

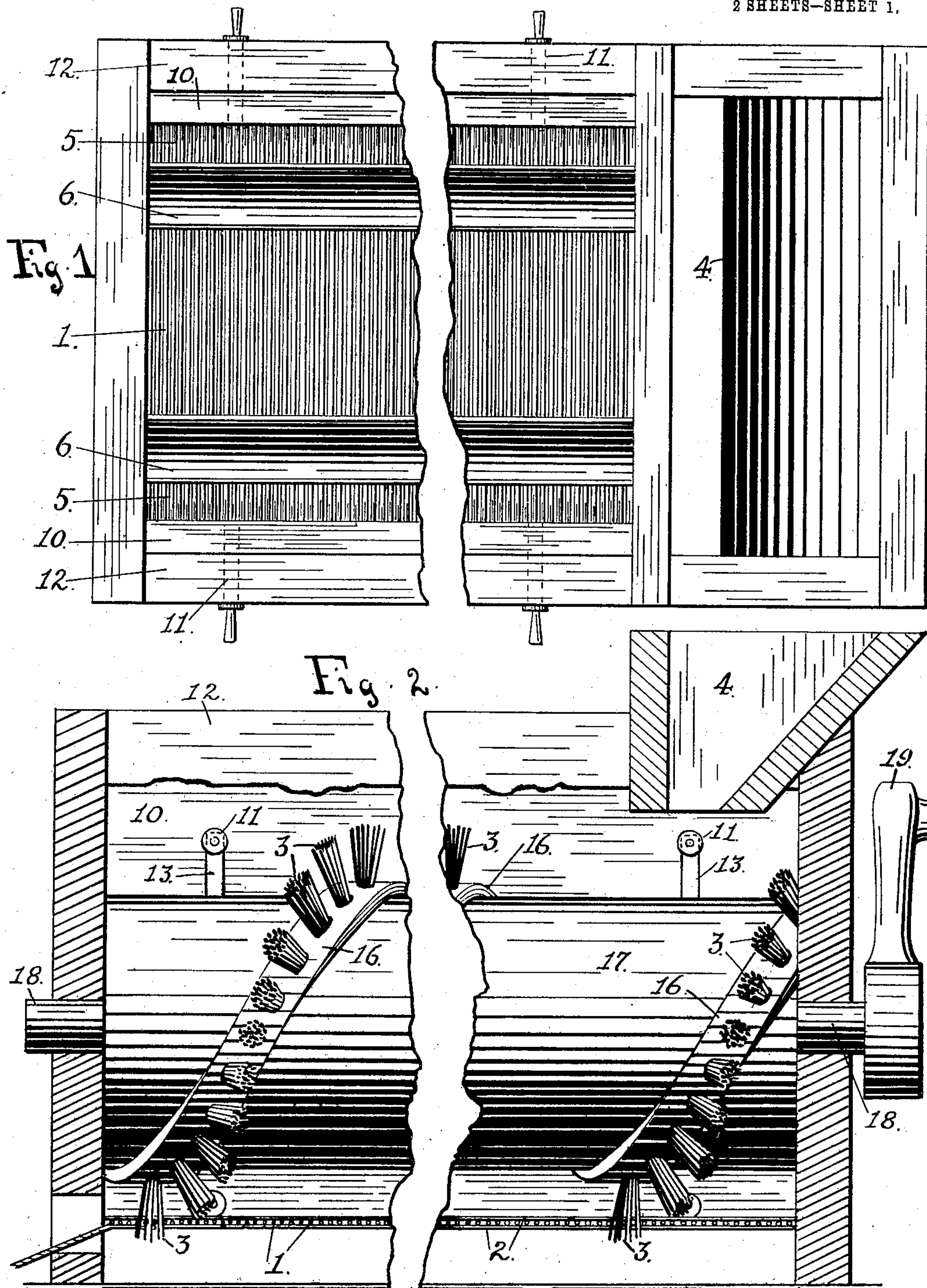
No. 891,424.

