

No. 651,919.

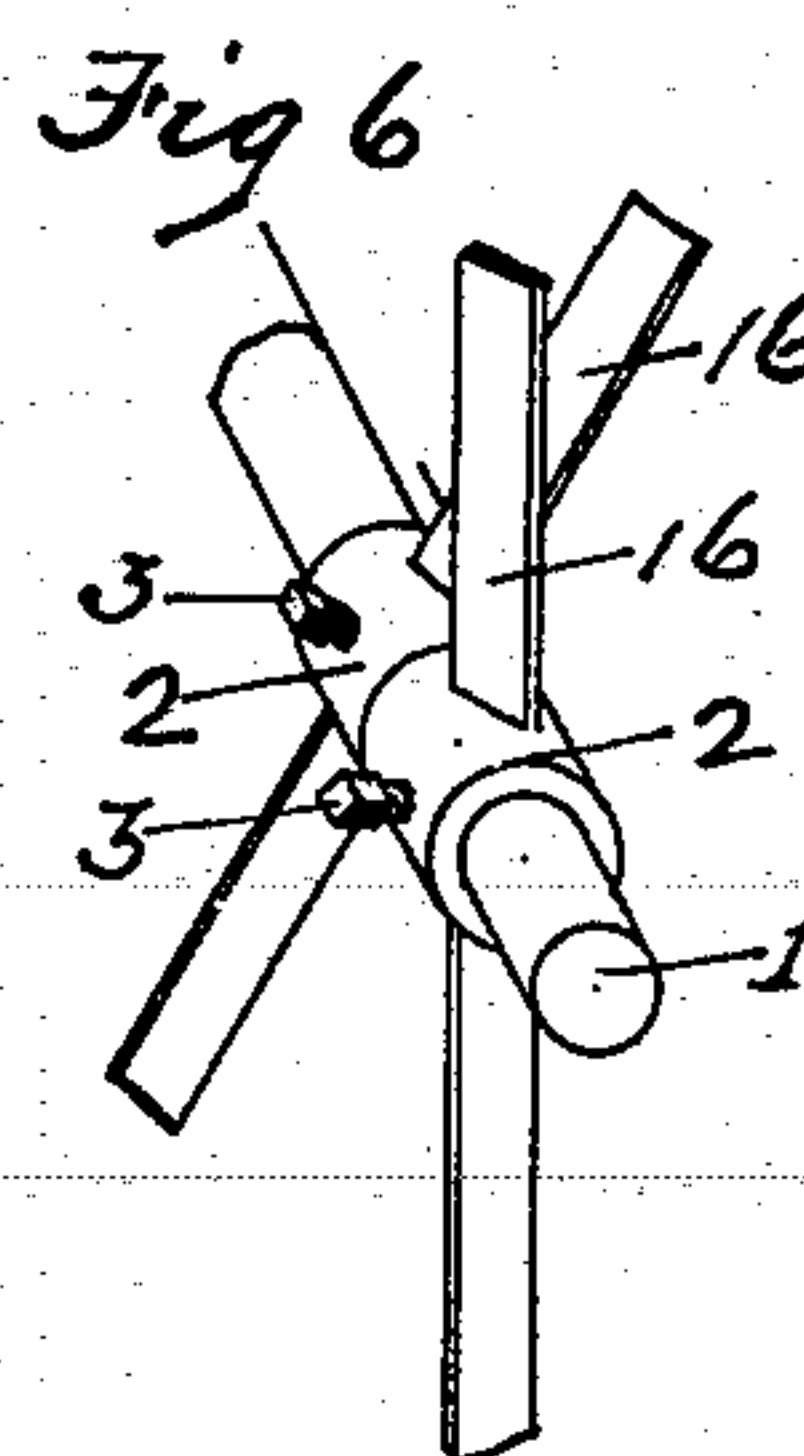
