

(No Model.)

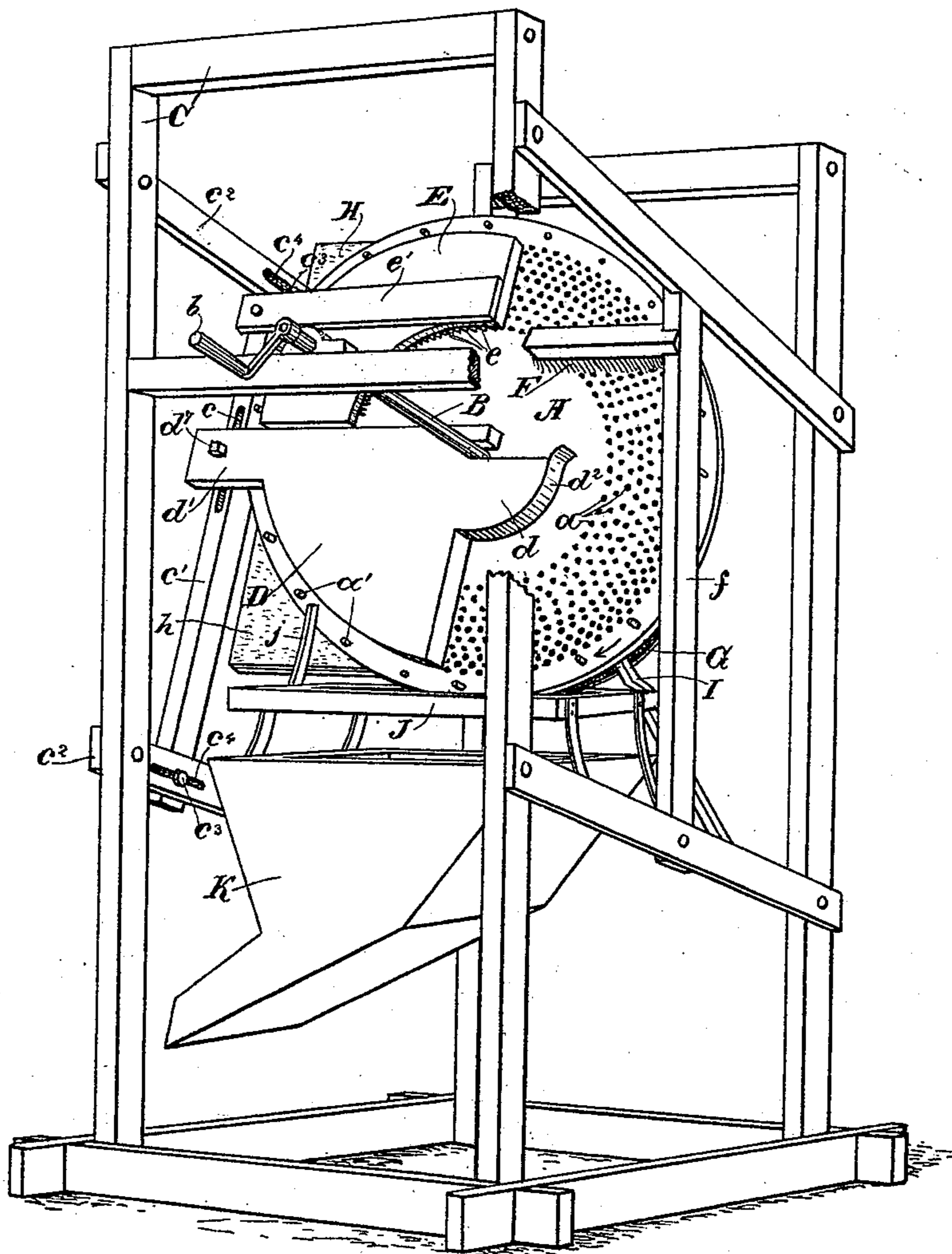
2 Sheets—Sheet 1..

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SEPARATOR.

No. 516,440.

Patented Mar. 13, 1894.

Fig. 1.



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2 Sheets—Sheet 2.

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Patented Mar. 13, 1894.

Fig. 2.