PATENTED JUNE 23, 1908.

R. W. JESSUP.  
SEPARATOR.

APPLICATION FILED AUG. 8, 1906.

2 SHEETS—SHEET 1.



Witnesses.  
J. H. Arnold  
J. Compton.

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

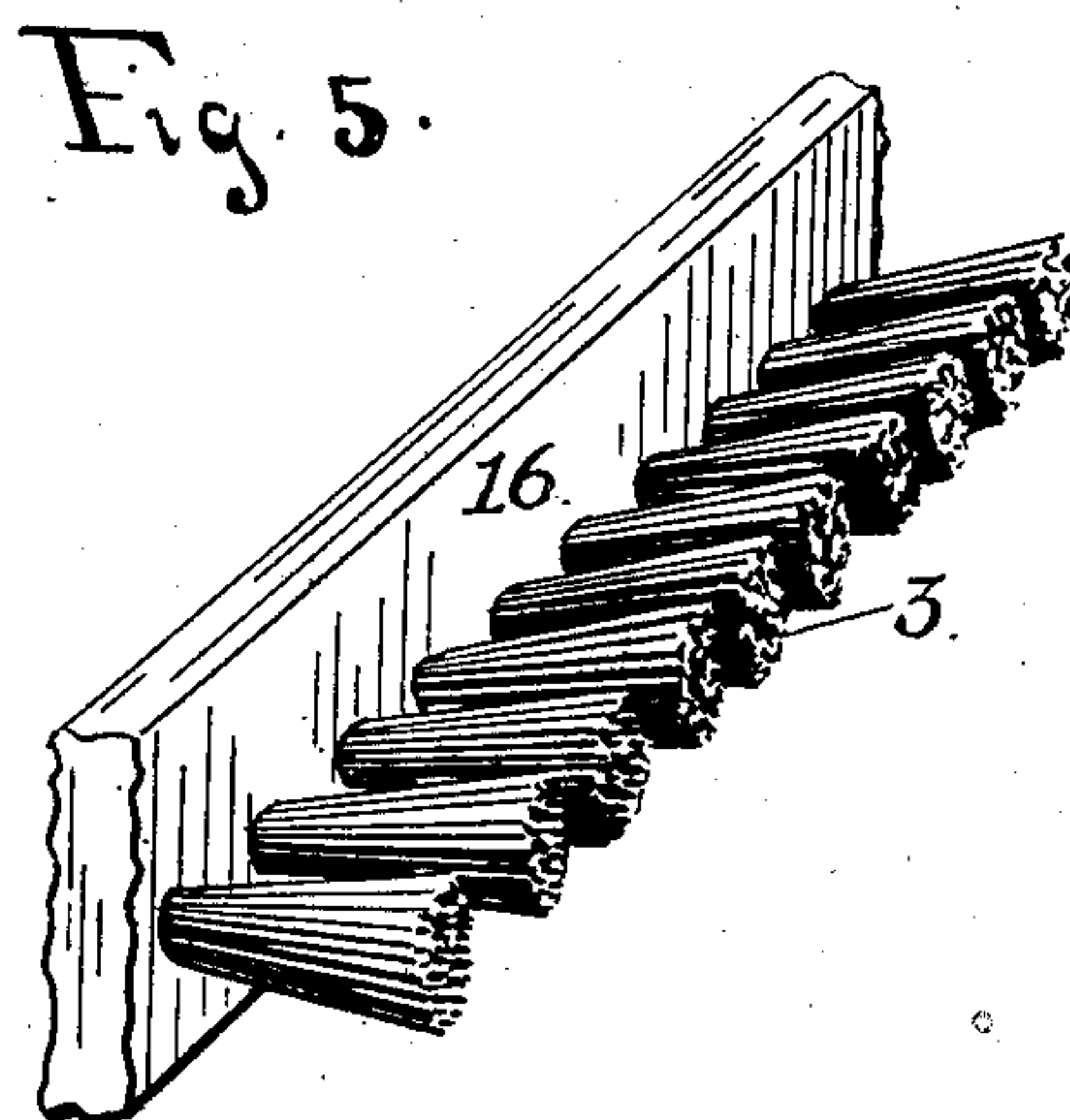
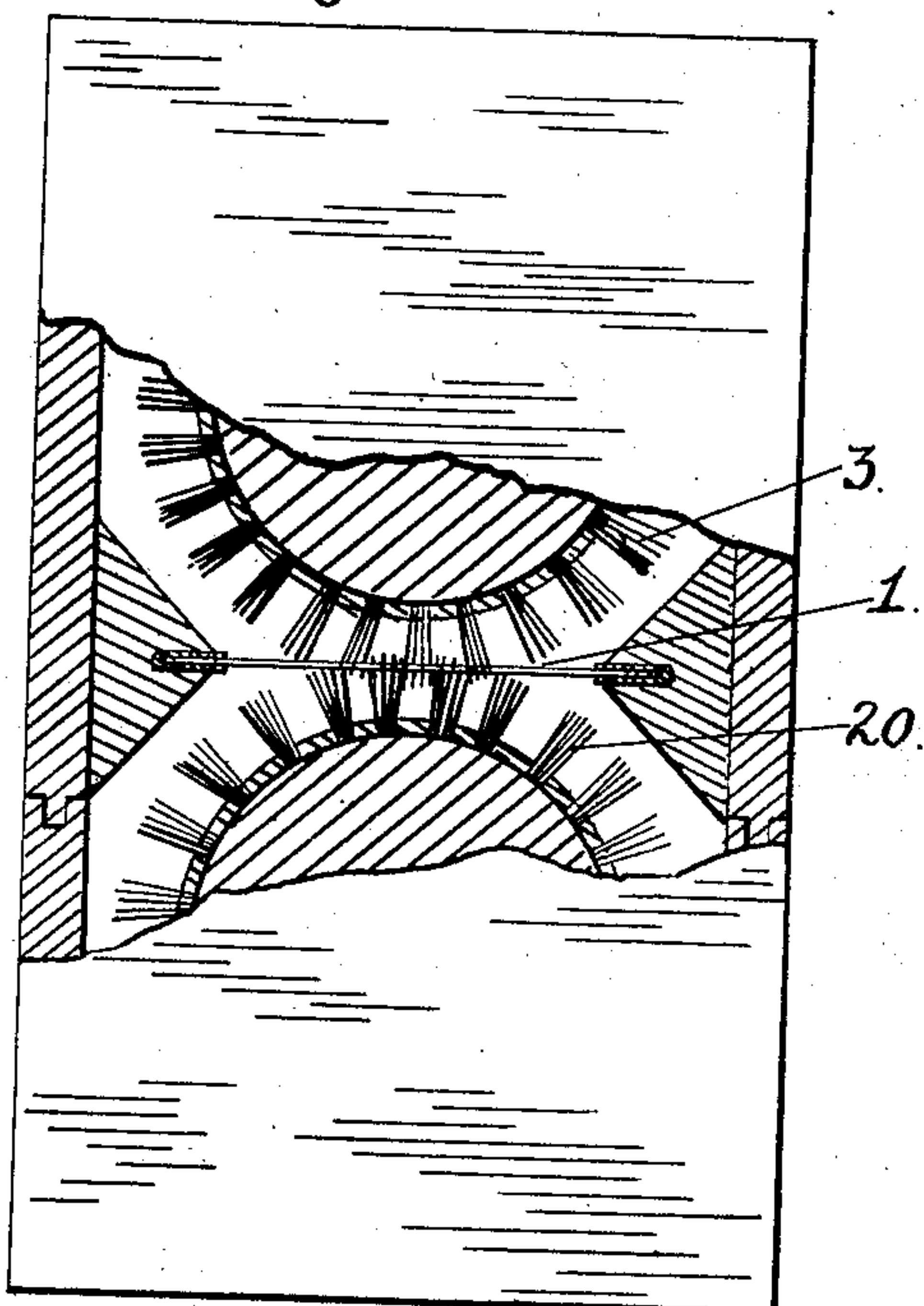
