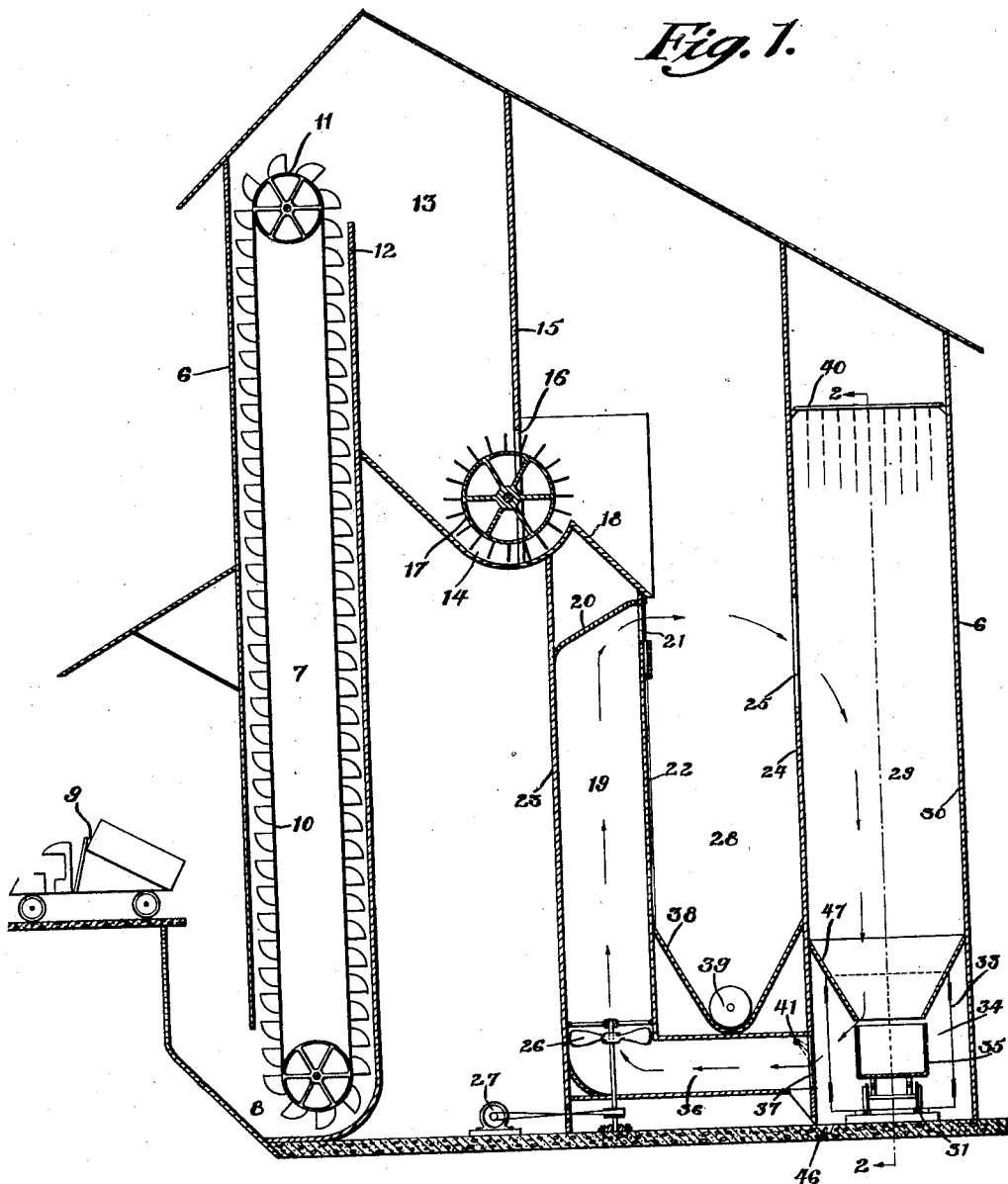


S. A. STONEBACK.
FUEL RECLAIMING APPARATUS.
APPLICATION FILED DEC. 9, 1920.

1,389,394.

Patented Aug. 30, 1921.
2 SHEETS—SHEET 1.



