W. S. NEWHALL.

THAWING APPARATUS.

APPLICATION FILED MAY 6, 1916.

1,277,996.

Patented Sept. 3, 1918.

2 SHEETS—SHEET 1.

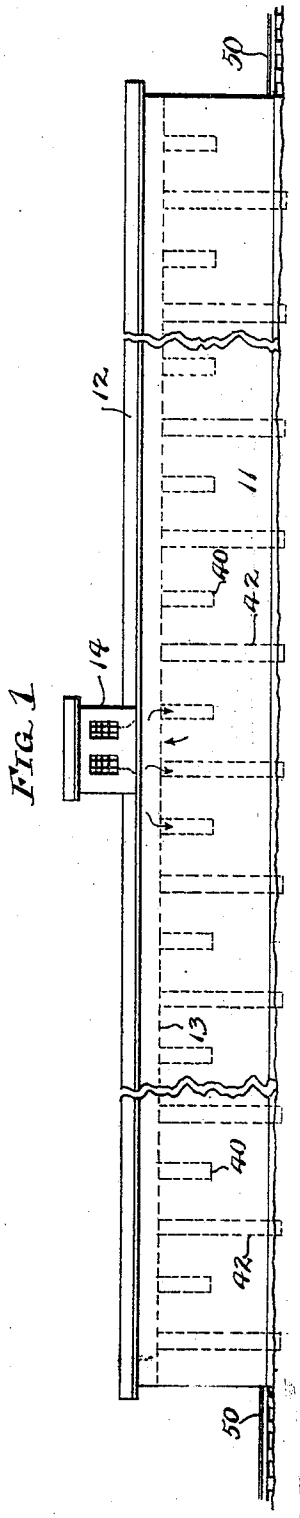


FIG. 1

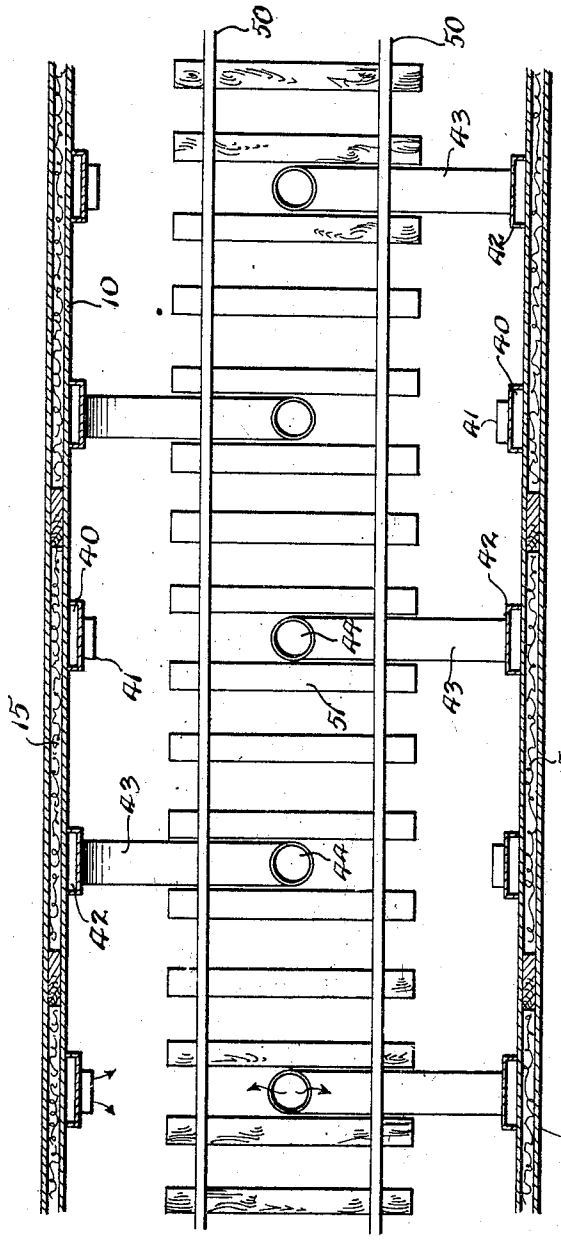


FIG. 2

INVENTOR

Walter S. Newhall