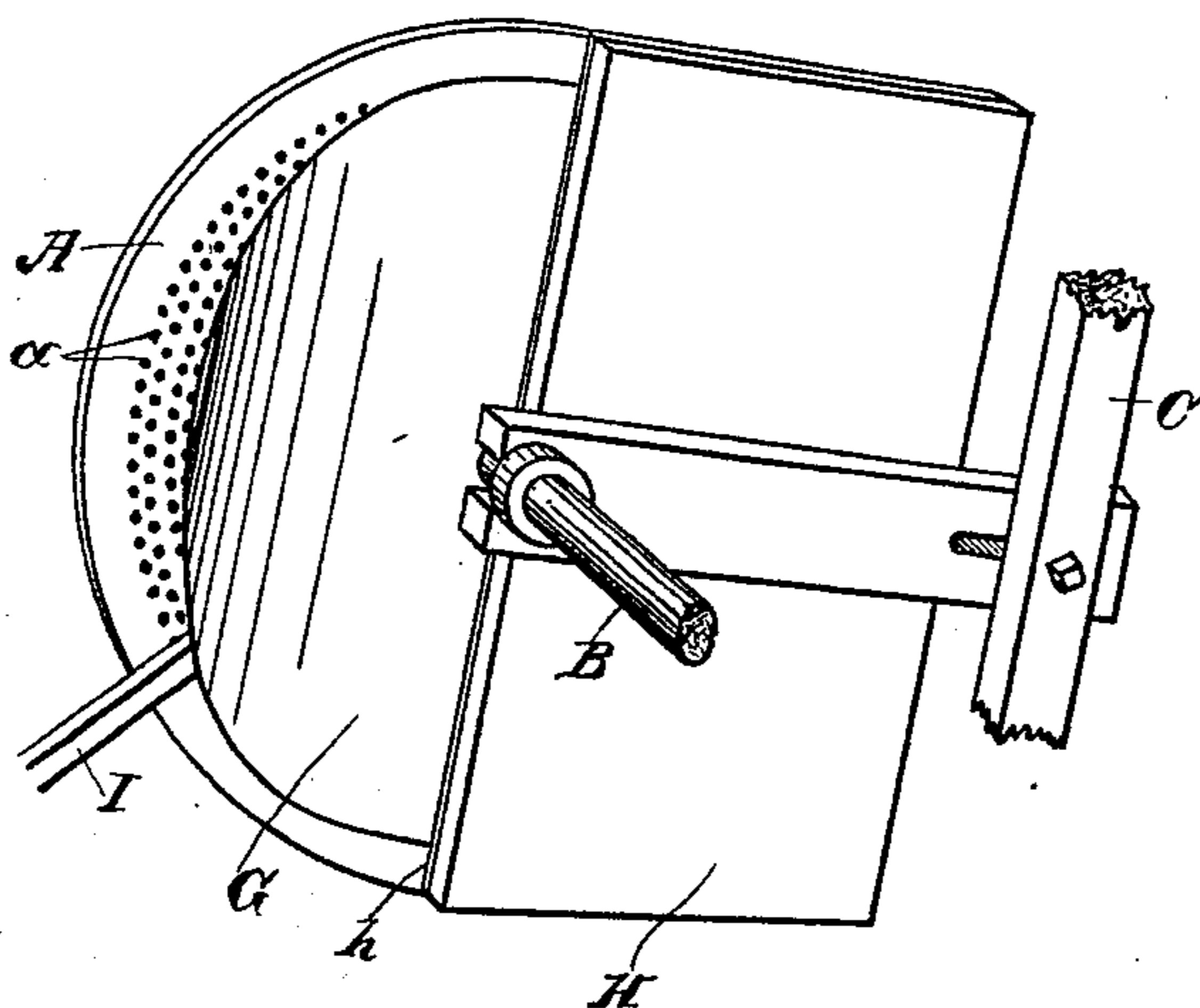


Fig. 3.