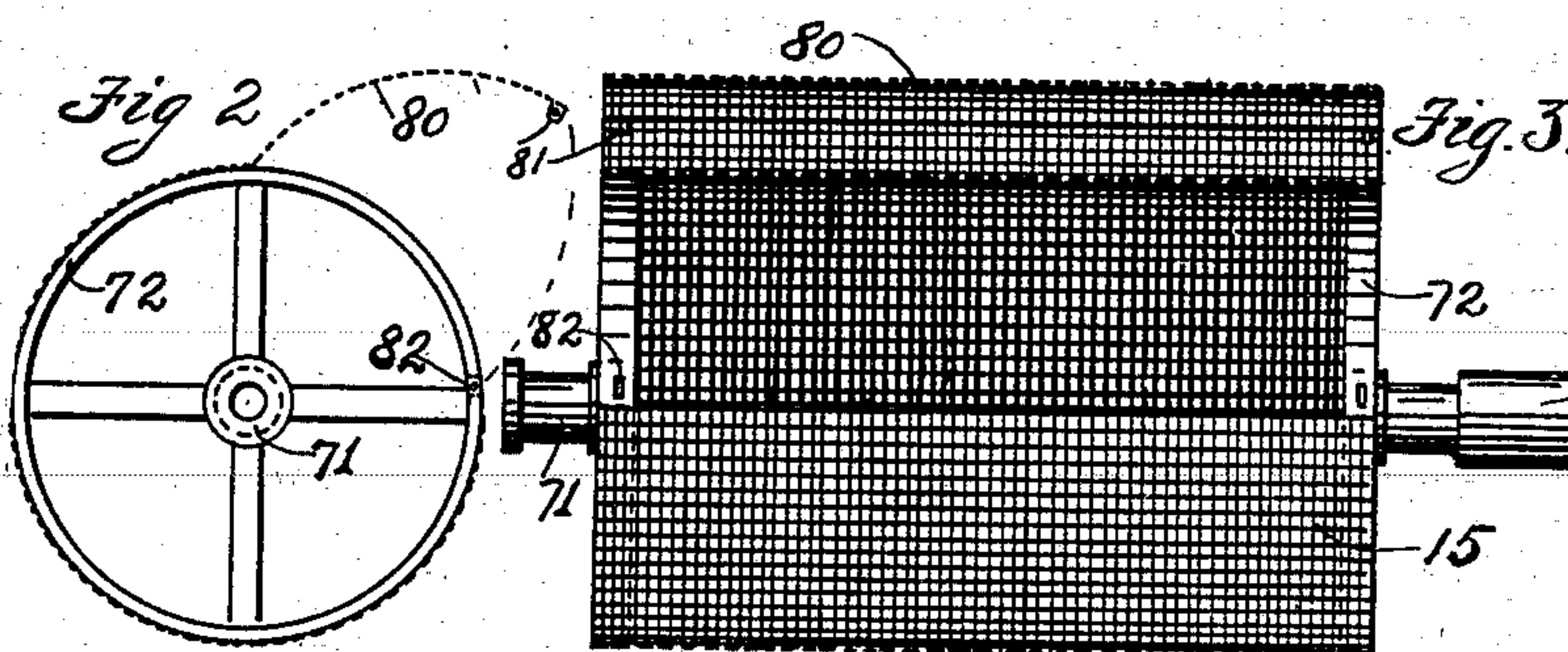
