N. S. STERN.

SCREEN FOR RICE CLEANING MACHINES.

APPLICATION FILED DEC. 24, 1914.

1,156,640.

Patented Oct. 12, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

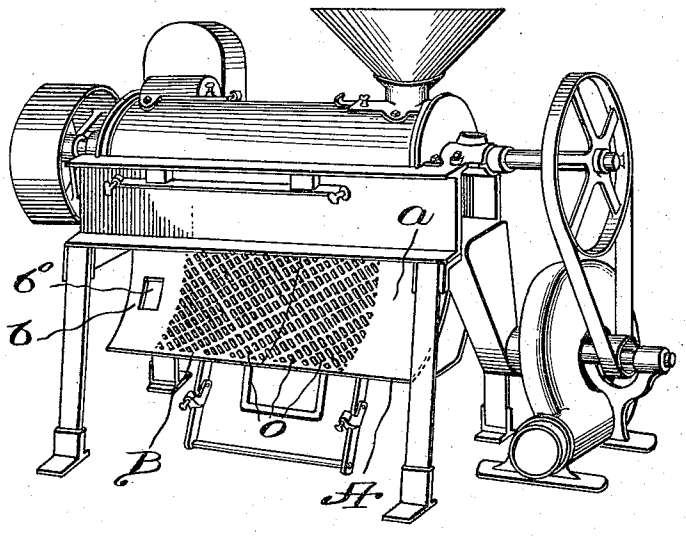


Fig. 2.

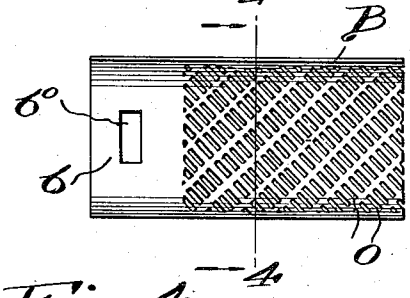


Fig. 3.

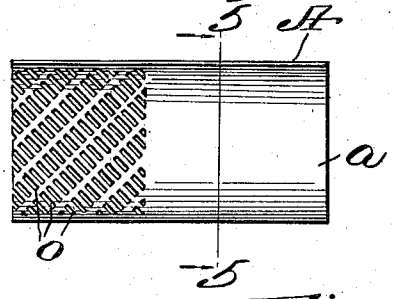


Fig. 4.



Fig. 5.



Fig. 6.

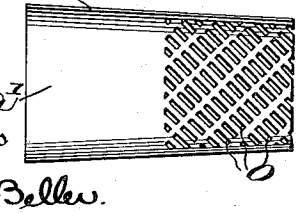
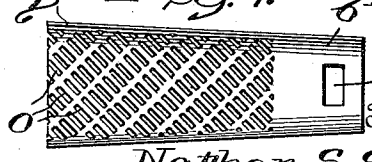


Fig. 7.



Witnesses

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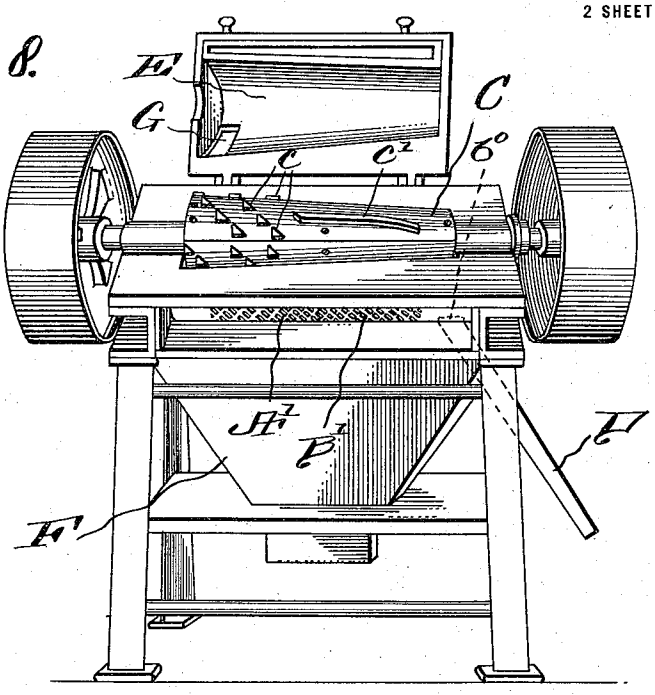
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2 SHEETS—SHEET 2.

Fig. 8.



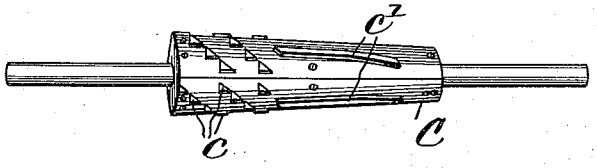


Fig. 9.

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UNITED STATES PATENT OFFICE.

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SCREEN FOR RICE-CLEANING MACHINES.

1,156,640. Specification of Letters Patent. Patented Oct. 12, 1915.

Application filed December 24, 1914. Serial No. 878,889.

To all whom it may concern:

Be it known that I, NATHAN S. STERN, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Screens for Rice-Cleaning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in rice cleaning machines, including machines for hulling and polishing the rice, and it is especially intended to provide an improved screen adapted for use in such machines, which is intended to be substituted for the screens now in use without otherwise altering the machine itself. For instance, my invention is intended to provide a screen adapted for use in the structure shown in the patent to A. B. Couch, No. 750610, granted January 26, 1904, and entitled Grain huller, or in the machine shown in the patent to Lipe, No. 525813, granted September 11, 1894, and entitled Hulling and cleaning machine.

