

(No Model.)

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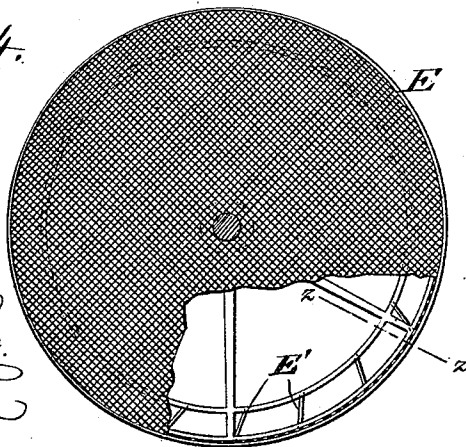
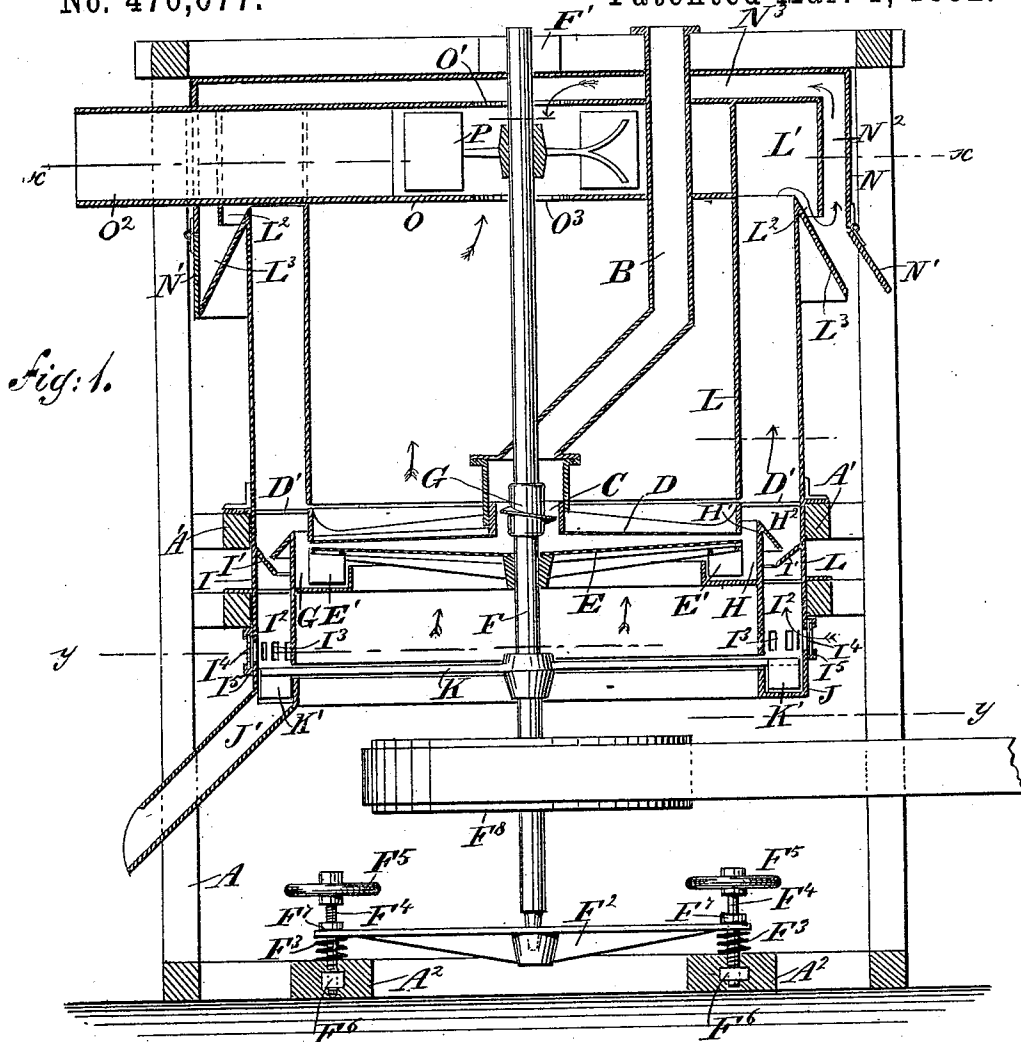
G. E. RUSSELL, Dec'd.

