

M. S. JONES.

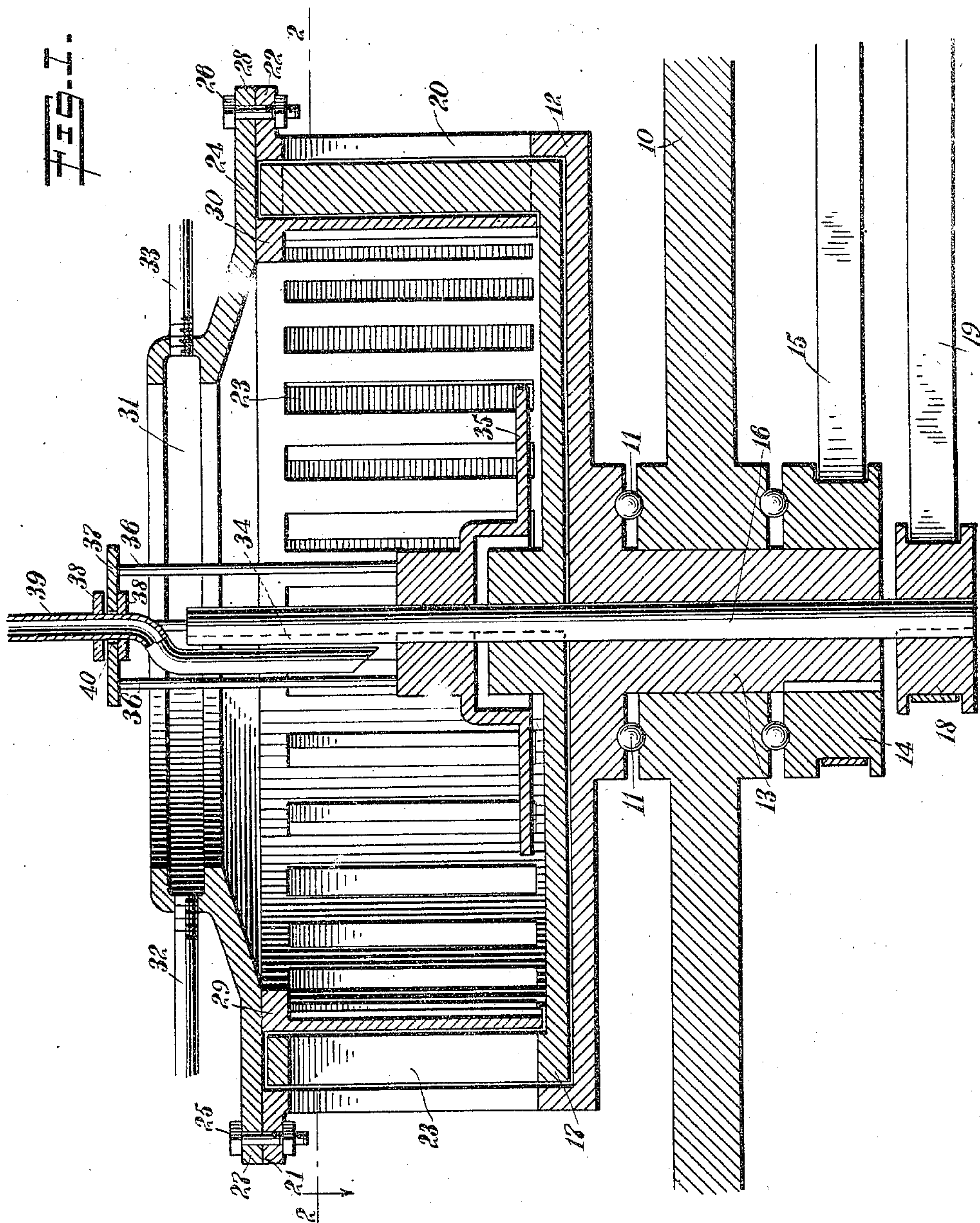
SEPARATOR.

APPLICATION FILED OCT. 21, 1909.

960,947.

Patented June 7, 1910.

