

(No Model.)

F. H. WHEELAN.
SEPARATOR.

No. 468,066.

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Fig - 1 -

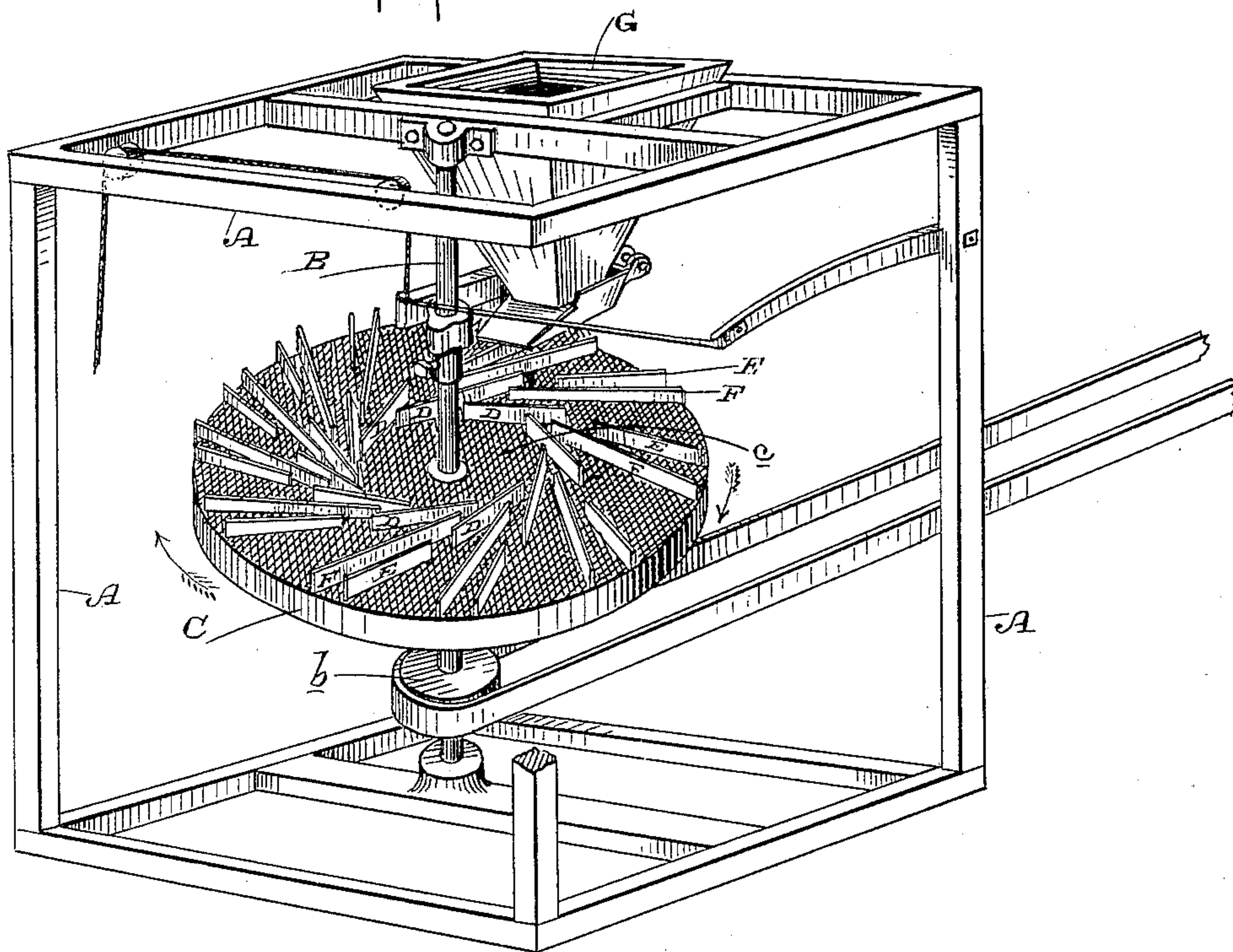
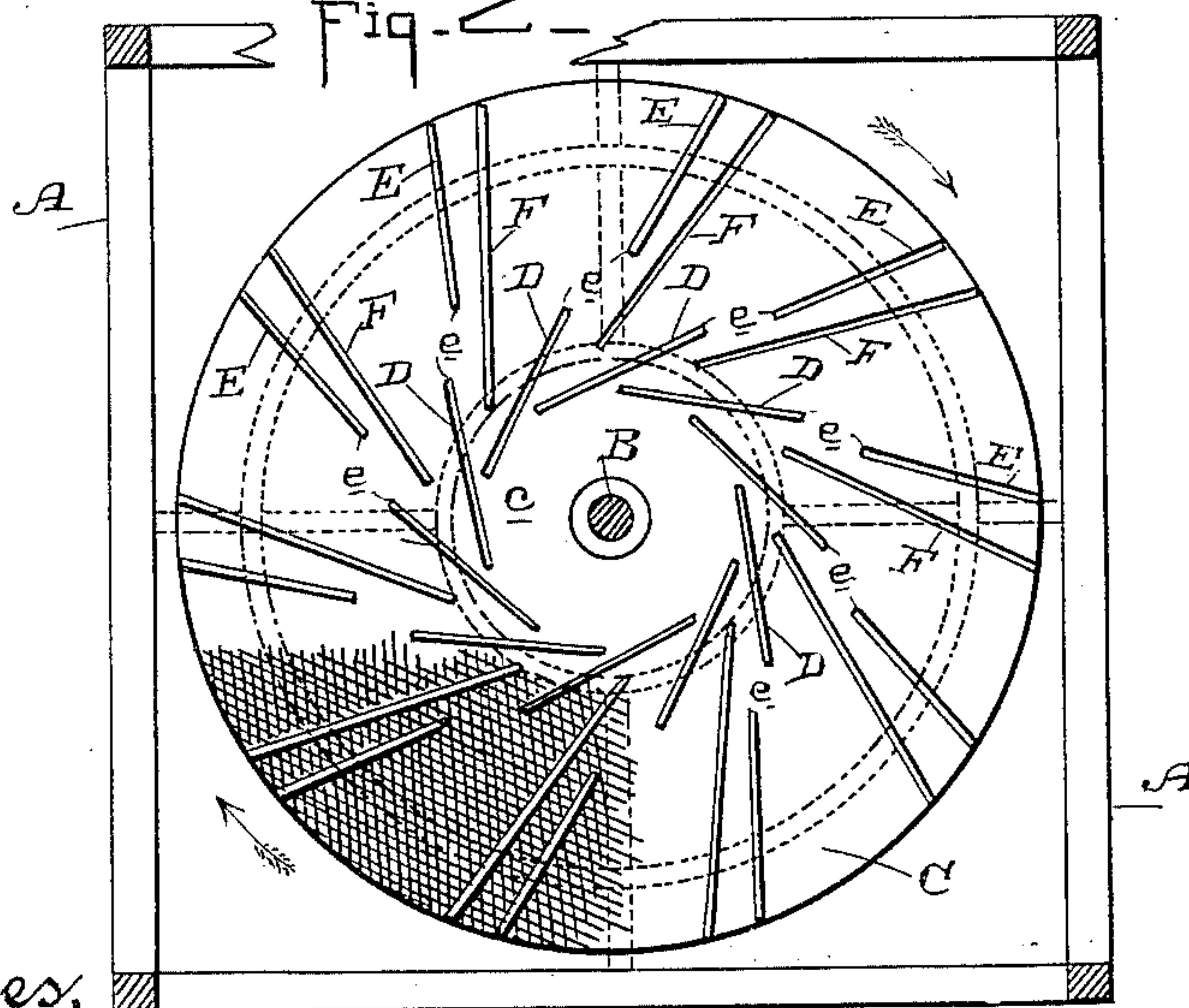


