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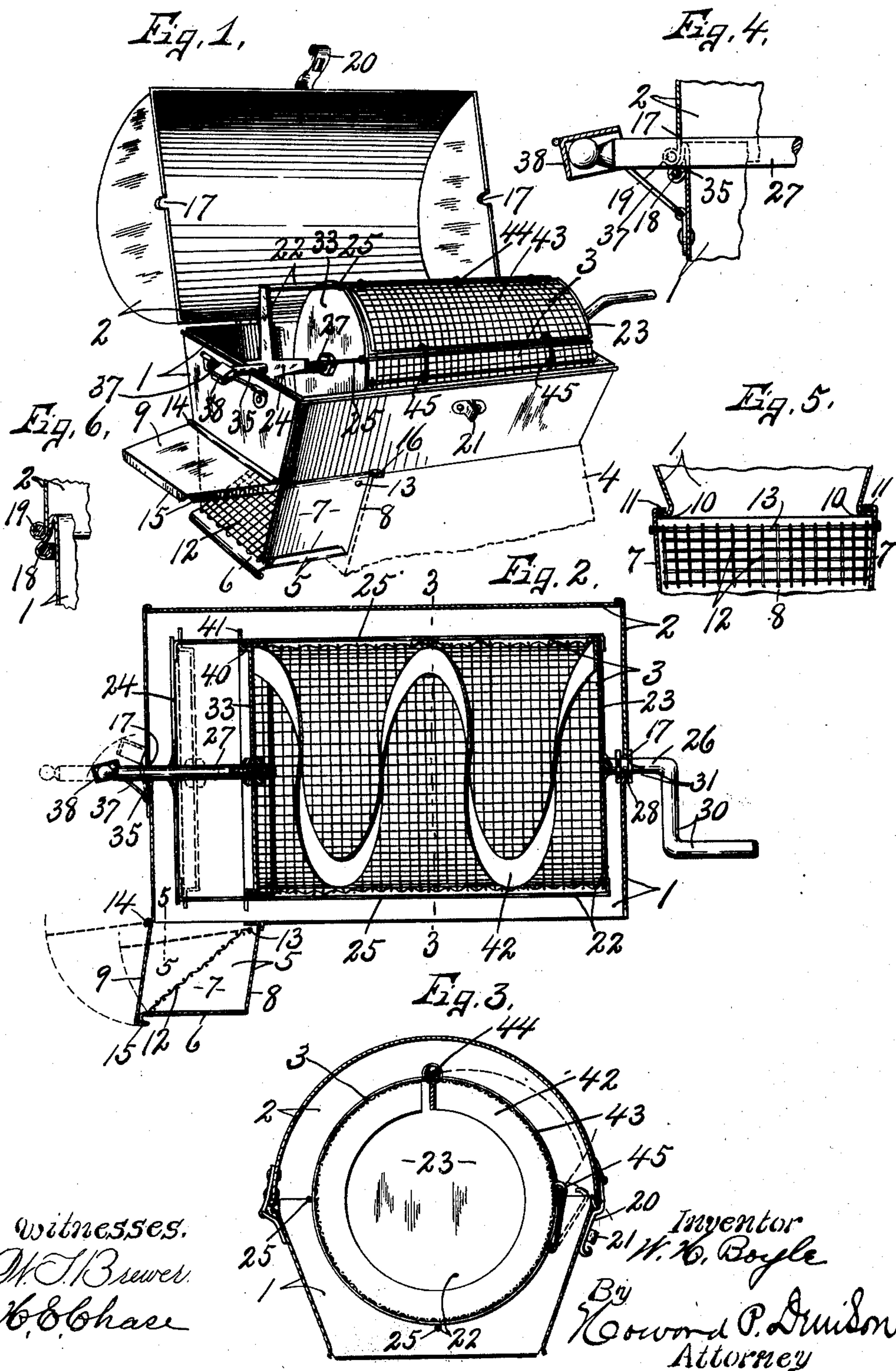
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W. H. BOYLE.

ASH SIFTER.

APPLICATION FILED APR. 29, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

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ASH-SIFTER.

SPECIFICATION forming part of Letters Patent No. 737,699, dated September 1, 1903.

