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ART OF COLLECTING, SIFTING, AND REMOVING ASHES.

APPLICATION FILED MAY 2, 1918.

1,314,677. Patented Sept. 2, 1919.

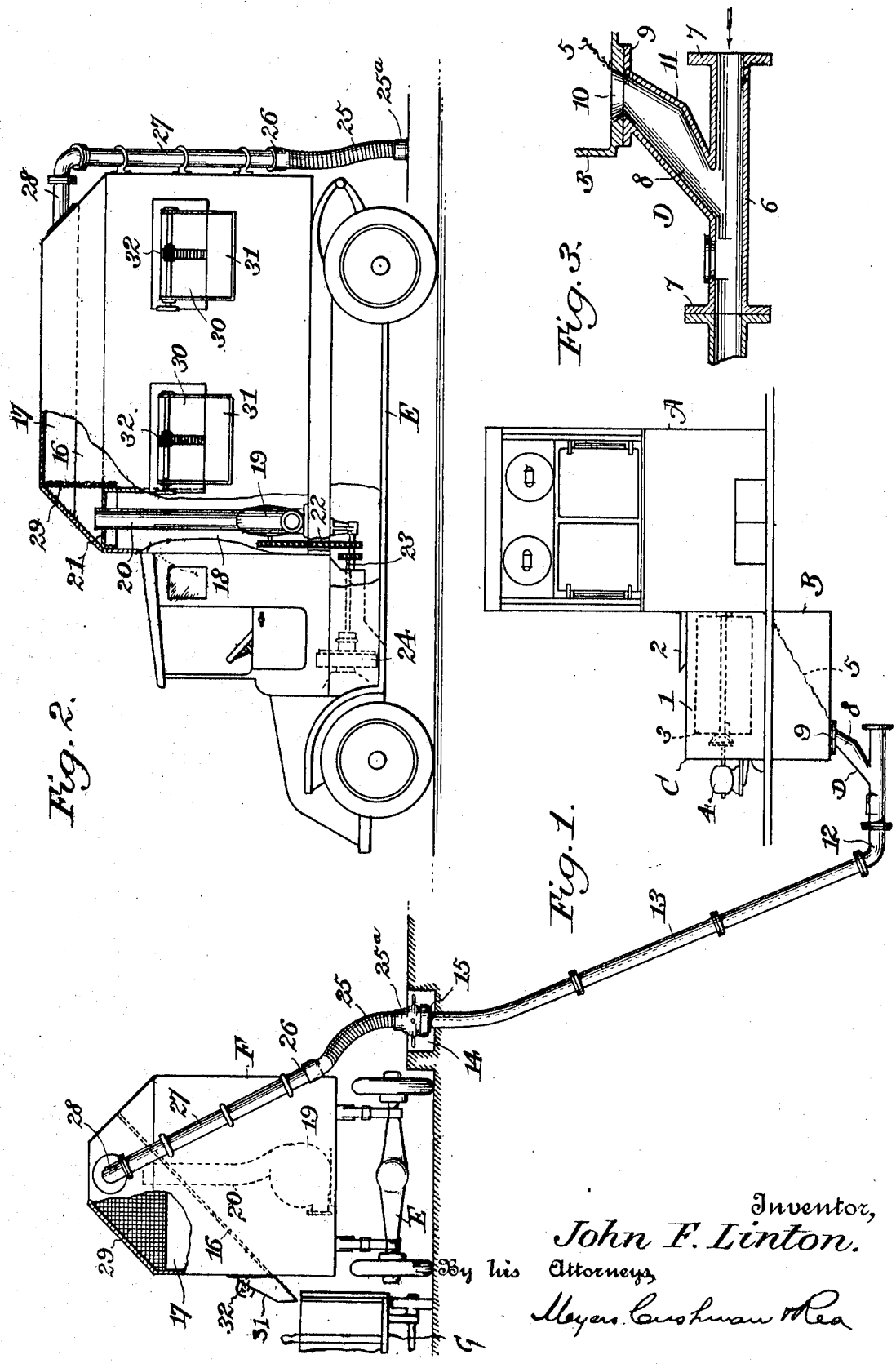


Fig. 1.

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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ART OF COLLECTING, SIFTING, AND REMOVING ASHES.

1,314,677. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed May 2, 1918. Serial No. 232,030.

To all whom it may concern:

Be it known that I, JOHN F. LINTON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in the Art of Collecting, Sifting, and Removing Ashes, of which the following is a specification.

This invention relates to certain new and useful improvements in the art of collecting, sifting and removing ashes.

