No. 746,089. PATENTED DEC. 8, 1903.

R. W. JESSUP.

SEPARATOR.

APPLICATION FILED OCT. 3, 1901.

NO MODEL.

Fig. 1.

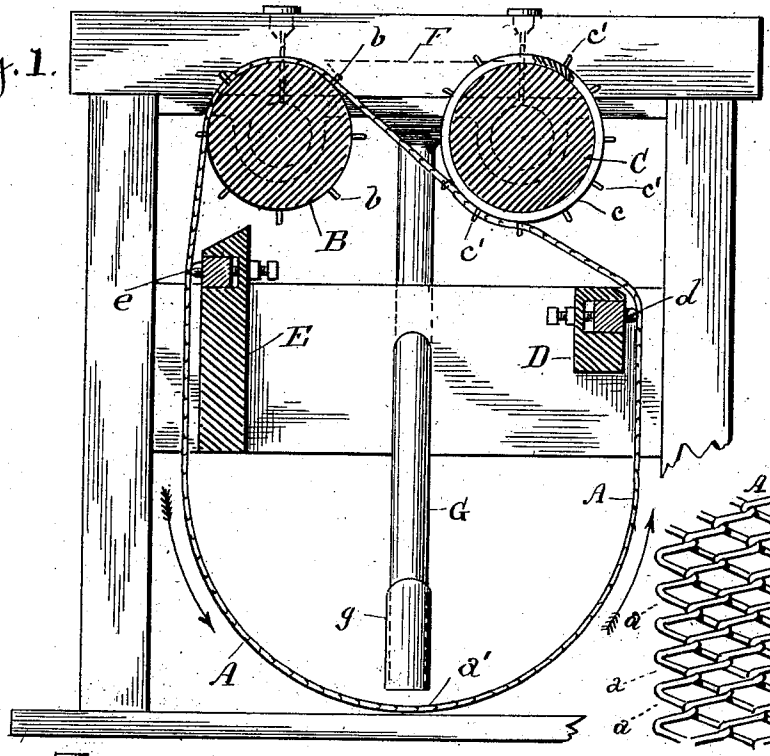



Fig. 3.



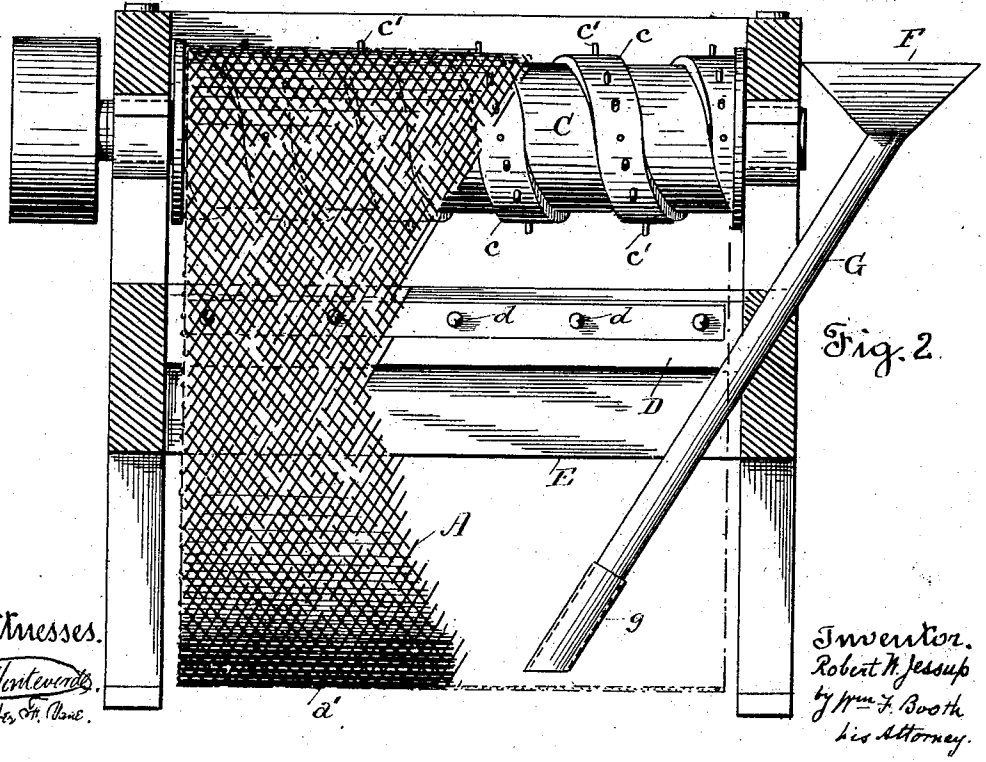




Fig. 2.

Witnesses.

Inventor.
Robert W. Jessup
by Wm. F. Booth
his Attorney.

THE HORBIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 746,089. Patented December 8, 1903.

# UNITED STATES PATENT OFFICE.

ROBERT W. JESSUP, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO SPIRAL BELT SEPARATOR CO., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

## SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 746,089, dated December 8, 1903.

Application filed October 3, 1901. Serial No. 77,382. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. JESSUP, a citizen of the United States, residing at the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Separators; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of separators in which an endless traveling screen is employed for the separation of grain and small seeds. Though it may be used in the separation of various materials and at different stages of the cleaning process wherever applicable, its special object is "scalping"—that is, the preliminary treatment or rough separation in the process of grain-cleaning by which the larger particles—such as corn, straws, sticks, &c.—are separated from the wheat, whether in the threshing-machine, warehouses, or terminal elevators, before the partially-cleaned material is subjected to the later and more careful treatment of removing from it other particles, such as oats, barley, and small seeds.

