T. S. LEAKE.

DEVICE FOR DISPOSING OF ASHES AND CINDERS FROM LOCOMOTIVES.

APPLICATION FILED MAY 2, 1908.

924,678. **Patented June 15, 1909.**

3 SHEETS—SHEET 1.

Fig. 1.

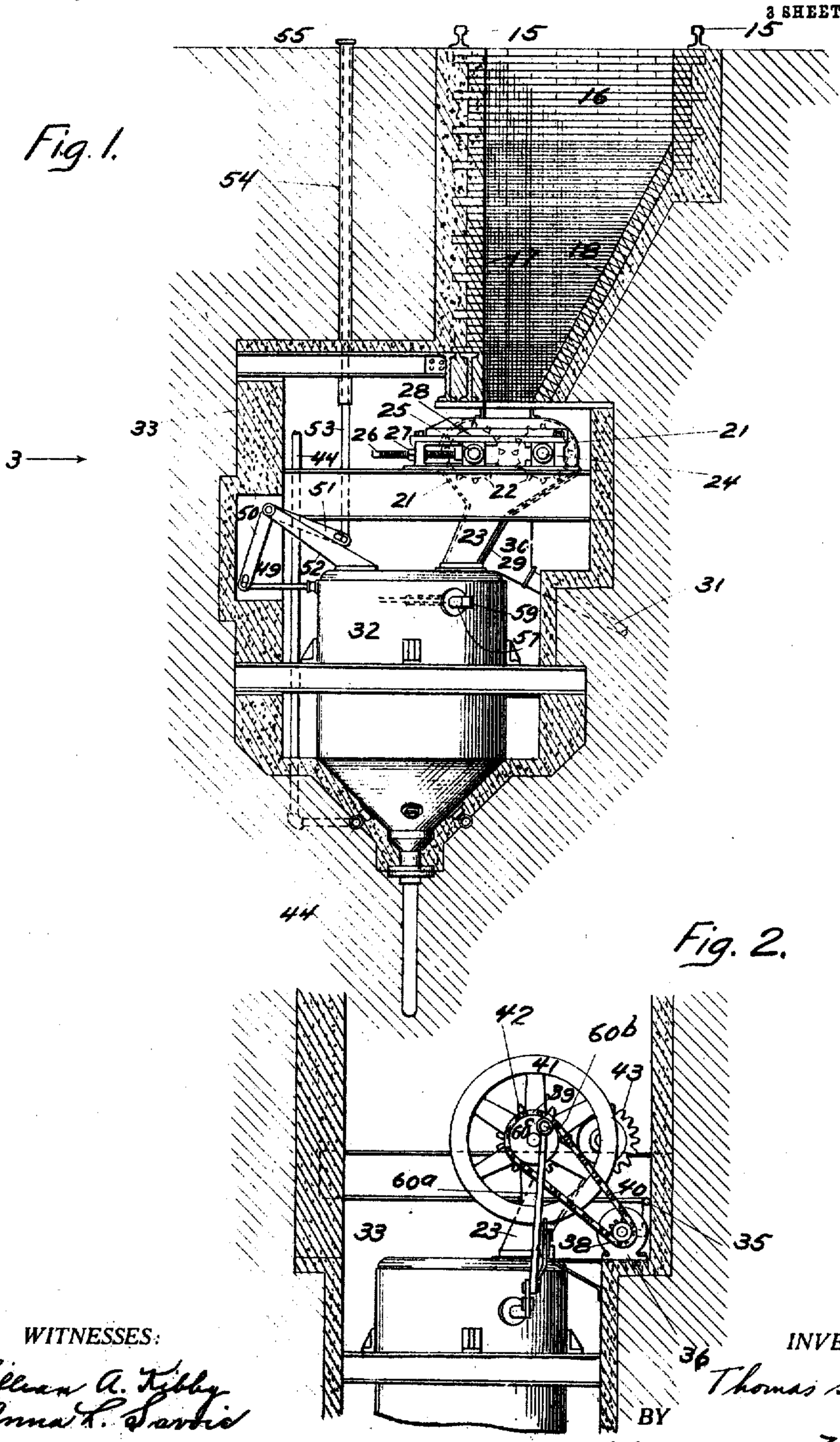

Fig. 2.