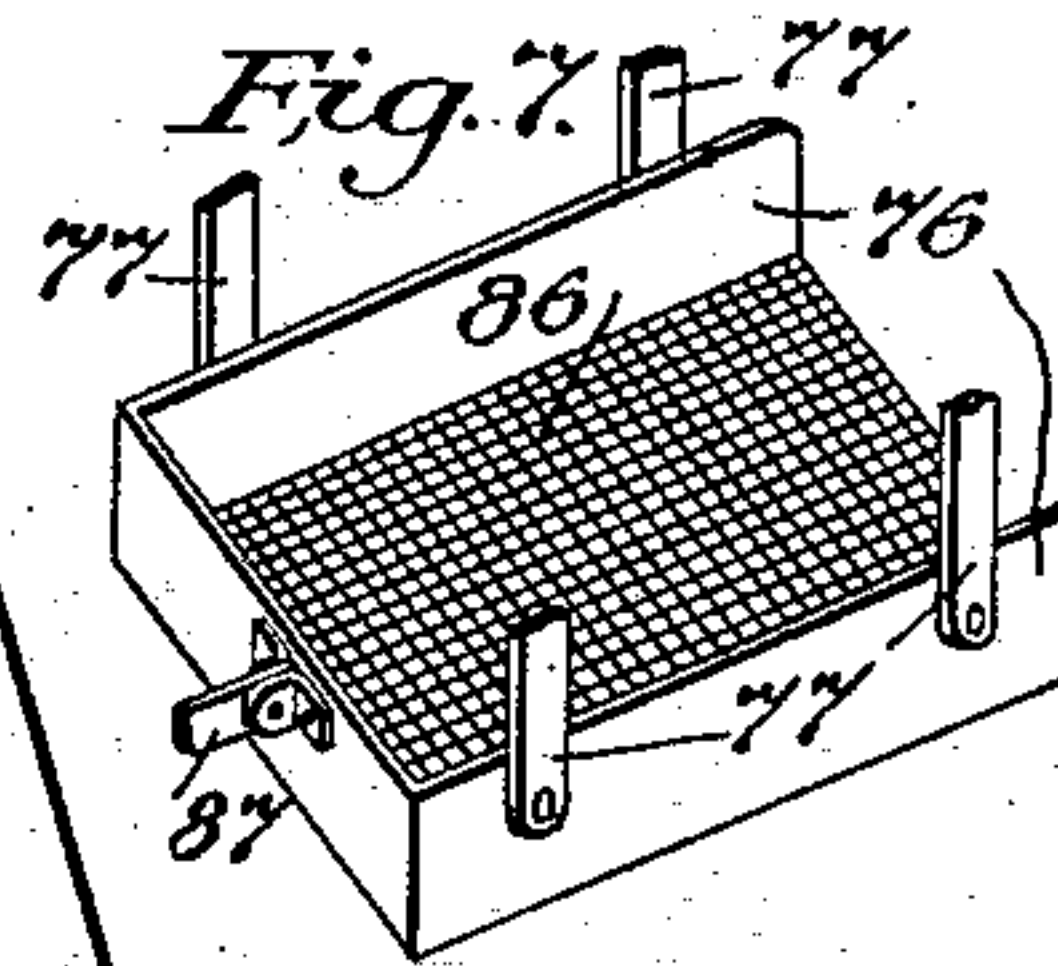