C. S. RUSSELL, Administrator.

GRAIN SCOURING, POLISHING, AND SEPARATING MACHINE.

No. 470,077.

Patented Mar. 1, 1892.



WITNESSES:

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INVENTOR:

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(No Model.)

2 Sheets—Sheet 2.

G. E. RUSSELL, Dec'd.

C. S. RUSSELL, Administrator.

GRAIN SCOURING, POLISHING, AND SEPARATING MACHINE.

No. 470,077.

Patented Mar. 1, 1892.

Fig: 2.

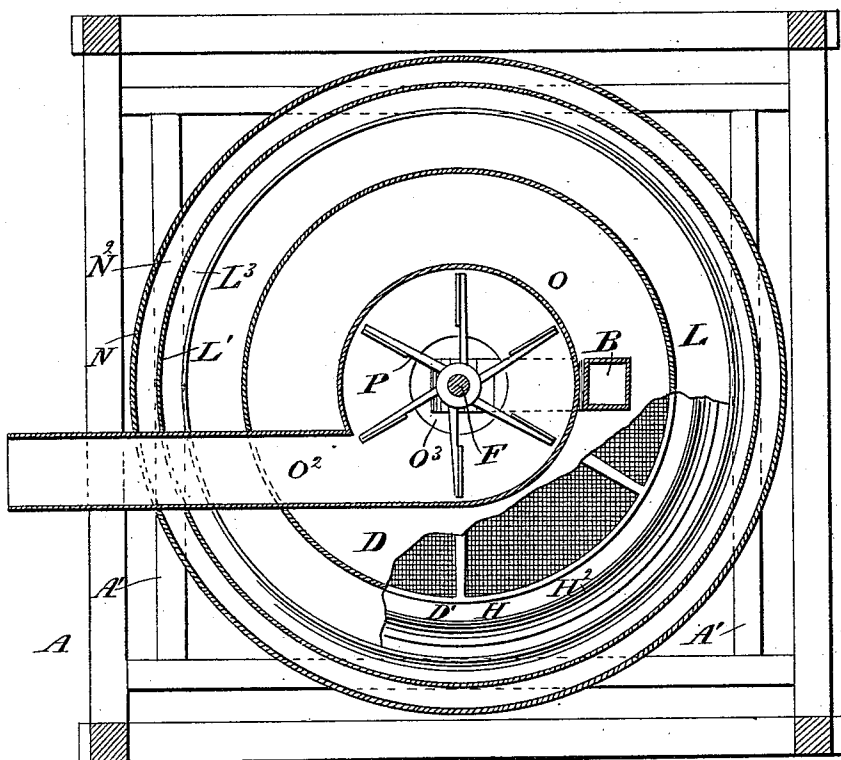
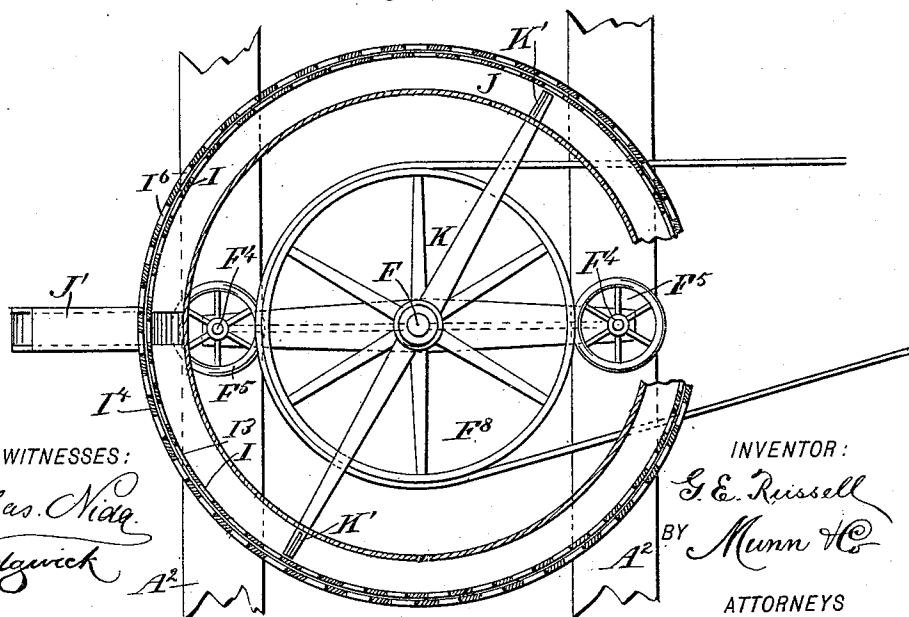