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Fig. 3.

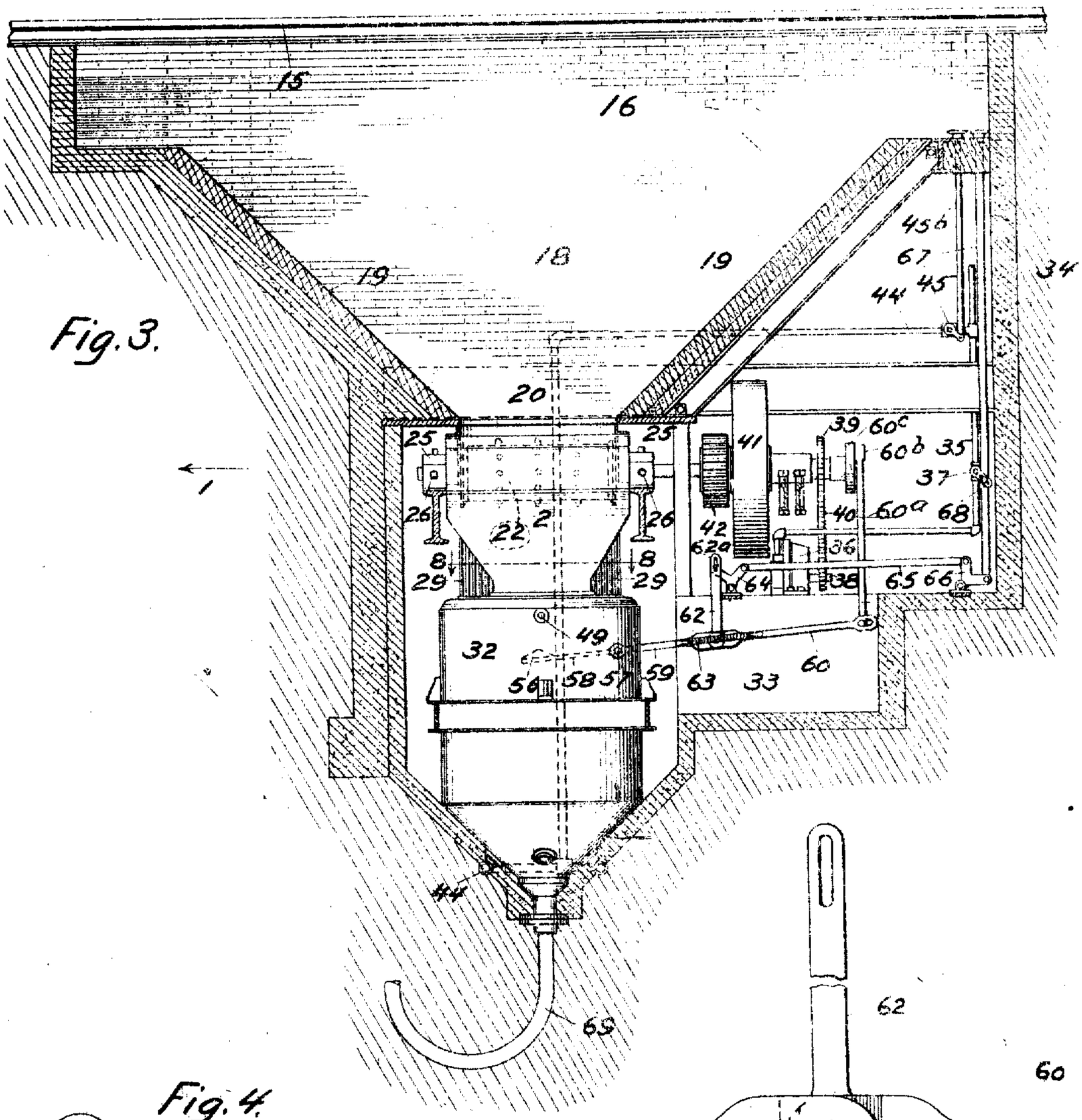


Fig. 4.

