No. 801,591. PATENTED OCT. 10, 1905.

E. O. HOUGH.

GRAIN SIEVE.

APPLICATION FILED OCT. 24, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

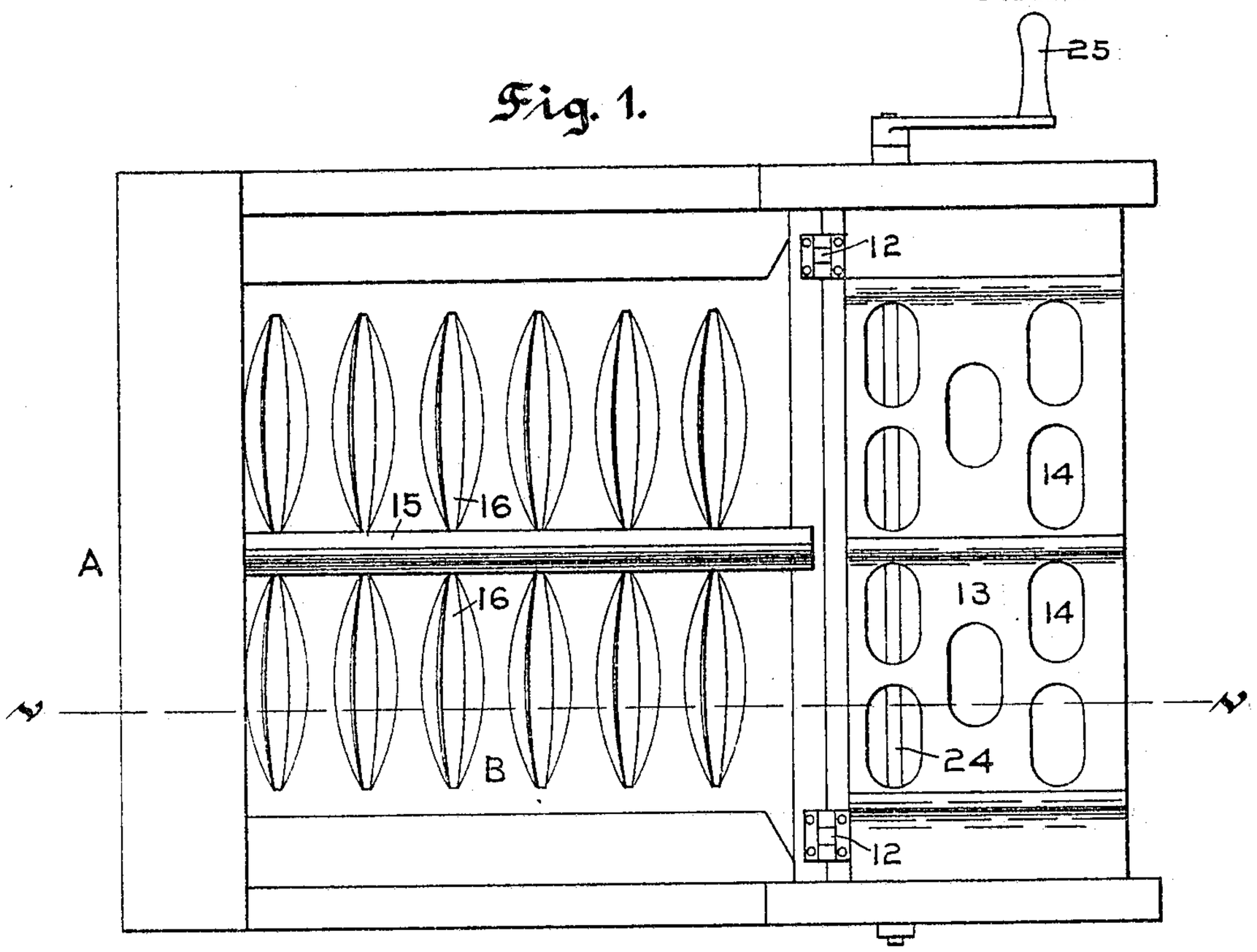
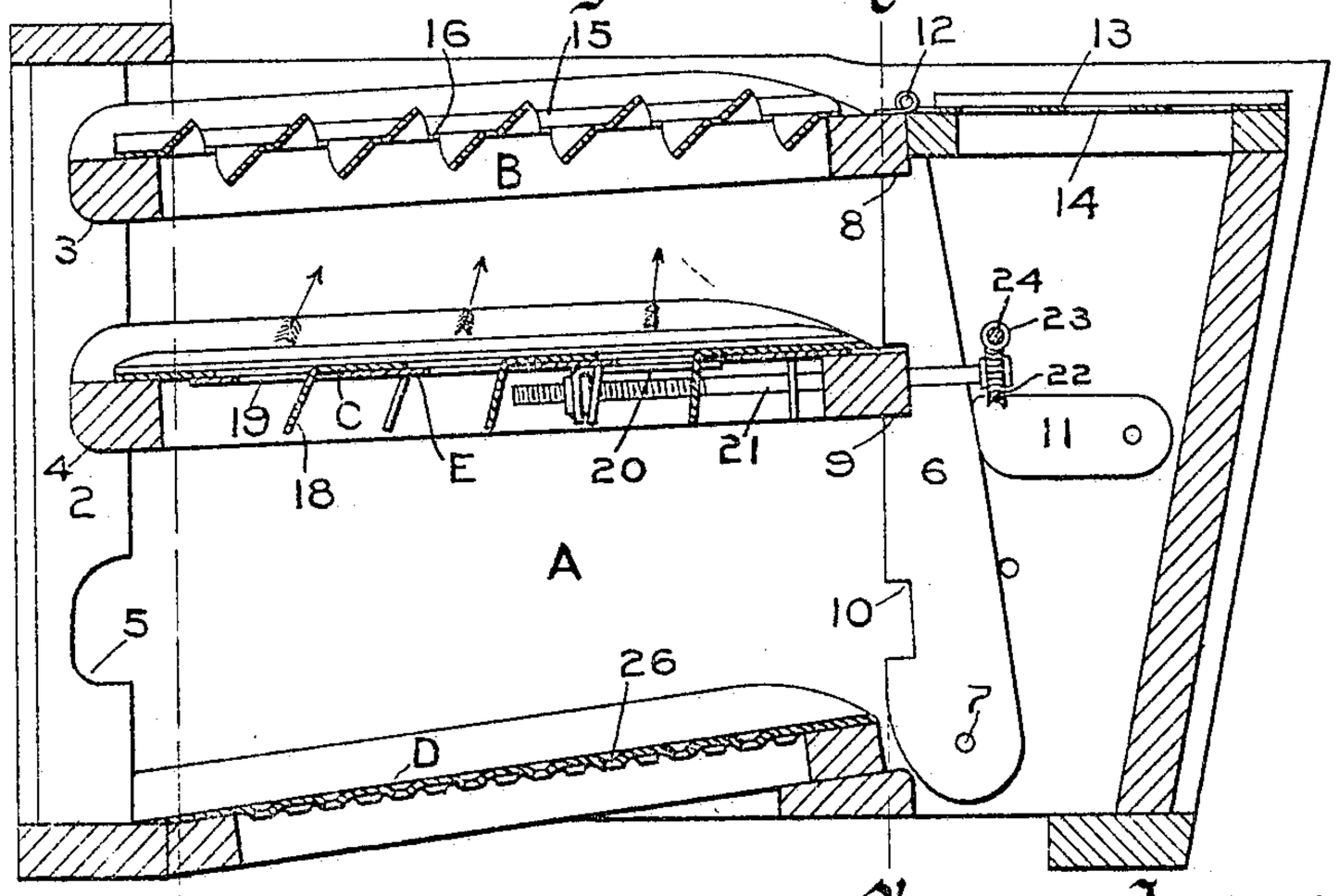