In large cities the removal of ashes, especially from office buildings, apartment houses, hotels and similar modern structures presents an industrial problem which is difficult of satisfactory solution because of the restrictions and obstacles encountered in the performance of the work. For instance, in a great city like New York, especially on Manhattan Island, land is very valuable and there are hundreds of buildings of extraordinary height, ranging from ten to fifty stories, congested within a limited area and extending substantially in solid rows along opposite sides of relatively narrow streets through which pass, at all hours of the day, continuous streams of traffic, both foot and vehicular. These buildings are almost without exception equipped with modern heating and power plants utilizing batteries of steam boilers, the operation of which results in the accumulation of tons of ashes each day. The disposal of these ashes is a matter of expense and annoyance, for it usually entails the addition to the equipment of each boiler room of dozens of large, costly, galvanized metal ash cans into which the ashes are shoveled each day, the filled cans being subsequently hoisted to the sidewalk level through the agency of elevators provided for this particular purpose, or else, when conditions will not permit the installation of such a special elevator, the cans must be carried by laborers to the sidewalk, the ashes being subsequently collected by the usual ash carts making the round from building to building. An elevator or elevator leg of the type usually employed for hoisting the ashes to the sidewalk level costs from seven hundred to five thousand dollars with one hundred per cent. cost of maintenance per annum, while the cost of the cans alone for a building handling about two tons of ashes per day will approximate six hundred dollars per annum, as these metallic cans rapidly deteriorate due to excessive wear caused by the abrasiveness of, and the sulfuric acid in, the ashes. In addition to this, the dust and annoyance incident to carting the ashes to the elevator and from the elevator to the ash cart is so great as to constitute a veritable nuisance. Furthermore, the local building regulations usually prohibit the installation of bins, elevator legs, and all overhanging projecting structures at the exterior of the building, or on, or over the street, because of the danger, obstruction and inconvenience to pedestrians. It will also be obvious that where great quantities of ashes have to be handled two or three times in conveying the same from the boiler room to the ash cart, the expense, time consumed, and labor required for such a procedure constitutes a considerable and serious item in the cost of maintenance of the building.

The salient purpose of the present invention is the elimination of the above recited disadvantages incident to the ash disposal problem as encountered under the conditions mentioned. To this end I propose to permanently install within the building a suction line or conduit having an ash receiving intake at the ash pit or box, preferably located adjacent the furnace, the delivery end of the suction line or conduit terminating at a man-hole preferably situated adjacent the street curb, or at a convenient point outside the building. I also povide an automobile bin or traveling van having a closed body or chamber divided by a partition or floor into an upper and a lower compartment. Suitably located within the lower compartment is a suction inducing device, such as a suction blower, having its intake communicating with the upper compartment and baffled with suitable protecting screens. The suction blower is intended to be driven from the power shaft of the engine which drives the automobile, a suitable clutch mechanism being provided so that the engine may be thrown out of propelling relation to the vehicle and into fan driving relation, or vice versa as may be desired, the engine thus being employed for both propelling the vehicle and for operating the suction mechanism. Connected with the upper compartment and forming a part of the automobile equipment is a short suction pipe section which extends exteriorly of the vehicle body and is adapted to be coupled, prefer-

ably by means of a short flexible pipe or a coupling attachment, to the end of the suction pipe at the man-hole. Thus, in removing the ashes from the building it is only necessary to drive the traveling van or bin alongside the curb and couple onto the suction pipe at the man-hole, and then throw the power shaft of the engine into driving relation with the suction fan so that the ashes will be drawn up through the conduit and into the upper compartment of the van. The partition forming the floor of this upper compartment is inclined so that the ashes will pass downwardly by gravity, and then, at stated times may be permitted to pass through a door, or doors, into an ordinary ash cart driven alongside the van. By this arrangement, the ashes may be quickly and completely removed without the noise and dust usually incident to handling under ordinary methods, and with far greater economy as the maintenance cost need not exceed two cents per ton of ashes removed. Of course, the van may be driven from building to building for the repetition of the removal operation as will be readily understood.

Furthermore, I propose to provide means whereby the ashes may pass from the bin into and through the intake of the suction pipe without banking, or clogging the intake thus avoiding the possibility of interference with or blocking the suction.

I also propose to provide means for sifting the ashes so that such cinders as can be used for fuel may be recovered, while the fine dust and other like non-usable products of combustion may be drawn off through the suction pipe.

With the above recited objects and others of a similar nature in view, my invention consists in the art of disposing of ashes set forth in and falling within the scope of the appended claims.

In the drawings:

Figure 1 is a view partly in elevation and partly diagrammatic showing the apparatus ready for carrying out the invention.