Fig. 2 -



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UNITED STATES PATENT OFFICE.

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Application filed March 5, 1891. Serial No. 383,889. (No model.)

To all whom it may concern:

Be it known that I, FAIRFAX H. WHEELAN, a citizen of the United States, residing at Santa Barbara, Santa Barbara 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 art of separation, and especially with relation to the separation of foreign particles from grains, seeds, &c.

The general object of my invention is to separate the smoother from the rougher particles of any material which is composed of particles of different degrees of smoothness, and its special object is to separate the dirt and other foreign particles from grains, and particularly from leguminous seeds.

My invention consists in feeding material composed of particles of different degrees of smoothness upon a rotating surface on which said particles are subjected to centrifugal action, which produces a separation of those particles having a less coefficient of friction with the surface from those particles having a greater coefficient of friction therewith.

My invention also consists, in connection with the above, of guiding the material to such a point on the surface where the centrifugal force can act to effect the separation of the smoother from the rougher particles, then relieving the particles to permit their separation, and then catching the separated particles at different points on the surface and maintaining their separation.

My invention also consists in the novel separating-table hereinafter fully described, and specifically pointed out in the claims.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view of my separator, the supporting devices for the barriers D and stops E and F being omitted. Fig. 2 is a plan of the table, the supports for the barriers and stops being shown in dotted lines.