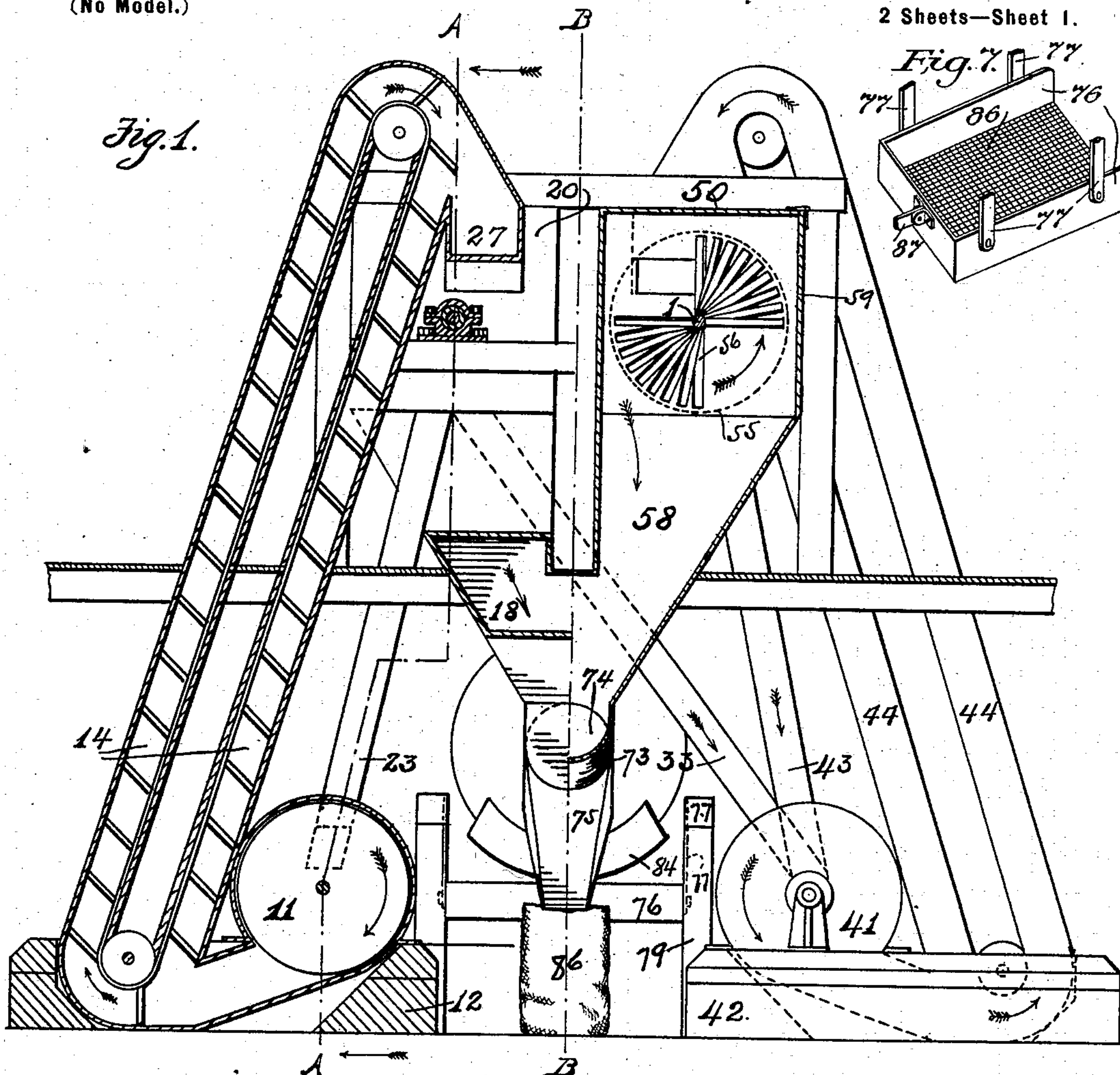
Patented June 19, 1900.