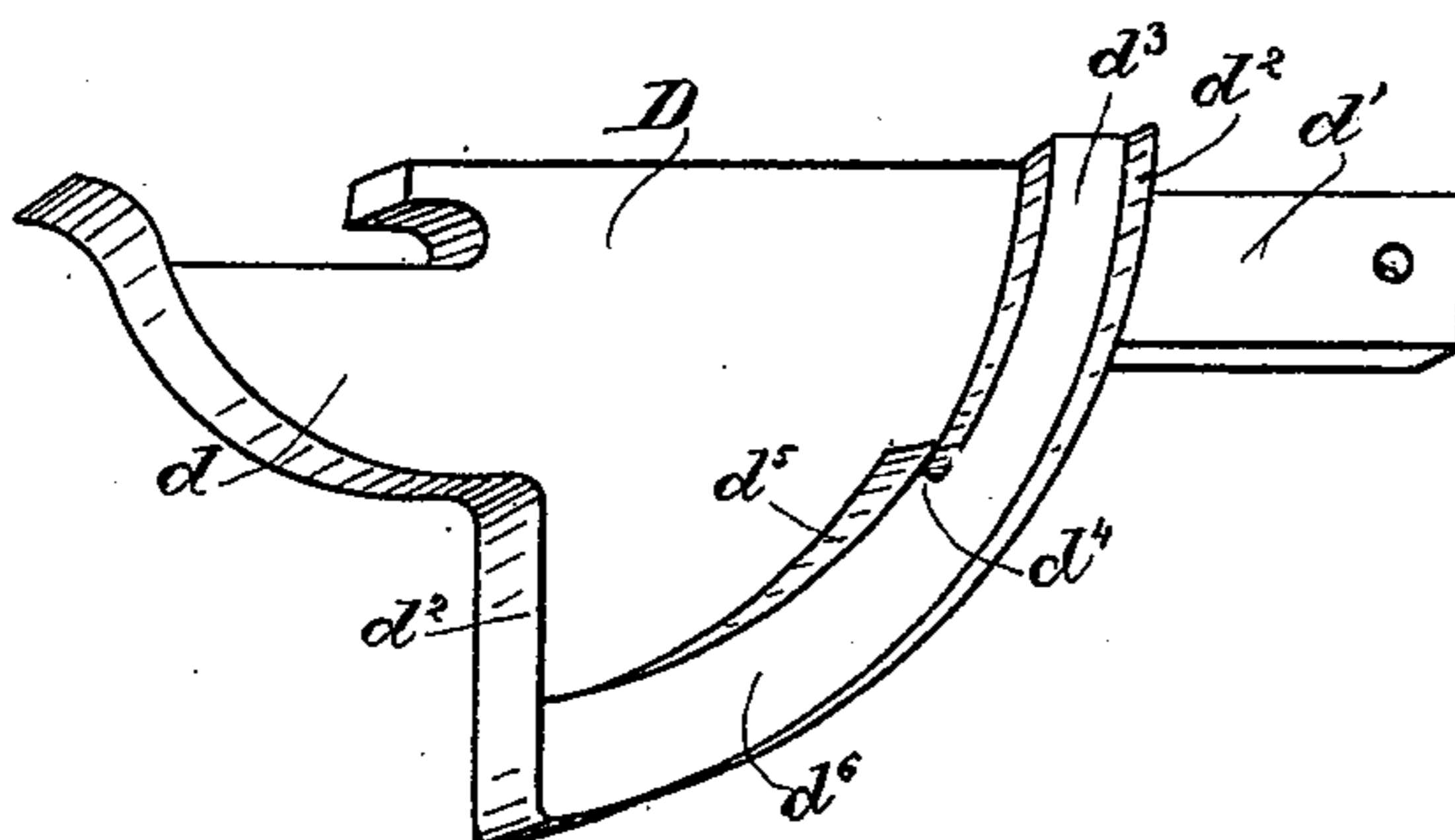
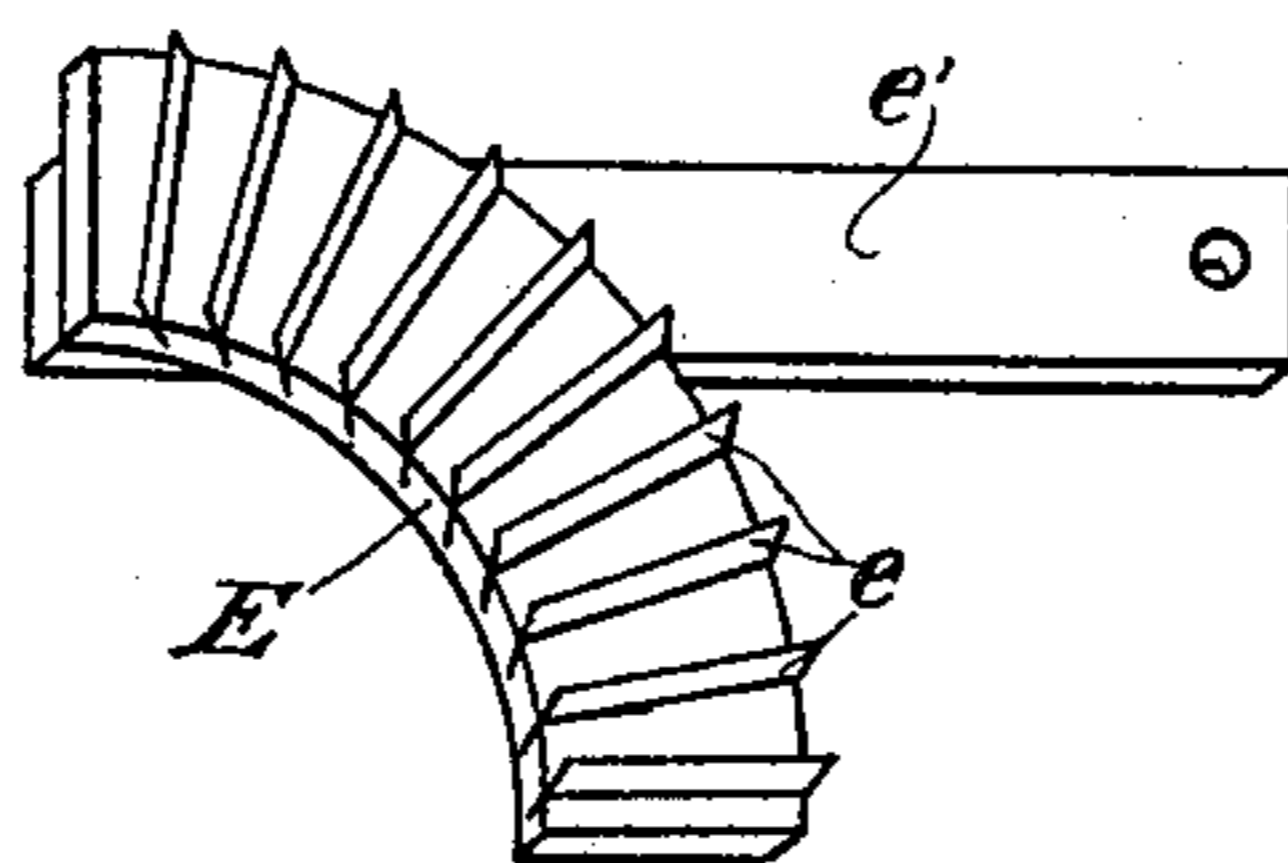