A is a frame or stand, in which is mounted a shaft B, adapted to be rotated by suitable means, as by a belt extending to the pulley *b*. This shaft carries a table C, which rotates with the shaft. In the center of the table is made a circular feed-chamber *c* for the ma-

terial. Over or upon the surface of the table and around the circumference of the feed-chamber and tangential thereto are the barriers D, which consist of any suitable stops. These are separated from each other, so that the spaces between their inner ends communicate with the central feed-chamber.

E are the first stops of the outer series. These are fixed over or upon the table and are substantially parallel with the barriers D. They extend from the circumference of the table inwardly and terminate short of the planes of the ends of the barriers, thus leaving a space *e* between their adjacent ends. These stops E are not in line with the barriers, but are set a little behind them, as shown.

F are the second stops of the outer series. They extend parallel with and back of the stops E. They reach from the outer circumference of the table to a point beyond the inner end of the stops E and lie behind and overlap the spaces *e*. The surface of the table may be of any suitable character—smooth or of a rougher nature. Wire-cloth will serve the purpose.

G is a hopper to feed the material.

The separation which I effect is founded upon the different degrees of smoothness between the different particles of the material to be separated. It is obvious that a particle having a rough surface has a greater coefficient of friction with the surface on which it rests than a particle having a smoother surface, and this is the more so if the surface on which the particles rest be of a somewhat rough character.

With grains and seeds, especially leguminous seeds, all sorts of substances are mixed, principally particles of dirt, but small twigs, sticks, &c., and mutilated and imperfect grains and seeds are also present. As a matter of fact, the perfect grains and seeds are much smoother than the mutilated ones and are far smoother than the particles of dirt, sticks, twigs, &c. Centrifugal force, acting upon particles of different degrees of smoothness resting upon a surface will overcome the frictional coefficient of and act upon the smoother particles to a greater extent than upon the rougher particles. Therefore if grains and seeds mixed with foreign parti-

cles having a rougher surface than themselves be fed upon a rotating table the centrifugal force, acting upon the different particles, will affect them differently, according to their frictional coefficients, and will separate those having a less from those having a greater frictional coefficient. Therefore the smooth grains and seeds will be thrown on or from the surface to a different extent from the foreign particles and will be separated from them. This is the main separation, and the different particles may be received at different points and kept separated; but while this method of separation would subserve a useful purpose, another step should be added to the method to provide for the highest efficiency and operativeness of the separating process and the means by which it is accomplished. This added step is the controlling of the particles upon the table in such a manner as to induce separation at the best points and to maintain this separation when once made. These are the purposes of the barriers and stops, and the operation of the device described will be now readily understood.

The material to be separated is fed from the hopper G into the central feed-chamber *c* of the table C. The table is given a rotary motion and the material is fed out from the central chamber equally all round upon and against the barriers D. Now, from the position of these barriers, and recognizing what is known as "draft" in the action of material upon a rotating surface, (such as a millstone provided with what is termed "furrows" and "land,") it will readily be understood that the material will travel outwardly against the barriers D, and as it travels outwardly it is approaching the planes of circles of greater diameter in the surface of the table. When it reaches the outer ends of the barriers, it is then in a position to be acted upon favorably by the centrifugal force due to the rotation of the table. At this point the centrifugal force, acting upon the smoother grains and seeds, causes them to glide or slip outwardly sufficiently to bridge or span the spaces *e*, so that they land after traveling through an ec-

centric curve upon the first stops E; but the rougher particles—dirt, mutilated seeds and grains, sticks, twigs, &c.—having a greater frictional coefficient with the surface of table C, do not so readily slip or glide, and failing to span or bridge the spaces *e* they fall through said spaces and are caught by the second stops F. There is thus a separation, the smoother particles being caught by the stops E and the rougher particles by the stops F, and by means of draft they are carried out to the outer end of the stops and are dropped separately over the edge of the table, where suitable means may be employed for receiving them and keeping them separate.

The capacity of the device is greatly increased by the continuous feed from the circumference of the feed-chamber *c*.

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

1. A separator consisting of a rotating table, draft-barriers for guiding the material outwardly, and outer stops separated from each other and from the draft-barriers to catch the separated particles after leaving said barriers, substantially as herein described.

2. A separator consisting of a rotating table, the draft-barriers for guiding the material outwardly, the first stops E, separated from the draft-barriers by spaces, and the second stops F behind stops E and overlapping the spaces, substantially as herein described.

3. A separator consisting of the rotating table having the central feed-chamber, the barriers D, tangential to the circumference of said chamber, the first stops E, having spaces between their inner ends and the outer ends of the barriers, and the second stops F behind the stops E, overlapping said spaces, substantially as herein described.

In witness whereof I have hereunto set my hand.

FAIRFAX H. WHEELAN.

Witnesses:

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J. A. BAYLESS.