Fig. 2 is a view in side elevation of the automobile van and its connection with the man-hole.

Fig. 3 is a vertical, longitudinal, sectional view taken through the intake member of the suction conduit of the building.

Referring now to the accompanying drawings in detail, the letter A indicates conventionally a steam boiler furnace, while B is an ash pit or well located adjacent to the furnace and preferably below the floor level of the boiler room. Positioned above this pit or well is an ash sifting device designated by the letter C and comprising a casing 1 provided with a feed hopper 2 and inclosing a suitable rotary sifter or screen 3, which is driven from the motor 4. This screening apparatus may be of any preferred construction and dust and ashes separated from the cinders in the screening operation will drop down into the pit or well B, forming an inclined bank such as indicated by the dotted line 5.

Connected with the lower portion of the pit or well B is an ash intake member indicated as a whole by the letter D, and shown in detail in Fig. 3. This intake comprises a horizontal pipe section 6 open at both ends and flanged as at 7, this horizontal section 6 having formed integral therewith and intermediate its ends an upwardly and rearwardly inclined supply pipe 8 flanged at its upper end as at 9 and suitably secured to the bottom of the ash pit or well with the bore of the supply pipe in alinement with the opening 10 of the pit. The forward wall section of this supply pipe 8 is uniformly inclined, but the rear section thereof is formed at an angular bend 11. The particular form of this ash intake assists materially in the operation of the apparatus, for the peculiarly shaped inclined supply pipe 8 insures that the ashes will flow in an unobstructed path into the horizontal section 6 of the intake and will not bank in the latter so as to interfere with the line of suction or draft through the intake in the direction indicated by the arrow in Fig 3. Should an ordinary T intake be employed in the apparatus, it will be found that there will be a tendency of the ashes to bank or clog in the horizontal section 6 of the intake directly below the communication of the supply pipe or vertical section of the intake so that the draft or suction is obstructed. With my intake, however, the ashes and dust are directed downward at an angle and introduced into the draft or suction in the direction of, or along, the flow of the latter, so that it is impossible for the banking of the ashes to occur. Connected with the forward opening end of the horizontal section 6 of the intake is an elbow 12 having coupled therewith the lower end of the main ash conduit shown at 13, the upper end of this conduit terminating within the man-hole 14 preferably located exteriorly of the building, and in the present instance, adjacent the curb or street. The upper end of this conduit 13 which projects into the man-hole is provided with a suitable coupling member 15. It will be understood that the ash pit, the intake, the main ash conduit 13 and the man-hole 14 at which the discharge end of the conduit terminates all form of a part of the ash handling equipment of the building, and each building is intended to have this much of the apparatus permanently installed therein.

To remove the ashes from buildings so equipped, I provide a traveling or automobile van or bin shown at E, and having a

body portion F in the nature of a relatively large closed chamber. This body portion is divided by the inclined partition 16 into an ash receiving suction chamber 17 and a lower chamber 18. Within the latter is mounted a suction device, in the present instance, a suitable suction fan 19 provided with the suction pipe 20 the upper end of which extends through the wall section 21 and into the upper or ash receiving suction chamber. This suction fan may be driven in any suitable manner such as by a chain and sprocket mechanism shown conventionally at 22, operated from the engine shaft 23, the latter of course being part of the propelling mechanism of the vehicle, a suitable clutch conventionally indicated at 24 being employed to shift the power of the engine from the propelling mechanism of the vehicle to the fan, and vice versa, as may be desired. When the ashes are to be removed from the boiler room, the vehicle is driven up alongside the curb, as shown in Fig. 1, and the flexible pipe section 25 having a coupling member 25ª complemental to the coupling member 15 of the main ash conduit 13 is connected to the latter at the man-hole. The upper end of this flexible pipe section 25 is connected as at 26 to a short suction pipe 27 which with the pipe section 25 forms a part of the van equipment and leads at its upper end into the ash receiving suction chamber, as shown at 28. When the suction pipe of the van has been coupled with the pipe 27, the engine may be thrown into driving engagement with the suction fan by shifting the clutch for this purpose, and suction being exerted in the ash receiving chamber through the pipe 20, the ashes will be drawn from the bin B through the intake D up the pipe 13, through the pipe 27, and into the upper chamber 17, one or more suitable baffling screens 29 preventing the ashes passing to and through the suction pipe 20 of the fan. The ashes will drop downwardly by gravity onto the inclined partition 16, and when desired, as when the upper chamber is well filled with ashes, or all of the ashes have been removed from the ash pit B, or at other times, an ordinary ash cart, conventionally shown at G, is driven into position alongside the van as shown in Fig. 1, and by opening one or both of the doors 30 controlling the delivery chutes 31 in the side of the van, the ashes may be permitted to discharge into the cart. These doors 30 may be opened and closed in any suitable manner, such as by the rack and pinion device 32. As soon as the ashes have been removed from the ash pit, the suction pipe of the van is uncoupled from the main suction conduit 13 of the building installation, and the van may be driven to the next building permanently equipped with the parts of the apparatus as herein described, so that the removal of the ashes from the next building may take place. The operation may be repeated of course as the van makes its rounds from building to building, accompanied by the ash cart, so that the ashes may be removed from a number of buildings within a neighborhood or territory with great speed and without noise and dirt.

