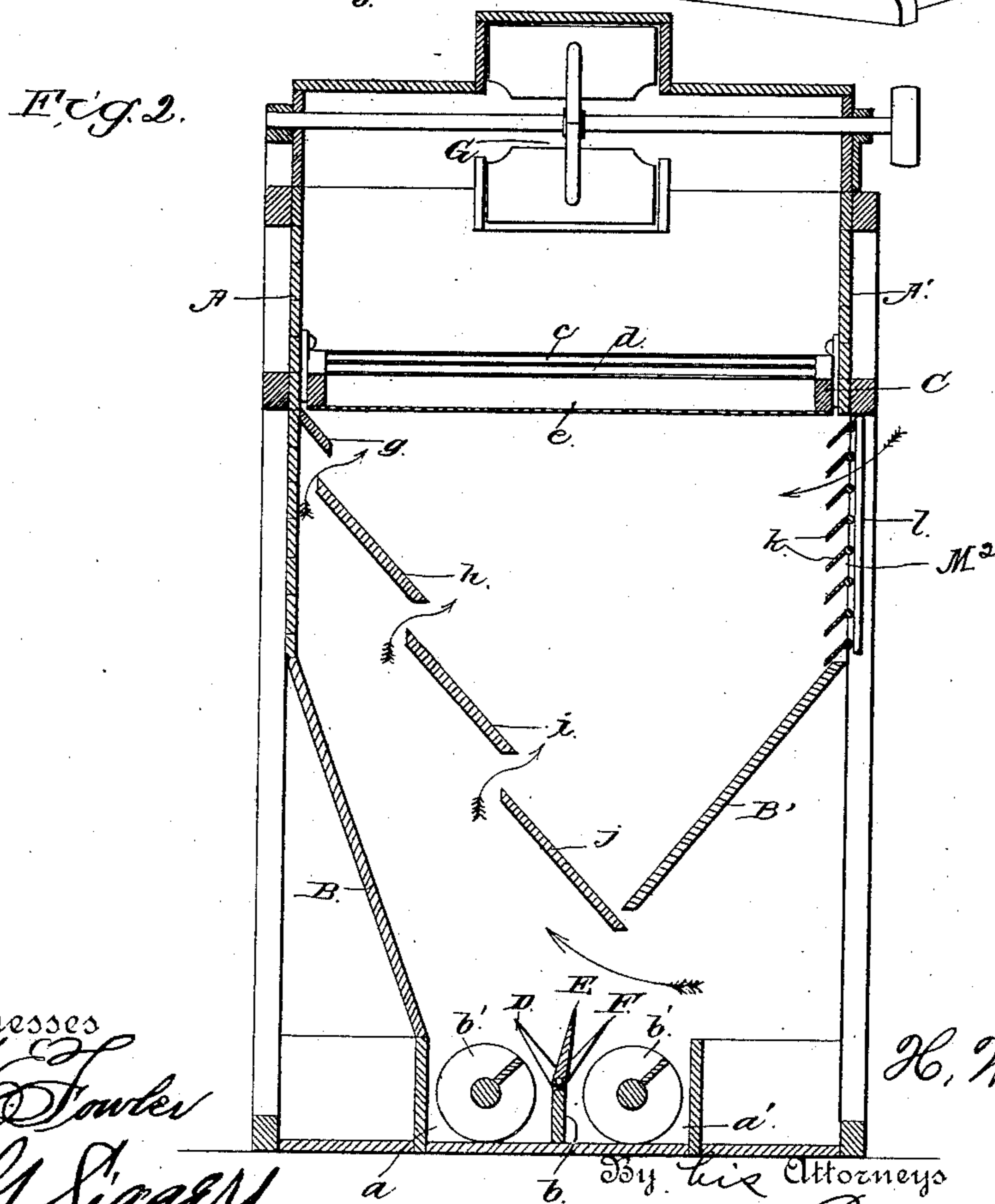
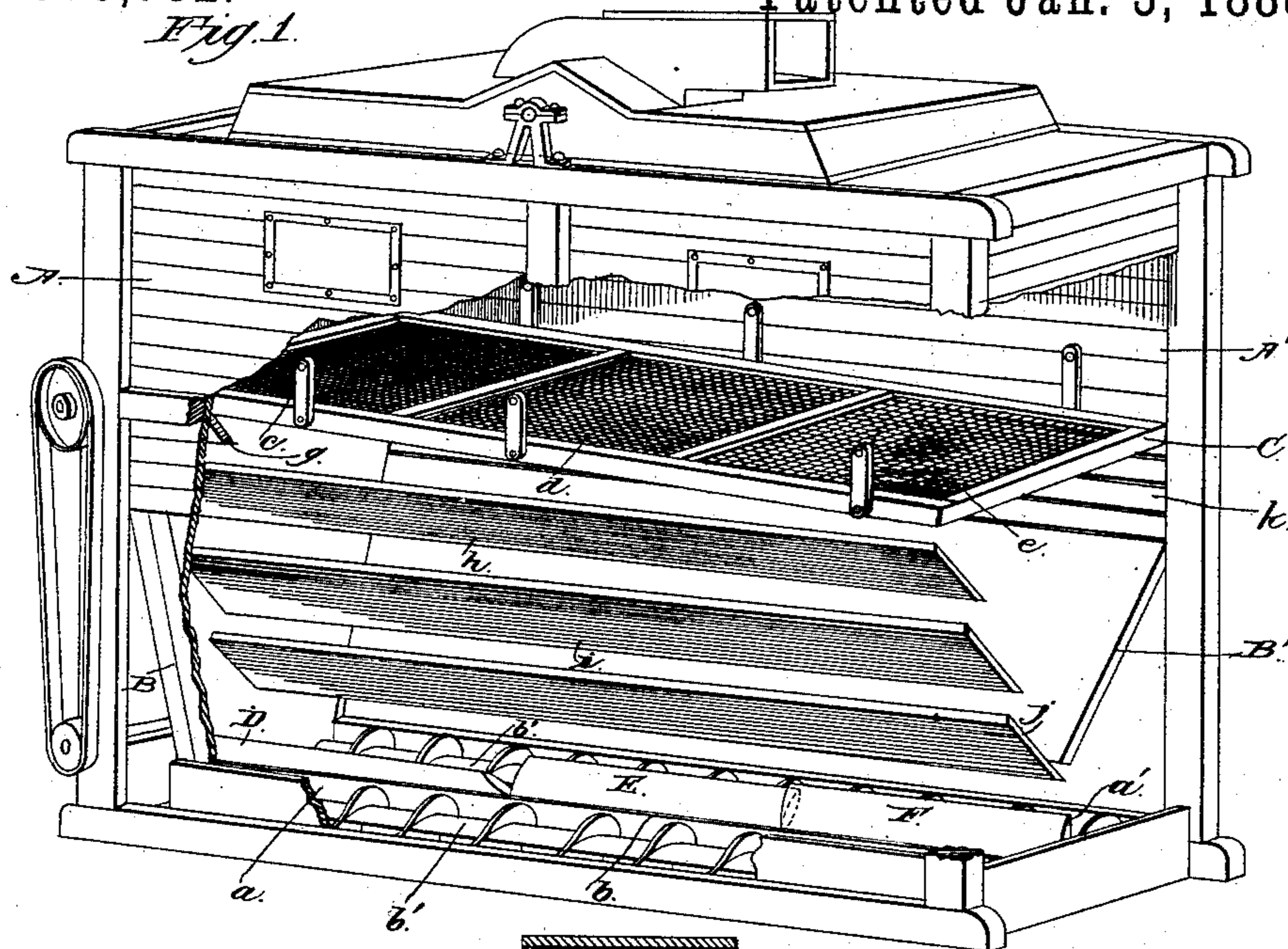