2 SHEETS—SHEET 1.



WITNESSES

G. Robert Thomas
P. A. Foster

INVENTOR

Marion S. Jones

BY

Miner Co

ATTORNEYS

M. S. JONES.

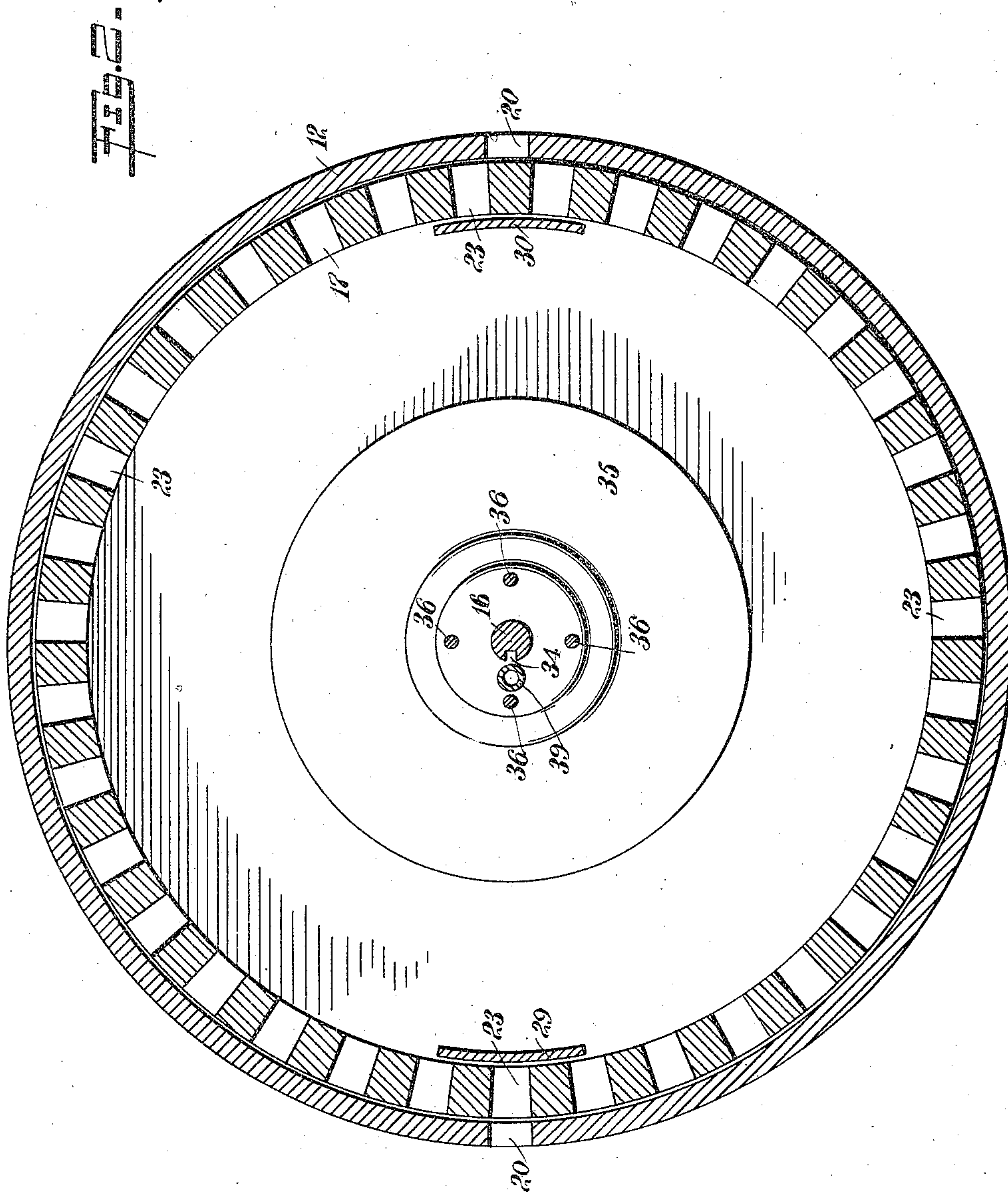
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G. Robert Thomas
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Munroe
ATTORNEYS

UNITED STATES PATENT OFFICE.

MARION SLEMONS JONES, OF BALTIMORE, MARYLAND.

SEPARATOR.

960,947.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed October 21, 1909. Serial No. 523,739.

To all whom it may concern:

Be it known that I, MARION S. JONES, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented a new and Improved Separator, of which the following is a full, clear, and exact description.

My invention relates to separators for centrifugally separating materials having a different specific gravity, and partake of rotatable means for separating a material having a lighter specific gravity from a material having a heavier specific gravity, and vice-versa.

One embodiment of my invention comprises an apertured drum adapted to rotate at a high rate of speed inside of a casing having apertures, and rotating at a slower rate of speed than the drum, the apertures in the drum being adapted to register with the apertures in the casing and the precise moment of registering of the apertures depending upon the relative speed of the said drums.