Fig: 3.



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UNITED STATES PATENT OFFICE.

GEORGE E. RUSSELL, OF MEMPHIS, TENNESSEE; CHARLES S. RUSSELL
ADMINISTRATOR OF SAID GEORGE E. RUSSELL, DECEASED.

GRAIN SCOURING, POLISHING, AND SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,077, dated March 1, 1892.

Application filed April 7, 1891. Serial No. 387,961. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. RUSSELL, of Memphis, in the county of Shelby and State of Tennessee, have invented a new and Improved Grain Scouring, Polishing, and Separating Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for conveniently, rapidly, and thoroughly scouring and polishing grain, at the same time separating the grain from screenings and other impurities.

The invention consists in a fixed screen and a revoluble screen, between which the grain is fed centrally and passed out peripherally, and a suction-fan for forcing a current of air through the screens.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view of the same on the line *xx* of Fig. 1. Fig. 3 is a like view of the same on the line *yy* of Fig. 1. Fig. 4 is a plan view, with parts in section, of the revolving screen; and Fig. 5 is an enlarged sectional side elevation of part of the same on the line *zz* of Fig. 4.

The improved grain scouring, polishing, and separating machine is mounted on a suitably-constructed frame A, which supports an inlet-chute B, through which the grain is passed to a central feed-opening C, formed in the middle of a screen D, made circular in shape and supported on its periphery by bars D' from suitable beams A', held on the main frame A. Below the screen D is arranged a second screen E, also circular in shape and fastened with its hub on a shaft F, arranged vertically and mounted at its upper end in a bearing F', secured in the main frame A, the lower end of the said shaft being set in a step F², supported at its end on springs F³, each held on a screw-rod F⁴, provided on its upper end with a hand-wheel F⁵ and screwing at its lower end in a nut F⁶, secured in the beam A² of the

main frame A. A collar F⁷ is held on the screw-rod and abuts on the top of the step F², so that when the hand-wheels F⁵ are turned the step F² is raised or lowered, the springs F³ holding the step against the collars F⁷, at the same time permitting the step to give, according to the amount of grain fed between the screens D and E. The shaft F is provided with a pulley F⁸, engaged with suitable machinery for imparting a rotary motion to the said shaft.

In the feed-opening C of the fixed screen D is arranged a feed-screw G, fastened to the shaft F and revolving with the same, the said feed-screw being so arranged as to press the grain coming down the chute B into and between the two screens D and E.