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 516,440, dated March 13, 1894.

Application filed July 20, 1893. Serial No. 481,050. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. JESSUP, a citizen of the United States, residing in Los Angeles, Los Angeles county, State of California, have invented an Improvement in Separators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of separating devices, and it consists essentially in a perforated disk mounted and rotating in a vertical plane or a plane inclined therefrom at such an angle as to still obtain the benefit of gravity, a feed device applied to and adapted to maintain a layer of material to be separated, against the uprising side of said disk, and a suitable backing applied to the reverse side of said disk on its uprising semi-area.

It also consists in the novel construction and arrangement of these parts, particularly the feed device, and the backing, as I shall hereinafter fully describe.

The object of my invention is to provide a simple and efficient machine for separating the different particles of material according to the difference in their length, and, incidentally according to other differences which would, with certain particles, enable them to readily pass through a hole, and with others would retard or prevent them from passing through. Though it may be applied to the separation of different particles of various materials, it is especially applicable to the separation of oats and barley from wheat.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a perspective view of my separator. Fig. 2 is a perspective view of the back of the disk. Fig. 3 is a view of the inner surface of the feeder. Fig. 4 is a view of the head E with its wiper strips.

A is a disk of suitable dimensions and thickness. In practice, it is preferably made of iron, and when used for the cleaning of wheat its thickness is about one-eighth of an inch. This disk is made with numerous perforations a , which are preferably arranged in concentric rows extending from the periphery, nearly to the center, but leaving the center imperforate. The disk is mounted in what I shall term a substantially vertical plane, by which

I mean either a true vertical plane or one inclined therefrom at such an angle, as still to make use of gravity. When in a true vertical plane, the principle of operation is the same as when in a plane inclined thereto, and the results vary only in degree. In practice, however, for the sake of increasing the capacity of the machine, without affecting its efficiency, I prefer to mount it at an angle to the perpendicular, as I have here shown. It is carried by a shaft B, to which any suitable power may be applied in order to rotate the disk. I have here shown a simple hand crank b for this purpose. The shaft B is carried by a frame C of suitable construction. The disk rotates in the direction shown by the arrows.