A further embodiment of my invention comprehends rotatably operated drums, one a casing, operating at different high speeds relative to each other, and provided with chambers for receiving one of a combination of materials centrifugally separated by the said revolving drums.

My invention still further comprehends certain novel features of construction and combinations of the same as will be hereinafter more fully described and specified.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference denote corresponding parts in both views, and in which—

Figure 1 is a vertical sectional view of my invention, suitable driving and bearing means being also shown; and Fig. 2 is a sectional view, taken on the line 2—2 in Fig. 1, looking in the direction of the arrow.

Rotatably mounted on a table 10, on suitable bearings 11, is a drum 12, also constituting a casing, provided with a shaft 13 to which is keyed driving means, comprising a pulley 14 in engagement with a belt 15. Extending longitudinally through the shaft 13 is a shaft 16, secured to a drum 17, and having keyed thereon at one end driving means comprising a pulley 18 in engagement with a belt 19.

The outer drum 12 comprises a circularly shaped container, provided with oppositely

placed apertures 20, as are particularly shown in Fig. 2, and secured to the upper portion of the said drum 12 are suitable lugs 21 and 22. The drum 17 revolvably placed inside the outer drum 12, is provided with a series of apertures 23, equidistantly spaced relative to each other and extending in a vertical direction, as can be easily seen in Fig. 1.

A cover 24 is provided and adapted to be secured to the outer drum 12 by suitable bolts 25, 26 extending through lugs 27, 28, integral with the cover 24, and engaging similar lugs 21 and 22 on the outer drum 12, as heretofore described. Secured to the cover 24 are downwardly-extending deflectors 29, 30, oppositely placed, so as to be diametrically in alinement with the apertures 20, 20 in the outer drum 12. The upper portion of the cover 24 comprises an open chamber 31 having side openings in which are disposed suitable pipes 32 and 33.

A longitudinal slot 34 is provided in the shaft 16, and secured to the shaft is a distributor 35 adapted to slide longitudinally in the slot 34. Secured to the distributor 35 are upwardly extending rods 36 fastened to a plate 37, mounted to rotate in a bearing 38 secured to a feed pipe 39, loosely extended through a hole 40 in the plate 37. The distributor keyed to the shaft 16 rotates therewith and consequently the plate 37, to which are secured the rods 36, is also caused to rotate. A suitable rocker shaft secured to the bearing 38 and the feed pipe 39, cause the same to move upwardly and downwardly, and likewise the distributor 35 will move longitudinally up and down on the rotating shaft 16.

The operation of my separator is as follows: Presuming the separator is to be used in extracting starch from corn, the corn, which first has been softened, is fed onto the distributor 35 which, rotating with the shaft 16 and moving upwardly and downwardly, thoroughly mixes the corn and water coming through the feed pipe 39 onto the distributor 35. The drum 17 keyed to the shaft 16 revolves at a high rate of speed, while the outer casing 12 revolves at a lower rate of speed. The high speed at which the drum 17 is rotated, causes the heavy particles of starch to fly outwardly and they collect in the various chambers 23 of the drum 17. Then when the chambers 23 filled with the starchy substance, successively register

with the openings 20, the starch in the chambers 23 is ejected outwardly through the apertures 20 and is collected on suitable trays and the like provided for this purpose.

5 The lighter cellulose substance of the corn, tends to move upwardly and is discharged through the outlet pipes 32 and 33, but should the same approach the side of the drum 17, it is prevented from going out

10 through the openings 20 by the deflectors 29 and 30 secured to the cover 24. The liquid matter in the drum 17, owing to the high speed of motion, moves upwardly along the inner side of the cover 24 and is ejected

15 from the separator by passing through the outlet pipes 32 and 33. As more material is constantly being fed through the feed pipe into the drum 17, the centrifugally separating operation goes on as described

20 until the machine is stopped or the initial supply of corn is exhausted.

It will be understood that although I have described the casing of the drum as rotating at a slower speed than the drum,

25 the casing can be made stationary with equally good results, depending entirely upon the existing conditions. It will also be understood that although I have described the operation of my separator as a

30 starch producer, it can be operated to separate various materials having a different specific gravity. It will be still further understood that I do not limit myself to the precise construction as shown in the draw-

35 ings, the scope of my invention being defined in the appended claims.

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

40 1. A centrifugal separator comprising a revoluble apertured drum and a revoluble apertured casing fitted over the said drum, the said apertures in the said drum being adapted to receive material, and the said

45 apertures in the said casing being adapted to discharge material, a cover for the said drum secured to the said casing and provided with cut-offs extending into the said drum, and distributing means in the said

50 drum adapted to rotate and to reciprocate longitudinally in the drum to distribute the material received therein.

