June 3, 1941. W. S. BLAUVELT 2,244,442

CONVEYER FOR LOOSE MATERIAL

Filed May 25, 1939

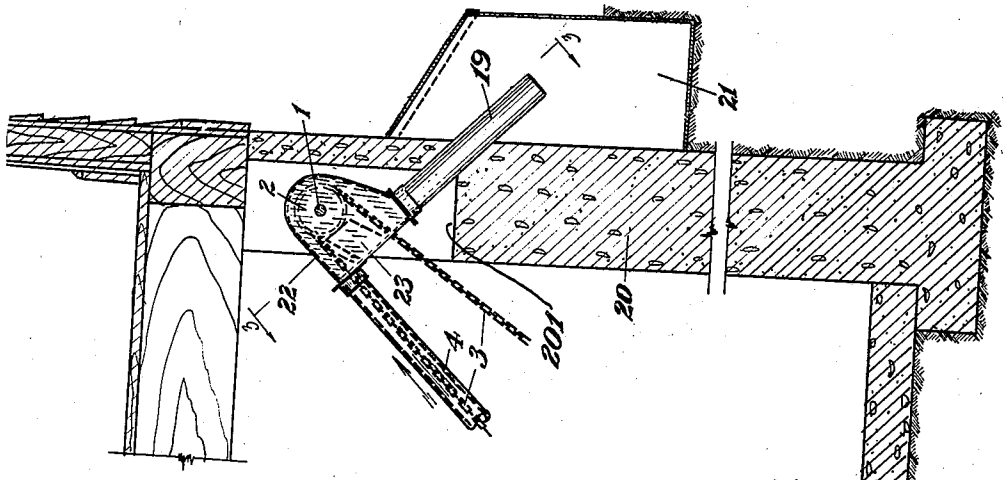


Fig. 1.

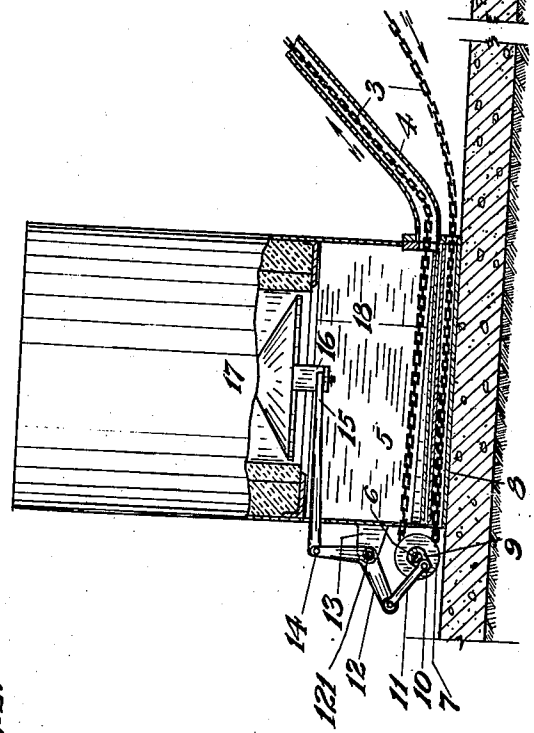


Fig. 4.

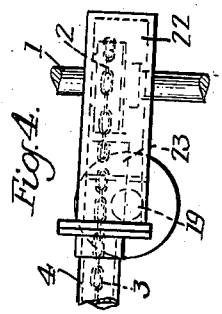


Fig. 3.

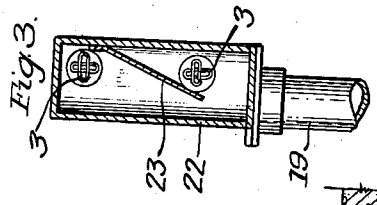
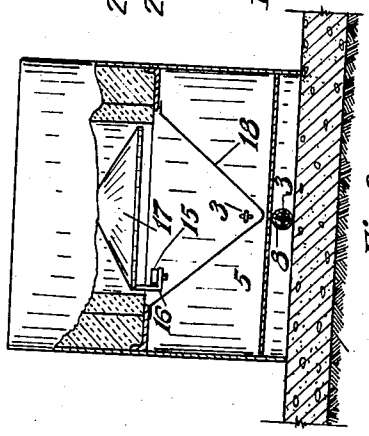


Fig. 2.



INVENTOR.
Warren S. Blauvelt

BY Dana L. Wood

ATTORNEY.

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CONVEYER FOR LOOSE MATERIAL

Warren S. Blauvelt, Troy, N. Y.

Application May 25, 1939, Serial No. 275,612

3 Claims. (Cl. 198—54)

My invention is particularly adapted for the removal of ashes from the ash pit of a mechanically operated solid fuel burning appliance to a suitable receptacle located at a suitable position which may be outside the fire room or outside the building which houses the structure, although it will be understood that my invention is not limited to this particular use.

One of the objects of my invention is to provide a device of the foregoing character the manufacturing cost of which is low and which is at the same time simple and rugged in construction. Such device insures reliability in operation and is substantially free from breakdown and requires a minimum of expense in operation.

A further advantage of the device embodying my invention resides in the fact that it is substantially free from dust, a feature which is particularly important where the device is used for the removal of ashes from the ash pit of a furnace. In accordance with my invention the conveyer that removes ashes from the ash pit of a furnace or which removes other loose material from one position to another is entirely housed so that no dust is raised in the fire room or other space from which the material is removed. With the device embodying my present invention, ashes may be removed from the premises without necessitating carrying them from the fire room, and as no ashes would be handled in the fire room except by this completely dust-tight conveyer, its use not only does away with the usual manual labor of handling ashes but also eliminates the additional work caused by ash dust settling in the fire room or being distributed therefrom throughout the building.

