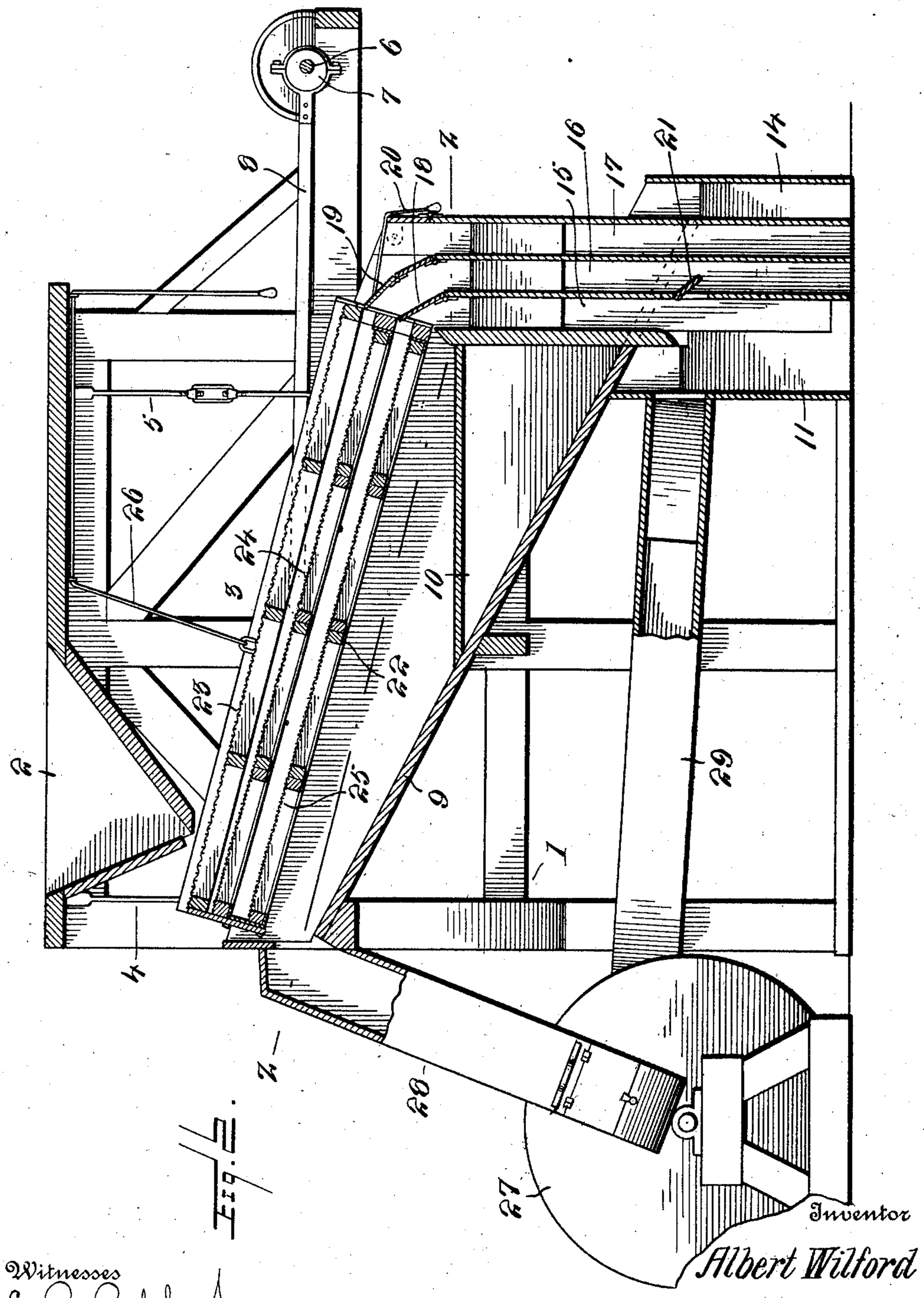

Fig. 1.