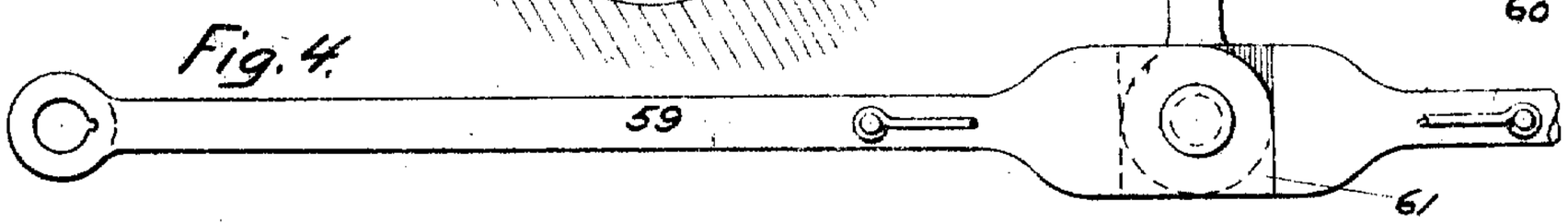
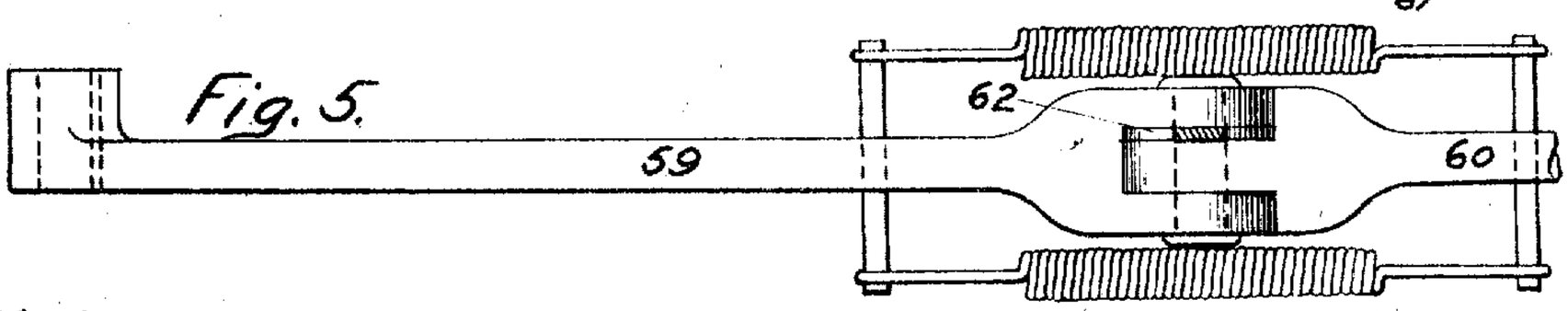


Fig. 5.



