Oct. 25, 1932. G. L. VAIL 1,884,399

ICE LOADING MACHINE

Filed Oct. 1, 1929 3 Sheets-Sheet 1

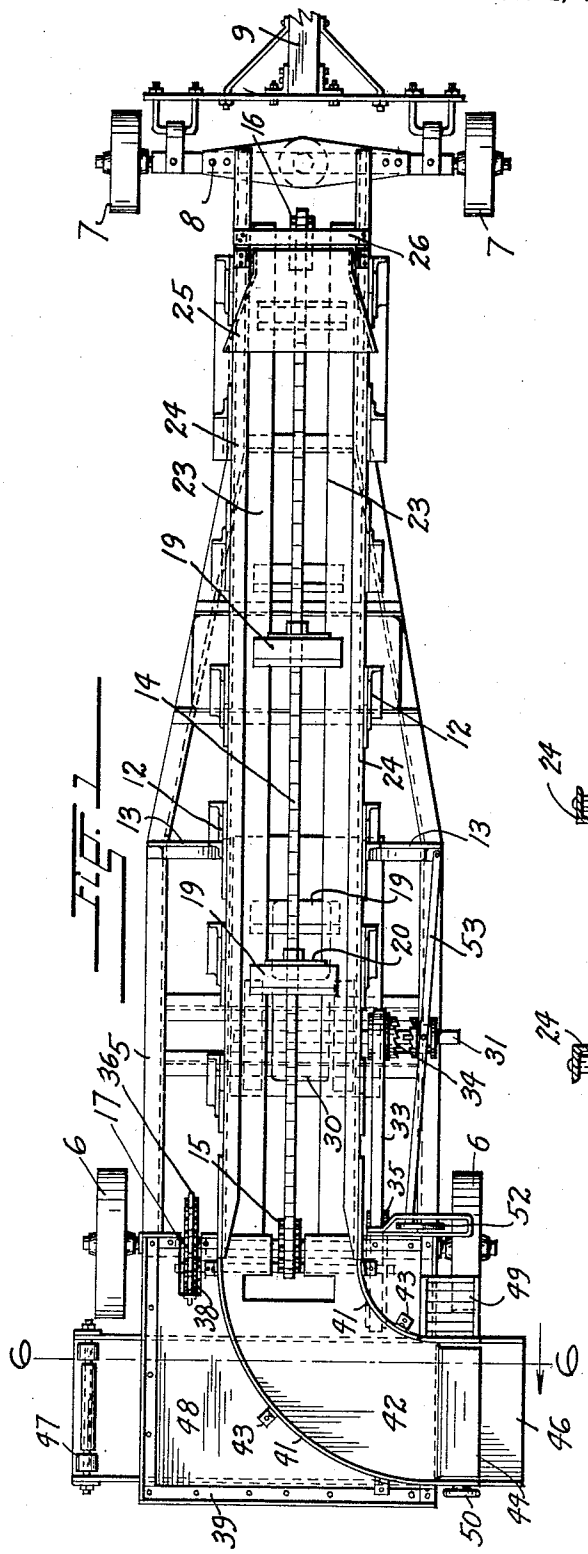


FIG. 1

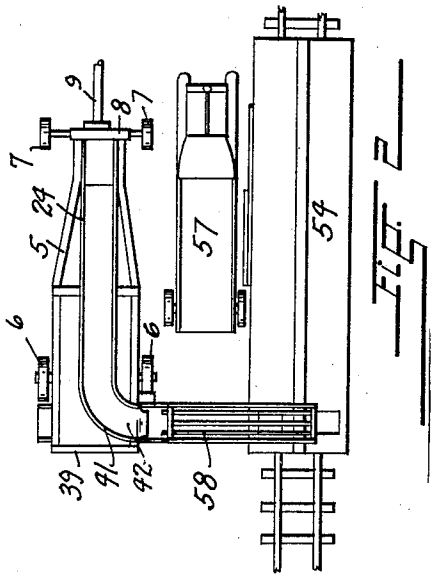


