

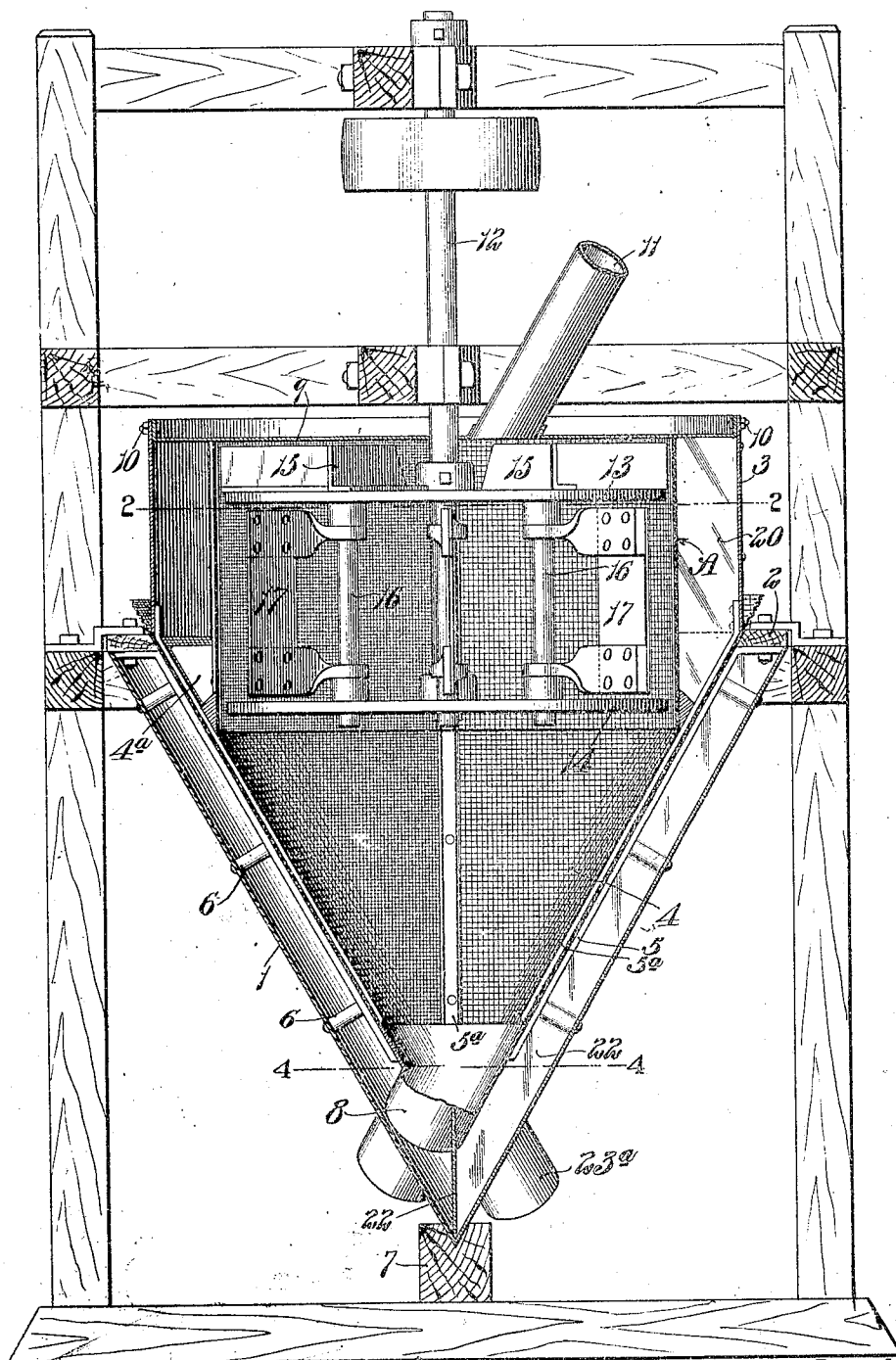
E. H. FRICKEY.
SEPARATOR.

APPLICATION FILED MAY 18, 1908.

938,657.

Patented Nov. 2, 1909.