Application filed April 29, 1903. Serial No. 154,767. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. BOYLE, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful
 5 Improvements in Ash-Sifters, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in
 10 ash-sifters in which a substantially cylindrical sieve is rotatably mounted within a suitable inclosing case, the latter being open at the bottom and is adapted to be placed upon a barrel, box, or other large receptacle for
 15 receiving the ashes passing through the sieve.

The primary object of the various improvements hereinafter enumerated is to produce a simple, durable, and practical construction whereby the finer grades of coal may be separated from the ashes and discharged automatically into a receptacle provided therefor without liability of the escape of any dust except through the channels or passages provided therefor, the friction of the rotary sieve
 20 being reduced to a minimum by providing the same with trunnions which rest upon thin open-sided bearings, so that the sieve may be readily removed from the inclosing shell, if desired.

30 Further objects will appear in the subsequent description.

In the drawings, Figure 1 is a perspective view of my improved ash-sifting apparatus, showing the lid or upper section as swung
 35 backwardly to its open position, the door of the discharge-chute for the coal being also shown in its raised position for disclosing the auxiliary inclined sieve within the chute. Fig. 2 is a longitudinal vertical section through
 40 the device seen in Fig. 1, except that the parts which are open in Fig. 1 are closed in this figure. Fig. 3 is a sectional view taken on line 3 3, Fig. 2. Fig. 4 is an enlarged detail view of one of the supporting-journals
 45 for the sieve and the movable end-thrust bearing therefor, showing also a portion of one of the end walls upon which said journal is supported. Fig. 5 is a vertical section taken on line 5 5, Fig. 2. Fig. 6 is an enlarged detail
 50 section through the meeting edges of the upper and lower sections of the inclosing shell or case.

Similar reference characters indicate corresponding parts in all the views.

In carrying out the objects of my invention 55 I provide a suitable inclosing case consisting of lower and upper sections 1 and 2, in which is mounted a rotary sieve 3, the lower section 1 being open at the top and bottom, the opening in the top permitting the insertion and
 60 removal of the sieve 3 and the opening in the bottom serving to permit the discharge by gravitation of the ashes, which may escape through meshes of the sieve during the operation of rotating the same. 65

The section 1 is mounted upon a suitable receptacle, such as a box 4, (indicated by dotted lines in Fig. 1,) which box is provided with an opening at the top alined with the opening in the bottom of the section 1, it being
 70 understood that the lower section 1 and open end of the box 4 are made to fit each other, so as to prevent the escape of any dust which may be discharged through the open bottom of the section 1. 75

Mounted upon one end of the section 1 and preferably extending across a portion of one end of the open bottom is a chute or pocket 5, which extends downwardly from the lower edges of the side walls of the section 1 and is
 80 provided with bottom, side, and rear walls 6, 7, and 8, said chute being open at the top for receiving the coal, which is discharged from the sieve in the manner hereinafter described, and the front of said chute is also open and
 85 is provided with a swinging closure 9, the latter being for the purpose of preventing the escape of dust during the operation of sifting the ashes, and at the same time permitting the sifted coal to be removed when the sifting operation is completed. This chute or
 90 pocket 5 is removably attached to the section 1, and for this purpose I provide the front ends of the lower edges of the side walls of said section 1 with laterally-projecting flanges or
 95 guides 10, and the upper edges of the side walls of the chute are also provided with inwardly-projecting flanges 11, which rest upon the flanges 10, the latter forming supporting guides or ways upon which the flanges 11 slide 100 during the operation of removing the chute or placing it in operative position. The object in making this chute removable is to permit the operator to readily convey the ashes

to any desired locality and dump the same without necessitating the removal of the entire apparatus.

In order to further insure the thorough separation of the ashes or dust from the sifted coal after it leaves the rotary sifter, I provide the chute 5 with an inclined sieve 12, which extends from the upper edge of the rear wall to the lower front edge of the bottom wall, and therefore inclines downwardly and forwardly for the purpose of discharging the coal through the open front end of the chute when the door 9 is open. This sieve 12 is hinged at its upper rear end at 13, so that its front end may be tilted upwardly for the purpose of discharging any ashes which may have accumulated on the bottom 6 beneath the sieve 12.