BY Albert H. Bates,

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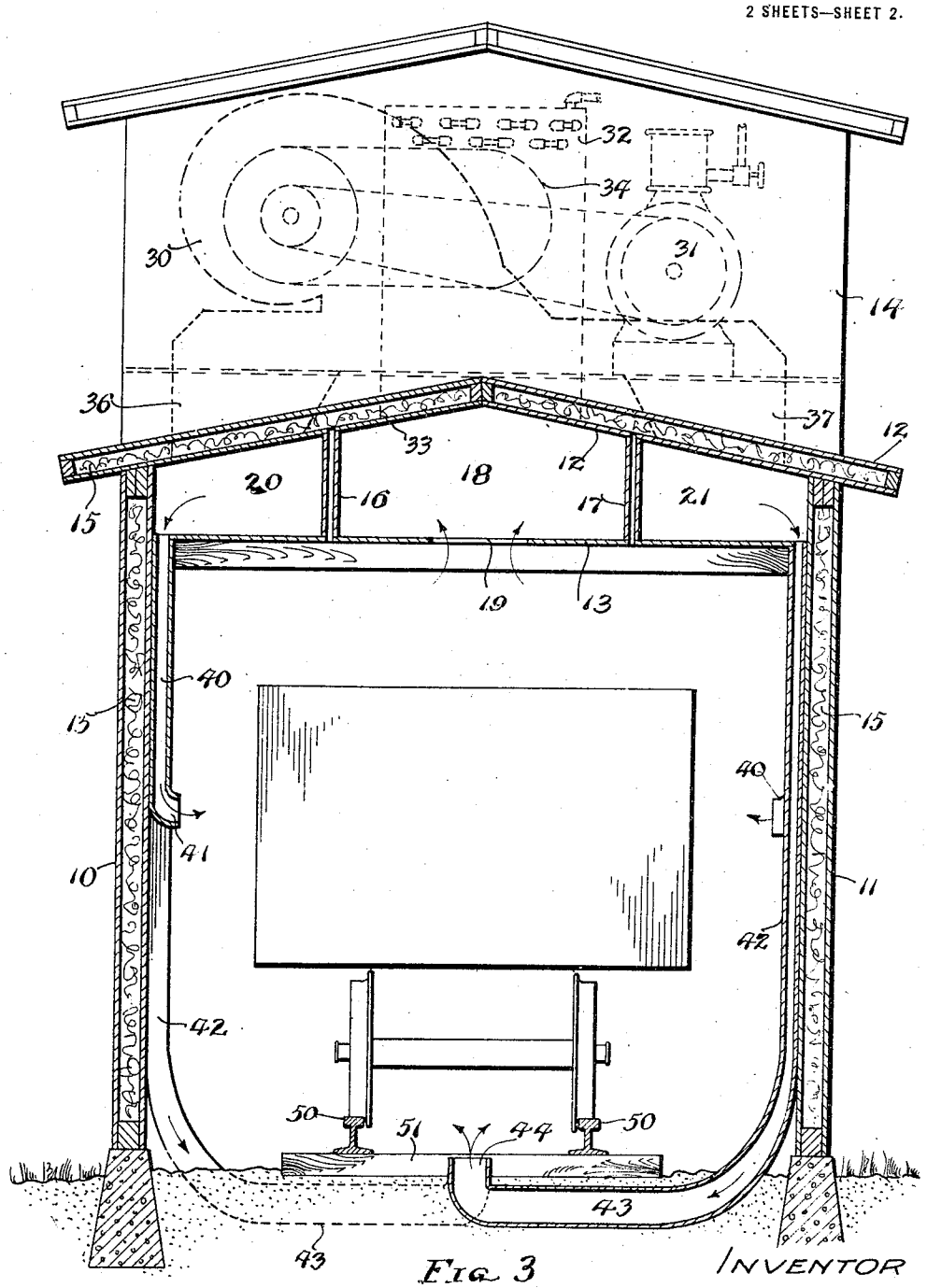


FIG. 3

INVENTOR

Walter S. Newhall,

BY Albert H. Baker,

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UNITED STATES PATENT OFFICE.