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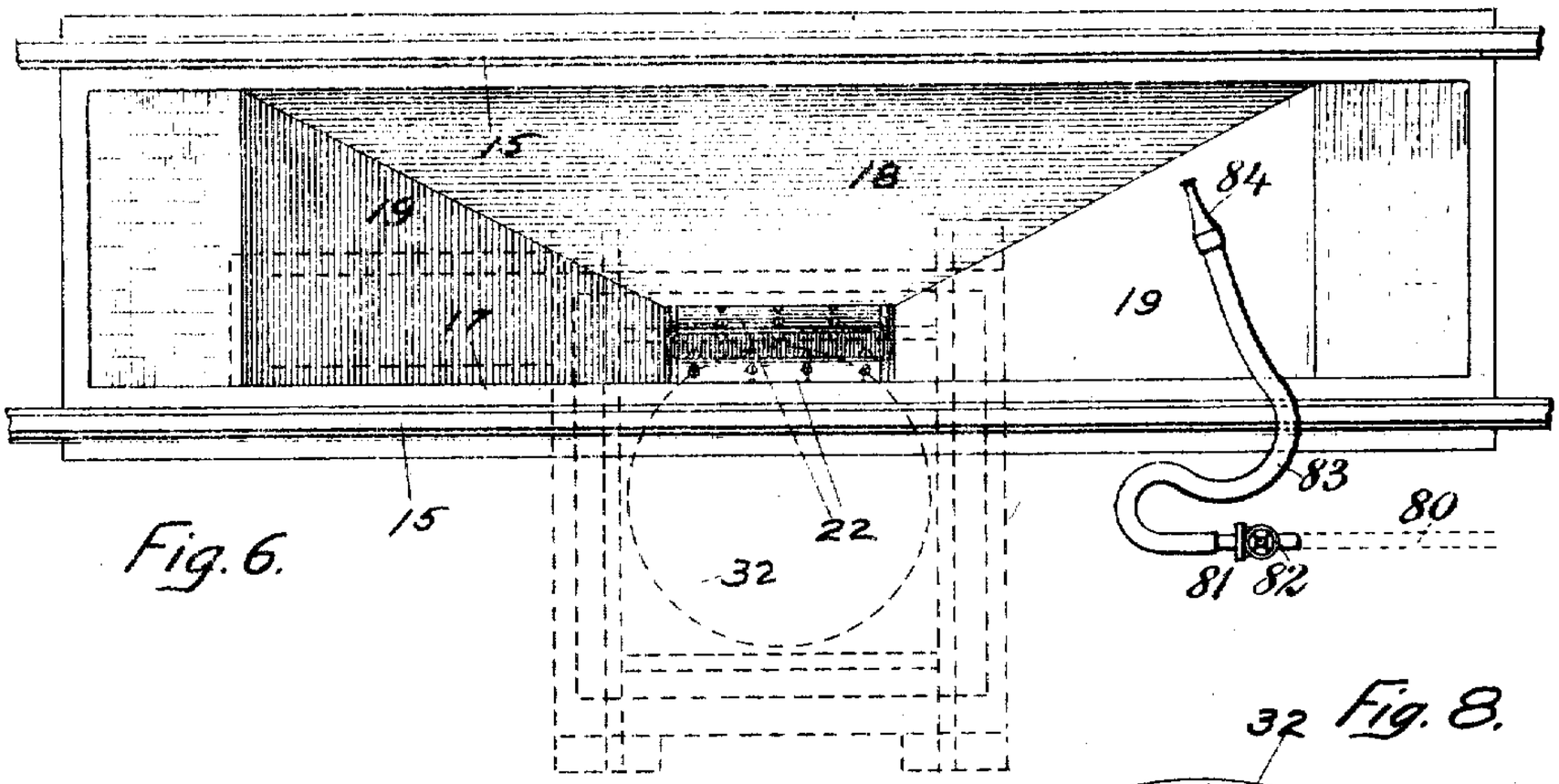


Fig. 6.

