

No. 894,425.

PATENTED JULY 28, 1908.

A. V. CULVER.  
ICE CRUSHER AND ELEVATOR.

APPLICATION FILED NOV. 25, 1907.

2 SHEETS—SHEET 1.

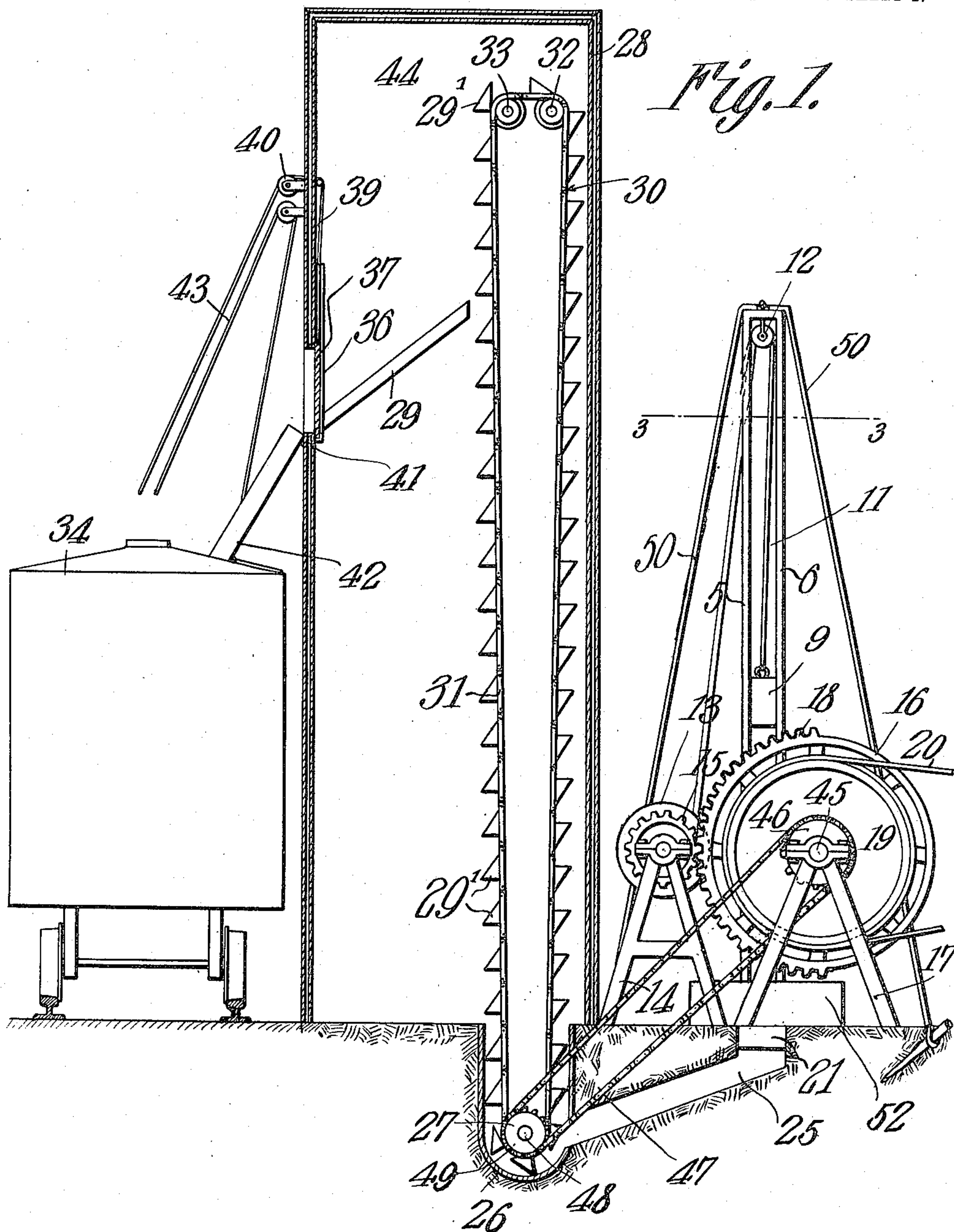


Fig. 6.