My invention will best be understood by referring to the accompanying drawing in which I have illustrated a preferred embodiment thereof and in which

Fig. 1 is a vertical cross section through a furnace and a building structure in which the same is located and illustrating the conveyer embodying my invention which is associated with the furnace;

Fig. 2 is a vertical cross section of the furnace taken at right angles to Fig. 1;

Fig. 3 is a vertical cross section through the upper end of the discharge chute for the material and through the conveyer, the section being taken on the line 3—3 of Fig. 1, and

Fig. 4 is a plan view of the chain sheave which drives the conveyer chain and illustrating the ash discharge chute at the discharge end of the conveyer.

Like reference characters indicate like parts throughout the drawing.

Referring to the drawing, 20 indicates the wall of a fire room provided with a recess 201 in which is mounted a shaft 1, it being understood that the ends of the shaft are mounted in suitable bearings (not illustrated) in the wall 20. The shaft 1 is actuated by any suitable means, preferably by a motor which operates only when fuel is being delivered to the furnace in a manner not illustrated. A chain sheave 2 is secured to the shaft 1. An endless straight link chain is reeved around the sheave 2 and is moved in the direction indicated by the arrows when the shaft 1 is rotated. The upper flight of the endless chain 3 passes through a closed pipe 4 which, in the embodiment of my invention illustrated, is mounted in an inclined position, the lower end of the pipe communicating with an opening in the wall of the ash pit 5 of the furnace across the lower portion of which the chain 3 passes to the pipe.

A second shaft 6 is mounted in suitable bearings (not illustrated) outside of the ash pit 5 and on the opposite side thereof from the pipe 4. A sheave 7 is mounted on the shaft 6 over which sheave the opposite end of the endless chain 3 passes. The upper flight of the chain 3 passes through the ash pit while the lower flight of the chain passes beneath the bottom of the ash pit and a conduit 8 may be provided beneath the ash pit, as illustrated, for the passage therethrough of the lower flight of the chain. In accordance with my invention means are provided for shaking the grate in timed relation to the movement of the chain so that the correct amount of material will be delivered to the chain and carried thereby. In the embodiment of my invention illustrated, a crank arm 9 is secured to the shaft 6 and is provided with a pin 10 secured to the outer end thereof. One end of a link 11 is pivoted on the pin 10 and the opposite end thereof is connected to one end of a bell crank 12 pivoted as at 121 on a bracket 13 supported from the wall of the ash pit. The opposite end of the bell crank 12 is connected by a rod 15 pivoted thereto as at 14 and to a bracket 16 projecting from the grate 17 of the furnace. A reciprocating movement of the connecting rod 15 thus produces an oscillating movement of the grate 17. It will be apparent therefore that the grate is shaken in timed relation to the movement of the chain conveyer.

The ash pit is shown as provided with a V-shaped trough 18 disposed beneath the grate and into which the ashes fall from the grate but

this is not necessary. The upper flight of the chain conveyer passes through the bottom portion of the V-shaped trough 18 and carries therewith the ashes which are intermittently shaken from the fuel bed. The chain drags the ashes along the bottom of the V-shaped trough from which they pass with the chain into the pipe 4 which carries them upwardly to a housing 22 through which the chain 3 passes and with which communicates a chute 19 passing through the wall 20 and communicating with an ash receptacle 21 preferably located outside of the wall 20 and of the furnace room. The housing 22 is preferably equipped with an inclined plate 23 which extends beneath the upper flight and above the lower flight of the chain 3 so that when the ashes drop from the upper flight of the chain they do not interfere with the lower flight thereof. The ashes which thus fall from the chain conveyer pass into the chute 19 and thus to the ash receptacle 21 from which the ashes may be removed as desired.

While my invention is particularly useful for the removal of ashes from the ash pit of a furnace, it will be understood that it is not limited thereto as it may be used for the removal of any divided solid material which is normally kept in position by a suitable retaining means and the movement of which is controlled by any suitable movable means.

While I have described my invention in its preferred embodiment, it is to be understood that the words which I have used are words of description and not of limitation. Hence, changes within the purview of the appended claims may be made without departing from the true scope and spirit of my invention in its broader aspects.

What I claim is:

1. In a conveyer for transferring small quantities of loose material from a chamber provided with a substantially horizontal floor at a relatively low level to a discharge point at a higher level, a tube extending from said chamber to said higher discharge point, an endless straight link chain movable through said chamber into and through said tube, means for moving said chain, and means for discharging said loose material from said tube at a level higher than said chamber.

2. In a conveyer for transferring ashes from a furnace ash pit at a relatively low level to a discharge point at a higher level, a tube extending from said ash pit to a higher point, an endless straight link chain movable through said ash pit into and through said tube, means for moving said chain, and means for discharging ashes from said tube at a level higher than said ash pit.

3. In a conveyer for transferring ashes from a furnace ash pit at a relatively low level to a discharge point at a higher level, a tube extending from said ash pit to a higher point, an endless straight link chain movable through said ash pit into said tube, means for moving said chain, said ash pit forming with said tube a substantially air tight enclosure, and a discharge element communicating with said tube and forming a substantially air tight enclosure communicating therewith through which ashes are discharged from said tube.

WARREN S. BLAUVELT.