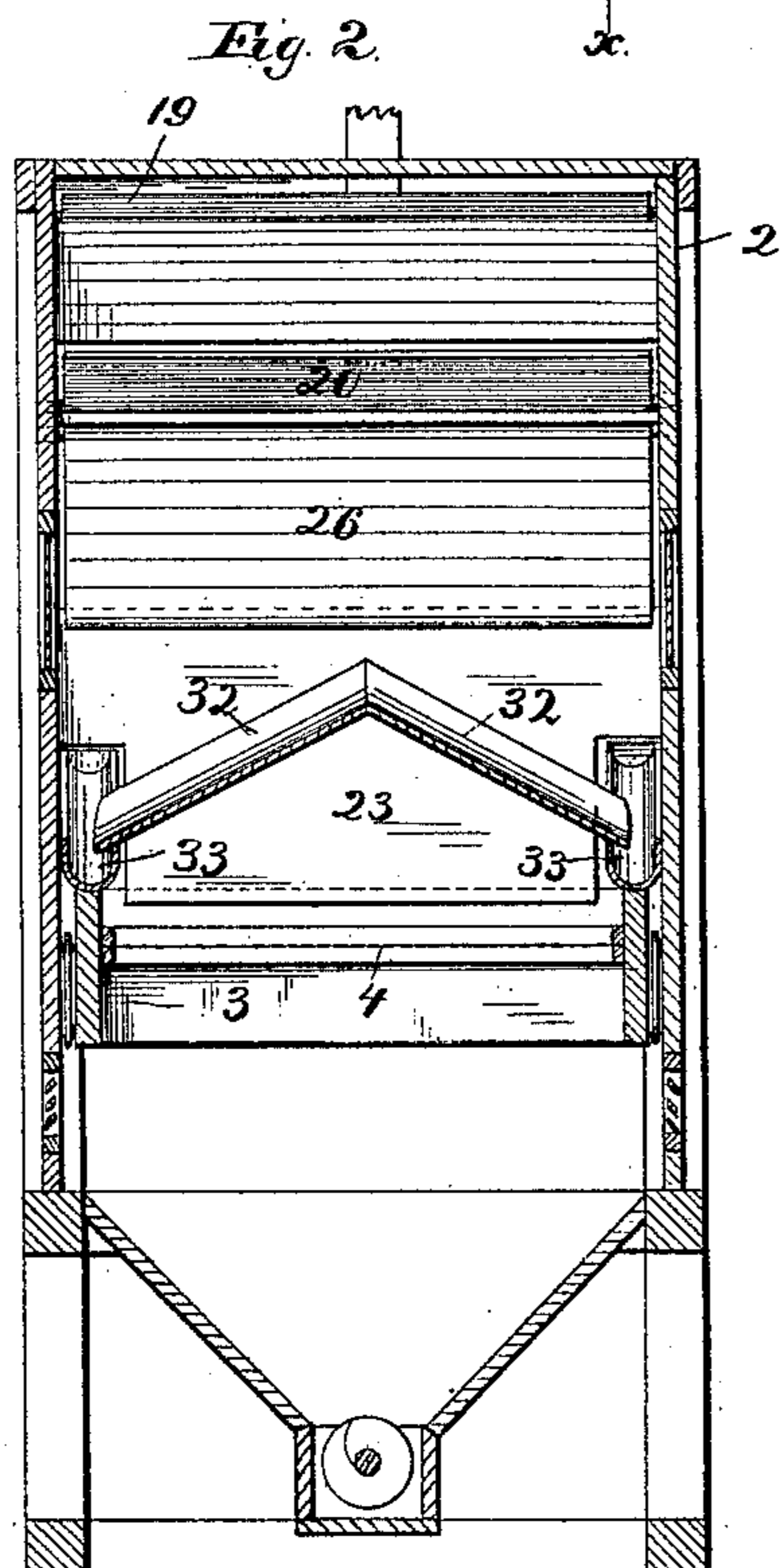