D is the feeder. It consists of a board or plate having substantially, a quadrant shape, with a receiving extension d , at one end, and a tail piece d' at the other end. This board has around its edge an inwardly extending flange d^2 , except along its top, thus forming a chamber. The feeder is placed opposite the disk at the lower quarter of its uprising side, its receiving extension d projecting past the center over upon the adjacent quarter of the down moving side of the disk. The flange d^2 comes up more or less closely to the disk, so that there is a chamber for the material bounded by the disk, the feeder and the flange, said chamber being open above. The inner face of the feeder board, opposite the outer edge of the disk is thickened throughout its whole curve, for a small width, as shown at d^3 , whereby the chamber is shallower at this place than elsewhere, and in this shallow portion at d^4 is an offset below which said portion is bounded by an inner flange d^5 parallel to the outer flange d^2 , thus forming a narrow channel d^6 . The feeder is supported at its inner end by being notched over the shaft B, in such a manner as to fulcrum thereon, and at its outer end it is supported by its tail piece d' , through which a set bolt d' passes into a slot c in an approximately upright bar c' of frame C, whereby the feeder may be adjusted vertically through an arc of a circle, about its inner end as a fulcrum, in order to lie over the disk in different positions according to the character of

the material being worked. This bar c' is supported above and below in cross bars c^2 , of the frame, the connection being an adjustable one by means of set bolts c^3 , and slots c^4 , whereby the bar c' may be moved bodily back or forth, in order to separate the flange d^2 of the feeder more or less from the face of the disk.

E is a head which carries the wiper strips e , these latter being made of some flexible and sufficiently stiff and durable material. I have found that celluloid is well adapted for this use. These wipers operate against the face of the disk at its upper portion, and their head E is carried by an arm e' which is secured to the adjustable bar c' .

F is a brush carried by frame bar f and adapted to operate against the face of the disk, to clean it.

Applied to the reverse side or back of the disk is an imperforate sheet G of some flexible or yielding durable material. Celluloid will answer the purpose. This sheet is about equal in area to that of the disk back, and lies closely up against it. It is firmly secured to the center of the disk and rotates with it. Upon its uprising semi-area, there is a fixed back board H, semi-circular in form, and adapted to bear upon the sheet G with such force as to hold said sheet firmly pressed up against the disk on its uprising half. The board may bear directly upon the sheet, but I prefer to have an intervening cushion h of some kind. Any soft or yielding material will answer, such as rubber or rope, or wool, or curled hair, but I have found that a sack filled with saw-dust or bran, and secured to the back-board, answers the purpose well, and I have lubricated the surface of this sack to reduce its friction on the sheet G.

I is a fixed guide arm, secured to frame C, and having its free end projecting to and over the back of the disk A upon its descending side. This end lies between the disk and the sheet G, whereby it bends outwardly said sheet and separates it from the disk, after it has left the fixed back-board H.

Mounted upon swinging supports from the frame C, is a screen J, directly under the disk. This screen is adapted to be shaken by suitable means, as by the pins a' in the extreme outer edge of the disk coming in contact with a striker arm j of the screen.

Under the screen is a discharge hopper K. The operation is as follows:—The material, say, mixed wheat, oats and barley, is fed into the receiving extension d of the feed-board, from a suitable hopper which, for the sake of avoiding confusion, I have not shown. With- in this extension the material passes downwardly and enters the main chamber of the feeder. In this it lies in a vertical layer up against the uprising side of the perforated disk. It is carried by the disk upwardly in a path along the outer portion of the chamber, and thence curving inwardly it descends by gravity along an inner path, and down to the

commencement again, describing an approximately elliptical course. During its passage, the wheat being shorter and otherwise shaped to better enter the holes of the disk, will enter said holes, while the barley and oats being longer and rougher will not enter them. The wheat in the holes of the disk, cannot pass directly through, on account of the back sheet G, but when said sheet is relieved of the back-board H, and is pressed outwardly from the disk by the arm I, the holes will be uncovered and the wheat will drop out therefrom and fall upon the shaking screen, and thence into the discharge hopper. If grains of barley, or of oats should partially get in the holes of the disk they are dislodged by the wipers e and fall back again into the mass within the feeder chamber. As the operation continues there will be a constant discharge of barley and oats from the upper outer end of the feed-board chamber. The advantage in making the outer edge of this chamber shallower, is to provide for a thinner layer of material just previous to discharge, whereby the still remaining wheat may be the more readily picked up by the outer rows of holes in the disk. The object of the offset d^4 in this portion of the feed chamber is to break or interrupt the general elliptical course of the mass of material, near its outer side, whereby some of it, is constantly diverted and directed to the discharge over the top of the board. A portion of this material about to be discharged will drop down into the narrow channel d^6 but not far and will be constantly raised to the discharge. The adjustment of the feed-board about its inner end or fulcrum, provides for discharging the separated material quicker or later according to the character of the admixture of the material, and its adjustment to and from the face of the disk is to provide for allowing more or less small particles, such as dirt or thin particles to drop directly through between the flange d^2 and the disk. The brush F is to clean the disk and prevent its holes from clogging.