Witnesses  
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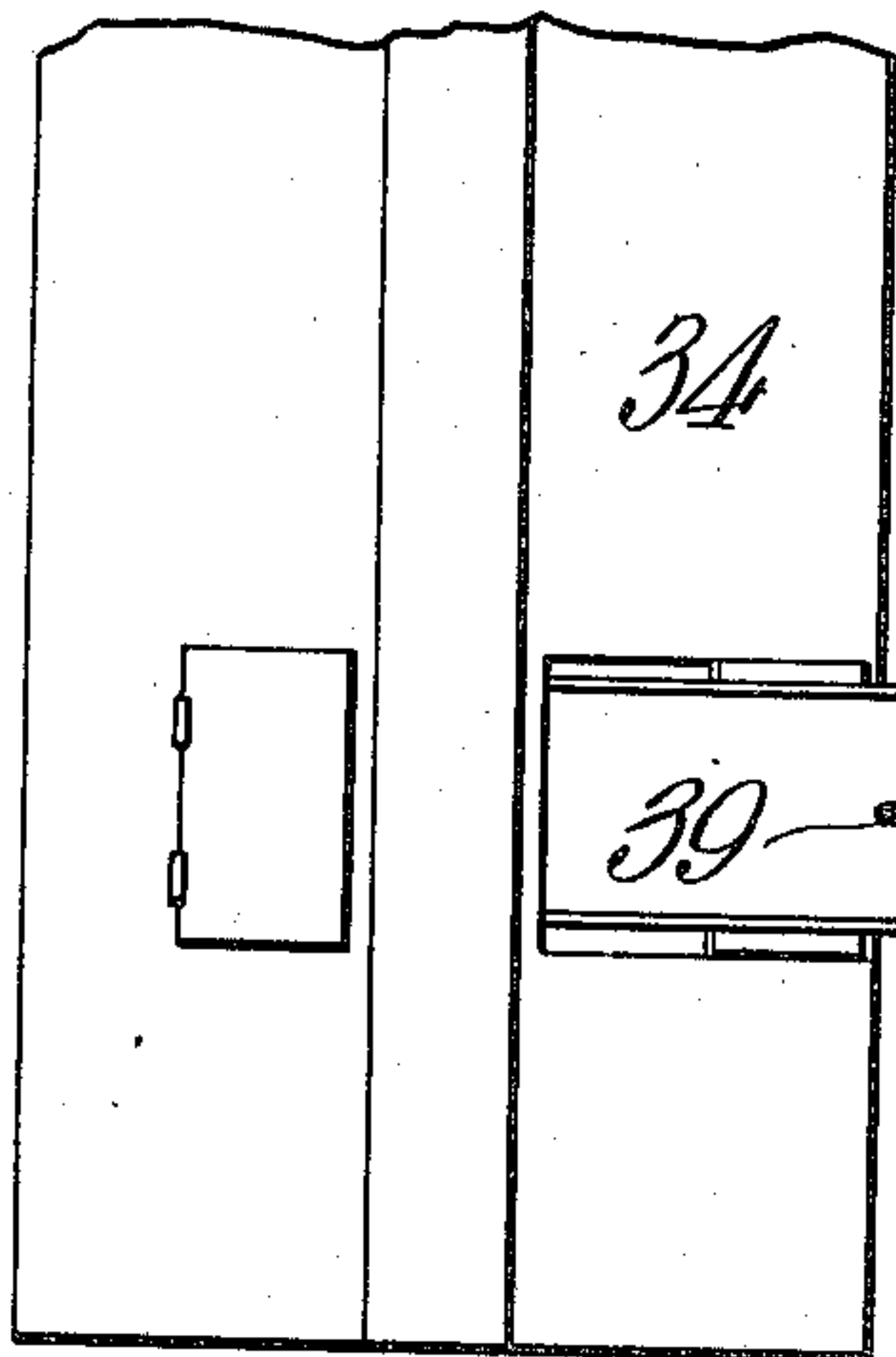


Fig. 2.

