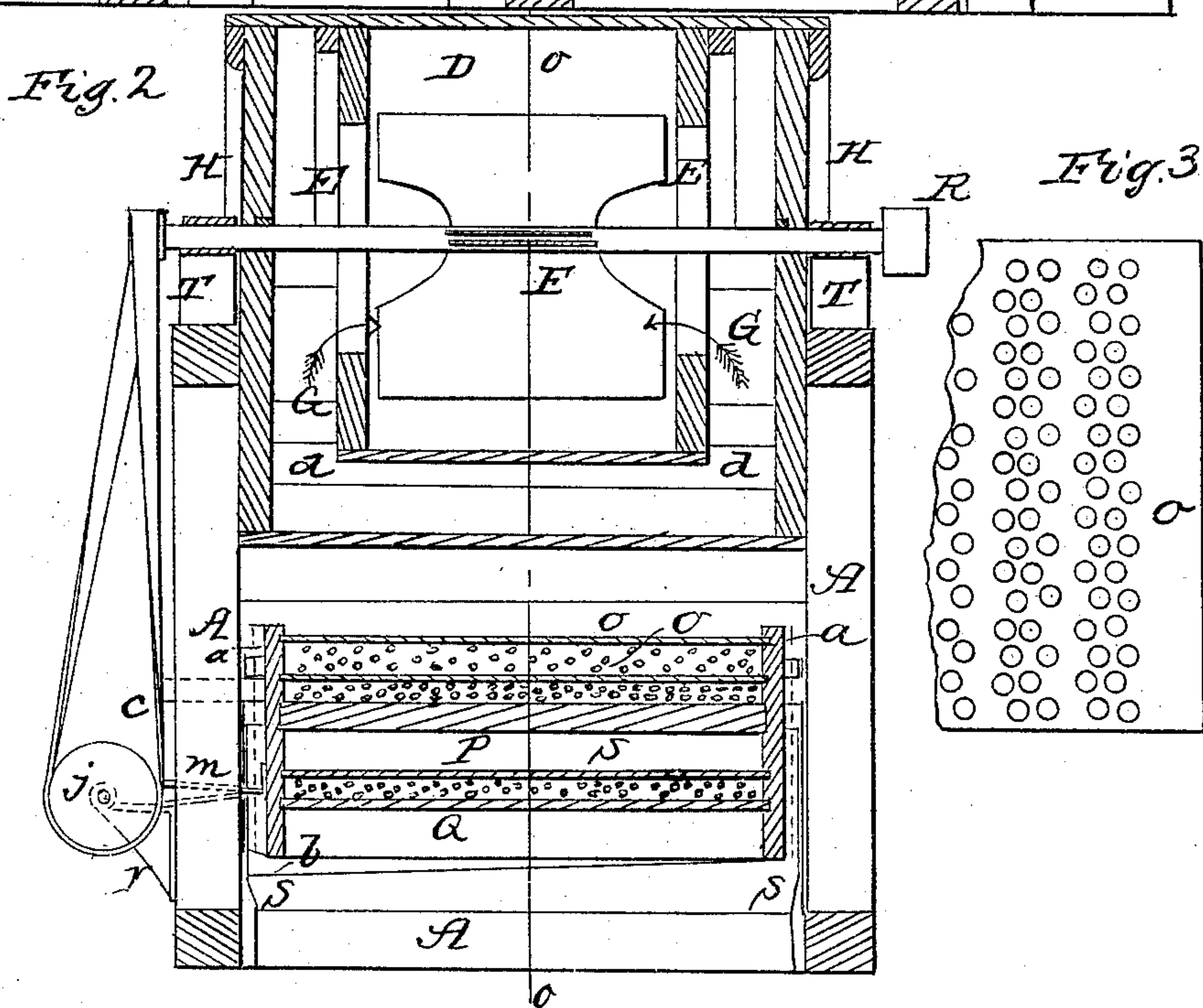