The grain is discharged from between the screens D and E at their peripheries and passes into an annular receptacle H, closed at the bottom and open at the top. Into this receptacle extend wings E', arranged at angles and fastened to the under side of the rim of the screen E, so that the latter on revolving forces the grain upward on the outer wall H' of the said receptacle to finally pass over the upper edge of the said walls upon an annularly-inclined flange H², secured on the outside of the wall H'. The flange H² extends into an annular casing I, supported on the main frame A and supporting at its inside the annular receptacle H, previously mentioned. The grain passed down to the inclined flange H² is discharged upon an inclined flange I', arranged on the inside of the receptacle I. The two flanges H² and I' are arranged in opposite directions, as is plainly illustrated in Fig. 1. The grain after leaving the lower end of the flange I' falls through the lower part of the receptacle I into a discharge-channel J, supported from or forming part of the receptacle I. In this channel J operate wings K', secured on a spider K, secured on the shaft F. The channel J is formed with an outlet-chute J', through which the grain is discharged after being scoured, polished, and cleaned, as is hereinafter more fully described.

In the outer wall of the receptacle I, above the channel J, are arranged openings I³, adapted to be opened or closed or partly opened by a ring I⁴, mounted to turn in suitable guide-

ways I⁵, secured on the outside of the receptacle I. This ring I¹ is formed with openings I⁶, similar to the openings I³ and adapted to register with the same. By turning the ring I¹ the openings I³ may be entirely closed or opened by registering with the openings I⁶, or the openings may be brought partly over each other, as described,

From the upper end of the receptacle I extends upward a casing L, made in ring shape and supported in the main frame A, as is plainly shown. The upper end of the casing L is formed with a cap L', the outer wall of which extends beyond the outer wall of the casing L, so as to form an opening L² with the upper end of the said casing, as is plainly illustrated in Fig. 1. On the upper end and on the outer wall of the casing L is arranged a downwardly and outwardly extending annular flange L³.

On the hood N are arranged doors N', the lower ends of which are adapted to rest against the lower end of the annular flange L³, so that when the said doors are opened, as shown to the right in Fig. 1, screenings and other impurities may be discharged to the outside of the machine. The hood N forms a vertical channel N² with the outer wall of the cap L', and also in the top of the latter a channel N³ is formed, which leads to the central opening O' of the casing O of a suitable suction-fan provided with the usual fan-wheel P, secured on the shaft F. The fan-casing O is provided with an outlet O², and also in its bottom with an opening O³, central to the wheel P and opening into the interior of the ring-shaped casing L.

The operation is as follows: When the several parts are in the position illustrated in the drawings and the shaft F is rotated, then the fan-wheel P creates a suction, the air passing through the screens E and D, the interior of the casing L, to the opening O³, to the inside of the casing O, to be discharged through the outlet-channel O² of the suction-fan. At the same time the fan-wheel P creates a suction of air in the channels N³ N², the casing L, and the receptacle I, the air entering the latter through the openings I³, as indicated by the arrows. Now the grain fed down the chute B is forced by the feed-screw G between the two screens E and D, so that the revolving of the screen E causes a rubbing of the grain and outward movement of the same, so that the grain is scoured and polished and finally discharged at the peripheries of the screens, the opening at the periphery being less in size than the distance between the screens at or near the center, it being understood that the screen E is slightly conical, as shown in Fig. 1. The grain after leaving the screens E and D passes into the receptacle H, and is there forced by the wings E' over the flange H² into the receptacle I, through which an upward current of air passes, as previously described. The screenings, light particles, and other impurities con-

tained in the grain are thus carried upward by the current of air to finally pass through the casing L into the cap L', to fall downward on the flange L³ against the doors N', and when sufficient screenings and other impurities have accumulated against the said doors the latter open to discharge the same. The current of air after leaving the impurities on the doors N' passes upward through the channels N², N³, and opening O' into the fan-casing, to pass out through the outlet-channel O². The scoured, polished, and cleaned grain falls into the channel J and is removed therefrom through the chute J' by the wings K'. Thus it will be seen that the grain is subjected to two distinct currents of air, the first passing through the grain at the time the latter is acted on between the screens D and E, in which the impurities, screenings, &c., are rubbed or polished over the kernels. The second current of air passes up the receptacle I and casing L to separate the impurities; screenings, &c., from the grain. It will further be seen that as the step F² is yieldingly mounted the discharge of the grain between the screens E and D is automatically regulated.