Fig. 2.



Witnesses,
W. H. Palmer.
Emily F. Otis

Inventor,
Eberhard O. Hough.
by Lothrop & Johnson
his Attorneys.

No. 801,591. PATENTED OCT. 10, 1905.

E. O. HOUGH.

GRAIN SIEVE.

APPLICATION FILED OCT. 24, 1903.

2 SHEETS—SHEET 2.

Fig. 3.

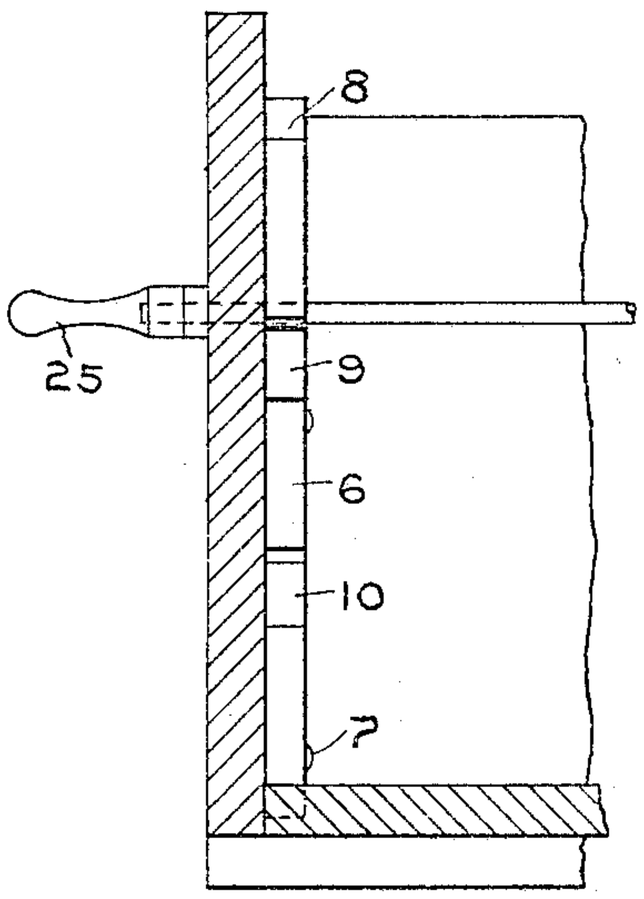


Fig. 4.

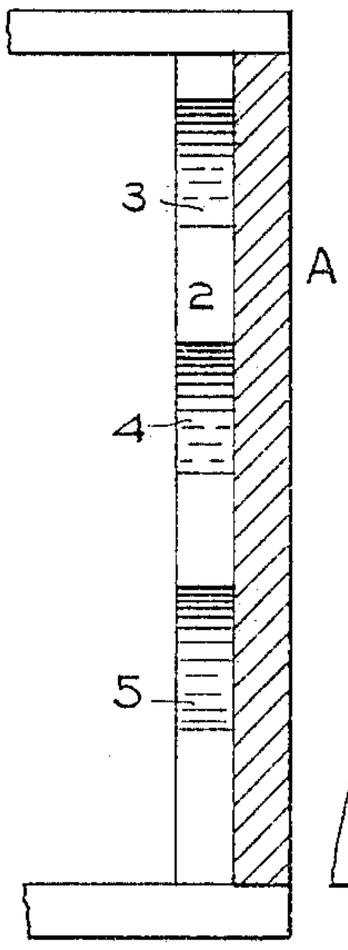


Fig. 5.