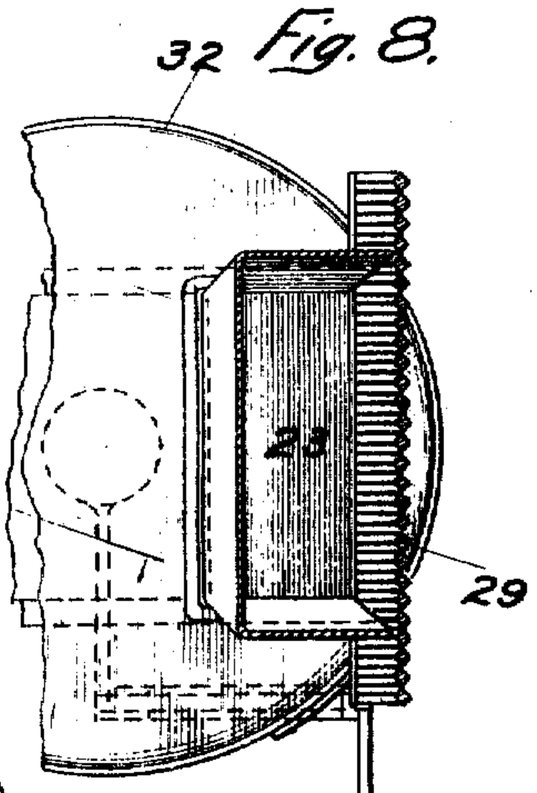
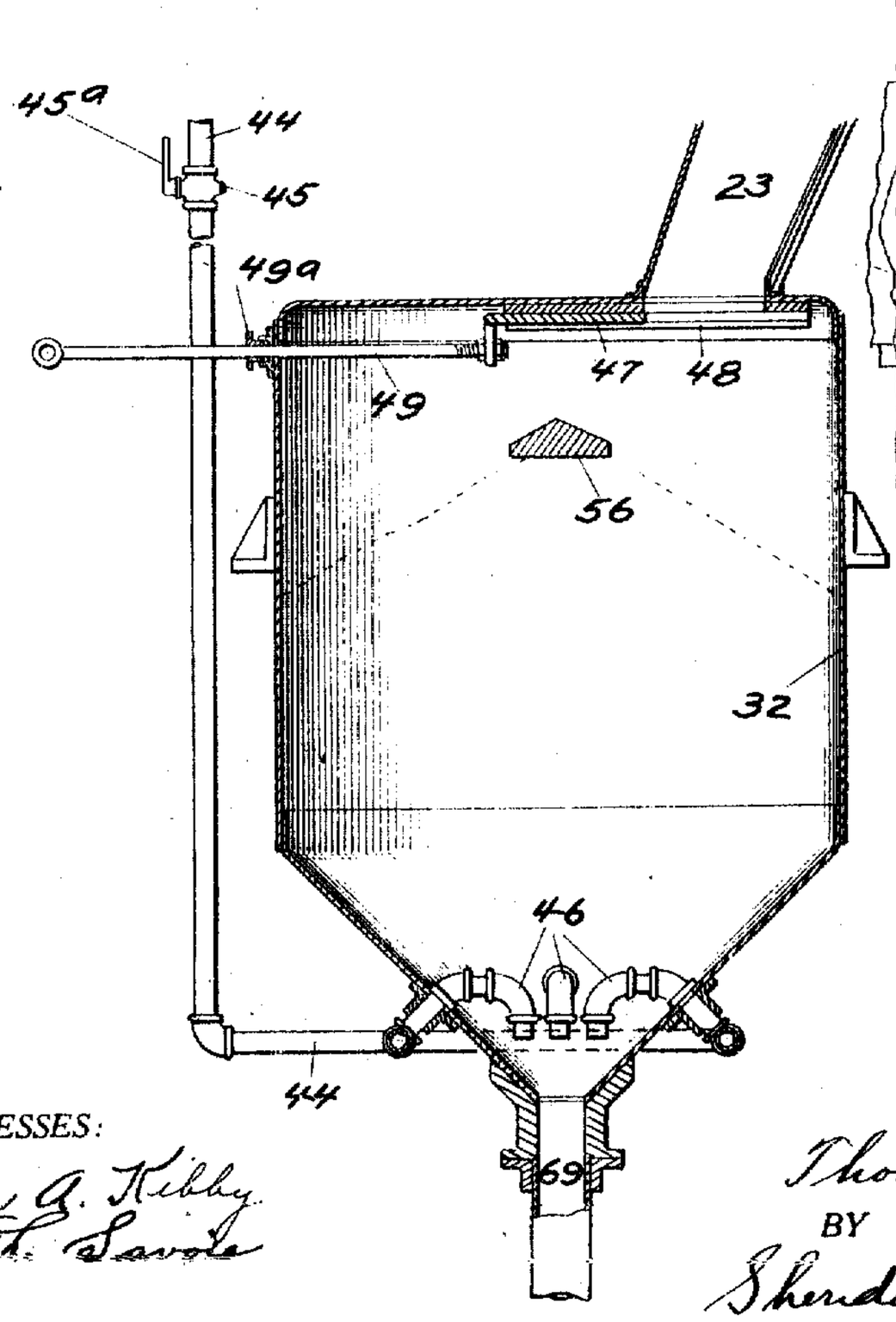


Fig. 8.