My invention will be understood by reference to the accompanying drawings, in which the same parts are indicated by the same reference letters throughout the several views:—

Figure 1 shows a complete machine of the type shown in the Lipe Patent No. 525813, aforesaid, with the improved screen attached, but showing the screen swung downward and out of use; Figs. 2 and 3 are detail views showing the two parts of the screen shown in Fig. 1; Fig. 4 shows a section along the line 4—4 of Fig. 2, and looking in the direction of the arrows; Fig. 5 shows a section along the line 5—5 of Fig. 3, and looking in the direction of the arrows; Figs. 6 and 7 are detail views showing in plan the two halves of a screen adapted for use in the structure shown in the Couch Patent No. 750610, aforesaid; Fig. 8 shows a rice hulling machine filled with a screen constructed according to my invention; and Fig. 9 is a detail showing the hulling cone with the shaft of Fig. 8.

Referring to Figs. 1—3, the screen may be made of a single sheet of metal bent to the arc of a circle, preferably forming an arc of about 90°; but it is preferably made in two sections for convenience of assembly and repair; the two sections being indicated at A and B. The section A to which the grain is fed is imperforate, as at *a*, through a major portion of its length, and through the remaining portion is provided with a series of perforations *o*, which are preferably cut in the form of rectangles diagonally disposed relative to the longitudinal axis of the screen, which perforations are of suitable length and breadth for ordinary rice, being about half an inch long and one-sixteenth of an inch wide. The other part B of the screen is provided with similar perforations *o* extending through a major portion of its length and provided with an imperforate delivery end *b*, provided with a delivery opening *b*° for the grain after treatment.

In the form of screen shown in Figs. 6 and 7, the screen is bent through a similar arc of a circle, and is tapered to form part of the surface of a truncated cone, and while it may be made in a single sheet of metal, it is preferably made in two parts A′ and B′; the part A′ being at the receiving end of the screen and the part B′ being at the delivery end of the screen. The part A′ is imperforate through a major portion of its length, as at *a*′, and is provided with perforations *o* similar to those already described; while the part B′ is imperforate through a minor portion of its length toward the delivery end as indicated at *b*′, and being also provided with a delivery opening *b*° for the grain after treatment.

The machine shown in Fig. 8 is generally similar to that illustrated and described in the patent to A. B. Couch, entitled Rice hulling machine, No. 988931, granted April 4, 1911. In this machine a screen similar to that shown in Figs. 6 and 7 is provided, mounted beneath the hulling cone C which is provided with the usual projections *c* for grinding the bran off the rice, and with the usual spiral ribs *c*′ as shown in the patent to A. B. Couch, aforesaid; which are cut off at a position corresponding to the end of the perforated portion of the screen B′ so that the rice grains and hulls may fall through the opening *b*° and the chute D, and be disposed of in the usual way. The rough rice is fed through an opening G in the top E, which top is shown in the raised position to show the inclosed parts. The fine bran and fine broken up parts of the rice falling through the screen are caught in

the hopper F. By having this outlet in the bottom of one end as described, the rice will slide freely, will fall into the opening *b*° and be carried off by the chute D; whereas in the machine now generally used, the rice is fed out of the top of the machine, after being lifted and more or less broken.

The screens hitherto used in machines of the character described have perforations continuous throughout their length, and when the unpolished rice enters the machine it immediately meets with considerable friction between the cylinder and the screen, thereby causing the rice to start to break immediately upon entering the machine, and, moreover, the grains not having time to adjust themselves are forced into the small holes in the screen thereby breaking up the grains of the rice and seriously injuring its marketable value. As the rice has to travel a certain distance and meets with considerable friction, the screen, of course, breaks it up considerably before it leaves the machine; whereas it is only necessary that the rice shall meet with a sufficient amount of friction when passing through the machine to rub off the hull or bran, as the case may be. Again, at the outlet end, with the continuous screens now used, the rice meets with a similar resistance as it does upon entering the machine, and cannot be discharged quickly enough to prevent the breaking up of the grains between the cylinder and the screen.

According to my invention, I form the front or receiving end of the screen of imperforate material, which furnishes a free sliding surface for the rice and enables the grains to adjust themselves to the machine without being broken up in the early stages of the operation. Then when the whole grains reach the screen the bran is rubbed off and falls through the openings in the screen, and the whole grains are pushed home and finally reach the imperforate portion of the delivery end of the machine, where the whole grains are discharged in the usual way. By having the openings set at an angle, there is less likelihood of the grains, which are being pushed longitudinally of the screen, being caught in the meshes of the screen and broken. Not only do the whole grains of rice command a much better price in market than the broken grains, but also when the grains are broken particles of the body of the grain, other than the bran, are rubbed off causing loss in the quantity of the grain actually delivered at the delivery end of the machine, such loss being carried off in the form of dust with the bran which drops through the perforations *o*. Instead of having the holes diagonally-disposed they may be arranged transversely, if desired, but I prefer to have the same diagonally-disposed or set at an angle with the longitudinal axis of the machine as shown in the drawings.

The herein described arrangement of screens is suitable for use in any of the rice cleaning machines now in use.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. A screen for use in machines of the character described curved transversely of its length, and having its central portion slotted transversely and its receiving end portion imperforate and adapted to turn the grain lengthwise thereon, substantially as described.

2. A screen for use in machines of the character described curved transversely of its length, and having its central portion slotted transversely and its two end portions imperforate, the imperforate portion being of a greater length at the receiving than at the delivery end of the screen, substantially as and for the purposes described.

In testimony whereof, I affix my signature, in presence of two witnesses.

NATHAN S. STERN.

Witnesses:
CONSTANT L. LE BLANC,
G. I. FAIL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."