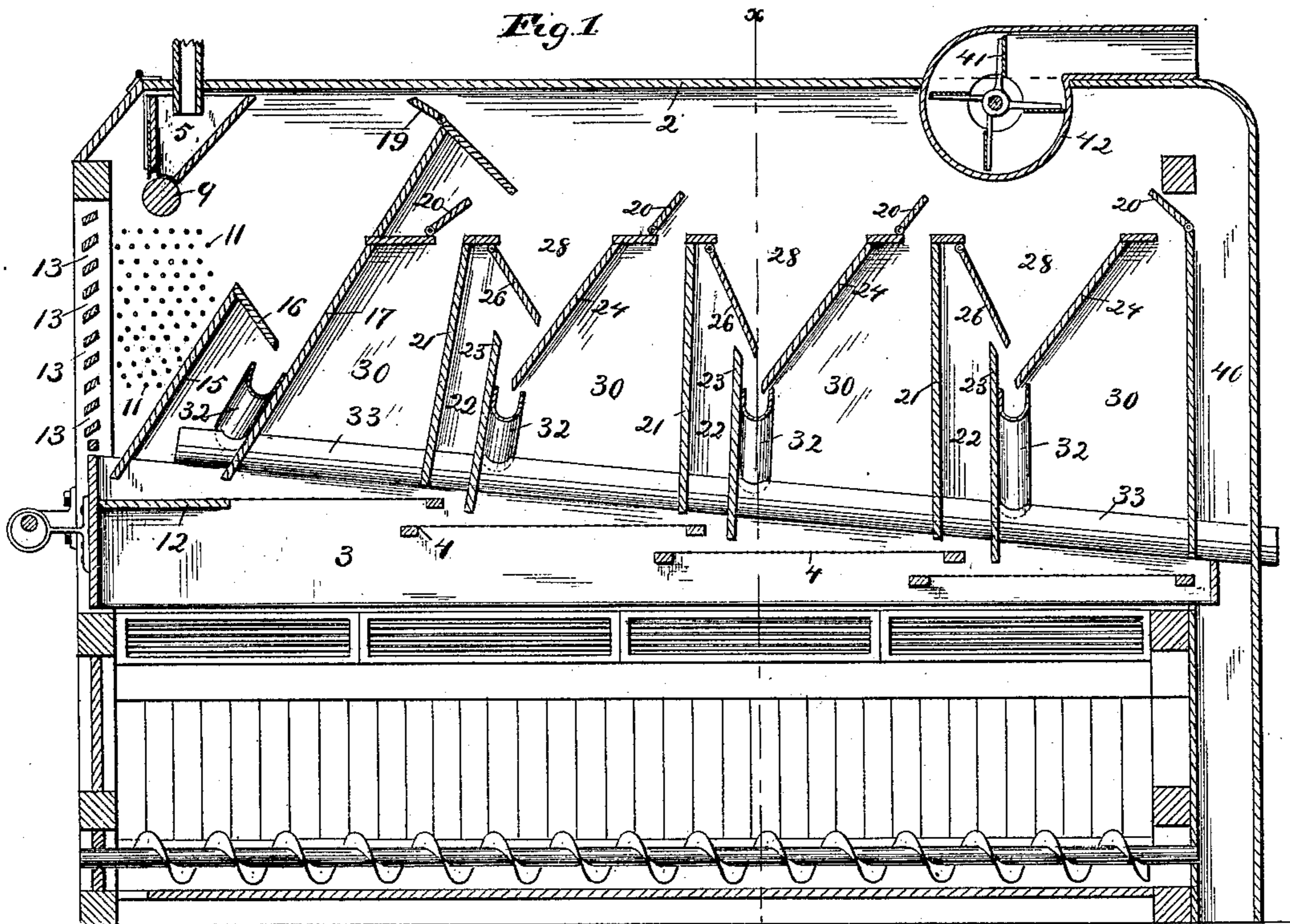