D. COCKRELL.  
SEPARATOR SYSTEM.

(Application filed Nov. 11, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

Joseph B. Heiskell  
J. H. Heiskell

Inventor.

Davis Cockrell  
by  
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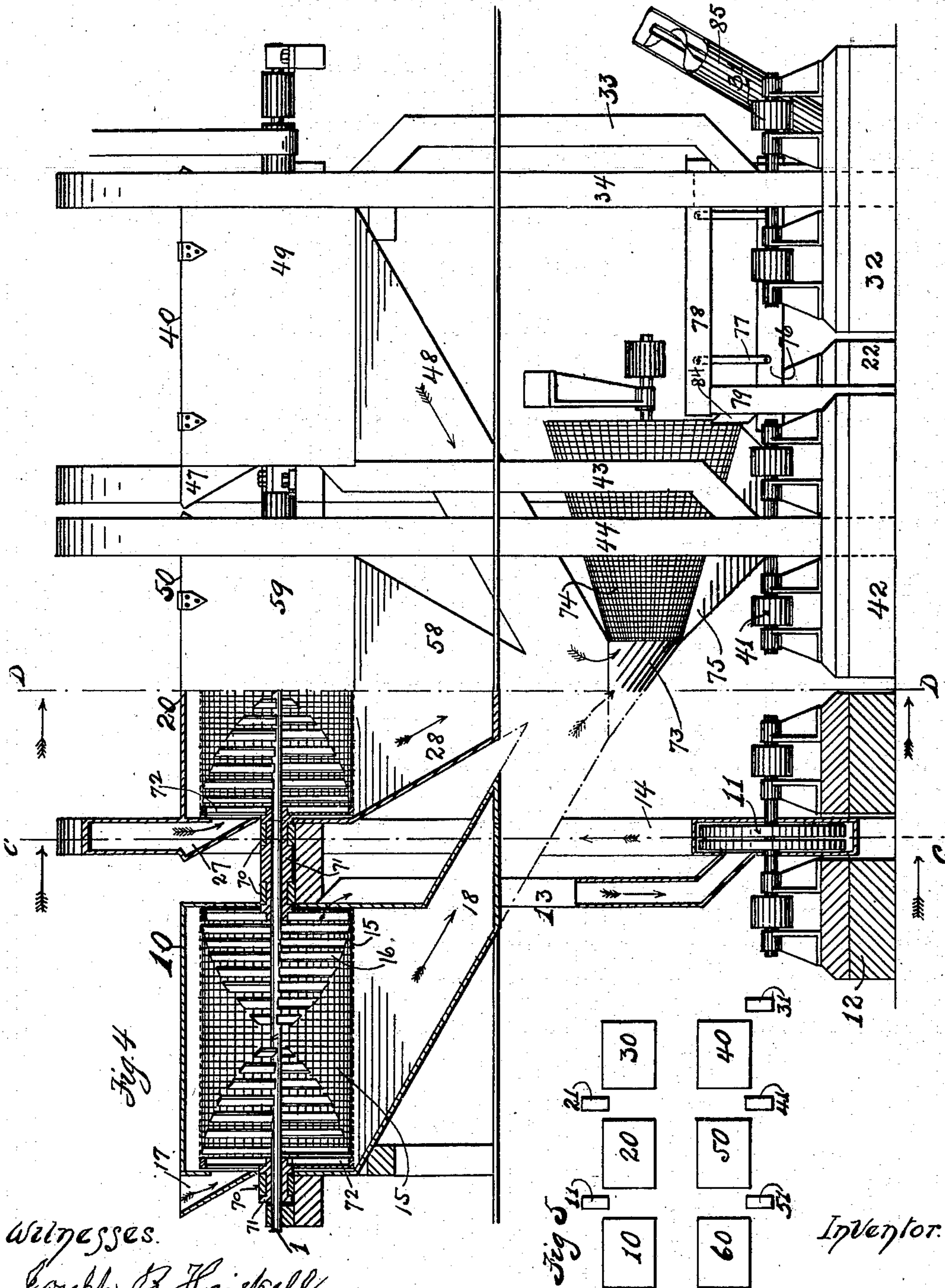
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2 Sheets—Sheet 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

DAVIS COCKRELL, OF MEMPHIS, TENNESSEE.

## SEPARATOR SYSTEM.

SPECIFICATION forming part of Letters Patent No. 651,919, dated June 19, 1900.

Application filed November 11, 1899. Serial No. 736,643. (No model.)

*To all whom it may concern:*

Be it known that I, DAVIS COCKRELL, a citizen of the United States, residing at Memphis, Shelby county, State of Tennessee, have invented certain new and useful Improvements in Separator Systems, of which the following is a specification.

My invention relates to an improvement in means for separating cotton lint from the hulls to which it is attached.

