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APPARATUS FOR SIFTING ASHES.

APPLICATION FILED DEC. 20, 1916.

1,254,873.

Patented Jan. 29, 1918.

2 SHEETS—SHEET 1.

FIG. 4

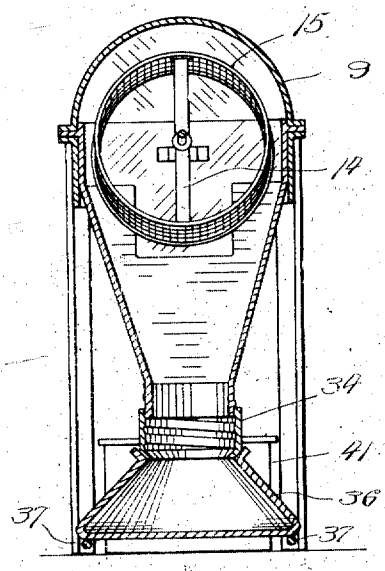


FIG. 5.

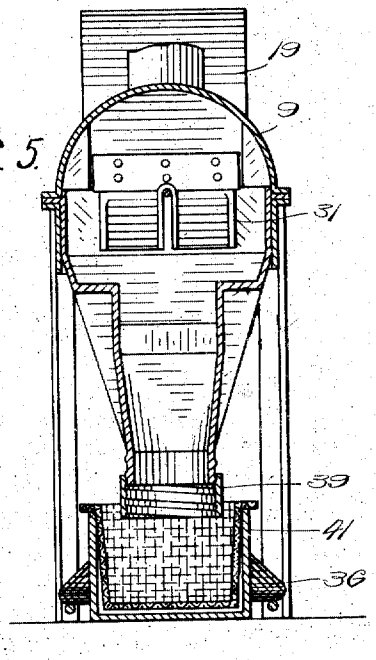


FIG. 1.

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2 SHEETS—SHEET 2.