Witnesses

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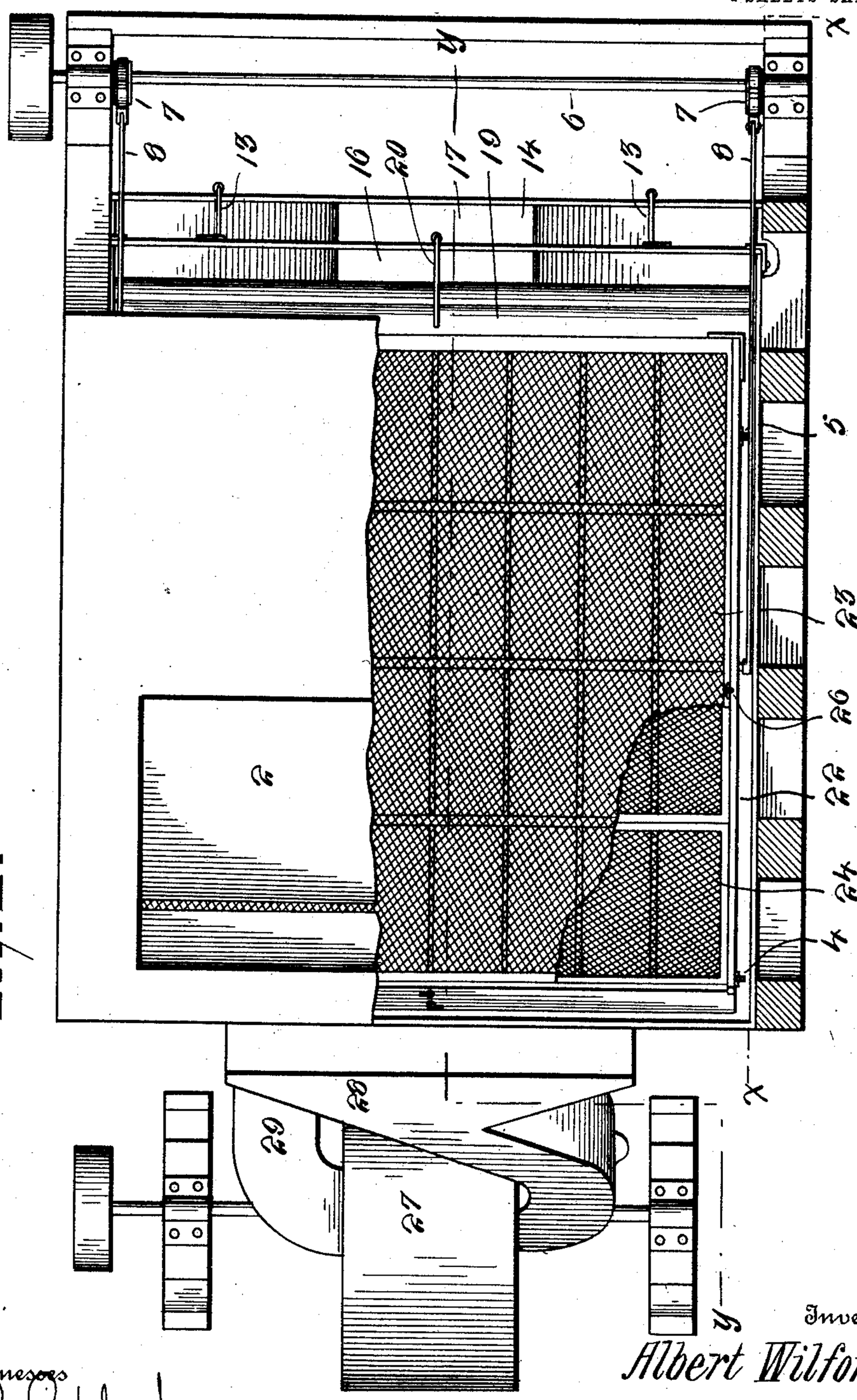

Fig. 4.

Witnesses

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4 SHEETS—SHEET 4.