FIG. 2

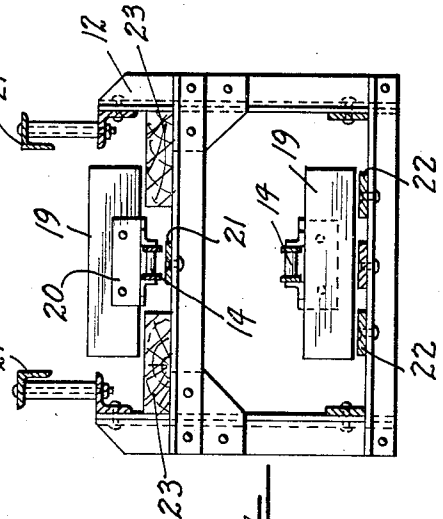


FIG. 4

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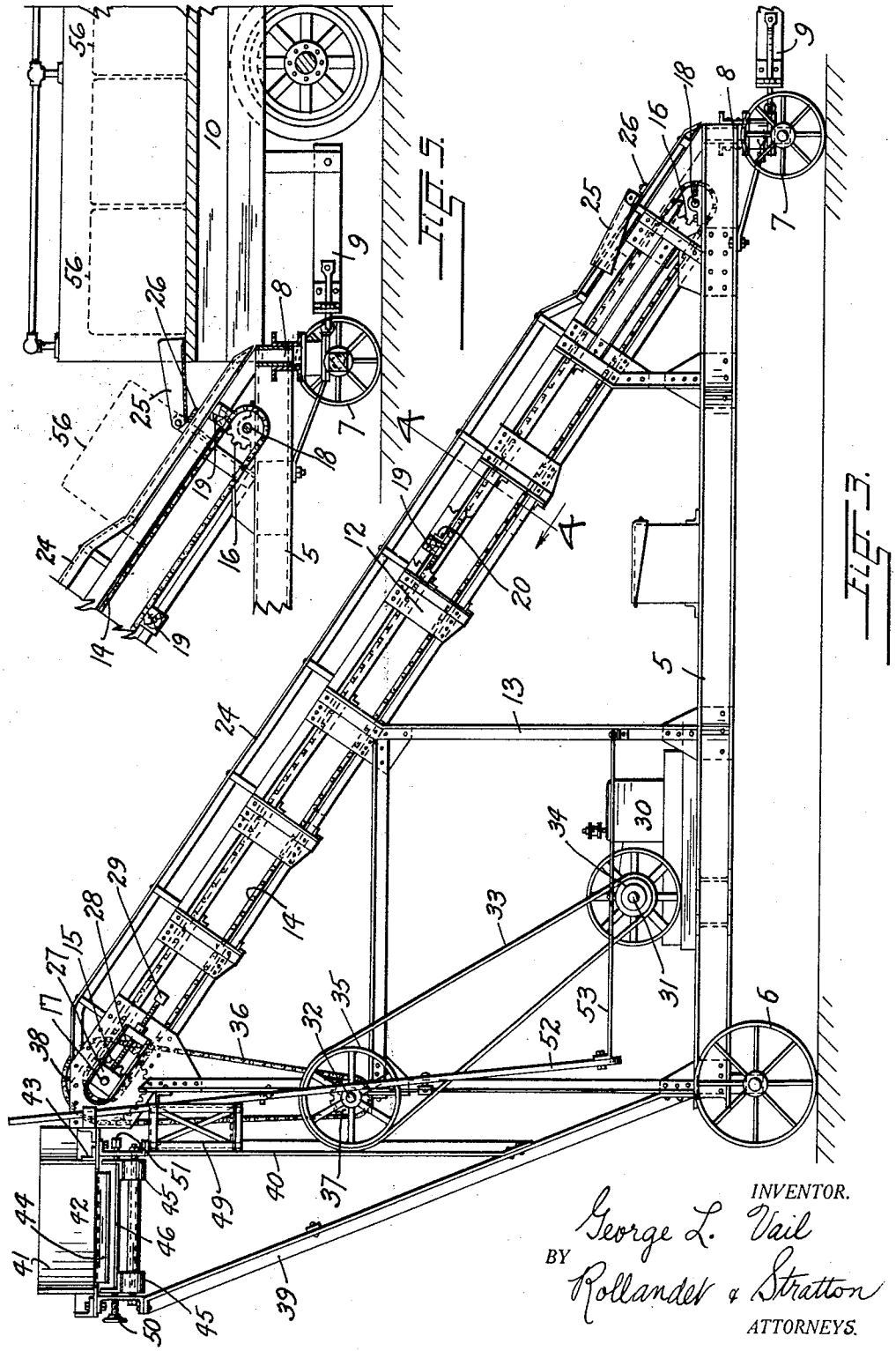


FIG. 3.