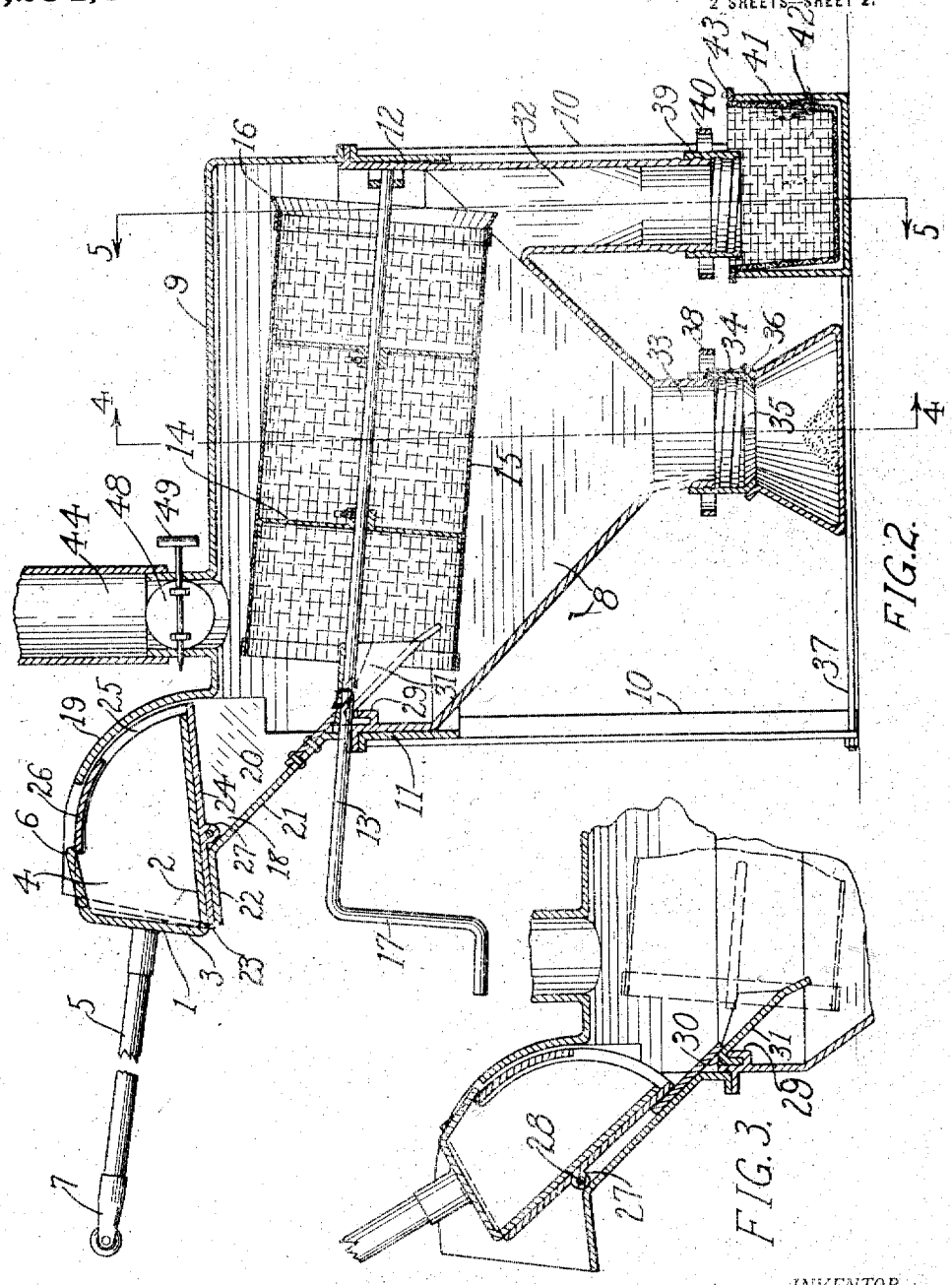


FIG. 2.

FIG. 3.

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APPARATUS FOR SIFTING ASHES.

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To all whom it may concern:

Be it known that I, FRANK D. WULFF, a citizen of the United States of America, residing at 5315 Leland avenue, Chicago, county of Cook, and State of Illinois, have invented new and useful Improvements in Apparatus for Sifting Ashes, Sand, or the like, of which the following is a specification.

The invention relates to an apparatus for sifting ashes, sand, or the like, and its principal object consists in the provision of an apparatus of this character which permits the separation of the ashes from clinkers and burnt coal without the escape of dust from the apparatus even when the latter is continuously in operation.

A further object constitutes the arrangement of an inlet chute or throat adapted to receive a scoop or shovel, such that the latter forms a closing for the throat when inserted therein.

Another object aims at the exhaustion of the circulating dust from the apparatus raised by the separation of the ingredients of the ashes.

Still another object embraces the connection between the ash receiver and the ash hopper of the apparatus to permanently insure airtight connection between said parts and to prevent the dust raised in the receptacle to escape therethrough.

A still further object embodies the arrangement of a screen box receiving the burnt coal and clinkers in a water receptacle, the level of the liquid being slightly above the lowermost edge of the appertaining discharge chute of the hopper.

It also constitutes an object of the invention to provide means for extending or shortening the length of the discharge chute, whereby a liquid seal therefor is continuously obtained.

With these and other objects in view, the preferred embodiment of the invention consists in the novel arrangement and construction of parts described in the following specification and specifically pointed out in the claims forming a part thereof.

In the accompanying drawings,

Figure 1 is a side view of the apparatus made in accordance with the invention, several auxiliary devices being omitted, however.

Fig. 2 is a central longitudinal section through the apparatus.

Fig. 3 is a fragmentary section through the inlet side of the apparatus with the scoop inserted and in discharge position.

Fig. 4 is a section on the line 4—4 of Fig. 2, and

Fig. 5 is a section on the line 5—5 of Fig. 2.

Referring to the several views of the drawings, 1 designates the scoop which comprises the bottom plate 2, the end wall 3 and the side walls 4, which have an arcuate upper edge. The end wall 3 is extended at its upper end to form an integral flange 6 which serves for a purpose hereinafter further referred to. The scoop 1 is equipped with a shaft 5 and a handle 7 to facilitate manipulation of the scoop in collecting ashes and removing the same to the apparatus. The apparatus for sifting ashes comprises a hopper 8 open at its upper end but closed up by a cover 9 which is removably placed on the hopper. Uprights 10 connected in pairs by transverse plates 11 and 12 respectively, form a supporting frame from which the hopper together with the cover is suspended. As will be seen by reference to Fig. 2, a rod 13 is journaled in the hopper in an inclined position, and keyed thereto are a pair of circular spider frames 14 in spaced relation and forming the supporting means for a cylindrical sieve 15 or, if preferred, a foraminous plate of cylindrical form may be secured in any approved or suitable manner to said spider frames. The cylinder 15, as is obvious, also assumes a slanting position and, being open at both ends, forms a passage way for the material to be separated. At the rear end of the cylinder an outwardly flaring portion 16 is provided which serves to divert material into proper direction. The rod 13 is extended at its forward end to form a handle 17, so that upon the actuation thereof the cylindrical screen is rotated and material contained therein is effectively separated.