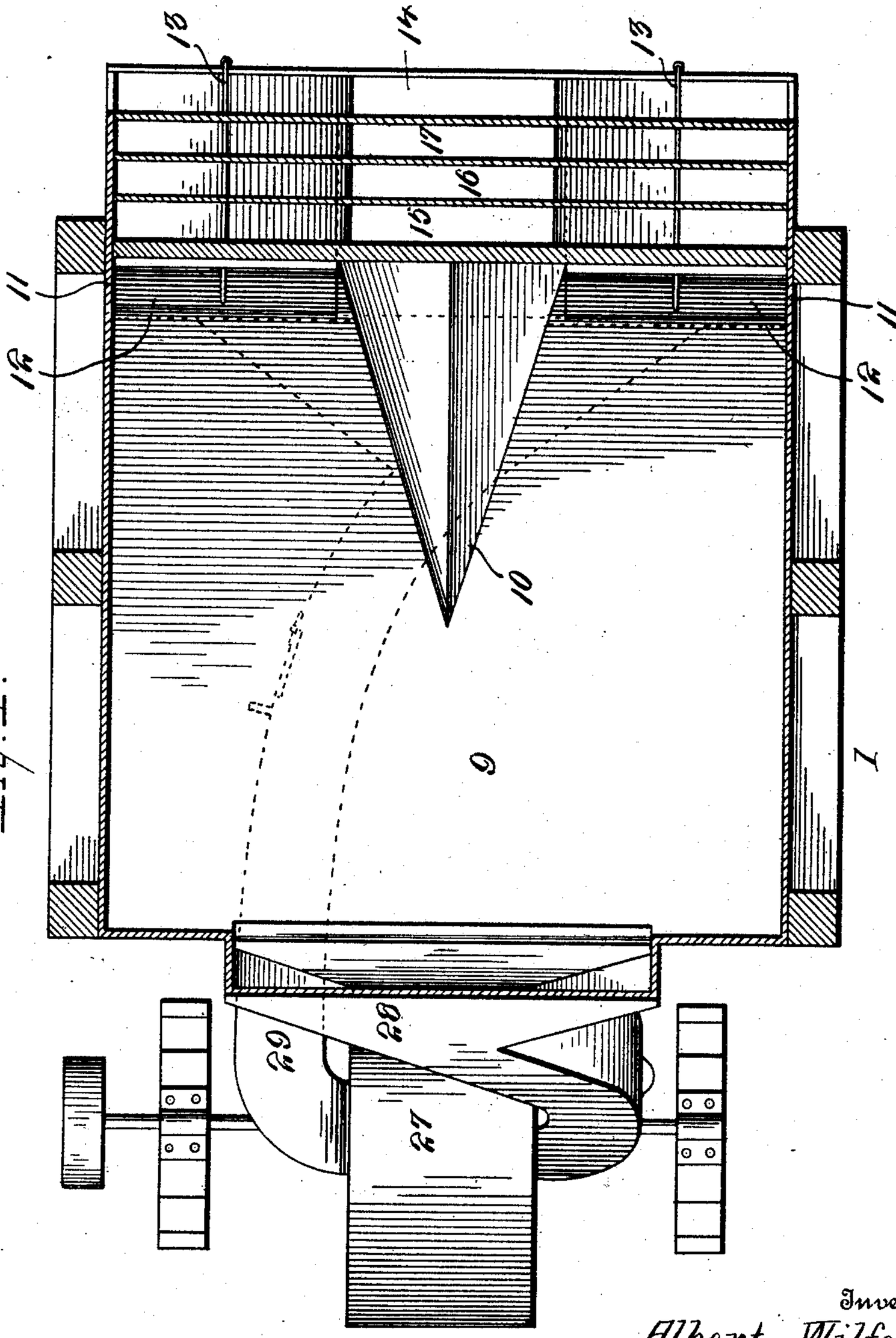

Fig. 4.

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UNITED STATES PATENT OFFICE.

ALBERT WILFORD, OF BALTIMORE, MARYLAND.

GRAIN SEPARATOR AND CLEANER.

998,439. Specification of Letters Patent. **Patented July 18, 1911.**

Application filed April 23, 1910. Serial No. 557,187.

To all whom it may concern:

Be it known that I, ALBERT WILFORD, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Grain Separators and Cleaners, of which the following is a specification.

The present invention appertains to milling machinery and most especially to grain separating and cleaning machines, the purpose being to provide a mechanism of this type which is adapted to be easily manipulated and adjusted to meet varying conditions of work, the invention residing most especially in the general construction and in the devices whereby the grain is directed into several passages for reception either in bins or other containers.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claims.

Referring to the drawings, forming a part of the application, Figure 1 is a view in elevation of a machine embodying the invention, the framework being in section on the line *x*—*x* of Fig. 3. Fig. 2 is a view similar to Fig. 1, the parts being in section on the line *y*—*y* of Fig. 3. Fig. 3 is a top plan view of the machine, parts being broken away. Fig. 4 is a horizontal section on the line *z*—*z* of Fig. 2.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The machine comprises a framework 1, which may be of any construction best adapted for supporting the working parts. A hopper 2 is located at the upper end of the framework and is adapted to receive the grain from an elevator, or other source, to be cleaned and separated. A shoe 3 is arranged near the upper end of the framework and is mounted to have a reciprocating movement imparted thereto. Hangers 4 and 5 hold the shoe 3 in suspension and may be of any construction. One set of hangers, as 5, is made adjustable so that the inclination of the shoe may be regulated. A countershaft 6 mounted in suitable bearings upon an extension of the framework and adapted to be driven from any suitable source of power is provided with eccentrics 7 with which cooperate pitmen 8, whereby a reciprocating movement is imparted to the shoe 3. Beneath the shoe is located a deflecting board 9, which inclines in the same direction as the shoe, but preferably at a greater inclination. A divider 10 is located centrally upon the lower rear portion of the deflecting board and directs the grain falling upon the deflecting board to two passages 11 located upon opposite sides of the machine. Doors 12 control openings leading to the passages 11 and when closed are flush with the deflecting board 9. The doors 12 are adapted to swing upward and rearward so as to insure delivery of the grain through the passages 11 when desired. Any suitable means may be provided for operating the doors 12 and as indicated cords 13 are supplied and are secured at their inner ends to the doors and are provided at their outer ends with suitable hand pieces for convenience when it is required to operate the doors. The deflecting board 9 is extended upon opposite sides of the divider 10 and the extensions communicate with passages 14. When the doors 12 are closed the grain passes over the passages 11 and discharges into the passages 14. A series of passages are located between the side extensions of the deflecting board and communicate with the various screens of the shoe 3.