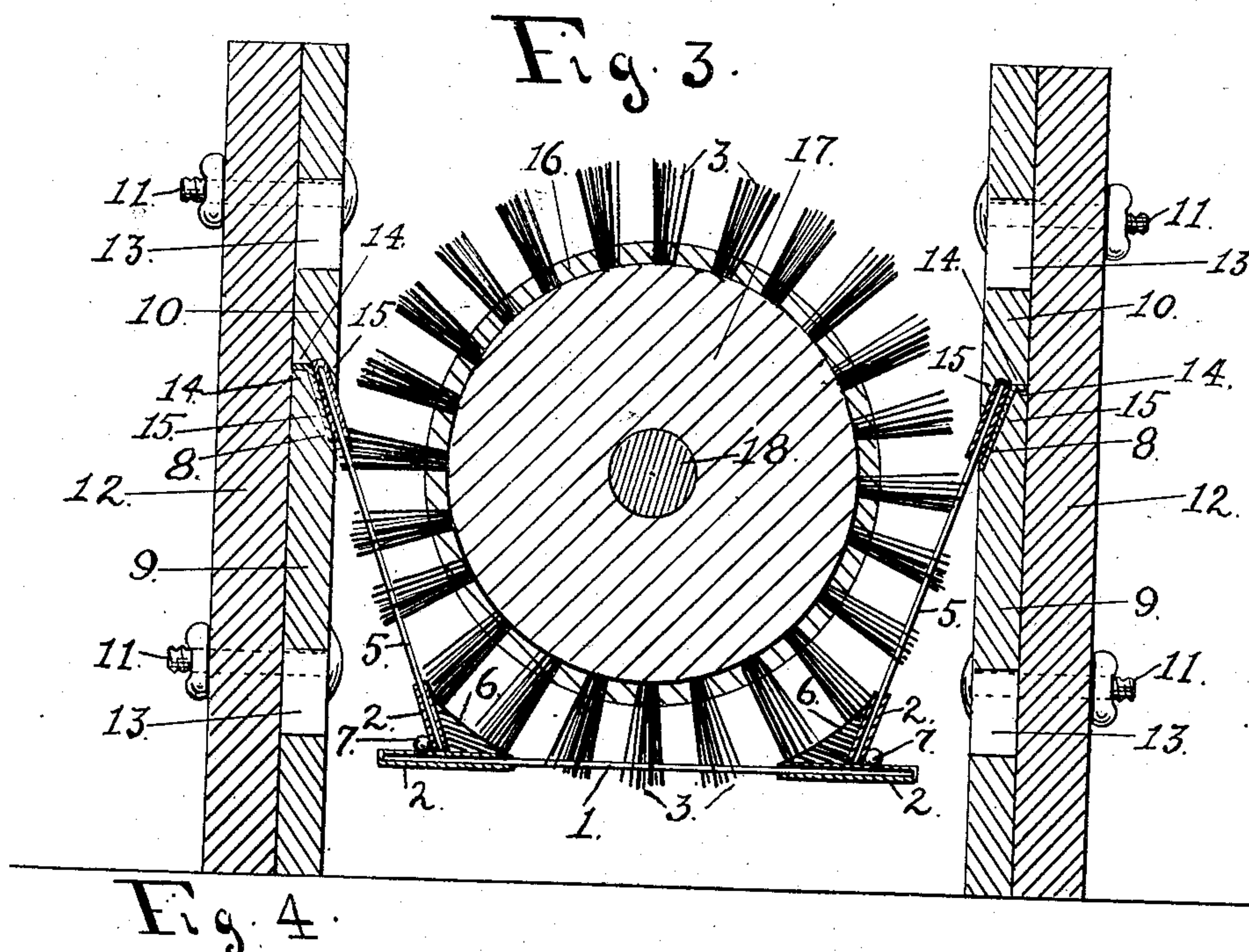
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2 SHEETS—SHEET 2.