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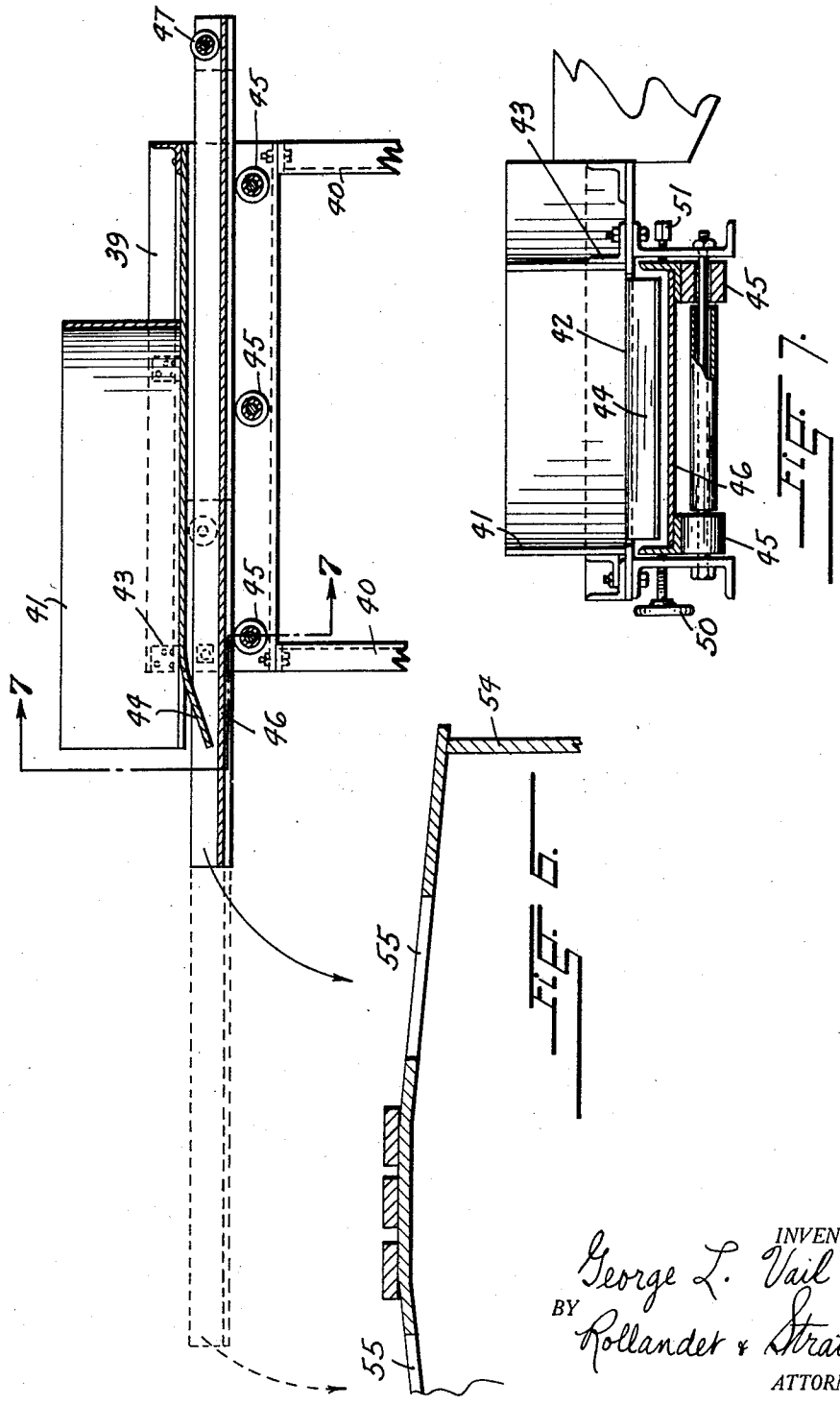


FIG. 7.

FIG. 6.

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UNITED STATES PATENT OFFICE

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ICE LOADING MACHINE

Application filed October 1, 1929. Serial No. 396,442.

This invention relates to loaders for railway cars and more particularly to loading machines adapted to load blocks of ice into the ice bins of refrigerating cars.

The ice bins have openings at the top of the cars through which they are supplied with ice at the time they are being loaded with perishable merchandise, the openings being normally closed by air tight covers.

In order to load the bins with ice, the blocks of ice are elevated from the trucks or other vehicles by which they are conveyed from the factory to the railway cars and then dumped into the open ice bins, or the railway cars are moved to loading platforms at the factory.

The last mentioned method is obviously not as practical as the other method which by reason of the fact that it is more economical and quicker to move the loaders to the railway cars, is generally preferred.

It is the main object of the invention to provide a loader of the preferred type which is operated to elevate the ice blocks with little expenditure of time, labor and power and which delivers the elevated blocks to the openings of the bin by readily adjusted runways.