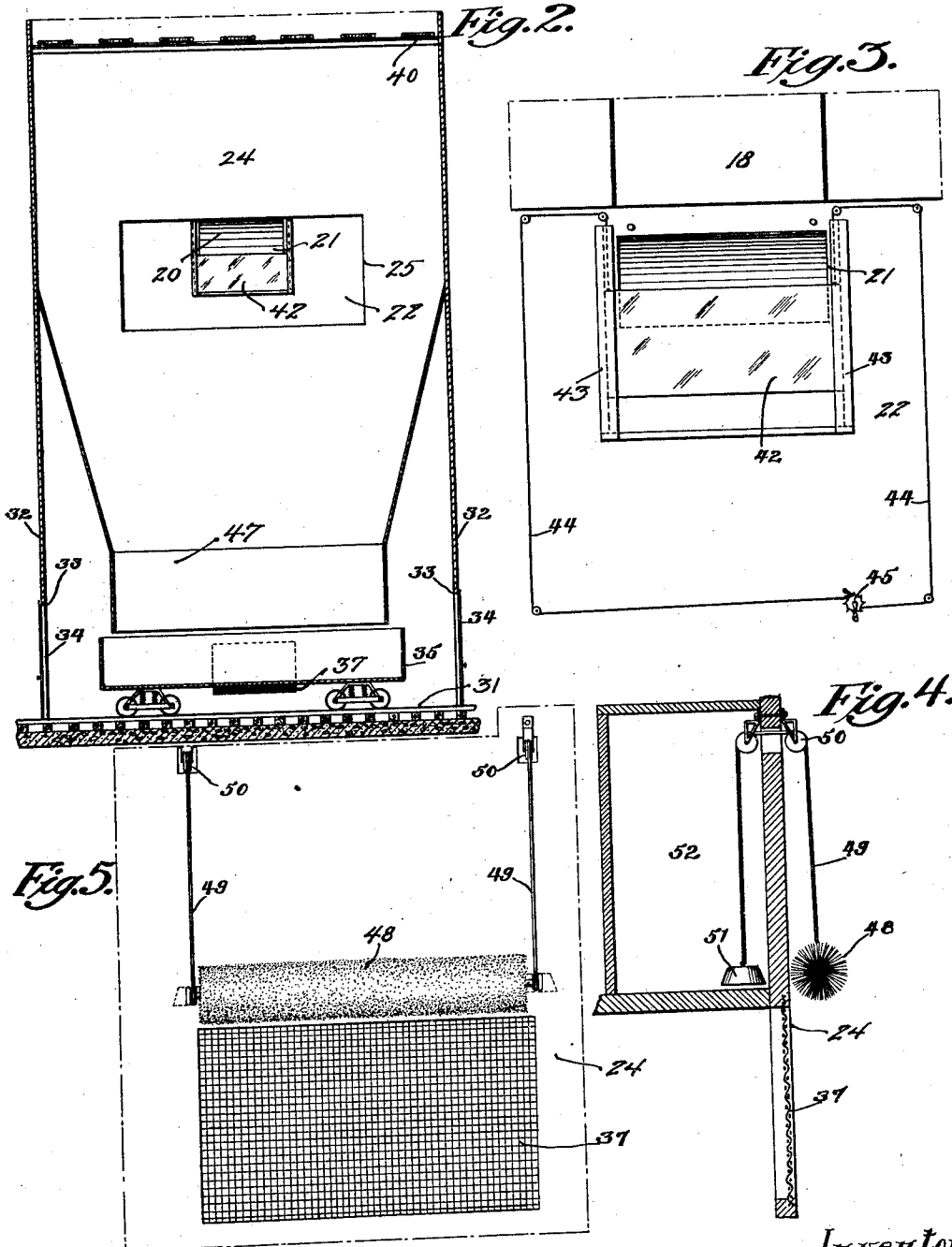
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UNITED STATES PATENT OFFICE.

SAMUEL A. STONEBACK, OF PHILADELPHIA, PENNSYLVANIA.

FUEL-RECLAIMING APPARATUS.

1,389,394.

Specification of Letters Patent.

Patented Aug. 30, 1921.

Application filed December 9, 1920. Serial No. 429,325.

To all whom it may concern:

Be it known that I, SAMUEL A. STONEBACK, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Fuel-Reclaiming Apparatus, of which the following is a specification.