Fig. 7



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UNITED STATES PATENT OFFICE.

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DEVICE FOR DISPOSING OF ASHES AND CINDERS FROM LOCOMOTIVES.

No. 924,678. Specification of Letters Patent. Patented June 15, 1909.

Application filed May 2, 1908. Serial No. 430,590.

To all whom it may concern:

Be it known that I, THOMAS S. LEAKE, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Devices for Disposing of Ashes and Cinders from Locomotives, of which the following is a specification.

The object of my invention is to provide suitable apparatus to transfer ashes and cinders away from the ash pits in which they are deposited from locomotives. This object and various other objects in connection therewith will be made apparent in the following specification and claims when taken in connection with the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of my improved apparatus. Fig. 2 is an elevation of certain parts, looking in the same direction as in Fig. 1, but the section being taken in a different plane. Fig. 3 is an elevation at right angles to that of Fig. 1. Figs. 4 and 5 illustrate details. Fig. 6 is a top plan view. Fig. 7 is an axial section of the chamber which forms an element of my apparatus. Fig. 8 is a section taken on the line 8, 8 of Fig. 3, looking in the direction of the arrows.

A large ash pit is provided between the rails 15 leading to the roundhouse. One side wall 17 of this pit is vertical while the opposite side wall 18 slopes downwardly toward it. The end walls 19 slope downwardly together and thus a throat 20 of moderate size is formed at the bottom of the pit. Below this throat 20 a large chamber 33 is excavated and in this chamber the greater part of my apparatus is installed. Leading from the bottom of the throat 20 is a sheet metal chute 23 which widens out on each side, as indicated by the reference numeral 21. Within these widened parts are the toothed parallel rollers 22, the relation of the teeth thereon being shown best in Fig. 6, the bearings for one roller indicated by the reference numeral 24 and for the other roller by the reference numeral 25. The bearings 24 are fixed, but the bearings 25 are adapted to reciprocate in guides 28 so as to adjust the distance between the rollers 22. This adjustment is effected by means of the screws 26 and nuts 27 attached to the bearings 25. The chute 23 is bounded on what may be called the back side by closely arranged square steeply inclined iron bars 29 (see Fig. 8), thus forming a sieve or screen through which water may drain from the ashes and cinders into the chamber 30 behind the bars 29, and be conducted away by the pipe 31.

The chute 23 discharges into a drum 32 which occupies the lower part of the chamber 23.

The reference numeral 34 designates a compressed air supply pipe. From this a branch pipe 35 leads to the air motor 36, being controlled by the valve 37. This air motor rotates the sprocket pinion 38 which communicates its movement to the sprocket wheel 39 by means of the chain 40. The sprocket wheel 39 is on the same shaft with one of the toothed rollers 22. This shaft also carries the fly-wheel 41 and the gear wheel 42 which meshes with a similar gear wheel 43 on the same shaft with the other toothed roller 22. The teeth of the two gears 42 and 43 are purposely made long so as to facilitate adjustment by means of the screw threaded rod 26. Another branch 44 from the air supply pipe 34 leads to the bottom of the drum 32 and there branches and terminates in a series of downturned nozzles 46, as shown in Fig. 7. There is a valve 45 in the pipe 44 having a crank 45^a which is under the control of an operator on the ground by means of the rod 45^b.

The sliding gate 47 with the co-acting guides 48 are provided for the purpose of closing the opening from the chute 23 into the drum 32 (see Fig. 7). The rod 49 passing through a stuffing box 49^a serves to control the gate 47 and is in turn controlled by the bent arm lever 50—51 fulcrumed on the arm 52 and actuated from the ground by means of the rod 53 extending through the sleeve 54 and terminating in a handle 55.