The cover 9 is formed at the inlet portion of the device with an inlet throat or chute 18, which comprises the upper arcuate wall 19, side walls 20 and an inclined bottom wall 21 merging into a horizontal portion 22, which serves as a support for a hood 23 when the same is in the normal or inoperative position. The hood is formed similar to the aforedescribed scoop and comprises a bottom wall 24 and arcuate side walls 25, which are interconnected by a bridge 26. The bot-

tom wall 24 of the hood 23 is formed with lugs 27 through which extends a pivot rod 28. By virtue of the inclined wall 21 and the arcuate formation of the upper wall 19, it will be readily recognized that the hood 23 may be oscillated to assume a slanting position determined by the inclined wall 21 of the throat. In order to discharge the material gathered by the scoop, the latter is inserted in the swingingly mounted hood and by raising the handle 7, scoop and hood are forced from horizontal into slanting position, so that the material drops by gravity into the inlet chute 18. The hopper 8 is equipped with a flange 29, and the space between said flange and the wall of the hopper serves for the reception of the flange 30 of an apron 31 which bridges the gap between the inlet chute 18 and the cylinder 15 to insure the entrance of the material in the cylinder.

The hopper 8 is formed at its lower end with two discharge chutes 32 and 33, respectively, of cylindrical formation, both having an exterior threaded portion. The chute 33 is surrounded by a collar 34 interiorly threaded for adjustable connection with said chute, said collar being formed with an ininwardly flaring portion 35 adapted to abut against the correspondingly flaring portion of a receptacle 36 which is employed to receive the ashes dropping from the screen 15. The uprights 10 are interconnected in pairs in the longitudinal direction by rods 37, which serve as support for the receptacle 36. It will be readily seen that in case of unevenness of the floor, or where for instance the receptacle 36 has different dimensions as the receptacle ordinarily used, it is, nevertheless, possible to maintain an airtight interconnection between the hopper chute 33 and the receptacle by virtue of the provision of the collar 34 which, being equipped with handles 38, may be rotated and thus lowered or raised to bring the same into intimate contact with the ash receiver. The chute 32 is also equipped with exterior screw threads and a collar 39 adjustably engages the same and may be rotated for adjustment by means of handles 40. Underneath said chute a receptacle 41 is arranged filled with water and adapted to receive a vessel 42 of foraminous material, which at its upper edge is extended into a flange 43 bearing against the upper edge of the water receptacle 41. As is obvious, the vessel 42 serves for the reception of the burnt coal and clinkers and the presence of the water serves to wash the materials. Simultaneously the liquid prevents the escape of dust, as its level is maintained above the lowermost edge of the chute 32. As will be seen by reference to Fig. 2, the collar 39 may be adjusted to raise or lower its lowermost edge, so that in case the water level drops by virtue of evaporation, the collar may be lowered and the discharge chute 32 hermetically sealed.

The operation of the device is as follows: Ashes are gathered in the scoop 1 and the latter is inserted in the hood 23 which is oscillatorily mounted in the inlet chute 18 of the apparatus. In this position the top flange 5 of the scoop engages the bridge 26 of the hood 23, whereby said bridge establishes a tight connection between the scoop and the upper wall 19 of the inlet chute or throat. Having inserted the scoop, the handle is lifted whereby the hood together with the scoop are forced to assume a slanting position, and this movement is limited by the slanting wall 21 which serves as an abutment. When the parts have assumed the position indicated in Fig. 3, the material carried by the scoop drops by gravity down the incline 21, passes the apron 31, and enters the cylindrical screen 15, from where the fine material—the ashes—are discharged through the chute 33 into the receptacle 36, while the coarser material travels along the wall of the drum 15 until the peripheral flaring portion 16 diverts it into the chute 32, and thence the material enters the vessel 42. The rotation of the screen by means of the handle 17 effectively separates the fine material from the coarser one, but simultaneously dust is raised which is circulated. In order to provide means for effectively exhausting the dust, a passage 44 is provided which leads into a chimney 45 or any other place wherever slight suction exists. The passage 44 contains a damper 48 which may be adjusted by means of a handle 49 to vary the cross-section of said passage. The negative pressure, of course, exhausts the dust raised in the receptacle and also diminishes the chances for any dust escaping through the joints of the apparatus or when a receptacle is removed to be emptied.