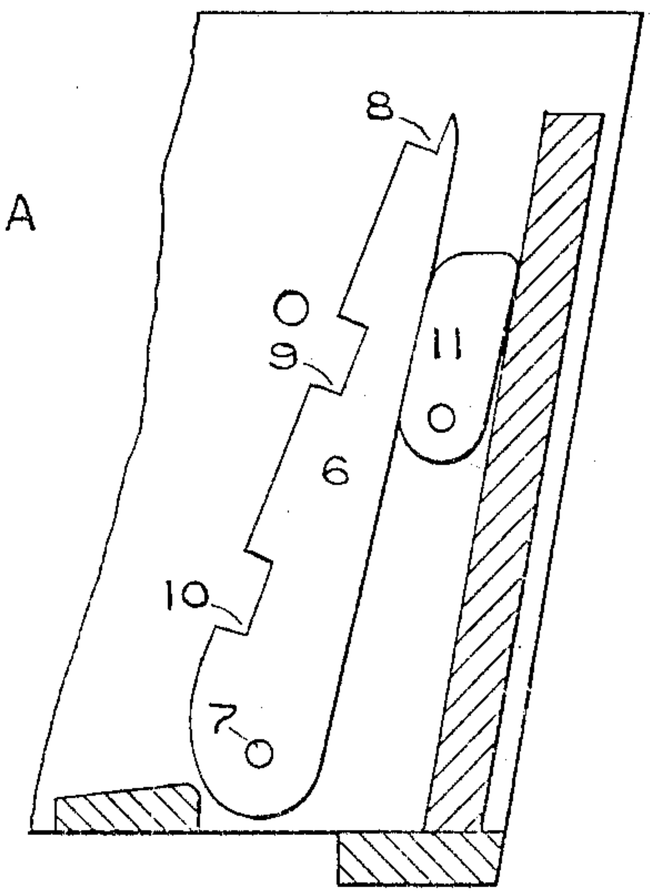


Fig. 6.

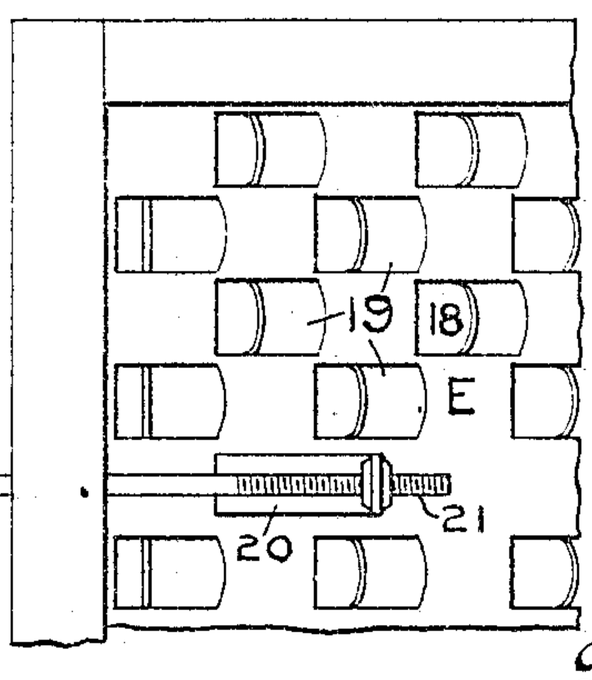


Fig. 7.

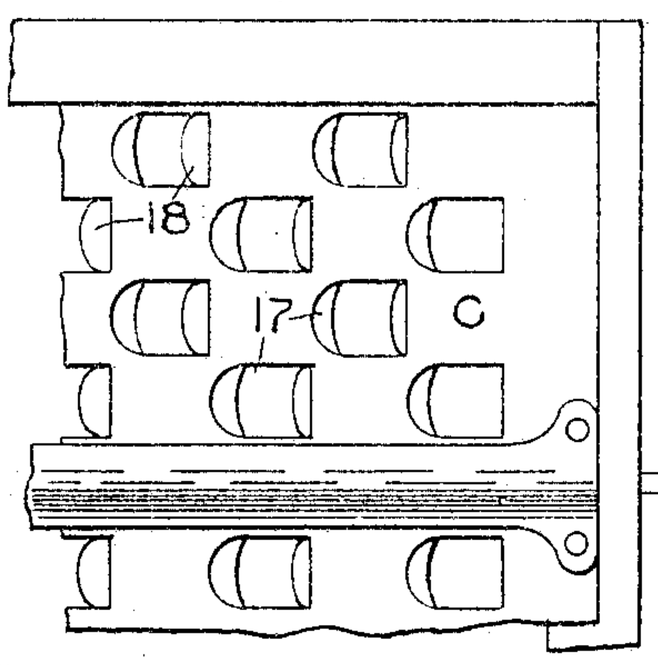
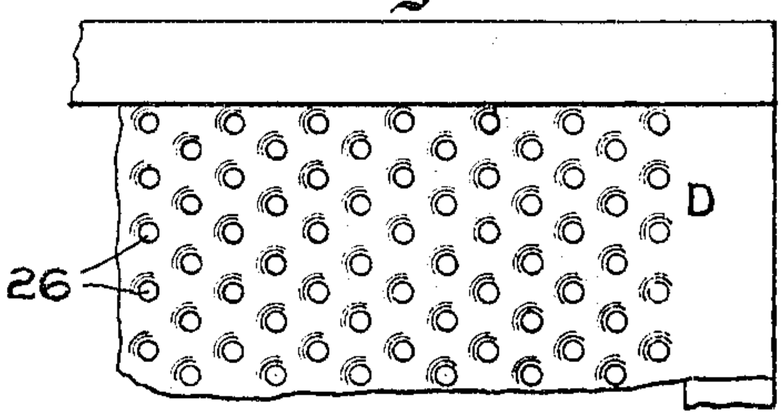