It is well known that ashes collected from households and other places contain a large amount of unburnt material which could be used for fuel if it could be reclaimed at such cost that it would make reclamation profitable, for example said ashes contain in addition to unburnt coal, other coal which is only partly burnt.

One object of my invention is to provide a structure by which practically all the burnable material can be reclaimed from such ashes at such cost as to render the reclamation profitable.

Another object is to make my improved structure so that the material can be handled in great quantities and readily transported.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a sectional elevation of a structure made in accordance with my present invention,

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1,

Fig. 3 is a fragmentary elevation showing an adjustable shutter construction which may be employed,

Fig. 4 is a fragmentary section showing a modified form of screen cleaning device from that shown in Fig. 1, and

Fig. 5 is a side view of the structure shown in Fig. 4.

Referring to the drawings and particularly to Figs. 1 to 3 inclusive, 6 represents a hollow housing body in the form of a building which at one end includes an elevator shaft 7 terminating at its bottom in a boot 8 into which ashes, such as above described, can be dumped for example from a truck or wagon such as shown at 9. The elevator shaft includes a bucket elevator 10 of any usual construction, the upper sheave of which is positioned above the level of a partition 12. To the side of the partition 12 opposite the elevator shaft is provided a compartment 13 which terminates in a hopper 14. A por-

tion of the bottom of the hopper extends beyond a partition 15 in which is provided an opening 16. A transferring wheel 17, which is power driven, is mounted in the bottom 60 of the hopper and projects partly through the opening 16 so that the ashes which are dumped in the body 8 will be raised by the elevator and discharged through the compartment 13 so as to fall in the hopper 14 65 and be moved by the transferring wheel 17 through the opening and permitted to slide down a chute 18, the bottom of which is inclined as clearly shown in Fig. 1. Below the chute 18 is provided an up-draft air pas- 70 sage 19 which at its top has a baffle 20; said baffle leading to the top of an opening 21 immediately below the lower end of the chute 18 and formed within a partition 22; said partition 22 together with a partition 23 75 forming said up-draft air passage.

Spaced from the partition 22 is another upright partition 24 including an opening 25 which is opposite the opening 21 in the partition 22; said opening 25 preferably be- 80 ing of greater length in the direction of its height than is the opening 21. A fan 26 is positioned in the up-draft passage 19 and may be operated by any suitable source of power such for example as the motor 27. 85 The arrangement is such that the air passing upwardly through the passage 19 will be deflected by the baffle 20 out of the opening 21 transversely and through the compartment 28 which is formed between the partitions 22 90 and 24. After passing transversely through said compartment 28, the air will pass through the opening 25 into a dust compartment 29 which is formed between the parti- 95 tion 24 and the end 30 of the housing body 6. The bottom of the compartment 29 preferably has a track 31 therein and the sides 32 of the housing body 6 have doorways 33 which, when the device is in use, are closed by doors 34. Thus a car 35 can be run into 100 the bottom of the compartment 29 on the track 31, after which the doors 34 can be closed. A transverse air passage 36 communicates with the bottom of the up-draft passage 19 and also with the bottom of the 105 compartment 29; said transverse air passage 36 preferably having a screen 37 which as illustrated is in line with the partition 24.

The bottom of the compartment 28 includes a trough 38 in the bottom of which is 110 mounted a conveyer preferably of the screw type as shown at 39; said conveyer extend-

ing in the direction of the width of the housing body.

Perforated water tubes 40 are positioned transversely of the dust compartment 29 above the opening 25 and are adapted to cause sprays of water to pass downwardly through the dust compartment for a purpose hereinafter described. Furthermore a perforated water pipe 41 is positioned preferably within the transverse air passage 36 and is adapted to direct sprays of water against the screen 37 for the purpose of keeping the perforations of the screen open during the operation of the device.

A gate or shutter 42 is movable in suitable guideways 43 and is adapted to vary the size of the opening 21 and this shutter can be regulated by any suitable mechanism, such for example as by the cables 44 and ratchet mechanism 45 as shown in Fig. 3.