Another object of the invention resides in the provision of means whereby the ice blocks may be delivered to the car bins from an elevated point distant from the cars, which is of particular advantage when, as frequently occurs, it is desired to load the ice bins in the presence of trucks which supply the merchandise to the cars.

Further objects of the invention reside in details of construction and novel and useful arrangements and combinations of parts as will be clearly brought out in the following description.

In the accompanying drawings,

Figure 1 represents a plan view of the loader,

Figure 2, a plan view drawn to a smaller scale, illustrating the method of supplying ice to a railway car in the presence of a truck from which the car is loaded with merchandise,

Figure 3, a side elevation of the loader,

Figure 4, an enlarged section taken on the line 4—4, Figure 3,

Figure 5, a sectional elevation showing the connection of the loader with a truck by which the ice blocks are conveyed from the factory,

Figure 6, an enlarged section along the line 6—6, Figure 1, showing the position of the delivery chute of the loader relative to the top of a railway car, and

Figure 7, section on the line 7—7, Figure 6.

Similar characters of reference designate corresponding parts throughout the views.

A base frame 5, preferably made of structural metal, is supported at its ends on two wheeled trucks 6 and 7. The front truck 7 of the carriage is swiveled on the base as at 8 and it is provided with suitable coupling means 9 for its connection at the rear end of a merchandise truck shown at 10 in Figure 5.

The swiveled wheel truck 7 permits of the body of the loader being turned at any desired angle to the merchandise truck by which it is drawn, which obviously is desirable in turning corners when the apparatus is moved from one side of a string of cars to the opposite side of the same, or from one string of cars to another on different railway tracks.

The base frame 5 supports an elevator frame 12 slanting upwardly from its front end to a point above its opposite end at which in the operation, the blocks of ice are delivered.

The elevator frame is like to the base frame, made of structural metal, and a superstructure 13 on the base frame similarly constructed supports and braces the elevator frame wherever necessary.

It is a distinctive and highly important feature of the invention that the entire structure is balanced so as to maintain its equilibrium under all conditions and irrespective of the number and weight of ice blocks supported thereby at one time.

The elevator comprises an endless chain 14 supported upon sprocket wheels 15 and 16 on shafts 17 and 18, rotatably mounted in bearings at the upper and lower ends of the elevator frame.

The chain carries at equidistant points

cross cleats 19 preferably made of wood, that are fastened to the chain by angular chairs 20.

Two open floors 21 and 22 on the elevator frame, one above the other, support the chains during its travel around the sprocket chains and wooden slide-rails 23 at opposite sides of the upper floor support the ice blocks as they are moved upwardly by the chain. Side bars 24 above the upper floor of the elevator frame, hold the ice blocks against lateral displacement.

A flanged apron 25 hinged at the lower end of the elevator, provides a bridge across which blocks of ice may be moved from the floor of the merchandise truck 10 onto the slide rails of the elevator as clearly shown in Figure 5 of the drawings.

A cross bar 26 on the elevator frame at the rear end of the apron 25, provides a rest which holds the ice blocks until they are engaged by the cleats on the elevator chain.

The bearings 27 for the shaft 17 at the upper end of the elevator frame, are adjustable in slots 28 in order to maintain the chain at the desired tension. Bolts 29 screwed into apertured blocks at the ends of the slots and engaging with the bearings 27, provide a convenient medium for the adjustment of the bearings.

In the operation of the loader the elevator is operated by power derived from an engine 30 mounted on the base frame.

This engine may be of any suitable character to operate by electricity, internal combustion or by any suitable motive fluid.

The shaft 31 of the engine is connected with a jack shaft 32 on the superstructure 13 by a belt 33 mounted on pulleys 34 and 35, and the motion of the jack shaft is transmitted to the upper shaft 17 of the elevator by a chain 36 mounted on sprocket wheels 37 and 38.

Rearward of the upper end of the elevator is a landing station 48 upon which the ice blocks delivered by the elevator are received. This station has a platform 48 supported at the rear end of the base frame of the carriage and is braced to form a rigid part thereof by angle stays 39 and 40.

Fastened upon the platform of the station are curved plates 41 that form a runway 42 to convey the ice blocks discharged from the elevator to a point of delivery at right angles to the same.

The curved sides are continuous with the side bars 24 of the elevator structure, and they extend a short distance beyond the delivery side of the platform, as is best shown in Figure 1 of the drawings.

The sides of the runway are braced against outward movement by angle brackets 43 and the portion of the platform that forms the floor of the runway is bent downwardly at the delivery end of the same, as is shown at 44 in Figure 7.

Mounted upon rollers 45 beneath the platform, is a chute 46 adapted to form an extension of the curved runway to convey the ice blocks passing through the end thereof to a distant point of discharge.

