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THAWING APPARATUS.

APPLICATION FILED JAN. 14, 1915.

1,179,953.

Patented Apr. 18, 1916.

2 SHEETS—SHEET 1.

FIG. 1.

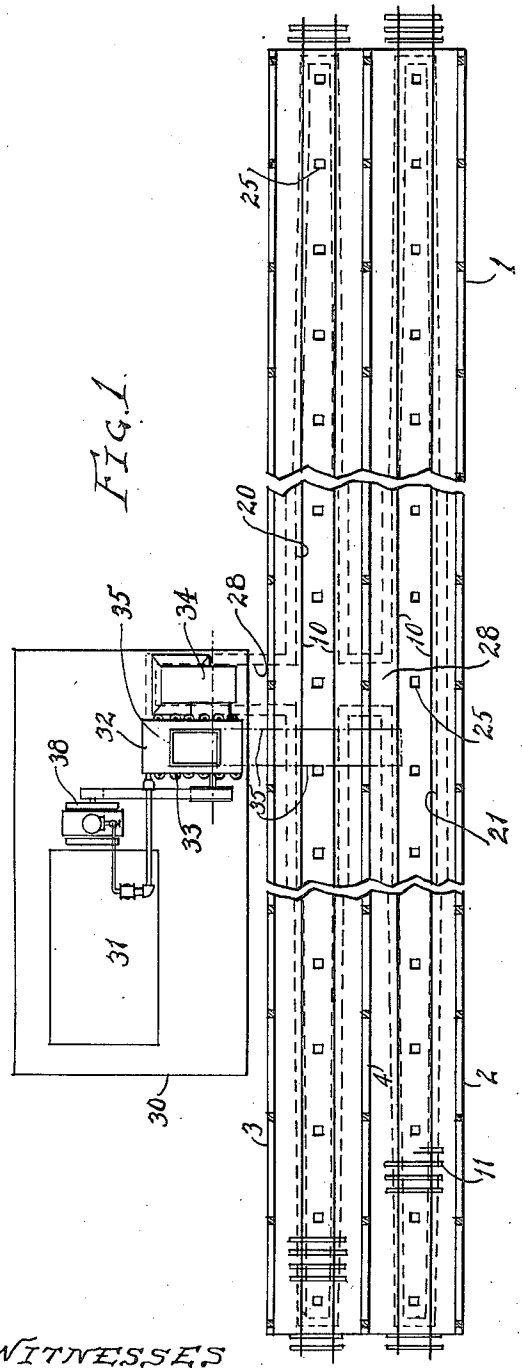
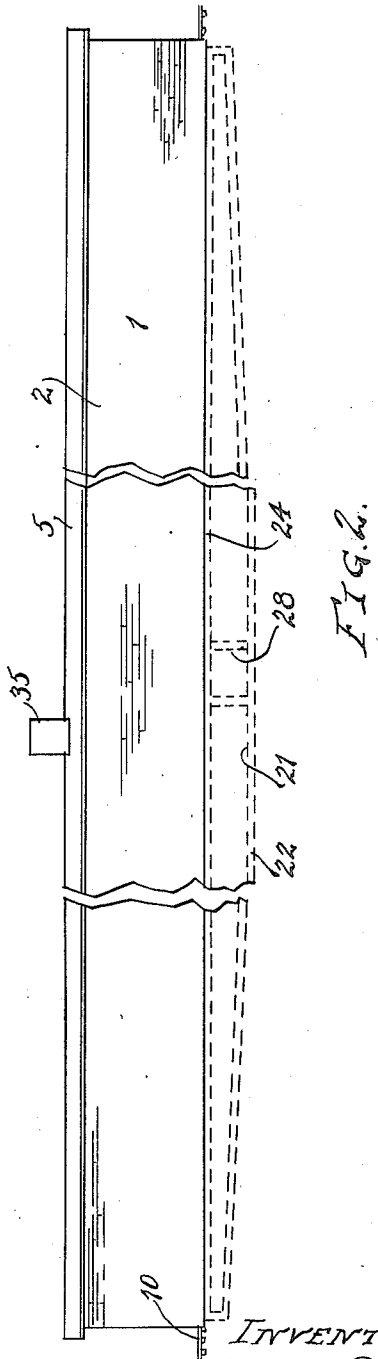


FIG. 2.