In the manufacture of cotton-seed oil the cotton-seed are cut up and the kernels separated from the hulls; which as they come from the huller are covered with cotton lint and mixed to a small extent with cotton-seed meal. This lint when separated from the hull or bran is valuable as paper-stock, and the bran left is but little reduced in value as a food-stock. The lint is, however, tenaciously attached to the hull and offers considerable resistance to all efforts to separate them. It is therefore necessary to subject the hulls to repeated treatment before the lint and bran are entirely separated.

It is one object of my invention to provide means of treating the hulls whereby they are subjected to such vigorous and repeated operations as may be necessary to effect a complete separation.

It is the further object to accomplish this without the intervention of labor of any kind from the beginning of the operation to the end and to accomplish this without damage to the building in which the plant is located or to surrounding buildings.

I accomplish the first two objects by the combination of a series of separators, chutes, grinding-mills, elevators, and shakers so arranged that the hulls passed into the first separator are mechanically carried through the entire operation, and the third object by placing all high-speed and reciprocating machinery on a solid foundation on the ground floor. I also accomplish the first of these objects by the novel combination of parts and construction of the beaters used.

In the drawings, Figure 1 is a sectional elevation on the lines C C and D D of Fig. 4 looking in the direction of the arrows. Figs. 2 and 3 show enlarged end and side eleva-

tions of a beater-screen. Fig. 4 is a partial section and partial side elevation on the line A A of Fig. 1. Fig. 5 is a diagrammatical plan showing arrangement of beaters and mills. Fig. 6 is a detail. Fig. 7 is a perspective view of the shaking-table.

Referring now to the drawings, in which like numerals refer to like parts in all the views, 10, 20, 30, 40, 50, and 60 are a series of beaters or separators, which run at a comparatively-slow speed and are placed on an upper floor.

11, 21, 31, 41, and 51 are corresponding grinding-mills, which run at a high rate of speed and are on the ground-floor.

Two gravity-chutes 13 and 18 are connected with each beater, as 10. The chute 13 connects the opening through which all material not beaten through the mesh of the screen is discharged with the corresponding grinding-mill 11, which mill in turn discharges into an elevator 14, which conveys the ground material to the hopper 27 of the next beater 20. The chute 18 carries off all lint and bran beaten through the screen 15 of the beaters and discharges it, in common with that from the other beaters, through a chute 73 into a revolving screen 74, which separates the bran and the lint, the bran dropping through and the lint passing out the end to be baled. Where the screen does not entirely separate the lint and bran, I provide a "shaking-table" 76, through which the bran is shaken, the lint passing onto the end to be baled, or if the end of the table 76 be so low that the shaker comes too near the ground an elevator 85 may be used to raise it for baling.

While I have shown a revolving screen and a shaking-table and prefer to use them in that way, I do not wish or intend to confine myself to the use of the two at one time, for in some grades of material either one will do the work. I such cases I prefer to use the shaking-table alone.

Referring now to details of construction, while of course any beater may be used in the system I prefer to use one, as shown, in which 10 is a box-casing having a door (not shown, but corresponding to 49 and 59) to provide entrance to same, a perforated metal



or wire-netting screen 15 revolving therein, and a shaft 1, with a series of arms 16 fastened thereto, revolving in an opposite direction. In Fig. 6 a section of this shaft 1 is shown with collars 2 fastened to the shaft by means of set-screws 3. In these collars blades set at an angle with the axis of the shaft are fastened, and by means of these collars the pitch of the beater-blades, taken as a series, may be regulated.

The screen, as shown in Figs. 2 and 3, is composed of two pulleys 72, to which a cylinder of perforated sheet metal or wire-netting 15 is securely fastened, except that one section 80 is hinged, as shown, and may be thrown open to permit examination of the interior. 81 82 show a means of locking the section 80 in place. The hub 71 is hollow, as shown, and the shaft 1 is extended through same and journaled outside. The beater further has a feed-hopper at one end, a discharge-hopper at the opposite end thereof, and an opening in the bottom of the casing 10, with a chute 18 leading therefrom, through which the material beaten through the screen falls.