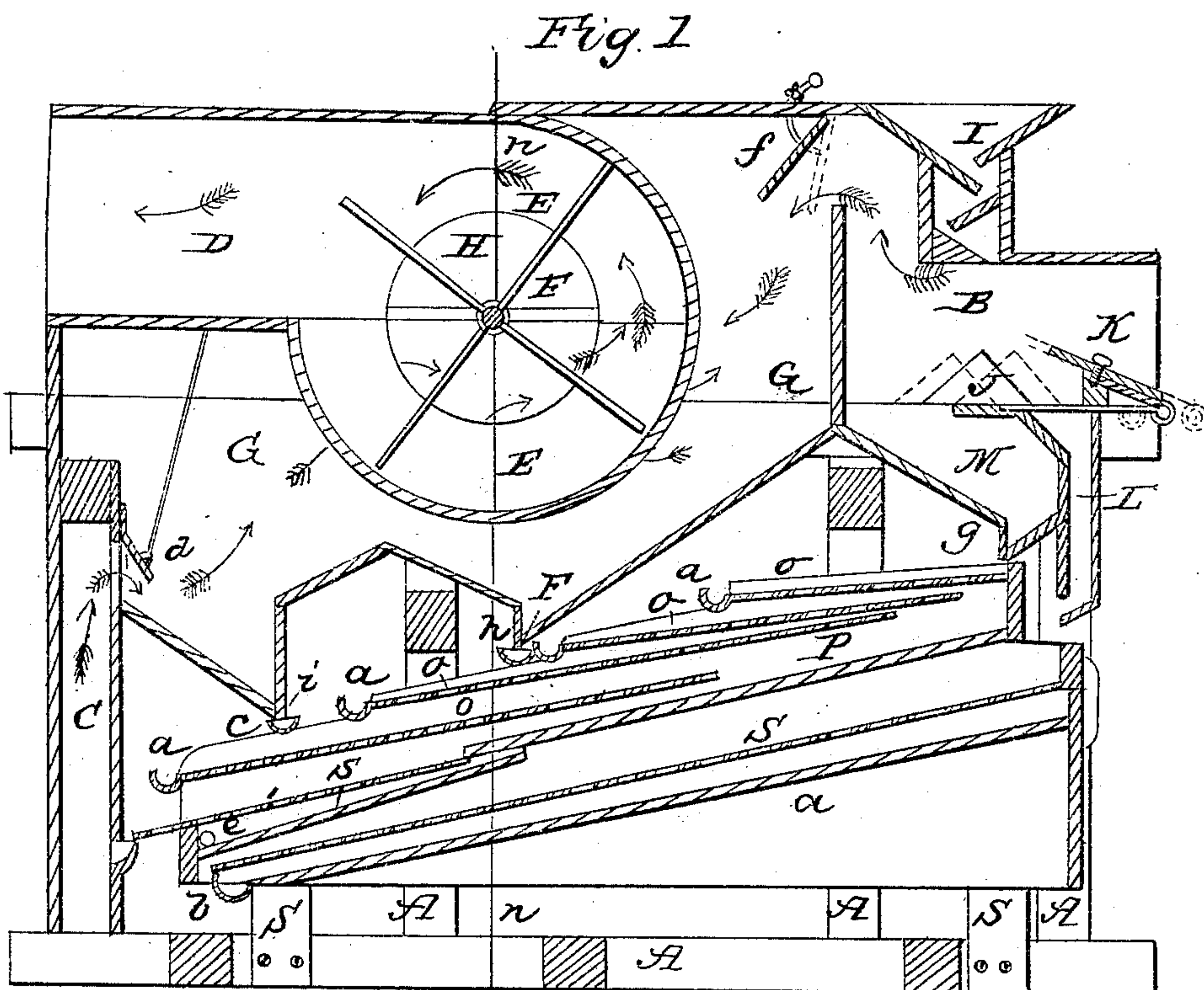