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THAWING APPARATUS.

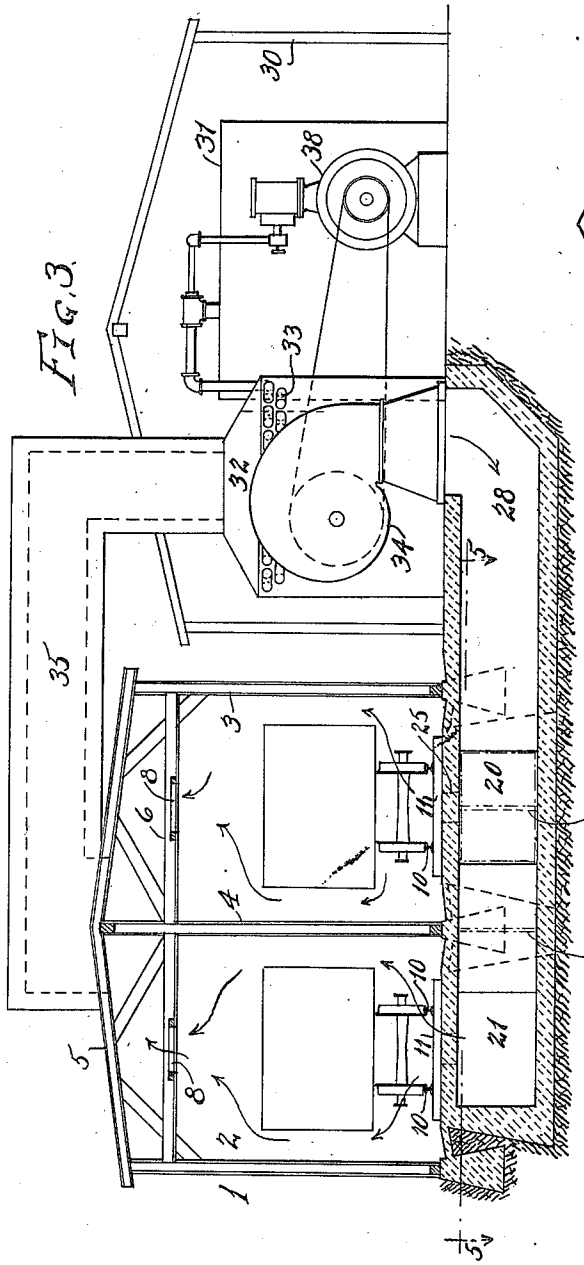
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2 SHEETS—SHEET 2.

FIG. 3.



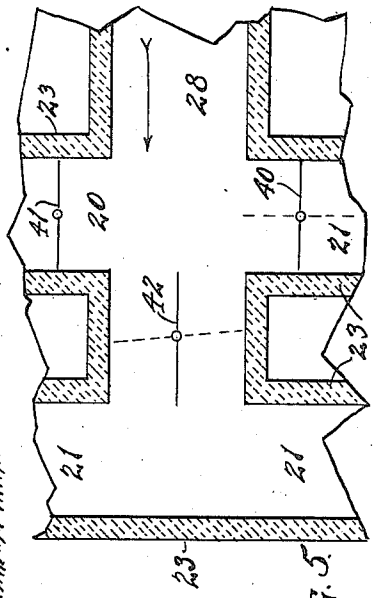


FIG. 5.

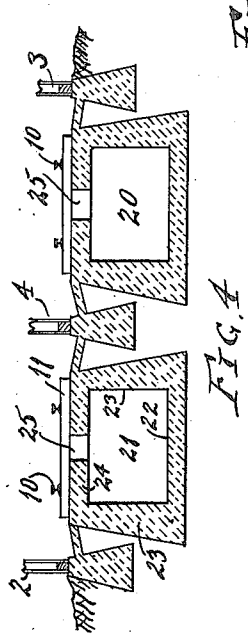


FIG. 4.