In the particular embodiment of my invention which I have chosen to illustrate and describe in this specification, I have incorporated means for automatically stopping the crushing rolls 22 in case the outlet from the drum 32 becomes plugged up. A patter 56 is positioned centrally in the upper part of the drum 32, being pivotally mounted on the axis 57 by means of the arm 58 within the drum 32. From the end of the axle shaft 57 extends an arm 59 and connected thereto by a knee joint is a link 60. The abutting shoulders 61 shown in Fig. 4 prevent the joint between the members 59, 60 from being flexed upwardly while permitting downward flex-

ure. Retractile springs 63 connecting the members 59 and 60 on either side are so designed that when once the joint between said members is flexed a little they will increase such flexure. Pivoted on the same axis as that which belongs to the joint 59—60 is the supporting link 62 which has its upper slotted end 62ª connected to one end of a bell crank 64, the other end being connected by the link 65 to another bell crank 66, which in turn is attached to a long rod 67 reaching to an accessible point where it can be used as a handle. The crank 68 on the valve 37 is engaged by the rod 67. The end of the link 60 is connected by a pitman 60ª to the wrist pin 60ᵇ on the crank disk 60ᶜ, which is at the end of the shaft carrying the toothed roller 22 and the fly-wheel 41. A conduit 69 arranged so as not to have any sharp bends extends from the bottom of the drum 32 to any point where it is desired to discharge the ashes. It will be noted that the compressed air nozzles 46 are directed into this conduit 69 in proximity thereto.

The water pipe 80 is embedded in the ground and terminates in a hydrant 81 controlled by a hand valve 82. From this hydrant a flexible hose 83 leads to the terminal nozzle 84. By this means the ashes in the pit 19 may be wetted down by an attendant.

Having described the structure of the apparatus which constitutes a preferred embodiment of my invention, I will now proceed to state how this apparatus operates. The locomotives travel along on the rails 15 and dump their ashes and cinders into the pit 16. The operator by pushing down on the rod 67 opens the valve 37 and starts the air motor running. This drives the crushing rollers 22, thus feeding the ashes and cinders down between them into the chute 23 and at the same time crushing any larger cinders or clinkers. At the same time that this is going forward the attendant or operator is wetting the ashes down copiously in the pit 16. Any excess of water will be drained out from the ashes in the chute 23 through the spaces between the squared bars 29, these constituting a sieve for this purpose, and such water will be drained away through the conduit 31. Thereafter, the ashes will fall into the drum 32, being in a more or less plastic mass, due to the admixture of water. After the toothed rollers 22 have fed down a quantity of wet ashes sufficient to partially fill the drum 32, then the operator stops the rotation of said toothed drum 32 by means of the handle 67 controlling the valve 37 of the air motor 36. Next, the operator closes the opening from the chute 23 to the drum 32 by shifting the gate 47 by means of the handle 55 and the intermediate mechanism. Thereafter, the operator opens the valve 45 and the compressed air will blow through the nozzles 46 into the conduit 69, which leads away from the bottom of the drum 32 to the point where it is desired to deposit the ashes. For example, this conduit may lead through a flexible hose to a car standing on a side track at a greater or less distance and thus the ashes may be loaded into the car. This completes the description of the normal operation of my device.

If it should happen that the ashes become clogged up in the bottom of the drum 32 they would continue to pile up therein until their top surface attained somewhat the form indicated by the dotted lines in Fig. 7. Meanwhile, the patter 56 is going up and down, the lever 58—59—60 as a whole rocking on the shaft 57, this movement being imparted by the pitman 60ª driven from the rotating shaft on which is the fly-wheel 41. The slot 62ª in the top end of the link 62 affords room for the necessary play of said link, but when the pile of ashes in the drum 32 reaches a certain height, then at every stroke, the patter 56 will strike down upon the pile and thus there will be a force tending to break the joint between the members 59 and 60 downward. As soon as this break occurs the spring 63 will tend to increase the relative deviation of the members 59 and 60 and thus there will be a jerk down on the link 62, which, through the elements 64, 65, 66, 67 and 68, will close the valve 37, thus shutting off the air from the air motor 36 and stopping the rotation of the toothed rollers 22. The space between the toothed rollers 22 is so narrow that the wet ashes will not sift through except when they are rotated.