C. B. HUTCHINGS.

Grain Separator.

No. 45,120.

Patented Nov. 15, 1864.



WITNESSES
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CHARLES B. HUTCHINGS, OF ROCHESTER, NEW YORK, ASSIGNOR TO MARIA HUTCHINGS, OF SAME PLACE.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 45,120, dated November 15, 1864.

To all whom it may concern:

Be it known that I, CHARLES B. HUTCHINGS, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Grain-Separators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of the machine. Fig. 2 is a transverse vertical section taken through the plane indicated by the red line *n*, Fig. 1. Fig. 3 is a face or top view of a portion of one of the oat-sieves *O*.

Similar letters of reference indicate corresponding parts in the several figures, and the arrows indicate the direction of the currents.

The main features of this invention consist in the employment of a divider for the inflowing grain, which is so constructed and operated that the changes in its adjustment do not affect the atmospheric current entering the machine through the tube or flue in which it is located; also, in the use of a horizontal primary suction-flue, through which the grain is dropped vertically, in combination with a double-headed suction-fan.

To enable others to make and use my invention, I will describe its construction and operation.

The several letters *A* in the drawings represent the frame of the machine; *B*, the primary suction-flue, through which the grain is fed to the screens; *C*, the secondary suction-tube or flue; *D*, the discharge or blast flue; *E*, the inner heads of the fan *F*; *G*, the vacuum-chamber, and *H* that portion of the casing which forms the outer or auxiliary heads of the fan.

The shoe containing the oat-sieves *O* and screens *S* and *S'* is supported upon four wooden or other suitable springs, *s*, so arranged as to permit a side shake, which is produced by a connecting strap or rod, *m*, Fig. 2, near each end of the shoe, they being operated by a crank on each end of the shaft *j*, which is driven by a belt from the fan-shaft. The shaft *j* is hung in two brackets, *k*, bolted to the posts of the machine. The fan-shaft turns in the hangers *T*.

The grain is supplied to the hopper *I*, from

which it passes over several zigzag chute-boards, as seen in Fig. 1, which act as distributors to spread the grain evenly across the width of the machine, preparatory to passing through the horizontal suction-current in flue *B*. All the heavy well-filled wheat passes directly through the current and down the flue *L* onto the long cockle-screen *S*, while the lighter portions—such as shrunk wheat, oats, and chaff—is moved forward and deposited through the chamber *M* and the automatic valve *g* upon the oat-screens *O*. These screens are punched, as shown in Fig. 3, with three or four rows of perforations alternating with a narrow blank space across the sieve from side to side of the shoe and in the direction of the shake, which is at right angles with the descent of the sieves. This particular way of punching the sieves in relation to their arrangement and operation in the shoe has been found entirely efficient for separating oats and similar grain from wheat. As the wheat kernels are working through the perforations the tendency is to erect the oats on end, which would allow them to pass through with the wheat, but before this is effected, they reach a blank space, causing them to retain their horizontal position and thereby pass over the holes, (the wheat dropping through,) to the next space, and so on, until they are finally deposited in the trough *a*, whence they are discharged from either end at the side of the shoe. This operation is repeated by the three successive sieves *O* with what few kernels of oats may chance to get through with the wheat. The screenings from this grade of the wheat is separated by the screen *S*, and are discharged from the shoe at *e*, the wheat being delivered into the secondary suction tube or flue, *C*, where it is again acted upon by a suction-current, which removes all light substances not separated by the screens, and carries them over into the vacuum-chamber *G*, the wheat being discharged from the machine at the bottom of the flue.

The heavy well-filled wheat passes over the long cockle-screen *s*, and is discharged from the shoe at the lower end. The screenings are conveyed by the screen board *Q* into the spout *b*. Most of the dust, chaff, and other refuse stuff is separated from the grain by the cur-

rent through the primary suction-flue B, and what is not carried through the fan is discharged from the vacuum-chamber G through the automatic valve *h* into the spout *c'*.

The divider J may be changed so as to cut off more or less of the heavy wheat without affecting the current entering that flue by contracting or expanding it, the divider being moved forward or back instead of being swung as in the ordinary way, from the lower edge.

The inclined wind-board K is made adjustable and is designed to "fix the current" before striking the grain, and to prevent any grain from bounding from the side of the divider out of the machine. The valves *g*, *h*, and *i* are kept closed by the suction, and are opened sufficiently to discharge by the pressure of the grain, &c., deposited against them. The valves *d* and *f* are adjusted by rods passing up through the case, and they are designed to regulate the force of the two suction-currents.

When the fan F is arranged in a vacuum-chamber, G, through which it receives its supply, it is evident the air will enter through the most direct channel, which, in this machine is through the flue C. Consequently the valve *d* is of the greatest importance as a means of regulating the force of the current in flue B, as well as in C, and which can almost be effected without the use of the valve *f*; but the two currents could not be so regulated if

the valve *d* was removed, because of the fan acting so much more directly upon the flue to which it is attached.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the suction-flue B, the sliding divider J, whereby, without affecting the inflowing current, the grain coming in contact with the current of air is separated or graded so that the plump well-filled grain, by reason of its greater density, passes through the current while the shrunken or poorer portion with the refuse is deflected from its course by the current and turned into the receptacle M, preparatory to screening and cleaning.

2. The horizontal suction-flue B, in combination with the double-headed fan F, when the grain to be operated upon by the suction-current is fed through it vertically, or nearly so.

3. The valve *d*, in combination with two or more inducting-flues, B and C, and double-headed fan F, when said fan is inclosed in a vacuum-chamber, G.

4. The employment of the wind-board K, for the purpose of concentrating and directing the current preparatory to its acting upon the falling grain, as set forth.

C. B. HUTCHINGS.

Witnesses:

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