Fig. 8.



Witnesses,
W. A. Palmer.
Emily F. Otis

Inventor.
Eberhard O. Hough.
by Lothrop & Johnson
his Attorneys.

UNITED STATES PATENT OFFICE.

EBERHARD O. HOUGH, OF FOSSTON, MINNESOTA.

GRAIN-SIEVE.

No. 801,591. Specification of Letters Patent. Patented Oct. 10, 1905.

Application filed October 24, 1903. Serial No. 178,331.

To all whom it may concern:

Be it known that I, EBERHARD O. HOUGH, a citizen of the United States, residing at Fosston, in the county of Polk and State of Minnesota, have invented certain new and useful Improvements in Grain-Sieves, of which the following is a specification.

My invention relates to improvements in grain-sieves designed particularly for use in connection with grain-separators, its object being to provide improvements in the construction and arrangement of the screens whereby the grain is more thoroughly screened than in the ordinary construction and whereby the screens themselves are more conveniently adjusted.

To this end my invention consists in the features of construction and combination hereinafter particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of the sieve box or casing. Fig. 2 is a section on line *v v* of Fig. 1. Fig. 3 is a section on line *y y* of Fig. 2, partially broken away and showing the screens removed. Fig. 4 is a similar section on line *x x* of Fig. 2. Fig. 5 is a longitudinal section of a portion of the grain-casing with the screens removed. Figs. 6 and 7 are bottom and top views, respectively, of the intermediate screen, broken away; and Fig. 8 is a similar top view of the lower screen.

In the drawings, A represents the grain box or casing, adapted to be arranged in connection with the feed-spout of the separator and discharge-opening of the fan. Within the casing is arranged a series of horizontal screens B, C, and D. Secured along the front of the side walls of the casing are vertical cleats 2, said cleats being provided with notches 3 and 4 to receive the front ends of the screens B and C and being also preferably provided with similar notches 5 below the screens C. The rear ends of the screens B and C are supported by cleats 6, which have pivotal support 7 at their lower ends upon the side walls of the casing. The cleats 6 are provided with notches 8, 9, and 10 to support the rear ends of the screens B and C. Said cleats are held in supporting position by pivoted dogs 11. The screen D is preferably secured permanently in the bottom of the casing. Having hinge connection 12 with the rear end of the screen B is a tail sieve or screen 13, formed with oblong rounded openings 14, said tail-screen spanning the space between the screen B and the rear end of the casing. The lower end of said space communicates with the ordinary tailings-conveyer of the separator.

By referring to Figs. 1 and 2 and Figs. 6 to 8, inclusive, the particular construction of the main screens will be seen. As shown in Figs. 1 and 2, the main screen B is provided with a longitudinal central band 15 and with slotted openings 16, extending from said band to the opposite sides of the screen. The opposite walls of the openings 16 are upwardly and downwardly deflected, as shown in Fig. 12. The air from the fan will thus be deflected to carry the chaff over the tail-screen while allowing the grain to drop through the openings 16. The screen C is provided with an adjustable plate E. Said screen is formed with openings 17, the cut-away portions being downwardly bent to form lips 18, projecting through the openings 19 in the adjustable screen-plate E. Secured under the screen-plate E is a strap 20, through which is threaded the end of a rod 21, the opposite end of the rod being provided with a worm-gear 22, intermeshing with a worm 23, carried by the shaft 24, said shaft having journal-support in the sides of the casing and being provided with an actuating-handle 25. The lower screen D is provided with depressed perforations 26.