2 SHEETS—SHEET 1



Witnesses:
George Radson
Wells R. Church

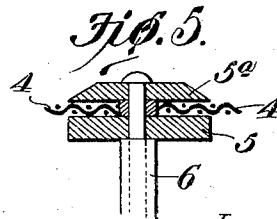
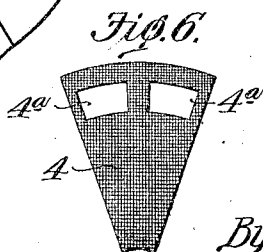
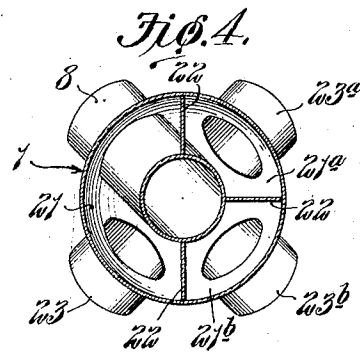
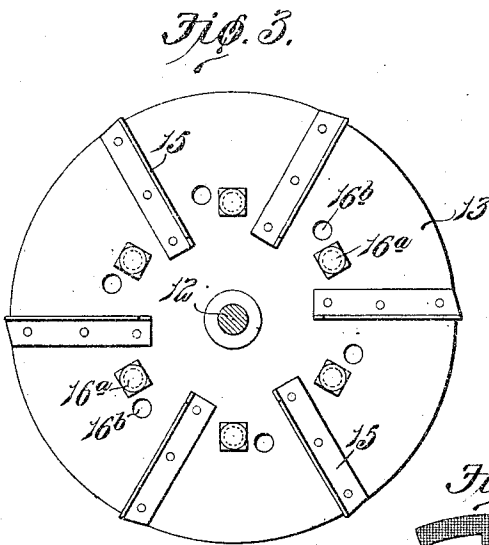
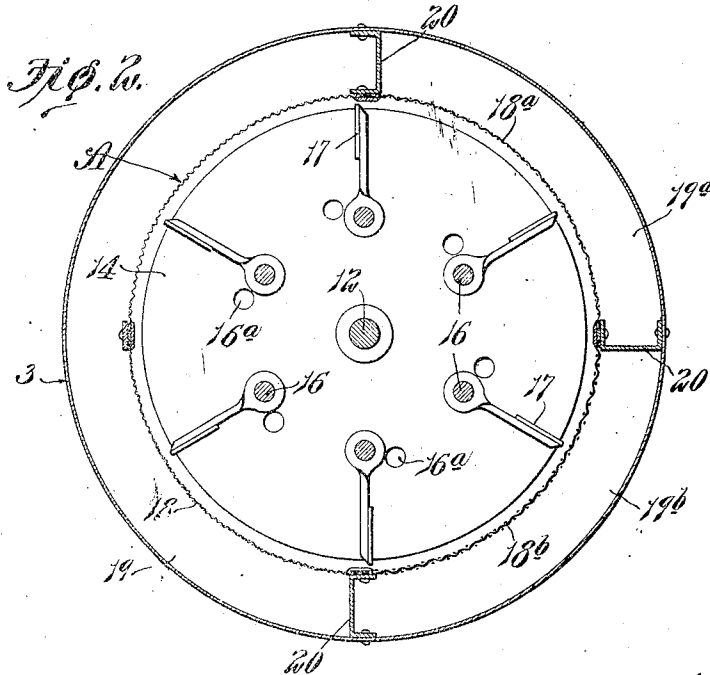
Fig. 1.

Inventor,
Edward H. Frickey.
By R. Kewell & Co. Attys.

E. H. FRICKEY.
SEPARATOR.
APPLICATION FILED MAY 18, 1908.

938,657.

Patented Nov. 2, 1909.
2 SHEETS—SHEET 2.



Witnesses:
George L. Adams
Wm. L. Church

Inventor,
Edward H. Frickey.
By Wm. Kewell, Cornwall, N.Y.

UNITED STATES PATENT OFFICE.

EDWARD H. FRICKEY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

SEPARATOR.

938,657.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed May 18, 1908. Serial No. 433,548

To all whom it may concern:

Be it known that I, EDWARD H. FRICKEY, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Separators, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view of a separator constructed in accordance with my invention; Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1; Fig. 3 is a top plan view of the upper disk on the shaft that imparts movement to the fan blades; Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a detail sectional view of one of the guides in which the removable screen sections are mounted; and Fig. 6 is a view of one of said removable screen sections.

This invention relates to separators, and particularly to that type which comprise a fan for drawing a current of air laden with the material to be separated into a contracted casing having a screen arranged inside of same.

The main object of my invention is to provide an apparatus that is particularly adapted for separating the fine leafy particles of alfalfa from the coarse fibrous stems of same.

Another object of my invention is to provide a separator of simple construction that will separate material into a number of different grades.

Other objects and desirable features of my invention will be hereinafter pointed out.