Witnesses.  
F. H. Norris  
J. Compton

Inventor.  
Robert W. Jessup  
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# UNITED STATES PATENT OFFICE.

ROBERT W. JESSUP, OF OAKLAND, CALIFORNIA, ASSIGNOR OF ONE-HALF TO FAIRFAX H. WHEELAN, OF OAKLAND, CALIFORNIA.

## SEPARATOR.

No. 891,424.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed August 8, 1906. Serial No. 329,658.

*To all whom it may concern:*

Be it known that I, ROBERT W. JESSUP, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Separators, of which the following is a specification.

My invention relates to that class of separators in which, by the use of screens, advantage is taken of the difference in size and shape of the component particles of the material to be separated.

It is particularly adapted for, and is applied to what may be termed "grain separation," by which is meant the separation from wheat, of oats, chess, sweet clover, and mustard; from barley, of oats, small kernels of barley, mustard, chess or seeds; and from oats, of the small oats, mustard, etc.; though it is also adapted for the separation of all the smaller seeds.

The object of the invention is to provide a separator wherein the mechanism which moves the material to be separated, and the screen which accomplishes the separation are so constructed and disposed, the one towards the other, that the action of the mechanism in moving the material, will, at the same time, agitate it, so that its different particles may be thoroughly presented to the screen, and will also, at the same time, clear the spaces between the screen, so that the full separating function may be always at its highest.

To this end my invention consists in the novel combination of separating-screen and conveyer-brush, which I shall now fully describe, by reference to the accompanying drawings, in which

Figure 1 is a top view, broken, of the separating or screen-trough, the brush-conveyer being omitted, in order to better show the disposition of the screen wires, Fig. 2 is a vertical longitudinal section, broken, of the screen-trough, showing the brush-conveyer in elevation, Fig. 3 is a vertical cross section of the separator, Fig. 4 is a broken sectional end view of a modification showing the application of a supplemental cleaning brush, operating from below the screen, Fig. 5 is a detail perspective, showing one form of the construction of the conveyer-brush.

The separating surface or screen consists of a series of parallel spaced straight rods, bars, or wires, 1, which, for the present pur-

pose, are best made of steel of small diameter and of circular section. These wires are disposed transversely to the general direction of the travel through the machine of the material, and are secured at each end in any suitable manner, as, for example, by being soldered or otherwise fastened between plates 2.

The separating agent is what may be termed a brush-conveyer, consisting of a helically directed brush 3, rotatable on an axis which is parallel to the general direction of advancing travel of the material, and at right angles to the wires composing the separating or screen-surface. The brush 3 is so placed relatively to the separating surface that in rotating it operates against said surface in such a manner that its bristles enter between the wires, and project through the spaces between them, and withdraw therefrom; a result easily attained on account of the transverse disposition of the wires, and the helical direction of the brush. In other words, the screen wires being transversely disposed, with their intervening spaces unobstructed, throughout their length, and the brush being directed helically and rotating on an axis at right angles to the transversely directed screen wires, the bristles of the brush easily effect an entrance to and through said spaces and remain therein throughout quite an appreciable time and distance (describing an arc within and below or beyond said spaces, said arc having a chord approximately equivalent to the screen's width), the entrance thereto and travel therein of the bristles being effected without undue breaking and frictional strains, as would necessarily be the case, if an ordinary perforated screen or a screen with a crossed mesh were used in connection with a brush the bristles of which were forced into said perforations or mesh. The wear and tear on the brush are thus reduced to a minimum, and its life appreciably prolonged. But in addition to this advantage, the actual separating effect is greatly increased by my construction and relative disposition of screen and brush, by the fact that the brush pushes the material over, along and through the unobstructed screen spaces for such a time and through such a distance as will insure the falling through the screen of all particles small enough to pass through the spaces, this result being further insured by the agitating effect of the brush which by the penetration of its