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UNITED STATES PATENT OFFICE.

WALTER S. NEWHALL AND SCOTT W. LINN, OF CLEVELAND, AND ALVA C. HEZLEP, OF MIAMISBURG, OHIO, ASSIGNORS TO THE WALTER S. NEWHALL COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

THAWING APPARATUS.

1,179,953. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed January 14, 1915. Serial No. 2,186.

To all whom it may concern:

Be it known that we, WALTER S. NEWHALL and SCOTT W. LINN, residing at Cleveland, in the county of Cayahoga and State of Ohio, and ALVA C. HEZLEP, residing at Miamisburg, in the county of Montgomery and State of Ohio, citizens of the United States, have inventrd 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; for example, coal, ore, etc. The apparatus comprises a long house or building provided with tracks on which the cars, with the material to be thawed, may be run, and means for distributing heated air beneath the building and upwardly between the rails and around the cars, and thence outwardly through the roof of the building to a heating and blowing device, where it is reheated and re-delivered. Our prior Patent No. 1,044,230 shows one form of thawing apparatus circulating heated air, but, in that case, the hot air delivered passes along the roof of the building and passes downwardly along the inner sides, and thence upwardly within the building. Such a system does not utilize, in feeding the heated air, the tendency of hot air to rise, but relies on the blower force to force the hot air downwardly in the flues along the sides of the building. In the present invention this tendency of the hot air to rise is availed of in the distributed air, thus saving in the blowing force. Moreover, by distributing the hot air from below upwardly between the rails, it acts first on the bottom of the car, where, in the case of dump cars, it is most needed. In fact, by acting on the bottom of the car and upwardly between the cars, as well as outwardly along the sides, the whole surface of the car is subjected to the air delivered while it is still in its hottest condition.

The invention comprises the combination, with the building and tracks, of the means for delivering the air as above described.

Other features contributing to the efficiency of the apparatus are also included within our invention, which are hereinafter more fully explained, the essential characteristics of the invention being set out in the claims.

In the drawings, Figure 1 is a sectional plan of the thawing apparatus embodying our invention; Fig. 2 is a side elevation thereof, both these figures having intermediate portions broken out; Fig. 3 is an enlarged transverse vertical section of the apparatus, the section being taken through the main transverse conduit; Fig. 4 is a vertical cross section through the longitudinal conduits, taken at a different point along the building from Fig. 3; Fig. 5 is a fragmentary sectional plan adjacent to the transverse and longitudinal conduits, the section being indicated by the line 5—5 in Fig. 3.

In the drawings, 1 indicates a suitable building divided into a series of longitudinal compartments, two compartments being shown. Thus, there are shown outside walls 2 and 3, and a partition 4. It is to be understood that as many intermediate partitions similar to the partition 4 may be employed as desired to provide the desirable number of compartments side by side.

5 designates a roof extending over the building, and 6 a ceiling.

The outside walls and roof, and, if desired, the partition or partitions, may be so made as to be non-conductors of heat.

Within each of the compartments or sheds is a track composed of rails 10 on suitable ties 11. These ties are shown (though mostly omitted in Fig. 1 for clearness) as resting on the tops of longitudinal concrete conduits 20 and 21. Each conduit comprises a bottom wall 22, vertical walls 23 and a top 24, on which rest the ties 11. At various points through the top are openings 25 between the ties 11. The heat is delivered to the conduits described from a main transverse conduit 28, and, passing upwardly through the openings 25, heats the cars and their contents and is drawn out through openings 8 into the space between the ceiling and roof. From this space the air is

taken to the heating room, re-heated and again delivered to the conduit 28 and thence to the conduits 20 and 21.

Figs. 1 and 3 show the heating room and blower house for heating and circulating the air. Thus, 30 indicates the building for these parts of the apparatus, 31 the steam boilers, 32 a hot air chamber containing steam coils 33.

34 is a blower connected with the hot air chamber and discharging into the conduit 28.

35 indicates a transverse flue leading from the space at the roof of the thawing building to the heating chamber.

38 indicates a steam engine for driving the blower.