2. A centrifugal separator, comprising a revoluble apertured drum, the said apertures

55 in the drum being adapted to receive material, a revoluble apertured casing fitted over the said drum, the said apertures in the casing being adapted to discharge the material received by the said drum, a cover for

60 the said drum secured to the said casing, and cut-offs secured to the said cover, adjacent the inside periphery of the said drum.

3. A centrifugal separator, comprising a revoluble drum, longitudinally disposed

65 apertures in the said drum adapted to re-

ceive material, a revoluble casing fitted over the said drum, longitudinally disposed apertures in the casing adapted to discharge the material received by the said drum, a cover for the said drum secured to the said cas-

70 ing, oppositely-disposed cut-offs on the said cover extending into the said drum and oppositely-disposed outlets in the said cover for disposing of material in the said drum.

4. A centrifugal separator, comprising a

75 revoluble apertured drum, the said apertures in the drum being adapted to receive material, a revoluble apertured casing fitted over the said drum, the said apertures in the casing being adapted to discharge the ma-

80 terial received by the said drum, a cover for the said drum secured to the said casing, cut-offs secured to the said cover, adjacent the inside periphery of the said drum, and a revoluble distributor in the said drum

85 adapted to distribute the material received by the said apertures in the said drum.

5. In a centrifugal separator, a revoluble longitudinally-apertured drum secured to a shaft, the said apertures in the said drum

90 being adapted to receive material, a revoluble longitudinally-apertured casing fitted over the said drum, secured to a second shaft, a cover for the said drum secured to the said casing, downwardly extending cut-

95 offs on the said cover, outlets in the said cover for centrifugally disposing of material in the said drum, and driving means for independently rotating the said shaft se-

100 cured to the said drum and the said shaft secured to the said casing.

6. In a centrifugal separator, a revoluble drum provided with equidistantly-spaced longitudinal apertures extending around the periphery of the said drum and adapted

105 to receive material, a revoluble casing fitted over the said drum and provided with apertures adapted to discharge the material received by the apertures in the said drum and the said receiving apertures in the said drum

110 being adapted to successively register with the discharge apertures in the said casing, a cover for the said drum secured to the said casing, cut-offs on the said cover ex-

115 tending into the said drum, oppositely-disposed outlets in the said cover, and distributing means in the said drum adapted to rotate and to move longitudinally to the said drum for distributing the material re-

120 ceived in the said drum.

7. In a centrifugal separator, a revoluble apertured drum secured to a driving shaft, the said apertures in the drum being adapted to receive material, a revoluble apertured casing fitted over the said drum, the said

125 apertures in the said casing being adapted to discharge the material received by the said apertures in the said drum, and a distributor in the said drum secured to the said shaft and adapted to move longitudi-

130

nally up and down on the said shaft and receive thereon the material received by the said apertures in the said drum.

8. In a centrifugal separator, a revoluble
5 apertured drum secured to a shaft, the apertures in the said drum being adapted to receive material, a revoluble apertured casing fitted over the said drum, secured to a second
10 shaft, the apertures in the said casing being adapted to discharge the material received by the said apertures in the said drum, a revoluble distributor in the said drum secured to the said first-mentioned shaft and adapted to move longitudinally to the said
15 first-mentioned shaft, and driving means adapted to independently operate the said drum on the said first-mentioned shaft and the said casing on the said second-mentioned shaft.

20 9. In a centrifugal separator, the combination of a revoluble apertured drum and a revoluble apertured casing fitted over the drum, the apertures in the said drum being adapted to receive material, the apertures in
25 the said casing being adapted to discharge the material received in the apertures of the

said drum, the said drum being secured to a shaft, the said casing being secured to a second shaft, driving means for independently operating the said drum and the said
30 casing, the said receiving apertures in the said drum being adapted to successively register with the said discharge apertures in the said casing, a cover fitted over the said drum and secured to the said casing, cut-
35 offs secured to the said cover, adjacent the inner periphery of the said drum, a revoluble distributor in the said drum secured to the said first-mentioned shaft and adapted to move longitudinally therewith, and a
40 feed pipe in the said drum adapted to feed onto the said distributor the said material adapted to be received by the said apertures in the said drum.

In testimony whereof I have signed my
45 name to this specification in the presence of two subscribing witnesses.

MARION SLEMONS JONES.

Witnesses:

MICHAEL GLASER,
JOHN MCKAIG.