My invention consists in the novel construction, arrangement, and combination of parts, all as I shall hereinafter fully describe by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my separator. Fig. 2 is a side view, part of the screen being broken away. Fig. 3 is a detail view of a portion of the screen, showing the diagonal channels.

A is an endless flexible screen. It may be of any suitable character with respect to its material and mesh. It must be a "perforated" screen, by which I mean and wish to be understood both in the specification and claims as meaning a screen having a mesh, whether formed by holes or reticulations, in contradistinction to a slatted belt. The best screen for the purpose is a flexible fabric known as "spiral mesh," composed, as shown in Fig. 3, of freely-interlaced spiral wires so engaging as to form the diagonal channels *a*, the mesh-openings being in the bottoms of said channels. The screen A is suspended so that it has a hanging loop or bight *a'*, and it travels in an oblong course down one side and up the other, as indicated by the arrows. The means for so mounting it may be of any suitable character. I have here shown a simple arrangement, comprising a driving and suspending roller B, which is preferably provided with pins *b* to engage the mesh and insure the travel of the screen. A second roller C, provided with a spirally-directed peripheral strip *c* with pins *c'*, serves as an idler and also as a means for clearing the mesh by reason of its pins entering the holes and forcing out any clogging particles. The screen is further guided and directed by a fixed bar D within on one side, which carries agitator-pins *d*, in contact with which the screen travels, an agitation being effected by this contact. A second and longer fixed bar E is on the other side and is provided with similar agitator-pins *e*. The length of bar E is such as to prevent the screen on the downmoving side from sagging or swinging over to the other side. It holds it effectively in its proper course, keeping its hanging loop or bight sufficiently open to receive the feed.

F is a hopper from which a spout G extends into the space inclosed by the screen and terminates at a point at or near the extremity of the hanging loop or bight of the screen, being thus adapted to deliver the material within said loop or bight. The spout may have a telescopic end section *g*, the adjustment of which up or down will regulate the feed. The discharge of the spout is far enough in from one edge of the screen to prevent overflow of the material.

The operation of the separator is as follows: The material in the hopper after passing through the spout is fed within the hanging loop or bight of the screen—that is to say, it falls upon the screen on the inner surface of its lower end near one edge. The screen being flexible, its freely-hanging loop or bight closely embraces the mass of material on three sides—that is, with its downmoving side, its bend, and its uprising side—and this close embrace provides for such extensive and perfect contact that the material is effectively turned over and over as a roll, continually rising on the uplifting side, the finer particles dropping through while the coarser particles travel over and along the screen

to the opposite edge and are discharged at the end or edge opposite to the feed end or edge. The diagonal channels or run of the mesh of the spiral wire screen I have described as being the best for this purpose insure and heighten this effect of the continual and rapid turning over and over of the material, the inducement of the coarser particles to travel along the screen to the opposite or discharge edge or end, and also effecting the exposure of the finer particles to the mesh-openings where they may drop through, thus giving great capacity and thorough work. The pins *d* and *e* with which the screen comes in contact give a constant and sufficient agitation to the screen, thereby assisting in the separation.

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

1. A separator consisting of an endless, traveling flexible screen; means for supporting the screen to form a loose, hanging loop or bight of its lower portion; guides, acting on the inner surface of the screen between its support and hanging loop or bight, arranged to deflect said loop or bight from the course it would pursue if left free to the influence of gravity; and a feeder arranged to deliver the material to the inner surface of said loop or bight.

2. A separator for grain and small seeds consisting of an endless traveling, flexible, perforated screen, means supporting said screen from above, to form a loose hanging loop or bight of its lower portion, a guide for the screen on its uprising side between its hanging loop or bight and the top support and disposed to one side of the vertical plane of said support, and a feeder arranged to deliver material to the inner surface of said loop or bight.

3. A separator for grain and small seeds consisting of an endless traveling, flexible, perforated screen, means supporting said screen from above, to form a loose hanging loop or bight of its lower portion, a guide for the screen on its downmoving side disposed relatively to the top support to direct the screen approximately vertically on said side, a guide for the screen on its uprising side between its hanging loop or bight and the top support and disposed to one side of the vertical plane of said support, and a feeder arranged to deliver material to the inner surface of said loop or bight.

4. A separator consisting of an endless traveling flexible screen, a driving-roller at the top of the screen, suspending it to form a hanging loop or bight, suitable guides for keeping the screen in its course, a feeder arranged to deliver the material to the hanging loop or bight of said screen, and a roller, outside the screen, near the top, provided with pins adapted to enter and clear the screen-mesh.

5. A separator consisting of an endless traveling flexible screen, a driving-roller at the top of the screen, suspending it to form a hanging loop or bight, guides for keeping the screen in its course, agitators carried by the guides, and with which the screen comes in contact, a roller outside the screen near the top, provided with pins to enter and clear the screen-mesh, and a feeder arranged to deliver the material to the hanging loop or bight of said screen.

In witness whereof I have hereunto set my hand.

ROBERT W. JESSUP.

Witnesses:
RICHARD PAUL,
P. R. THOMPSON.