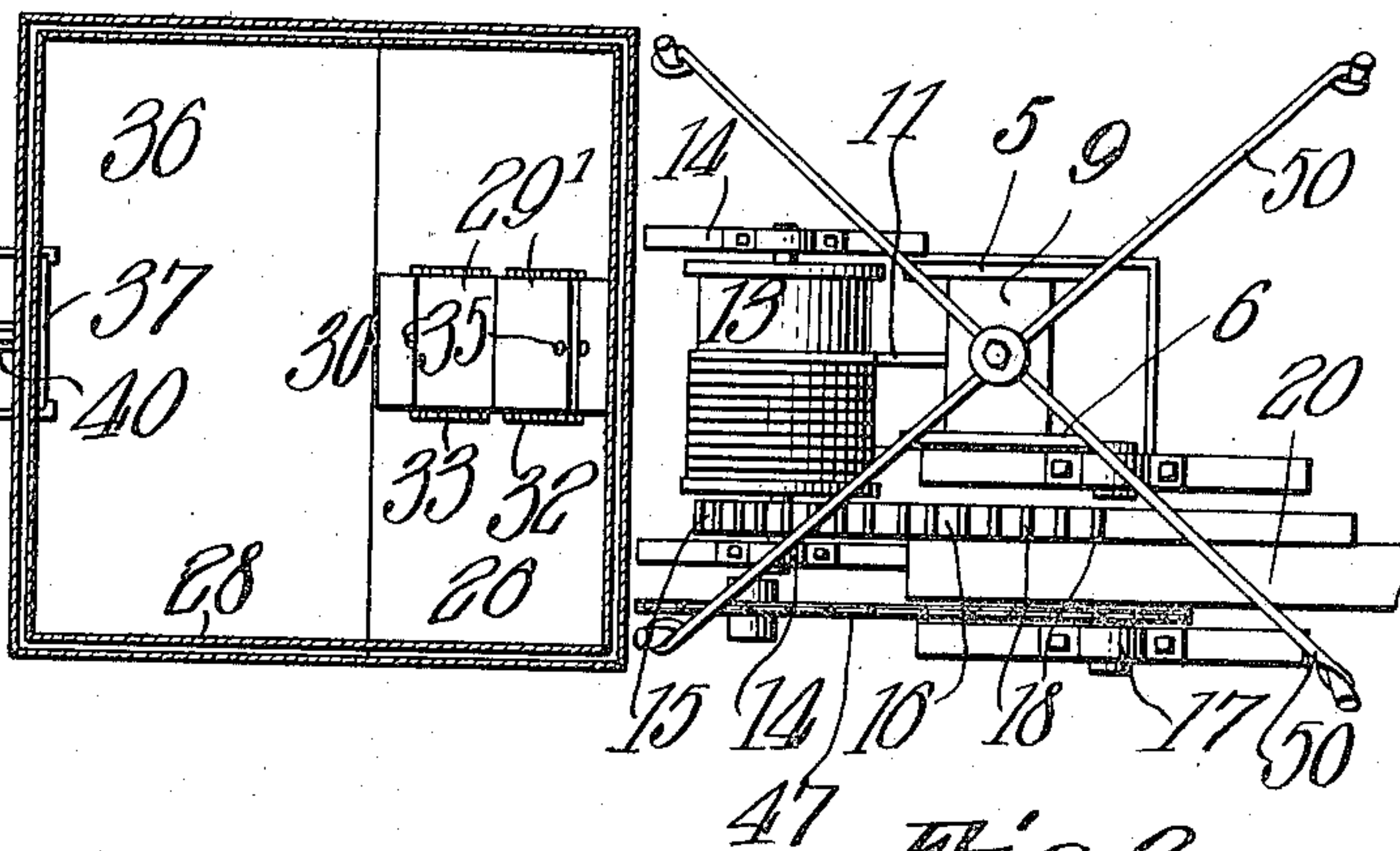


Fig. 4.