Referring to the drawings which illustrate the preferred form of my invention, 1 designates an approximately inverted cone-shaped member which forms the lower portion of a casing; and 2 designates a ring-shaped supporting member arranged at the upper edge of the member 1. The upper portion of the casing is formed by a cylindrical-shaped member 3, the lower edge of which terminates adjacent the ring-shaped supporting member 2. Inclined guideways are arranged inside of the lower portion of the casing, and removable screen sections 4 are slidingly mounted in said guideways, said screen sections 4 passing between the

ring-shaped supporting member 2 and the lower edge of the cylindrical-shaped member 3 and terminating beyond said member, as shown in Fig. 1, thus enabling said screen sections to be grasped and pulled upwardly out of their guideways when they become worn out or whenever a screen of a different mesh is desired. Said inclined guideways preferably consist of two spaced bars 5 and 5^a which receive the edge portions of the screen sections 4, as shown in Fig. 5. These guideways are connected to the ring-shaped supporting member 2, and the lower portion 1 of the casing is spaced away from said guideways by sleeves 6 through which fastening devices pass to hold the lower portion of the casing in position. If desired, the lower portion of the casing can be connected at its upper edge to the ring-shaped supporting member 2, the lower end of the casing being supported by a block 7. The casing 1 is provided at its lower end with discharge chutes, hereinafter described, and the screening member, which the sections 4 form, is also provided with a discharge chute 8 that is connected to the inclined guideways in which the screen sections 4 are mounted.

The casing and screening member above described are of substantially the same construction as those shown in my pending application Serial No. 433,547, filed May 18, 1908, so that I have not claimed them in this application.

The cylindrical-shaped member 3 which forms the upper portion of the casing is provided with a removable top 9 that is held in position by means of bolts 10 or other suitable fastening devices, and a feed pipe 11 passes through said top for introducing a current of air laden with the material to be separated, such, for example, as ground or shredded alfalfa, into the upper end of the casing. A cylindrical-shaped screen A is arranged inside of the upper portion 2 of the casing, and the lower end of said screen A projects into the upper end of the inverted conical-shaped screening member, which the removable sections 4 form, the lower edge of the screen A resting upon the screen sections 4, as shown in Fig. 1.

A vertically disposed shaft 12 which is driven by a belt not shown, passes through the top 9 of the casing, and said shaft is provided with a pair of horizontally disposed

disks 13 and 14, the upper disk 13 being provided with radially disposed vanes 15. Removable vertically disposed pins 16 pass through said disks, and a plurality of fan blades or wings 17 are pivotally connected to said pins. When the shaft 12 revolves a suction will be created that draws a current of air laden with the material to be separated through the feed pipe 11 into the upper end of the casing, the vanes 15 and fan blades 17 forcing the fine particles of material through the screen A and the coarser particles of material sliding down the screen sections 4 to the discharge chute 8. The pins 16 are provided with heads 16^a which rest upon the upper disk 13 and I prefer to provide said disks with a plurality of sets of holes 16^b for said pins, as shown in Fig. 3, so that the blades or wings 17 can be adjusted relatively to the circular screen A inside of which they are arranged. When the pins 16 are arranged in the position shown in Figs. 1 and 3, the blades 17 will not contact with the screen A, but when said pins are mounted in the holes 16^b in the disks the blades 17 will drag over the screen A and positively force the particles of material through said screen.

Each of the screen sections 4 is provided adjacent its upper end with a plurality of openings 4^a so that the particles of material which are forced through the cylindrical screen A can fall through said openings into the lower portion of the casing.

The apparatus herein shown is so constructed that the material will be separated into a number of different grades. As shown clearly in Fig. 2, the cylindrical-shaped screen A is composed of a number of sections 18, 18^a and 18^b of different mesh, and the inverted conical-shaped screening member is also composed of sections 4 of different mesh, as shown in Fig. 1. The space between the cylindrical-shaped screen A and the upper portion 2 of the casing is divided into three compartments 19, 19^a and 19^b by means of vertically disposed partitions 20 that are connected to the screen A and to the portion 2 of the casing, and the space between the inverted conical-shaped screen and the lower portion 1 of the casing is also divided into three compartments 21, 21^a and 21^b by means of partitions 22, as shown in Figs. 1 and 4, said compartments 21, 21^a and 21^b being provided with discharge conduits 23, 23^a and 23^b, respectively. The very fine particles of material will pass through the fine portion 18 of the screen A into the compartment 19 and thence through the openings 4^a in the screen sections 4 to the compartment 21, some of the very fine particles of material also passing through the fine mesh sections 4 into said compartment 21. The coarser particles of material will pass through the portion

18^a of the screen A and the screen section 4 arranged underneath same into the compartment 21^a, and the very coarse particles of material will pass through the portion 18^b of the screen A and the screen section 4 arranged underneath same into the compartment 21^b. The particles of material which are too coarse to pass through the screen A or through the screen sections 4 will pass into the discharge chute 8 at the lower end of the screen sections 4.