(No Model.)

C. E. HENSHAW.
MIDDLINGS PURIFIER.

No. 432,488.

Patented July 15, 1890.



Witnesses.
a.m. Gaskill
J. Jensen.

Inventor.
Charles E. Henshaw.
By Paul & Merwin attys.

UNITED STATES PATENT OFFICE.

CHARLES E. HENSHAW, OF MEDFORD, WISCONSIN.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 432,488, dated July 15, 1890.

Application filed January 25, 1889. Serial No. 297,533. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HENSHAW, of Medford, in the county of Taylor and State of Wisconsin, have invented certain new and useful Improvements in Middlings-Purifiers, of which the following is a specification.

This invention relates to improvements in machines for purifying middlings, and particularly to improvements in the construction of the machine for which Letters Patent of the United States were granted to me October 16, 1888, No. 391,366.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal vertical section of the machine embodying my invention. Fig. 2 is a transverse vertical section on line *xx* of Fig. 1.

In the drawings, 2 represents a suitable casing, which may be of any preferred or usual construction, and 3 represents a suitable sieve-frame preferably provided with a series of sieves 4, arranged in steps in said frame, substantially as described in my former patent.

The sieve-frame and sieves are preferably reciprocated in the frame of the machine by any suitable means.

5 represents a suitable hopper arranged at the head of the machine above a feed-roll 9. Beneath the roll 9, I arrange a series of wires 11, which extend transversely across the machine and are suitably supported in the walls of the casing. In the end of the machine-casing opposite the wires 11, I form a series of openings 13 for the purpose hereinafter described. An inclined transverse partition-board 15 is arranged below the wires 11 and extends nearly to the surface of the blank 12 in the sieve-frame. An inclined partition-board 17 extends from a point near the top of the first sieve to a point near the top of the casing, a narrow opening being left between the lower edge of the said partition-board 17 and the sieve. A pivoted valve 19 is arranged at the upper edge of the board 17, and is adapted to close or partially close the space between the upper edge of this board and the top of the casing. A spout 32 is arranged on the board 17 on the side toward the partition 15, and an inclined board 16 is arranged at the top of the board 15. A series of transverse partition-boards 21 are arranged in

the casing substantially over the junction of each two sieves and extending upward about two-thirds of the distance to the top of the casing. A valve 20 is arranged in the space between the upper edge of the board 17 and the top of the first partition-board 21. A second series of partition-boards 23 are arranged near to the boards 21, and forming therewith a series of narrow compartments 22, which extend in a substantially vertical direction from points directly over the junction of said sieve 4. The partition-boards 23 are of less height than the boards 21, and the inclined partition-boards 24 are arranged to extend from the tops of the board 23 to points substantially in line with the tops of the board 21. Narrow spaces are left between the lower edges of the inclined board 24 and the tops of the boards 23, and upon the boards 23 beneath these openings I prefer to arrange the inclined spout 32, which extends in opposite directions toward the walls of the casing and empty into the spouts 33, which extend longitudinally of the machine within the walls of the casing, resting upon and moving with the sieve-frame. The inclined boards 24, together with the upper portions of the partitions 21, form a series of expansion-chambers 28, which are above the narrow compartments 22, and with which said compartments communicate. Valves 26 are also preferably arranged in these expansion-chambers, and by means of these valves the passage of the material through the expansion-chamber may be regulated. A series of compartments 30 are also formed over each section of the sieve-frame, the first of said compartments being formed between the partitions 15 and the inclined board 17, and the others being formed between the boards 23 and 21 and the inclined boards 24. A valve 20 is arranged at the upper end of each of these compartments for the purpose of permitting the passage of air through said compartments. An aspirating-trunk 40 is also preferably arranged at the tail end of the machine. A fan 41 is arranged in the casing of the machine at a point near the tail end thereof, and is provided with a suitable fan-casing 42 in the usual way.

The operation of the machine is as follows:

The sieve-frame and sieves are reciprocated in the usual manner. The stock to be acted upon is passed into the hopper 5 and over the feed-roll 7 and then down through the series of wires 11, which knocks off any dust or dirt that may adhere to the material. The stock then passes down to the head of the sieve. While the stock is passing through the wires 11 it is subjected to an air-current which passes through the openings 13 and by the valve 19, the position of the valve determining the force of the current. By this means the lighter material is removed by the current, a portion of it falling upon the board 16 and passing thence to the first sieve and the remainder passing over the valve 19 and being carried to the suction-fan. As the material passes over the sieve it is subjected to an upward air-current, the current through the main portion of each sieve passing through the compartment 30 and escaping through the valve 20 at the top of the compartment. As the material passes from one sieve to the next it is subjected to a stronger air-current, which passes between the sieves and up through the narrow compartment 22. As this current enters the expansion-chamber 28 it is expanded and a portion of the material drops upon the board 24 and passes through the opening between the bottom of the said board and the top of the board 23 and falls into the spout 32, and passes from said spout into the longitudinally-arranged spouts 33. The lighter portion of the material is passed to the fan and then discharged. By this construction a very perfect separation of material is obtained and the force of the current upon any portion of the material may be very accurately regulated.

I claim as my invention—

1. The combination, in a machine of the class described, of the sieve and the casing provided at one end with the series of openings 13, a fan located at the other end of the casing, a hopper arranged at a point between said openings and said fan, a series of wires 11, extending transversely across the casing above the head of the sieve beneath said hopper and opposite said openings 13, the inclined board 15, arranged below said wires, and the regulating-valve 19, arranged between said wires and said fan, all substantially as described.

2. The combination, in a machine of the class described, of the sieve-frame, the series of sieves arranged in steps in said frame, the narrow compartments 22, arranged above the junction of said sieves, and the expansion-chambers 28, with which said compartments communicate, provided with valves 26, substantially as described.

3. The combination, in a machine of the class described, of the sieve-frame, the series of sieves arranged in steps in said frame, the narrow compartments 22, arranged above the junction of said sieves, the expansion-chambers 28, with which said compartments communicate, provided with valves 26, the transverse spouts 32, arranged below said expansion-chambers, and the reciprocating longitudinal spouts 33, arranged below said transverse spouts, substantially as set forth.

In testimony whereof I have hereunto set my hand this 11th day of January, 1889.

CHARLES E. HENSHAW.

In presence of—

W. W. LAMB,
F. M. PERKINS.