bristles below or beyond the screen wires and their distance of travel between them, lifts the material from the screen at the point where the bristles, on their uprising side, leave the screen, thus presenting all the particles to the screen, thereby enabling the smaller ones to fall through: and in addition to this, and at the same time, the bristles will keep the screen spaces clear. Briefly stated, therefore, the effect of the construction, as far as described, is this; material fed to the separating surface, say, through the hopper 4 at or near one end, will, by the rotation of the brush in the proper direction, be advanced and pushed over said surface, and agitated by being lifted as the bristles leave the separating surface, whereby the particles of smaller size will be duly presented to and will fall through the spaces of the surface, and, at the same time, the bristles entering and withdrawing from the spaces between the wires, will keep them clear. The function therefore, of the brush, is a triple one, namely, advancing or pushing the material over the surface, agitating it during its movement, and keeping the screen clean. This last named result is very important in separators used in cleaning grain and small seeds, as they clog easily.

In carrying out the separating action just described, various forms and details of construction may be followed. A practical form of machine is herein illustrated, in which the wires 1 form the bottom of a trough, the sides of which are inclined and are formed by other similar, parallel, spaced wires 5, which afford separating surfaces on each side, against and through which the helical brush-conveyer 3 works in the same manner as it does in connection with the wires 1.

In operation a good portion of the material clings to the brush, and is carried up by it, against the side wires, and some of it is carried over against the opposite side wires. Separation, therefore, takes place at the sides in a similar manner, though to a less extent, than it does at the bottom.

A good construction is to fill in the interval between the side and bottom screens, with curved directing surfaces 6, and to brace the base of the screen trough with wires 7, soldered to plates 2. The whole trough is adjustably supported and braced by the side angle irons 8 fitting between the vertically adjustable cleats 9 and 10, secured by bolts 11, passing through the sides 12 of a frame, and fitting in slots 13 in said cleats. As will be seen, by referring to Fig. 3, the adjacent edges of the cleats 9 and 10 have straight holding surfaces 14 to support the angle irons 8, and inclined surfaces 15 which serve to brace the screens against both the push-

ing and the pulling action of the brush. The upper cleats 10 can be raised when the screens are to be changed, thus allowing their withdrawal. By adjusting the cleats vertically, the screen trough may follow the wear of the brush.

The brush 3 may be of any suitable character, made with bristles of wire, fiber, or other material, or a pile of suitable kind. A good construction is shown in Fig. 5, in which a leather backing 16 has fitted to it bundles of fiber bristles, the leather backing being helically wound upon and secured to a wooden filling 17 of a shaft 18 which is suitably mounted in the frame, and is adapted to be rotated by proper means, as, for example, by the crank 19.

In Fig. 4, is shown a supplemental cleaning brush 20, made like the brush 3, but mounted below, so that it works up through the bottom screen from underneath. This brush has its coils lying in a course between the coils of the upper brush so that there is no interference between the two. This supplemental brush may be used, if desired.

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

1. The combination, in a separator, of a screen composed of parallel, spaced straight wires fixed at both ends; and an overlying, rotatable, helically-directed brush with its axis transverse to the screen-wires and so mounted relatively to the screen that its bristles, during the revolution of said brush, shall pass through the screen-spaces, and their ends so passing through shall describe, beyond the outer surface of the screen, an arc having a chord approximately equivalent to the width of the screen.

2. The combination, in a separator, of a plurality of screens relatively disposed to form a trough, each screen being composed of parallel, spaced wires fixed at both ends; and a rotatable, helically-directed brush mounted in said trough with its axis transverse to the screen-wires, said brush being so disposed relatively to the screens that its bristles with each revolution of the brush shall pass through the screen-spaces of each screen, and their ends so passing through shall describe, beyond the outer surface of each screen, an arc having a chord approximately equivalent to the width of said screen.

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

ROBERT W. JESSUP.

Witnesses:

J. COMPTON,  
L. E. WILKINS.