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

1. An apparatus of the character described, comprising a casing, an inverted conical-shaped screen arranged inside of said casing and composed of a number of substantially wedge-shaped sections of different mesh, a cylindrical-shaped screen arranged at the upper end of said inverted conical-shaped screen and composed of sections of different mesh that are arranged in vertical alinement with the sections of the same mesh in the inverted conical-shaped screen, a fan arranged inside of said cylindrical-shaped screen, a feed pipe entering the upper end of said casing, and vertically disposed partitions arranged between the casing and the outer surfaces of both of said screens to form separate compartments; substantially as described.

2. An apparatus of the character described, provided with a screening member consisting of a cylindrical-shaped portion and an inverted conical-shaped portion composed of sections of different mesh, a rotating member arranged inside of said screening member and provided with pivotally mounted fan blades and rigid fan blades, a casing surrounding said screening member, a feed pipe extending into the upper end of said casing, and vertically disposed partitions arranged between said casing and screening member to form separate compartments; substantially as described.

3. A separator provided with a vertically disposed cylindrical screen, a pair of horizontally disposed disks arranged for rotation within said screen, a series of fan blades positioned between the disks and adapted to be adjusted toward and away from the screen, and means whereby the material to be separated is delivered onto the uppermost disk.

4. A separator provided with a vertically disposed cylindrical screen, a vertically disposed shaft arranged for rotation in the center of the screen, a pair of horizontally disposed disks fixed on the shaft within the screen, a series of pins having their ends detachably situated in the disks, fan blades carried by the pins, and means whereby the material to be separated is delivered onto the uppermost disk.

5. A separator provided with a vertically disposed cylindrical screen, a vertically dis-

posed shaft arranged for rotation in the center of the screen, a pair of disks fixed on a shaft within the screen, vertically disposed adjustable pins mounted in said disks, fan blades pivotally mounted on said pins between the disks, radially disposed vanes on the upper one of the disks, and means for delivering the material to be separated onto the uppermost disk.

6. An apparatus of the character described, provided with an inverted conical-shaped screening member, a cylindrical screen, projecting into the upper end of said screening member, the portion of said cylindrical screen being provided with enlarged openings or cut-out portions, a casing surrounding said screen and screening member, and a fan arranged inside of said cylindrical-shaped screen; substantially as described.

7. An apparatus of the character described, comprising a casing, a screen arranged inside of said casing and consisting of sections of different mesh arranged edge to edge, vertically disposed partitions arranged between the casing and screen and located adjacent the edges of said screen sections so as to form a number of compartments, and a fan for drawing material into said casing and forcing it through said screen into said compartments; substantially as described.

8. An apparatus of the character described, comprising a casing having a cylindrical-shaped upper portion and an inverted conical-shaped lower portion, a screening member arranged inside of said casing and conforming to the shape thereof, vertically disposed partitions arranged between said casing and the screening member to form a number of separate compartments having their lower ends contracted, the screening member being composed of a number of substantially wedge-shaped sections of different mesh arranged edge to edge, discharge conduits leading from the contracted lower ends of said compartments, a discharge conduit leading from the lower end of the screening member, and a fan arranged inside of said screening member for drawing material into the casing and forcing it through said screening member; substantially as described.

9. An apparatus of the character described, comprising a casing, inwardly projecting

partition members arranged vertically inside of said casing to form a number of compartments, screen sections of different mesh forming the inside walls of said compartments, and a vertically disposed shaft arranged inside of said casing and provided with radially projecting fan blades that force material through said screen sections into said compartments; substantially as described.

10. An apparatus of the character described, comprising a screening member having a cylindrical-shaped portion and an inverted conical-shaped portion located underneath same, a vertically disposed shaft arranged inside of said screening member and provided with a horizontally disposed disk, fan blades rigidly connected to the upper side of said disk, pivotally mounted fan blades carried by said disk, and means for discharging material onto said disk; substantially as described.

11. In an apparatus of the character described, a horizontally disposed disk, means for rotating said disk, means for discharging material onto said disk, blades or vanes on the upper side of said disk, a screening member inside of which said disk is arranged, and pivotally mounted fan blades arranged underneath said disk for forcing the material that falls from said disk through said screening member; substantially as described.

12. An apparatus of the character described, comprising a casing provided with a number of separate compartments, screen sections of different mesh forming the inner walls of said compartments, a horizontally disposed frame arranged for rotation in the upper portion of the casing, a series of vertically disposed fan blades pivotally arranged in the frame, means whereby the material to be separated is delivered onto the top of the rotating frame, there being discharge outlets leading from the various compartments within the casing.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this thirteenth day of May 1908.

EDWARD H. FRICKEY.

Witnesses:

MILTON F. WILLIAMS,
GEORGE BAKWELL.