WALTER S. NEWHALL, OF CLEVELAND, OHIO, ASSIGNOR TO THE WALTER S. NEWHALL COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

THAWING APPARATUS.

1,277,996. Specification of Letters Patent. Patented Sept. 3, 1918.

Application filed May 6, 1916 Serial No. 95,954.

To all whom it may concern:

Be it known that I, WALTER S. NEWHALL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Thawing Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide an efficient apparatus for thawing frozen material in freight cars, as, for example, coal, ore, etc. Broadly speaking the apparatus comprises a long house or building provided with a track on which cars, with the material to be thawed, may be run, and means for conducting heated air to the space beneath the cars and opposite the sides of the cars, such air (reduced in temperature by its thawing action), being conducted from the upper portion of the building to a suitable position where it is reheated and again delivered to the interior of the building.

My thawing apparatus may be embodied in an equipment having one track or parallel tracks. The heating and blowing devices, as well as the main ducts for hot air and return ducts, may be located at any convenient point; for instance, it is convenient to place the blower house on top of the thawing building in an intermediate position and provide hot air and return ducts in the space between the ceiling and roof of the building, as shown and claimed in Patent No. 1,044,230. The walls and roof may be made with internal spaces filled with suitable insulating material. It is to be understood that these various features may be modified as conditions render desirable.

The drawing illustrates the apparatus embodied in a simple form of single track house. Figure 1 is a side elevation (with intermediate portions broken out), of the thawing building; Fig. 2 is a horizontal cross section of a portion of the same on a larger scale; Fig. 3 is a vertical cross section on a still larger scale.

The building shown in the drawing comprises outside vertical walls 10 and 11, a roof 12, interior ceiling 13, and an intermediately located blower house 14, the floor of which is substantially co-incident with the ceiling 13. The space between the ceiling 13 and the roof 12 is preferably divided by partitions 16 and 17, into a centrally located return flue 18 (communicating with the interior of the house by openings 19 through the ceiling), and with two outer hot air flues 20 and 21.

It is to be understood that within the blower house is a blowing and heating means, designed to receive the moisture-laden cooler air from the return flue 18 and to discharge the same through the hot flues 20 and 21. This blowing and heating means is indicated diagrammatically in dotted lines in Fig. 3, where 30 indicates the blower, 31 an engine for driving the same, 32 a steam heated drier. The drier is shown as connecting directly with the flue 18, as indicated at 33; the intake of the blower is coupled with the drier (indicated at 34), and the discharge from the blower is directed by conduits, indicated at 36 and 37, to the main hot air flues 20 and 21.

To distribute the hot air, from the flues 20 and 21, into the interior of the thawing house in a way in which it will come beneath the cars and thus rise through the material therein, and the rest of it into a position where it is discharged against the sides of the cars, heating those sides, so that material adjacent thereto is quickly thawed. As most of the cars carrying frozen bulk material are dump cars, having inclined bottoms, the freezing which most interferes with the discharge, is the freezing of the material to the bottom and to the sides. By my method of thawing I direct the hot air principally against these parts, so that material is first loosened from the bottom and sides of the cars, and thus is in a condition to be dumped, even though pieces of the material remain frozen to other pieces.

By freeing the material from the car bottom and sides, the initial discharging movement given to it is sufficient to break the pieces of material from each other, even though the entire mass is not entirely thawed. Accordingly, I can accomplish a sufficient thawing for practical purposes in a quicker time than where the heat delivered is not concentrated as described.

To deliver the heat partly against the bottom of the cars and partly against the sides, I provide conduits connecting with the hot air flues 20 and 21, and leading downwardly therefrom along the interior of the side walls 10 and 11, and some discharging

against the sides of the cars and others continuing beneath the adjacent rail and discharging upwardly at the center of the track. The drawing clearly shows this arrangement, wherein 40 indicates the hot air conduits discharging at 41 opposite the side of the car, and 42 are the conduits extending at 43 beneath the trackway and discharging upwardly at 44, between the rails. In Figs. 2 and 3, 50 indicates the usual rails and 51 ties, the upturned portions 44 of the conduits 42 being designed to stand between adjacent ties.