The passages comprising the series are indicated at 15, 16 and 17 and are widened at their upper ends so as to extend the full width of the shoe 3 so as to receive the grain from the several screens thereof. The walls separating the passages are provided at their upper ends with movable portions 18 and 19 which may be turned out of the way to admit of the screens of the shoe 3 being placed in position or removed or of the grain being directed if desired into one passage. The movable portion 19 forming an extension of the wall between the passages 16 and 17 is

flexible so as to fold and thereby admit of access being readily had to the shoe for the purposes stated. A cord 20 or like flexible connection is attached to the movable part 19 for operating the same when required. The wall separating the passages 15 and 16 is provided with an opening which is closed by means of a door 21, thereby admitting of a current of air passing through the opening when desired for any purpose. The passage 14 exterior to the series of passages 15, 16 and 17 is widened at its upper end and communicates with the side extensions of the deflecting board 9 so as to receive the grain therefrom. The passages 11 merge into a single passage and represent branches of the main passage, which like the other passages 15, 16, 17 and 14 are widened at their upper or receiving ends.

The shoe 3 comprises a frame 22 and a series of screens 23, 24 and 25, which have a superposed relation and are graduated so as to separate the grain into different sizes. The upper screen 23 is coarse and the lowest screen fine and the intermediate screen or screens of a mesh to effect a graduating in the sorting or separating of the grain. The uppermost screen is preferably of one piece consisting of a frame reinforced by cross bars over which a screen material is placed. The lower screens preferably consist of sections, the several sections being formed of frames to which are attached screen material and the several sections being arranged in a frame which is secured within the shoe or the main frame 22 thereof. The uppermost screen 23 may be elevated when not required for use by means of a cord 26, which passes through suitable guides arranged at the top of the main frame 1 and extending within convenient reach to be drawn upon when it is required to elevate the frame 23 so as to be out of the way. The grain separated by the screen 23 is delivered into the passage 17 and that separated by the screen 24 is discharged into the passage 16, while the grain remaining upon the screen 25 finds its way into the passage 15. The small grain passing through the shoe and received upon the deflecting board 9 gravitates thereon and finally discharges into the passage 14. The several passages connect with bins or are arranged to discharge into receptacles which receive the various sizes indicating the different grades.

For cleaning the grain and removing chaff, dust or other like material therefrom a fan 27 is provided and spouts 28 and 29 connect the fan casing with respectively the shoe and the passages so as to create a strong current sufficient to catch light material and carry the same off. The fan illustrated is of the suction type, but it is to be understood that a fan of any design may be employed having for its purpose to eliminate the impurities from the grain, such as dust, chaff, and other light material.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

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

1. In a grain separator and cleaner, the combination of a shoe comprising a series of graduated screens, a framework having a vertical series of passages arranged to receive the grain from the respective screens of the shoe, and a deflecting board located below the shoe and having extensions at the sides of the framework leading to the last passage of the series of passages to direct the grain received upon the deflecting board past the said passages and into the last one of the series.

2. In a grain separator and cleaner, the combination of a shoe comprising a series of graduated screens, a framework having a vertical series of passages arranged to receive the grain from the respective screens of the shoe, a deflecting board located below the shoe and having extensions at the sides of the framework leading to the last passage of the series of passages to direct the grain received upon the deflecting board therein, and a divider located upon the deflecting board in the rear of the upper portion of the framework and comprising oppositely inclined portions to direct the grain laterally to the side extensions of said deflecting board.

3. A grain separator and cleaner comprising a shoe embodying a graduated series of separating screens, means for imparting a reciprocating movement to the shoe, a framework provided with a series of vertically arranged passages widened at their upper ends to receive the grain from the shoe, the front and the rear passages of the series terminating some distance below the upper ends of the intermediate passages, movable extensions at the upper ends of the walls separating the intermediate passages and making close contact with the respective screens of the shoe, a deflecting board located below the shoe and having side extensions projecting beyond the intermediate passages and discharging into the front passage and formed with openings leading into the rear passage, upwardly opening doors

for closing the openings in the deflecting board, a divider located upon the lower rear portion of the deflecting board and comprising oppositely inclined portions, and a fan for creating a current and having its casing connected by means of spouts with the said shoe and series of passages.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT WILFORD.

Witnesses:
CHAS. J. THOMAS,
JOHN S. OLIVER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."