(No Model.)

H. W. STONE, Jr.
MIDDLINGS PURIFIER.

No. 375,782.

Patented Jan. 3, 1888.



Witnesses
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UNITED STATES PATENT OFFICE.

HEMAN WARD STONE, JR., OF MORRIS, MINNESOTA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 375,782, dated January 3, 1888

Application filed February 9, 1887. Serial No. 2-7,053. (No model.)

To all whom it may concern:

Be it known that I, HEMAN WARD STONE, Jr., a citizen of the United States, residing at Morris, in the county of Stevens and State of Minnesota, have invented a new and useful Improvement in Middlings-Purifiers, of which the following is a specification.

My invention has reference to middlings-purifiers; and it consists in the improved construction hereinafter described, and set forth in the claims, whereby a purifier is provided in which the material is more effectively purified than heretofore, the action of the air is made variable to regulate the purification, and the arrangement of devices in the lower part of the chest is such as to properly separate the material.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of a middlings-purifier, a portion of one end and the side of the chest being removed to more clearly show my invention; and Fig. 2 is a transverse vertical sectional elevation of my improved purifier.

In the description and operation of my said improved machine the distinct grades constituting the material acted upon in the chest will be referred to as follows: the middlings, the offal, or lighter part, and an intermediate grade which is valuable for some purposes and which it is an object to secure in a separated condition.

The sides A A' of the chest are of the usual construction, and have the lower tapering walls, B B', which lead down to the double conveyer-boxes *a a'*, separated by a central partition, *b*, and each of which has located therein a conveyer-screw, *b'*, suitably journaled and driven by any suitable means from some of the other driving portions of the purifier. The side B' inclines more abruptly than the side B, and does not extend to the conveyer-boxes, a horizontal opening being thus formed between said conveyer-box and the side B'.