My improved device operates as follows: The ashes mixed with the unburnt fuel is dumped into the body 8 and lifted by the elevator so as to be discharged in the hopper 14. The transferring wheel operates to move the ashes containing the unburnt heavier portions onto the inclined chute 18 and the entire mass will slide down the chute and fall through the current of air passing out of the opening 21. The lighter portions of the ash, which is usually in dust or small particle form, will be deflected from its downward path and will be compelled to take the path of air current transversely across the compartment 28 and through the opening 25 into the dust compartment 29; the heavier particles previously referred to and which consist of unburnt and partly burnt coal, being heavier will continue to fall through the transverse air current and will drop into the trough 38 where they will be conveyed by the conveyer 39 out of the structure into any suitable receptacle (not illustrated).

By the arrangement of the air passages 19 and 36 and the dust compartment 29, the fan 26 will establish a circulation of air which will take the path of the arrows shown in Fig. 1. The lighter particles of the ashes which pass into the dust compartment instead of blowing around in said space in an uncontrolled manner will take the downward course effected by the downward passage of the air within the compartment 29. By causing these particles to pass downwardly through the compartment 29, in which is included the water spray from the tubes 40, the dust will be of such weight that when reaching the car 35 it will fall therein while the air will continue in its circulation through the screen 37 and thereby will be rid of any dust particles which may happen to continue below the car and will again be moved upwardly through the passage 19 and repeat its action by passing out of the open-

ing 21 as before stated. In other words, the circulation of air in the manner specified keeps the lighter particles under control assisted by the moistening of said particles by the spray of water from the pipes 40. The size of the opening 21 can be regulated to suit various conditions in order to provide a proper delivery of air therethrough and the screen 37 will be kept clean due to the forcible discharge of water from the pipe 41 against the inner part of the screen 37; said water tending to keep the perforations of the screen open. The floor structure of the compartment 29 is preferably provided with a gutter 46 which will convey any water, draining therein, out of the housing body.

The dust compartment 29 is preferably provided with deflecting baffles 47 so as to cause the material falling therethrough to pass into the car 35. However, it will be understood that there is sufficient space between the bottom of the baffles 47 and the car to permit passage of air therethrough so as to again pass into the up-draft passage 19 through the medium of the passage 36 and screen 37.

I have found that the material such as that passing downwardly into the trough 38 practically all contains fuel value and can be used for many purposes.

In Figs. 4 and 5 I have shown a modified form of apparatus for keeping the screen 37 clean so that the perforations therein will not become clogged to such extent as to interfere with the circulation of air. In this modified structure I have shown a wire brush 48 attached to a cable 49 passing over pulleys 50; the weight of the brush being counter-balanced by a weight 51; there being preferably provided a compartment 52 in which a workman can stand so as to move the cable to cause the brush to scrape against the screen 37 by an upward and downward movement of said brush.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

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

1. A device of the character described including means providing two upright compartments separated by a partition having an opening; means positioned to allow the discharge of material, containing ashes mixed with heavier fuel, down one of said compartments; and means providing an opening for directing a current of air transversely across said fuel compartment in a

substantially horizontal path at right angles to the vertical path of said falling material and then directly through said first opening into the other compartment; substantially as described.

2. A device of the character described including means providing two upright compartments arranged side by side and separated by a partition having an opening; means positioned to allow the discharge of material, containing ashes mixed with heavier fuel, down one of said compartments; means providing an opening for directing a current of air transversely across said compartment to and directly through said first opening into the other compartment above its bottom; means communicating with the latter compartment below said first opening and with said second opening and providing a passage, said passage together with said openings and compartments forming a circulating passage for said air; means for causing said air to circulate through said circulating passage; and a screen in the lower part of said circulating passage; substantially as described.

3. A device of the character described including partitions spaced apart to provide a fuel compartment; means providing a dust compartment at one side of one of said partitions, said latter partition having an opening communicating with said fuel and dust compartments; means providing an air duct having an outlet opening substantially horizontally opposed to said first opening with the space of said fuel compartment forming a direct transverse air passage therebetween so that air emanating from said outlet opening will pass directly across said fuel chamber through said first opening and through the path of material containing fuel and ashes falling through said fuel chamber from a position above said outlet opening; and means for returning the air from said dust compartment to said air duct to establish a circulation of said air; substantially as described.