While the specific embodiment of my invention which I have chosen to illustrate and describe relates to removing ashes and cinders from a railway track ash-pit, it will be obvious that in its broader aspect my invention may be employed to convey ashes and cinders from any one point to another. Thus the chamber 32 and its associated parts might, for example, be employed to convey ashes from the neighborhood of a battery of stationary boilers to a barge on which it is desired to load the ashes and cinders. The various applications of my invention are intended to be covered by the following claims.

I claim:

1. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, a passage connecting them, crushing and feeding mechanism in said passage, means for introducing water into the ash-pit a conduit leading from the bottom of said chamber, and a compressed air pipe terminating in nozzles within the chamber directed toward said conduit.

2. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, a passage connecting them, crushing and feeding mechanism in said passage, means for introducing water into the ash-pit an ad-

justable closure for said passage, a conduit leading from the bottom of said chamber, and a compressed air pipe terminating in nozzles within the chamber directed toward said conduit.

3. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, a passage connecting them, crushing and feeding mechanism in said passage, means for introducing water into the ash-pit a compressed air motor to actuate said mechanism, a conduit leading from the bottom of said chamber, and a compressed air pipe terminating in nozzles within the chamber directed toward said conduit.

4. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, a passage connecting them, an adjustable closure for said passage, means for introducing water into the ash-pit a conduit leading from the bottom of said chamber, and a compressed air pipe terminating in nozzles within the chamber directed toward said conduit.

5. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, a passage connecting them, crushing and feeding mechanism in said passage, a motor to actuate said mechanism, a patter in the chamber, and operating connections from the motor to the patter, said connections comprising a yielding element adapted to stop the motor.

6. In a device of the class described, a receiving chamber for ashes means for wetting ashes as they are about to be introduced into said chamber, an adjustable closure for the top of the chamber, compressed air pipes terminating in downwardly directed nozzles within the chamber, and an outlet conduit leading away from the bottom of the chamber.

7. In a device of the class described, a receiving chamber for ashes, a chute leading thereto, crushing and feeding rolls within the chute, an air motor to drive said rolls, compressed air pipes terminating in downwardly directed nozzles within the chamber, a conduit leading therefrom, and a compressed air supply pipe with branches leading respectively to said motor and nozzles.

8. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, and an inclined chute connecting them, the lower side of said chute being formed of square bars arranged longitudinally, each bar having its diagonally opposite edges adjacent to corresponding edges of the neighboring bars.

9. In a device of the class described, an ash-pit, a receiving chamber beneath the ash-pit, a passage connecting them, crushing and feeding mechanism in said passage, a motor to actuate said mechanism, a patter in the chamber, and an oscilllating arm driven by said motor to actuate said patter, said arm having a knee joint normally held straight by a spring with connections therefrom to a controlling device for the motor.

10. In a device of the class described, a receiving chamber for ashes, a chute leading thereto, feeding and crushing rolls within the chute, an air motor to drive said rolls, a compressed air pipe leading to the motor, a valve in the pipe, a patter in the chamber, connections from the motor to oscillate the patter, said connections comprising a crank having a knee joint therein, and connections from said knee joint to said valve.

11. The method of conveying ashes from one place to another, which consists in wetting the ashes, gathering them compactly in a closed chamber, admitting compressed air to the chamber, and thereby forcing the ashes from the chamber along a conduit leading therefrom.

12. The method of conveying ashes from one place to another, which consists in wetting the ashes, crushing the clinkers therein, gathering them compactly in a closed chamber, admitting compressed air to the chamber and thereby forcing the ashes in more or less compact masses along a conduit leading from the chamber.

13. The method of conveying ashes from one place to another, which consists in accumulating them in a pit, wetting them down in the pit, transferring them from the pit to a closed chamber having a conduit leading therefrom, admitting compressed air to the chamber and thereby forcing the ashes therefrom along the conduit.

In testimony whereof, I have subscribed my name.

THOMAS S. LEAKE.

Witnesses:
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