The horizontal riddle C is located in the upper portion of the machine in an inclined position, and is vibrated by any suitable means. By reference to Fig. 1 it will be noted that the cloth or screening-surface of the riddle is divided into a series of sections, *c d e*, &c.,

which are formed of different-sized mesh, as will be readily understood. On the central partition of the conveyer-boxes is hinged or pivoted a series of deflector-plates, D E F, each of which registers vertically with one of the divisions of the riddle above.

g h i j refer to a series of transversely-inclined longitudinal plates, which are also located in inclined series, one below the other, so as to extend the length of the chest, beginning at one side adjacent to the sieve and terminating adjacent to the lower edge of the oppositely-inclined side B'. It will be noted that the arrangement of the plates is such that the grain can pass from one onto the other, while air-passages are formed between said plates. Said plates are imperforate, so that all the meal deposited on one plate is compelled to drop upon the plate below and cannot escape, as would be the case were the plates perforate. An opening, M², formed in the side A', is provided with a series of pivotal slats, *k*, which are operated in series by a vertical bar, *l*, connected therewith.

In operation the fan G causes the air to rise through the riddle and carry off the offal or lighter particles. This action is maintained throughout the descent of the material, which passes gradually from one plate to the next below. By the time the material is about to pass to the conveyer-boxes it consists, principally, of middlings and a quantity of the material resulting from the action of separation. Said middlings and material of separation pass in a thin stream to the conveyer-boxes, said stream being subjected to the current of air on its entrance to the chest, the said current effecting the separation of the intermediate grade from the middlings. The latter, being the heavier, drop by gravity into the conveyer-box below, whereas the current of air drives the intermediate grade into the other conveyer-box. If the current of air is such that it will not act forcibly on the intermediate grade, the decrease may be provided against by throwing the valve-plate F over to the position shown. It will readily be understood that the intermediate grade will not then need to be carried so forcibly by the current to deposit it in its box.

It will be understood that the admission of air into the casing through the opening M^2 is accelerated by the action of the suction-fan G, which in operation tends to draw the air in an ascending current to the top of the casing through the riddle. The rush of the air up the interior of the casing induces a partial vacuum within the casing, and thus, the pressure of the atmosphere outside being greater than the pressure within the casing below the riddle, the outside air is caused to enter the opening M^2 with considerable force, and, passing through the spaces separating the sections $g h i j$, acts on the meal falling from one section to the other, for the purposes previously explained.

The varying mesh of the riddle requires that the different valve-boards be in different positions, since the quantity and nature of the material passing to the conveyer-box at different points will also vary. This contingency is provided for by having the valve-boards independently adjustable, as explained.

The admission or cutting off of the air through the slats k will diminish or increase the force of the ascending current of air, as will be obvious.

From the foregoing it will be obvious that the middlings-purifier embodying my improvements is adapted for high and efficient degree of service and that the novel features are of such simple character as to enable them to be readily applied to existing machines without great expense.

I claim—

1. In combination with the casing A, the riddle consisting of a series of screens of varying-sized mesh, all of said screens being on the same plane, the downwardly-inclined separate plates $g h i j$, extending longitudinally of the casing below the riddle, said plates being arranged one above the other with a space separating their adjoining edges, whereby the meal can pass from the riddle onto the plates and then pass from one plate to the other, the meal in its passage from one plate to the other being subjected to the action of the air through the spaces separating the adjoining edges of the

plates, and the suction-fan G, located at the top of the casing above the riddle and providing an ascending current of air through the riddle, the conveyer-boxes below the plates and receiving the meal therefrom, and the hinged deflector-plates D E F, registering vertically with one of the divisions of the riddle above, as set forth.

2. The combination of the casing A, the suction-fan G at the top thereof, the riddle C, arranged longitudinally within the casing below the suction-fan, so that the latter will cause an ascending current of air to pass through the riddle, the opening M^2 in one side of the casing below the riddle, adjusting-slats k , the chute arranged below the riddle, and the series of transversely-inclined longitudinal plates located opposite the opening M^2 and one above the other in an inclined series, and having their adjoining edges separated by an intervening space, whereby the air entering therethrough is caused to circulate through the spaces between the said inclined plates, and thus the meal falling from the riddle onto the plates and passing from plate to plate is subjected to the action of a vertical ascending current of air by means of the fan G, and also a transverse current through the opening M^2 , as set forth.

3. In combination with the casing of the machine having an opening in the side A' thereof, the suction-fan, the vibrating riddle consisting of a series of screens of varying-sized mesh, the downwardly-inclined plates $g h i j$, extending longitudinally of the casing, the slats k , covering the opening in the side A' , the boards B and B', forming the chute, the downwardly-inclined deflector-plates D E F, the conveyer-partition b , to which said latter plates are hinged, and the two conveyers $b' b'$, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HEMAN WARD STONE, JR.

Witnesses:

NELLIE M. FINNEY,
HORACE E. FINNEY.