By referring to Fig. 2 it will be seen that there are a series of rows of openings and lips, the rear rows of lips being bent at a more acute angle than the forward ones. I preferably bend the forward lips one-fourth of an inch from the vertical, a portion of those in the rear one-eighth of an inch, and those at the extreme rear one-sixteenth of an inch. The object of this is to deflect the air from the fan more directly upward toward the rear of the screen, as indicated by the arrows in Fig. 2. Thus the grain and chaff in dropping upon the front of the screen will be blown with greater force to the rear than the grain and chaff which drops upon the rear of the screen, it being the object to thoroughly separate the chaff from the grain and to carry the chaff rearwardly over the screen, while at the same time preventing the grain being carried to the space at the rear of the screen. By having the lips turned downwardly at gradually more acute angles toward the rear of the screen a more powerful air-blast can be used, with consequently more effective screening of the grain.

In use the grain and chaff from the spout

of the separator will drop upon the upper screen B, a blast of air being directed by the fan (not shown) into the front end of the screen-casing. The upwardly and downwardly turned walls of the slots 16 in the upper screen will deflect the air to blow the chaff and foreign bodies over the tail-screen, the grain dropping through the openings 16 to the screen C. The openings 14 of the tail-screen will allow the tailings to drop through to the conveyer below, large foreign bodies, such as broken cylinder-teeth, passing over the end of the tail-screen. After dropping through the screen B the grain will pass through the openings of the screen C, the screen C being adjusted to accommodate the kind of grain being screened. The air passing rearwardly between the screens will carry all the chaff and dirt to the space at the rear of the casing, where it will pass in the usual manner to the tailings-conveyer. The finest grain will pass through the openings of the lower screen D. By releasing the cleats 6 and turning them upon their pivots the screen may be removed and the screen C adjusted. The varying angles of the lips of the screen C, together with the means which permits the adjusting of said screen, will result in far more effective screening of the grain than in the ordinary construction.

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

1. The combination with a separator, of a screen-casing of the class described, a series of horizontal screens supported within said casing, one of said screens consisting of two superimposed plates provided with a series of openings, and with downwardly-projecting lips, the lips upon the upper plate projecting through the openings in the lower plate, said lips being turned downward at a gradually-increasing acute angle toward the rear, and means for adjusting said plates.

2. The combination with a separator, of a casing of the class described, a horizontal screen supported in the upper end of said casing provided with transverse openings having their opposite walls upwardly and downwardly deflected, an adjustable horizontal screen supported below the same and formed with a series of openings, and lips inclined downwardly from the rear sides of said openings, the lips at the rear of the screen being turned at a more acute angle than those at the forward end, and means for adjusting said screen to regulate the size of said openings.

3. The combination with a separator, of a screen-casing of the class described, a horizontal screen supported in the rear end of said casing and provided with slotted openings having their front and rear walls upwardly and downwardly deflected, a tail-screen hinged to the rear end of said upper screen, and provided with relatively large openings, an adjustable screen supported below said upper screen, said adjustable screen consisting of a pair of superimposed plates provided with openings and downwardly-inclined lips, said lips being turned at a more acute angle at the rear than at the front of the screen, means for adjusting said plates to regulate the size of said openings, and a fixed screen arranged below said adjustable screen and provided with depressed perforations.

4. In a screen-casing for separators of the class described, the combination with a series of horizontal screens, of a stationary support for one end of each of said screens, vertically-arranged supporting-cleats at the opposite ends of said screens, said cleats being pivotally supported at their lower ends, and dogs pivotally supported alongside said cleats in position to be turned against said cleats to hold them in supporting position.

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

EBERHARD O. HOUGH.

Witnesses:
L. JENSEN,
M. E. HOUGH