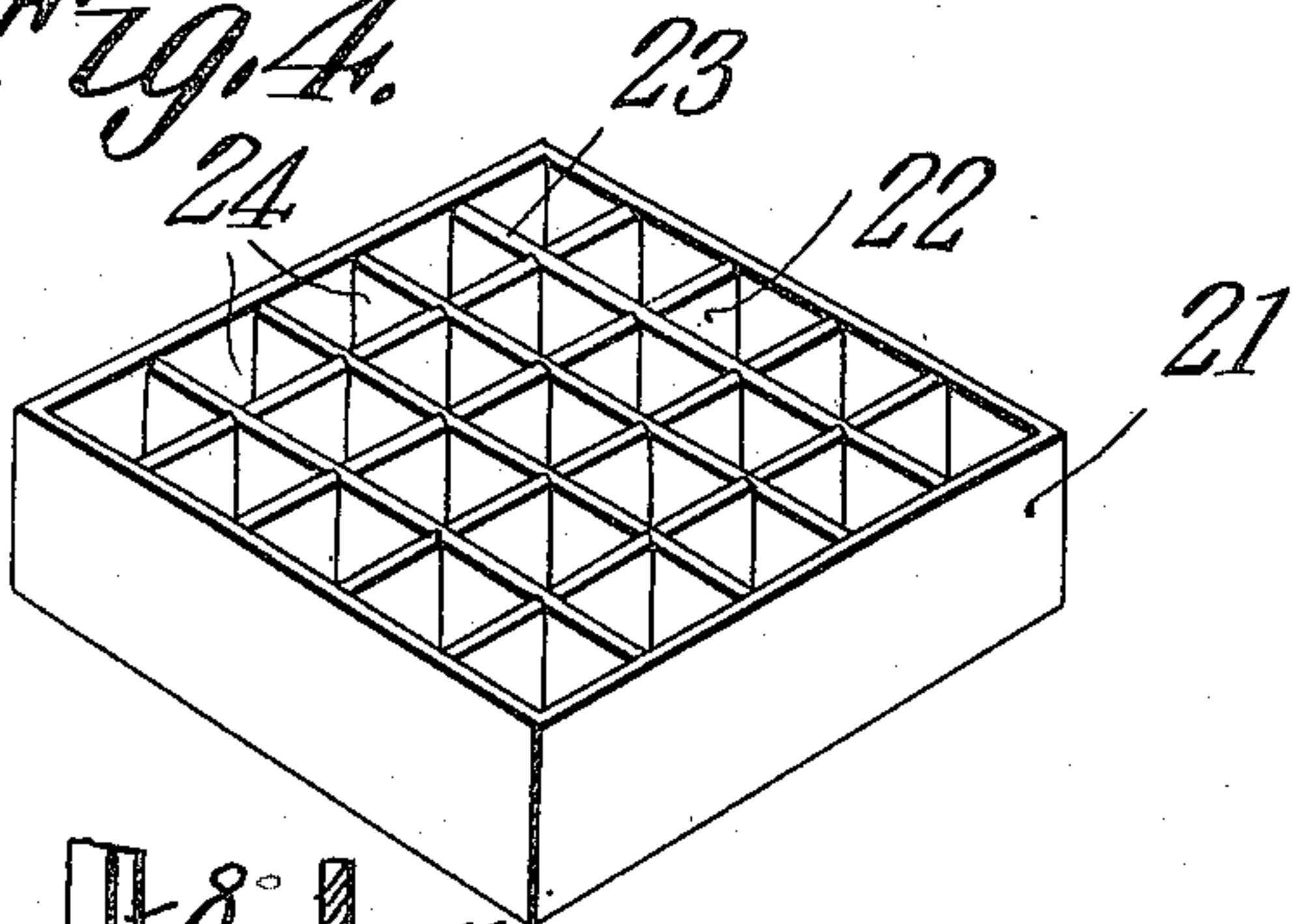


Fig. 3.