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

1. A separator consisting of a perforated disk standing on edge and mounted and rotating in a substantially vertical plane, a feeder applied to the face of said disk on its uprising side, and a backing applied to the reverse face of said disk on its uprising side, substantially as herein described.

2. A separator consisting of a perforated disk standing on edge and mounted and rotating in a substantially vertical plane, a feeder applied to the face of said disk on its uprising side, an imperforate flexible sheet applied to the whole reverse face of the disk rotating therewith, and separable therefrom, and a fixed back for holding the flexible sheet pressed against the disk on its uprising side, substantially as herein described.

3. A separator, consisting of a perforated

disk mounted and rotating in a substantially vertical plane, a feeder applied to the face of said disk on its uprising side, an imperforate flexible sheet applied to the whole reverse face of the disk rotating therewith, and separable therefrom, a fixed back for holding the flexible sheet pressed against the disk on its uprising side, and a guide for separating the flexible sheet from the disk when free of the fixed back, substantially as herein described.

4. A separator, consisting of a perforated disk mounted and rotating in a substantially vertical plane, a feeder applied to the face of said disk on its uprising side, an imperforate flexible sheet applied to the whole reverse face of the disk, rotating therewith and separable therefrom, a fixed back for holding the flexible sheet pressed against the disk on its uprising side, and a cushion between said back and sheet, substantially as herein described.

5. A separator, consisting of a perforated disk mounted and rotating in a substantially vertical plane, a feeder applied to the face of said disk on its uprising side, an imperforate flexible sheet applied to the whole reverse face of the disk, rotating therewith, and separable therefrom, a fixed back for holding the flexible sheet pressed against the disk on its uprising side, a cushion between said back and sheet, and a guide for separating the flexible sheet from the disk when free of the fixed back, substantially as herein described.

6. In a separator, and in combination with the perforated disk mounted and rotating in a substantially vertical plane, a feeder adjustable in vertical planes applied to one side of said disk and adapted to hold the material to said side, substantially as herein described.

7. In a separator and in combination with the perforated disk mounted and rotating in a substantially vertical plane, a feeder board or plate applied to the uprising side of the disk face and adapted to hold the material thereto, substantially as herein described.

8. In a separator and in combination with the perforated disk mounted and rotating in a substantially vertical plane, a feeder board or plate applied to the uprising side of the disk face and adapted to hold the material thereto, said feeder-board or plate having the

extension d and the inturned flange d^2 , substantially as herein described.

9. In a separator and in combination with the perforated disk mounted and rotating in a substantially vertical plane, a feeder board or plate applied to the uprising side of the disk face and adapted to hold the material thereto, said feeder-board or plate having the extension d the inturned flange d^2 , and the shallow portion at its discharge side, substantially as herein described.

10. In a separator and in combination with the perforated disk mounted and rotating in a substantially vertical plane, a feeder board or plate applied to the uprising side of the disk face and adapted to hold the material thereto said feeder board or plate having the extension d the in-turned flange d^2 , and the shallow portion at its discharge side, provided with the offset and inner flange, substantially as herein described.

11. In a separator and in combination with the perforated disk mounted and rotating in a substantially vertical plane, the feeder D applied to the uprising side of the disk face, said feeder being fulcrumed on the disk axis and adjustably connected at its outer end whereby it may be turned about said fulcrum, substantially as herein described.

12. In a separator and in combination with the perforated disk standing on edge and mounted and rotating in a substantially vertical plane, the feeder D applied to the uprising side of the disk face, and the adjustable bar by which said feeder is supported whereby it may be moved to or from the face of the disk, substantially as herein described.

13. In a separator and in combination with the perforated disk standing on edge and mounted and rotating in a substantially vertical plane, a feeder applied to the uprising side of the disk face, and the wipers applied to said face above the feeder, substantially as herein described.

In witness whereof I have hereunto set my hand.

ROBERT W. JESSUP.

Witnesses:

S. H. NOURSE,

J. A. BAYLESS.