In operation, steam from the boiler is admitted to the steam pipes 33, heating the chamber 32. The blower now being driven, the hot air is drawn through this chamber and delivered to the conduit 28, and into the conduits 20 and 21, and thence passes upwardly around the cars and upwardly through the ceiling through suitable openings, indicated at 8, and thence along under the roof to the exit conduit 35, where it is drawn in by the blower into the heating chamber 32.

In order to distribute the heat with substantial uniformity throughout the length of the compartment, we make the conduits 20 and 21 of continually decreasing cross section as they extend from the delivering transverse conduit. This is shown in Figs. 1 and 2, where it appears that the conduits become narrower and shallower toward their ends. To enable the concentration of heat in any of the compartments, or the shutting off of any which are not used, we provide a series of dampers to close the longitudinal conduits not desired. These dampers are illustrated at 40, 41 and 42 in Fig. 5. The dampers 40 and 41 are shown in this view as closed, and the damper 42 open, which distributed all of the air to the conduit 21, thus heating only the left hand compartment shown in Fig. 3. If the dampers 40 and 41 are opened, and the damper 42 left open, both compartments are heated, or, if the dampers 40 and 41 are opened and the damper 42 closed, only the right hand compartment is heated. For simplicity of illustration, the dampers are shown as intermediately pivoted on vertical pivots and swinging as a unit. Any other form of damper may be used, however, as, for example, a series of plates or louvers.

Having thus described our invention, what we claim is:—

1. In a thawing apparatus, the combination of a longitudinal compartment, a longitudinal air duct beneath the floor of the compartment, a trackway above the air duct, openings from the air duct between the rails, a roof and ceiling for the compartment, an opening through the ceiling into the flue provided between it and the roof, a heating means, a blower, a transverse duct extending from the heating means and blower beneath one wall of the building and intersecting the longitudinal duct on substantially its level, and a transverse air duct extending from the return flue to the heating means and blower.

2. In a thawing apparatus, the combination of a longitudinal air duct consisting of a concrete box having upward openings, a trackway resting on the roof of said box, a building having its foundations on opposite sides of said box having walls rising from such foundations and a roof, a heating and blower building alongside of the building mentioned, a transverse conduit below ground between the heating and blowing building and the longitudinal conduit, and a transverse conduit above ground between the upper portion of the compartment and said heating and blowing building.

3. In a thawing apparatus, the combination of a longitudinal air duct consisting of a concrete box, a trackway resting on the roof of said box, a building above the box having upright members resting on isolated supports on opposite sides of said box, said building being provided with walls, a ceiling and a roof, a heating and blower room alongside of the building mentioned, a transverse conduit below ground between the heating and blowing room and the longitudinal conduit, and a conduit between said ceiling and roof communicating with said heating and blowing room, there being communication between the conduit mentioned and the interior of said building.

4. In a thawing apparatus, the combination of a longitudinal air duct consisting of a conduit having upward openings, a trackway resting on and supported by said conduit, a building having its foundations on opposite sides of the conduit and having walls rising from such foundations and a roof, a transverse conduit on substantially the same level as the longitudinal conduit mentioned and intersecting it, a transverse conduit from the upper portion of the structure, and blowing and heating means forming a connection between the two transverse conduits.

5. The combination of a plurality of parallel compartments having tracks, a plurality of longitudinal conduits beneath the respective tracks, a transverse conduit on substantially the same level as the longitudinal conduits and intersecting and communicating with them, means for shutting off communication between the transverse conduit and any of the longitudinal conduits, means

for forcing hot air into said transverse conduit, and means for returning and heating such air from the compartments.

6. In a thawing apparatus, the combination, with a longitudinal compartment, of a longitudinal duct beneath it, a transverse duct communicating with the longitudinal duct at an intermediate position, the longitudinal duct being of gradually reduced cross section from such intermediate position toward the ends, a trackway in the building above the longitudinal duct, a return flue in the upper portion of the building, and blowing and heating means connected with the return flue and the transverse duct.

In testimony whereof, we hereunto affix our signatures in the presence of two witnesses.

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Witnesses:
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Witnesses:
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