The door 9 is hinged at its upper end at 14 to the chute 5, and its free end and side edges are provided with inturned flanges 15, which overlap the adjacent sides of the chute when the door is closed to further prevent the escape of any dust. It will be seen from this latter statement that to remove the chute 5 it is simply necessary to draw the same forwardly longitudinally upon the ways 10, which operation also removes the door 9 and screen 12, which are mounted upon the chute, a suitable stop or stops 16 being provided upon the side walls of the section 1 to limit the inward movement of the chute when placed in operative position.

The lid 2 is preferably semicylindrical in cross-section and is provided with end walls, one of its longitudinal meeting edges being hinged to the adjacent longitudinal edge of the section 1, so that the upper section forms a lid adapted to be swung into and out of operative position for entirely inclosing the sieve 3 or when swung backwardly to expose said sieve and to permit its removal when desired, the meeting edges of the end walls of said sections being provided with recesses 17, which fit over and upon the journals of the sieve 3, as hereinafter set forth.

In order to reinforce the meeting edges of the sections 1 and 2, I provide each with a wire band 18 and 19, which entirely surround their respective sections, the band 18 being held in position by turning the upper edge of the section 1 outwardly, downwardly, and upwardly, by which a loop is formed to receive the wire band. The other band, 19, is held in position by bending the lower edge of the section 2 outwardly and upwardly for forming a loop which incloses the wire. The lower edge of the upper section preferably telescopes with the upper edge of the lower section for the purpose of preventing the escape of dust at the junction of the two sections, said sections being held in their closed position by a suitable clasp 20, which engages a shoulder 21 upon the section 1.

The sieve 3 is preferably cylindrical in cross-section and consists of a wire screen which is mounted upon a supporting-frame 22, said frame comprising opposite heads 23

and 24 and tie-rods 25, connecting said heads. The sieve proper is of less length than its inclosing case or shell and is of such diameter that its lower portion is normally disposed in a plane slightly above that of the lower edges of the section 1. The heads 23 and 24 are mounted upon journals 26 and 27, the journal 26 being permanently secured to the head 23 and normally rests in an open-sided bearing 28 in the upper edge of the rear end wall of the section 1, said journal being extended outwardly beyond the end wall of the section 1 and is provided with a suitable crank 30, by which the sieve is rotated. Shoulders 31 are provided upon the journals 26 at the inner and outer sides of the adjacent wall of the case 1 and serve to prevent endwise movement of the sieve when in its operative position. The opposite or front end of the sieve is preferably open and is provided with a sliding closure or end wall 33, to which the inner end of the journal 27 is secured, while its opposite end is movable in a central opening in the head 24 and is journaled in an open-sided bearing 35 in the upper edge of the end wall of the case-section 1. The front open end of the sieve terminates in a vertical plane substantially coincident with the rear end of the chute 5, so that during the operation of sifting the ashes passing through the sieve escape through the open bottom in the section 1 at the rear of the chute 5, while the coal or coarser matter which is retained within the sieve is forced through the open end of the sieve and deposited onto the screen 12 in the chute 5, when the closure 33 is open, sufficient space being left between the end wall 33 and head 24 to permit the closure 33 to be moved axially of the sieve sufficient to permit the discharge of the coal into the chute 5.

It has been previously stated that the sieve is held from endwise movement by the tie-rods 25, and in order to prevent the endwise movement of the head or end wall 33 during the sifting operation I provide the front end wall of the case 1 with a swinging bracket 37, to which is secured an abutment 38, the latter being adapted to be swung into and out of engagement with the adjacent face of the journal 27 to prevent endwise movement of the trunnion and the head or end wall 33, secured thereto. When it is desired to remove the coal from the interior of the sieve, it is simply necessary to rock the bracket upwardly, which throws the abutment 38 out of alinement with the journal 27, whereupon said trunnion may be drawn forwardly and axially for withdrawing the end wall 33 from the open end of the sieve, said end wall being provided with recesses in its periphery, which receive the tie-rods 25, the latter serving to guide and to hold the end wall 33 from accidental displacement. In order that the closure 33 may fit as closely as possible in the opening, the central portion is stamped or pressed inwardly to form an annular shoulder 40 and a marginal flange 41, in which lat-

ter the recesses for receiving the tie-rods 25 are formed.