While I have herein shown and described one particular manner of practising my invention, I wish it to be understood that I do not wish to limit myself to the precise details herein set forth by way of illustration, as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the appended claims.

What I claim is:

1. In an apparatus for transferring ashes from a building, an ash receptacle located within the building, an ash conduit having a receiving end communicating with the ash receptacle, and having a discharge end located at a station exterior of the building whereby direct communication is established between the receptacle and station, a traveling ash collecting vehicle adapted to be moved into juxtaposition with the station, and a suction creating apparatus carried by the vehicle and including a suction fan and a suction pipe operatively associated with the fan and adapted to be detachably coupled to the discharge end of the ash conduit, said suction apparatus on the vehicle being operable to draw the ashes by suction directly from the ash receptacle into the vehicle when the suction pipe is coupled with the conduit.

2. In an apparatus for transferring ashes, a stationary ash-receptacle, an ash conduit having a receiving end communicating with the stationary ash receptacle and having a discharge end terminating at a fixed station distant from the receptacle whereby direct communication is established between the receptacle and the station, a traveling ash-collecting vehicle adapted to be moved into juxtaposition with the station, suction-creating apparatus mounted on the vehicle and including power-driven suction-creating mechanism and a suction pipe operatively associated with the power-driven suction-creating mechanism, and means for detachably connecting one end of the suction pipe to the discharge end of the ash conduit, said suction creating apparatus on the vehicle being operable to draw ashes by suction directly from the ash receptacle through the conduit and pipe into the vehicle when the suction pipe is coupled with the conduit.

3. In an apparatus for transferring ashes from a building, a stationary ash receptacle located within the building, a permanent

ash conduit having a receiving end communicating with the ash receptacle and a discharge end terminating at a station exterior of the building, a traveling ash-collecting vehicle adapted to be moved into juxtaposition with the station, said ash collecting vehicle being divided into an ash receiving compartment and a suction apparatus compartment, a suction creating apparatus located in the suction apparatus compartment and including a suction pipe, and means for detachably coupling one end of the suction pipe to the discharge end of the conduit, said suction creating apparatus being operable to draw ashes by suction directly from the receptacle through the conduit and suction pipe into the ash-receiving compartment of the vehicle when the suction pipe is coupled with the conduit, and means for discharging the ashes from the last named compartment of the vehicle.

4. In an apparatus for transferring ashes from a building, an inclined, stationary ash conduit having an intake provided with a portion communicating with the bottom of the ash receptacle and a portion communicating with the atmosphere, and having a discharge end located at a station exterior of the building whereby direct communication is established between the receptacle and station, a coupling member carried by the discharge end of the conduit, a traveling ash collecting vehicle adapted to be moved into juxtaposition with the station, and a suction creating apparatus carried by said vehicle and including a fan mounted on the vehicle and a swinging suction pipe operatively associated with the fan and having a free end portion provided with a coupling member complemental to the coupling member at the discharge end of the conduit and adapted to be detachably connected therewith, said suction creating apparatus being operable when the coupling members are united, to draw ashes by suction directly from the ash receptacle into the vehicle.

5. In a system for removing ashes from a plurality of buildings, a stationary ash receptacle located within each building below the street level, a permanent ash conduit for each receptacle, each ash conduit having a receiving end communicating with one of the receptacles and having an elevated discharge end located at a station exterior of the building whereby direct communication is established between each receptacle and its associated station, the discharge ends of all of the conduits having similar couplings, a traveling ash-collecting vehicle adapted to be moved into juxtaposition with each station, and a suction creating apparatus carried by the vehicle and including a relatively short suction pipe having a coupling which is complemental to all of the couplings of the ash conduits, said suction creating apparatus on the vehicle being operable to draw the ashes by suction directly from the ash receptacles into the vehicle when the suction pipe is coupled to the discharge conduits.

In testimony whereof I have hereunto set my hand.

JOHN F. LINTON.