The chute is trough-shaped and it carries at its rear end an anti-friction roller 47 to engage with the underside of the platform when the chute is moved to its extended position, as indicated in broken lines in Figure 6.

It will be apparent that when the chute is extended and blocks of ice move through the chute, it is firmly wedged between the rollers and the underside of the platform and is thus held in place.

The turned down end portion of the floor of the curved runway provides a stop that by engagement with the roller limits the outward movement of the chute.

At a side of the runway adjacent the delivery end thereof, is a cage or basket 49 extending below the platform to provide a support for the operator.

One of the duties of the operator is to move the chute to a position above the opening of the ice bin of a refrigerator car, and a set screw 50 within easy reach of the operator, enables him to lock the chute in any adjusted position.

The set screw engages a side of the chute and a second set screw 51 opposite the other, permits of a limited lateral adjustment of the chute.

A handle 52 extending upwardly from a clutch lever 53, permits the operator at the elevated support to control the operation of the engine.

In the operation of the loader it is coupled at the rear end of the truck 10 loaded with ice, which pulls it to a position at a side of a railway car, as shown at 54 in Figure 6.

The chute is moved outwardly by the operator in the cage to deliver blocks of ice above one of the openings 55 in the top of the car, leading to the ice bins, and the same operator starts the engine by means of the handle 52, for the operation of the elevator.

A second operator at the foot of the elevator moves the ice blocks across the bridge 25 between the side bars of the elevator structure.

The cross bar 26 provides a support for the ice blocks which have been indicated in broken lines 56 in Figure 5, until they are engaged by one of the cross cleats of the elevator chain and are carried upwardly to the point of discharge at the elevated station 39.

The bars 24 hold the ice blocks against lateral displacement.

The ice blocks are discharged by the elevator into the curved runway 42 and the operator in the cage 49, moves the blocks through the runway into the chute which conveys them to the point of delivery above

the opening 55 of the ice chute of the railway car.

If the loader is positioned closely alongside of the railway car, the chute may be extended to deliver the ice blocks in the openings at either side of the car as has been illustrated in Figure 6 of the drawings.

It frequently occurs, however, that when the loader is moved alongside of a railway car, the car is being loaded with merchandise from another truck. In such a case, the chute is lengthened by the use of an extension which ordinarily is carried at a side of the superstructure of the carriage, as indicated in Figure 3.

This condition has been illustrated in Figure 2 in which the merchandise truck has been shown at 57, alongside of a railway car 54, while an extension 58 has been shown in its operative position with relation to the chute 46 and the opening 55 of the railway car.

The chute may be made of spaced slots to facilitate its manipulation and it has at one end a cross bar above its floor to provide an opening for the insertion of the outer end of the chute. The weight of the extension and of the blocks of ice conveyed therethrough holds the extension in place.

Having thus described my invention, it will be apparent that it provides a most practical, time-saving and highly economical method of loading refrigerating cars with ice. But two men are required for the operation of the loader with the possible exception of a man on top of the railway car who breaks the ice blocks if too large and who signals to the operator at the station 39 when the ice bin of the car is filled.

The ice-carrying truck 10 pulls the loader to any desired position alongside any railway car in a freight yard, it being understood that the swiveled truck at the front end of the loader permits of its being moved at any required angle to pass from one track to another or from one side of a string of cars to the opposite side of the same.

When the truck 10 is emptied it is easily uncoupled from the loader and it may thus be returned to the ice plant to receive another load while, if so desired, another truck previously loaded is hitched to the loader in its stead.

By the use of the chute 46 and the extension 58 the ice blocks discharged from the elevator may be delivered to any opening in the top of any refrigerating car irrespective of the position of the opening or the presence of trucks or other obstacles that prevent the loader from being moved close to the side of the railway car.

Under favorable conditions, the operation of the loader is continuous and blocks are delivered by the elevator at regular intervals until the bins of a car have been loaded with ice when the operation is discontinued and the loader is moved alongside of another car.

What I claim and desire to secure by Letters Patent is:

1. In a loader of the character described, including an elevated platform and a conveyor for moving ice-blocks onto the same, a chute slidable beneath the platform and capable of vertical deflection, and a roller on the chute, engaging the underside of the platform whereby to hold the chute in selective positions by the weight of its load.

2. In a loader of the character described, including an elevated platform and a conveyor for moving ice-blocks onto the same, a chute slidable beneath the platform and having a stop to limit its sliding movement, the platform having a downwardly bent end-portion to be engaged by said stop.

In testimony whereof I have affixed my signature.

GEORGE L. VAIL.