It is desirable to feed the coal or coarser material gradually toward the front open end 5 of the sieve in order that the same may be readily discharged into the chute 5 either during or after the operation of sifting the ashes, and I therefore provide the sieve with an interior spiral plate 42, which extends 10 from end to end of the sieve and is secured thereto, this spiral being usually arranged in close proximity to the cylindrical wall of the sieve, so that when the sieve is rotated the coarser material, as coal, is fed forwardly to- 15 ward the open end of the sieve.

It is apparent from the foregoing description that the only bearings for the sieve are the thin edges of the end walls of the lower section 1, and therefore the friction is reduced 20 to a minimum.

In order to provide means for introducing the ashes into the sieve, I preferably form the cylindrical portion of the sieve in sections, one of the sections, as 43, being hinged at one 25 of its longitudinal edges at 44 to the adjacent edge of the remaining portion of the cylinder, while its free edge is adapted to be swung outwardly, but is normally held in its closed position by catches, such as hooks 45. 30 The ashes may preferably be placed in the sieve while in operative position by simply opening the screen-door 43. When the ashes are thus placed in the sieve and the latter is suspended in its bearings, the lid 2 is closed and locked, and the sieve is then rotated by 35 means of a crank 30, during which operation the ashes are separated from the coal, the ashes being precipitated through the bottom of the section 1 into the receptacle 4, and the 40 coal is fed forwardly to the open end of the sieve and is finally discharged onto the screen 12, from which it passes out through the door 9 by its own weight.

Having thus described my invention, what 45 I claim, and desire to secure by Letters Patent, is—

1. In an ash-sifter, the combination with an inclosing case consisting of lower and upper sections hinged to each other, the lower sec- 50 tion having an open bottom, a chute inclosing a portion of the open bottom and depending therefrom, one end of the chute being open, a movable closure for the open end of the chute, a screen in the chute inclining 55 downwardly toward the open end, a rotary sieve in the shell or casing having one end open and terminating at the closed end of the chute whereby the ashes are deposited at

one end of the chute and the coal is dis- charged into the chute and onto the inclined 60 screen.

2. In an ash-sifter, the combination of an inclosing case consisting of lower and upper sections hinged to each other, the lower sec- 65 tion having an open bottom, a rotary frame in the shell or casing, journals journaled upon the upper edges of the end walls of the lower section and supporting said frame, one of the journals being movable axially, a mov- able end-thrust bearing for the latter journal, 70 a sieve mounted in the frame and having one end open, and a closure for the open end of the sieve secured to the axially-movable journal.

3. In an ash-sifter, the combination of an 75 inclosing case consisting of lower and upper sections hinged to each other, the lower section having an open bottom, a rotary frame in the shell or casing, journals journaled upon the upper edges of the end walls of the 80 lower section and supporting said frame, one of the journals being movable axially, a movable end-thrust bearing for the latter journal, a sieve mounted in the frame and having one end open, and a closure for the open end of 85 the sieve secured to the axially-movable journal, and a chute depending from the lower edges of the lower section communicating with the interior of the shell or casing for re- ceiving the coal from the open end of the sieve. 90

4. In an ash-sifter, the combination of an inclosing case consisting of lower and upper sections hinged to each other, the lower sec- 95 tion having an open bottom, a rotary frame in the shell or casing, journals journaled upon the upper edges of the end walls of the lower section and supporting said frame, one of the journals being movable axially, a mov- able end-thrust bearing for the latter journal, 100 a sieve mounted in the frame and having one end open, and a closure for the open end of the sieve secured to the axially-movable jour- nal, and a chute depending from the lower edges of the lower section communicating 105 with the interior of the shell or casing for re- ceiving the coal from the open end of the sieve, one end of the chute being open, a closure for the open end of the chute and an inclined screen in the chute discharging to- ward the opening of said chute. 110

In witness whereof I have hereunto set my hand this 27th day of April, 1903.

WILLIAM H. BOYLE.

Witnesses:

MILDRED M. NOTT,
HOWARD P. DENISON.