It will be noted that inside of the thawing chamber I arrange on each wall the conduits 40 and 42, located alternately, and the arrangement along one wall is staggered with reference to that on the other, so that each short conduit 40 comes opposite one of the long conduits 42. This makes a symmetrically balanced construction, and the same quantity of air is delivered through each of the flues 20 and 21, and the respective discharge pipes.

To economize space I prefer to make the conduits 40 and 42 in the form of flattened rectangular pipes along the inner side of the vertical walls of the building. The lower portions of the conduits 42 may, however, conveniently be rounded, as shown in Fig. 3.

It will be seen that my thawing apparatus is simple and comparatively cheap to construct. It directs the heated air where it will be most useful in accomplishing an effective thawing, and it receives the moisture-laden air at the top of the building and suitably reheats it and returns it.

Having thus described my invention, what I claim is:

1. An apparatus for thawing bulk materials in cars, consisting of a building adapted to contain the cars, and means for discharging heated air directly against the bottoms of the cars and directly against the sides of the cars, to effectively free the load from the bottom and walls of the car.

2. In a thawing apparatus, the combination of a building, a trackway therein, conduits for hot air leading downwardly along one of the walls of the building, said conduits being arranged to alternately discharge inwardly against the sides of the cars on the track and upwardly against the bottoms thereof.

3. In a thawing apparatus for cars, the combination of a building, a trackway therein, conduits along the walls of the building, some of said conduits extending beneath the adjacent rail of the track and discharging upwardly between the track rails, and others of said conduits discharging from the sides of the walls, and means for supplying heated air to said conduits.

4. In a thawing apparatus, the combination of a building, a trackway therein, conduits for hot air on opposite sides of the trackway, some of said conduits continuing beneath the adjacent rail of the track and discharging upwardly between the rails, others of said conduits terminating at an intermediate position on the walls of the building and discharging inwardly, the conduits discharging inwardly on one side of the building being located opposite those conduits on the other side of the building which continue beneath the track.

5. In a thawing apparatus, the combination of a building including a chamber containing a trackway, a series of individual ducts leading inwardly from the side of the trackway chamber and adapted to discharge air upwardly against the bottoms of cars standing on the track, a heating and blowing plant at the top of the building, and means for conducting heated air from said plant to said individual ducts.

6. In a thawing apparatus, the combination of a building including a chamber containing a trackway, a series of individual ducts leading from the side of the trackway and having their points of discharge beneath cars on the track, a heating and blowing plant at the top of the building, and a longitudinal main duct within said building and adapted to convey heated air from the heating and blowing plant to said individual ducts.

7. In a thawing apparatus, the combination of a building including a chamber containing a trackway, a series of individual ducts leading from the side of the trackway beneath one rail of the track and discharging upwardly between the rails, a heating and blowing plant at the top of the building, a longitudinal main duct within said building and adapted to convey heated air from the heating and blowing plant to said individual ducts, and means for returning the cooled air from the trackway chamber to the blowing and heating plant.

8. In a thawing apparatus, the combination of a building including a chamber containing a trackway, a series of individual ducts leading from various points at the side of the trackway beneath one rail of the track and discharging upwardly between the rails, a series of individual conduits discharging inwardly at various points from the two sides of the trackway chamber, a heating and blowing plant at the top of the building, longitudinal main ducts within said building adapted to convey heated air from the heating and blowing plant to said individual ducts, and means for returning the cooled air from the trackway chamber to the blowing and heating plant.

9. In a thawing apparatus, the combination of a building including a chamber having a trackway, a series of conduits having orifices some of which are between the rails

of the track and others of which are at an intermediate height on the side walls of the chamber, and means for feeding hot air to said conduits.

10. In a thawing apparatus, the combination of a building including a chamber having a trackway, means for discharging heated air upwardly between the rails of the track and inwardly from the two side walls of the chamber at points adapted to be opposite the sides of cars standing on the track, a blowing and heating apparatus, means for conducting hot air therefrom to said discharging means, and means for returning the cooled air from the trackway chamber to the blowing and heating apparatus.

In testimony whereof I hereunto affix my signature.

WALTER S. NEWHALL.