4. A device of the character described including partitions spaced apart to provide an intermediate fuel compartment, an up-draft air passage at one side of the fuel compartment, a dust compartment at the opposite side of the fuel compartment, and a transverse air passage communicating with the up-draft air passage and with the dust compartment adjacent its bottom, said partitions above the bottom of the fuel compartment having opposed openings; means for effecting a circulation of air through said up-draft passage, then outwardly therefrom through one of said openings transversely across said fuel compartment through the other of said openings, then downwardly through said dust compartment and transversely through said transverse passage

again into said up-draft passage; means for discharging ashes mixed with heavier fuel material into the portion of the current of air while passing across said fuel compartment whereby said heavier material will fall into the bottom of said fuel compartment and the ashes will pass into said dust compartment; and means for delivering sprays of water downwardly through said dust compartment; substantially as described.

5. A device of the character described including partitions spaced apart to provide an intermediate fuel compartment, an up-draft air passage at one side of the fuel compartment, a dust compartment at the opposite side of the fuel compartment, and a transverse air passage communicating with the up-draft air passage and with the dust compartment adjacent its bottom, said partitions above the bottom of the fuel compartment having opposed openings; means for effecting a circulation of air through said up-draft passage, then outwardly therefrom through one of said openings transversely across said fuel compartment through the other of said openings, then downwardly through said dust compartment and transversely through said transverse passage again into said up-draft passage; means for discharging ashes mixed with heavier fuel material into the portion of the current of air while passing across said fuel compartment whereby said heavier material will fall into the bottom of said fuel compartment and the ashes will pass into said dust compartment; and a screen positioned to allow the air during its circulation to pass through it after passing downwardly through the dust compartment; substantially as described.

6. A device of the character described including partitions spaced apart to provide an intermediate fuel compartment, an up-draft air passage at one side of the fuel compartment, a dust compartment at the opposite side of the fuel compartment, and a transverse air passage communicating with the up-draft air passage and with the dust compartment adjacent its bottom, said partitions above the bottom of the fuel compartment having opposed openings; means for effecting a circulation of air through said up-draft passage, then outwardly therefrom through one of said openings transversely across said fuel compartment through the other of said openings, then downwardly through said dust compartment and transversely through said transverse passage again into said up-draft passage; means for discharging ashes mixed with heavier fuel material into the portion of the current of air while passing across said fuel compartment whereby said heavier material will fall into the bottom of said fuel compartment and the ashes will pass

into said dust compartment; a screen positioned to allow the air during its circulation to pass through it after passing downwardly through the dust compartment; and
 5 means for keeping open the perforations of said screen; substantially as described.

7. A device of the character described including partitions spaced apart to provide an intermediate fuel compartment, an up-draft air passage at one side of the fuel compartment, a dust compartment at the opposite side of the fuel compartment, and a transverse air passage communicating with the up-draft air passage and with the dust compartment adjacent its bottom, said partitions above the bottom of the fuel compartment having opposed openings; means for effecting a circulation of air through said up-draft passage, then outwardly therefrom through one of said openings transversely across said fuel compartment through the other of said openings, then downwardly through said dust compartment and transversely through said transverse passage again into said up-draft passage; means for discharging ashes mixed with heavier fuel material into the portion of the current of air while passing across said fuel compartment whereby said heavier material will fall into the bottom of said fuel compartment and the ashes will pass into said dust compartment; and means for regulating the size of said first specifically mentioned opening; substantially as described.
 35 scribed.

8. A device of the character described in-

cluding partitions spaced apart to provide an intermediate fuel compartment, an up-draft air passage at one side of the fuel compartment, a dust compartment at the opposite side of the fuel compartment, and a transverse air passage communicating with the up-draft air passage and with the dust compartment adjacent its bottom, said partitions above the bottom of the fuel compartment having opposed openings; means for effecting a circulation of air through said up-draft passage, then outwardly therefrom through one of said openings transversely across said fuel compartment through the other of said openings, then downwardly through said dust compartment and transversely through said transverse passage again into said up-draft passage; an inclined chute; and means for delivering ashes mixed with heavier fuel material onto said chute whereby said ashes will slide down said chute and be intercepted by the current of air passing transversely across the fuel compartment so that the lighter material will follow the path of the air current into the dust compartment while the heavier fuel material will fall downwardly into said fuel compartment; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL A. STONEBACK.

Witnesses:

CHAS. E. POTTS,

ELIZABETH GARBE.