The shaking-table consists of a frame 76, Fig. 7, which has a screen 86 as a bottom. The shaking-table is suspended by two sets of short bars 77, loosely pivoted from cross-bars 78, which rest on posts 79. These posts and, in fact, the entire shaking-table are made separate from the other mechanism and are placed on a solid foundation on the ground-floor.

84 is a short chute discharging into the shaker.

87 is a reciprocating rod to operate the shaking-table. Such means of operation being in common use, it is not thought necessary to further illustrate it.

12 22, &c., are foundations for the mills 11 21, &c.

In operation hulls are fed into the hopper 17 and through it into the first beater 10. There the blades 16, revolving rapidly, beat the lint off from the hulls and also beat out any loose bran. This bran and a portion of the lint fall through the screen 15 into the chute 18, going thence to the shaking-table, where the lint and bran are separated. The hulls, with lint attached, pass on through the beater and the discharge-opening into the chute 13, thence to the grinding-mill 11, and after a thorough grinding are elevated by the elevator 14 to the feed-hopper 27 of the mill 20, where the process is repeated, and in like manner to each of the other mills and beaters until the final one of the series is reached. From this beater a discharge-chute leads to a shaking-table 76, which effects the final separation of the lint and bran.

I have shown and described in the specification and drawings a six-beater system. It is of course evident that I do not confine myself to that number of beaters or mills, and I also wish it understood that, while I show in

Fig. 5 a diagrammatic plan of six beaters arranged in two rows of three each, said rows being parallel to each other, it is neither my wish nor intention to limit myself to this double row, since in some localities or situations it would be impossible to secure space for two rows so placed. I therefore desire that this specification be read to include a single row. I have not separately illustrated a single row for the reason that three of the beaters of Fig. 5 sufficiently illustrate this single row. I am aware that many attempts have been made to solve this problem, that much time and ingenuity have been expended, and that systems somewhat similar to mine have been tried and are now in use. These systems have many serious defects, on which their inventors and many others have spent much time, which in my system I have overcome. I am aware also that beaters and grinding-mills are old.

Therefore what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a separator system, as a separator, the combination of a box-casing, open at its lower side, having a feed-hopper at one end, a discharge-opening at the other, and an entrance-door to permit access to a perforated screen therein, of the said perforated screen revolving therein said screen being open at both ends, one open end being so situated as to receive the discharge from the feed-hopper and the other end discharging into the discharge-opening of the box-casing, the said screen also having one portion hinged to permit access to the interior of same and means of fastening said hinged portion when the screen is in use, a central shaft having a series of beater-arms adjustably fastened thereto to permit variation of the pitch of the spiral formed by the arms, said shaft and arms revolving therein in opposite direction to the screen and means of revolving the screen and the shaft therein in opposite directions, substantially as set forth.

2. As a separator system, the combination with a series of beaters each comprising a box-casing open at the bottom having a charging-hopper at one end, a discharge-opening at the other end, and a side door permitting access to a perforated screen therein, in combination with the said perforated screen adapted to be revolved therein, open at both ends and having one section hinged to permit access to the interior thereof, and means of locking the section when the screen is to be put in use, and a central shaft revolving in the said screen in an opposite direction thereto, and having blades adjustably fastened thereto, of a series of grinding-mills on a lower level, a series of gravity-chutes connecting the discharge ends of the beaters with the corresponding mills, a series of elevators connecting these mills with the corresponding beater-hoppers, and a series of gravity-chutes leading from the open



bottom of the beaters to a revolving screen,  
a shaking-table onto which the said screen  
discharges and a gravity-chute leading from  
the last beater to the shaking-table with  
5 means of operating the beaters, the eleva-  
tors, the revolving screen and the shaking-  
table, substantially as and for the purposes  
set forth.

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

DAVIS COCKRELL.

Witnesses:

DANIEL SHEA,  
THOMAS J. BROGAN.