When it is desired or necessary to empty the ash receiver 36, the collar 34 is rotated to be carried upwardly by virtue of its screw-threaded engagement, so that its engagement with the receptacle is terminated and the latter may be easily removed. As indicated in Fig. 1, a closure 46 may be applied to the collar 34 in order to prevent the dropping of ashes to the floor while the receptacle is withdrawn. Similarly, the removal of the receptacle 42 may be effected by raising the collar 39 above the upper edge of the flange 43, whereupon the vessel 42 together with the water receptacle 41 may be withdrawn. A closure 47 may then be applied to the collar 39 to prevent clinkers or burnt coals from falling to the floor.

While the drawings illustrate the preferred embodiment of the invention, it is, of course, understood that I do not intend to confine myself to the exact details shown, but being aware that various modifications

and alterations may be made, I want to avail myself of such departures which fairly fall within the scope of the invention, as indicated in the appended claims.

I claim:

1. An apparatus for sifting ashes, sand, or the like, comprising a hopper provided with discharge openings, a drum of foraminous material arranged in said hopper, a cover for said hopper being provided with an inlet chute, and a scoop adapted to be received within said inlet chute and forming a closure therefor.

2. An apparatus for sifting ashes, sand or the like, comprising a hopper formed with discharge openings, a drum of foraminous material rotatably arranged in said hopper, a cover for said hopper provided with an inlet chute, said chute leading into one end of said drum, and a scoop adapted to be received in said inlet chute and to be oscillated from normal into discharging position, said scoop forming a closure for said chute in both positions.

3. An apparatus for sifting ashes, sand or the like, comprising a hopper formed with discharge openings, a drum of screening material rotatably arranged in said hopper, a cover for said hopper provided with an inlet chute, said chute including an arcuate upper wall and an inclined lower wall terminating in a horizontal front portion, a scoop adapted to be received within said chute to rest with its bottom on said horizontal front portion of the chute and adapted to be swung into engagement with said inclined wall.

4. An apparatus for sifting ashes, sand or the like, comprising a hopper formed with discharge openings, a drum of screening material rotatably arranged in said hopper, a cover for said hopper provided with an inlet chute, said chute including an arcuate upper wall and an inclined lower wall terminating in a horizontal front portion, a scoop adapted to be received within said chute to rest with its bottom on said horizontal front portion of the chute and adapted to be swung into engagement with said inclined wall, said scoop forming a closure for said chute in horizontal and slanting position.

5. An apparatus for sifting ashes, sand or the like, comprising a hopper formed with discharge openings, a screening drum arranged in said hopper, a cover for said hopper having an inlet chute, said chute including an arcuate upper wall and an inclined bottom wall merging into a horizontal front portion, a hood in said chute comprising a bottom wall partly resting on said horizontal front portion, side walls conforming to the curvature of the upper wall of the chute, and a scoop adapted to be received within said hood, said scoop and said hood being adapted to be swung into engagement with the inclined wall of said chute, substantially as described.

6. An apparatus for sifting ashes, sand or the like, comprising a hopper formed with discharge openings, a screening drum arranged in said hopper, a cover for said hopper having an inlet chute, said chute including an arcuate upper wall and an inclined bottom wall merging into a horizontal front portion, a hood in said chute comprising a bottom wall partly resting on said horizontal front portion, said walls conforming to the curvature of the upper wall of the chute, and a bridge interconnecting the side walls of said hood, said bridge being in engagement with the inner side of the arcuate wall of the inlet chute, and a scoop adapted to be received within said hood, said scoop and said hood being adapted to be swung into engagement with the inclined wall of said chute, substantially as described.

7. An apparatus for sifting ashes, sand or the like, comprising a hopper formed with discharge openings, a screening drum arranged in said hopper, a cover for said hopper having an inlet chute, said chute including an arcuate upper wall and an inclined bottom wall merging into a horizontal front portion, a hood in said chute comprising a bottom wall partly resting on said horizontal front portion, said walls conforming to the curvature of the upper wall of the chute, and a bridge interconnecting said side walls, said hood being pivotally secured within said inlet chute to engage the horizontal front portion and the inclined portion of the bottom wall of said chute respectively, and a scoop adapted to be received within said hood and forming a closure therefor.

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