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

1. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out of the peripheries, of a suction-fan for passing a current of air through the said screens, substantially as shown and described.

2. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out peripherally, of a suction-fan for passing a current of air through the said screens, and a feed-screw held to revolve in the feed-opening of the fixed screen and adapted to force the grain between the two screens, substantially as shown and described.

3. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out peripherally, of a casing into which the grain is discharged and a suction-fan for passing a current of air through the screens and casing, substantially as and for the purpose set forth.

4. In a machine of the class described, the combination, with a shaft carrying a revolving screen, of a fixed screen arranged above the said revolving screen and provided with a feed-opening, a chute leading to the said feed-opening, a feed-screw held on the said shaft and turning in the said feed-opening, a casing, and a suction-fan actuated from the said shaft and serving to pass a current of air through the said screens and casing, substantially as shown and described.

5. In a machine of the class described, the

combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out peripherally, of a receptacle into which the grain passes after being discharged from the peripheries of the said screens, a second concentric receptacle, and means, substantially as described, for forcing the grain out of the first receptacle into the second receptacle, substantially as set forth.

6. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out peripherally, of a receptacle into which the grain passes after being discharged from the peripheries of the said screens, a second concentric receptacle arranged on the outside of the first-named receptacle and into which the grain is forced from the first-named receptacle, and a suction-fan for passing a current of air through the said second receptacle to separate the impurities from the grain, substantially as shown and described.

7. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out peripherally, of a receptacle into which the grain passes after being discharged from the peripheries of the said screens, a second concentric receptacle arranged on the outside of the first-named receptacle and into which the grain is forced from the first-named receptacle, a suction-fan for passing a current of air through the said second receptacle to separate the impurities from the grain, and means, substantially as described, for regulating the current of air passing through the said second receptacle, as set forth.

8. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and passed out peripherally, of a receptacle into which the grain passes after being discharged from the peripheries of the said screens, a second receptacle arranged on the outside of the first-named receptacle and into which the grain is forced from the first-named receptacle, a suction-fan for passing a current of air through the said second receptacle

to separate the impurities from the grain, a discharge-channel connected with the lower end of the said second receptacle below the air-inlet opening, and wings mounted to turn in the said channel to move the grain to a discharge-chute in the said channel, substantially as shown and described.

9. In a machine of the class described, the combination, with a fixed screen and a revolving screen between which the grain is fed centrally and discharged peripherally, of a receptacle into which the grain passes after being discharged from the screens, a second receptacle concentric with the first-named receptacle, the division-wall of the receptacles projecting above the fixed screen, and wings secured to the revolving screen for forcing the grain out of the first receptacle into the second receptacle, substantially as described.

10. In a machine of the class described, the combination, with a fixed screen and a revolving screen, of a receptacle into which the grain is discharged from the screens, a second receptacle concentric with the first receptacle and provided with the flanges $H^2 I'$, projecting in opposite directions, and wings secured to the revolving screen, substantially as and for the purpose set forth.

11. In a machine of the class described, the combination, with a shaft, a screen secured to the shaft, and a fixed screen above the screen on the shaft, of a step in which the lower end of the shaft is held, springs under the ends of the step, and screw-rods for adjustably holding the ends of the step on the springs, substantially as described.

12. In a machine of the class described, the combination, with a shaft provided with a screen and a fixed screen above the screen on the shaft, of a step in which the lower end of the shaft is supported, screw-rods provided with collars and hand-wheels passed through the ends of the step, nuts into which the rods screw, and springs surrounding rods below the step, substantially as herein shown and described.

GEORGE E. RUSSELL.

Witnesses:

J. M. TREZEVANT,
E. T. JOHNSON.