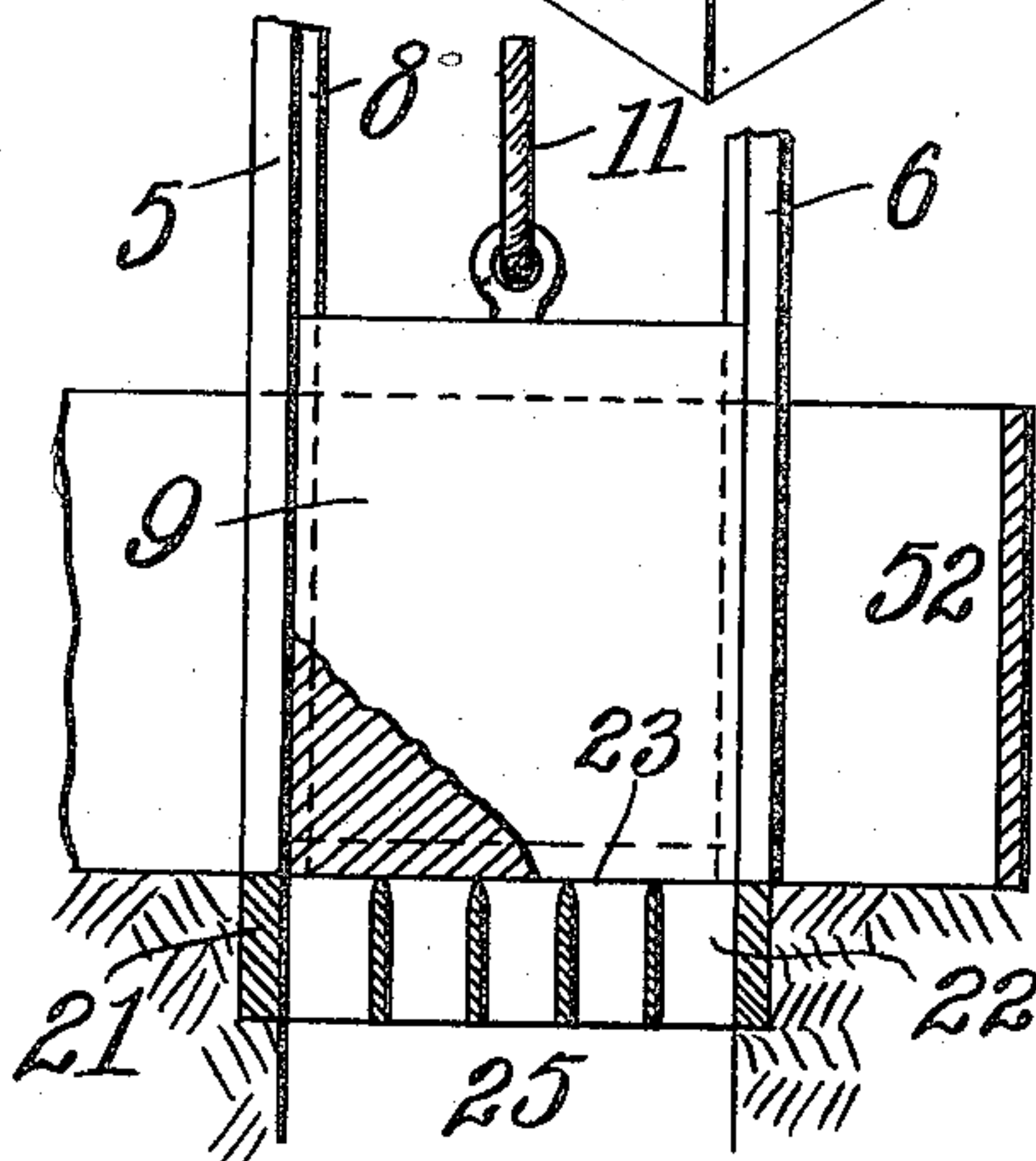
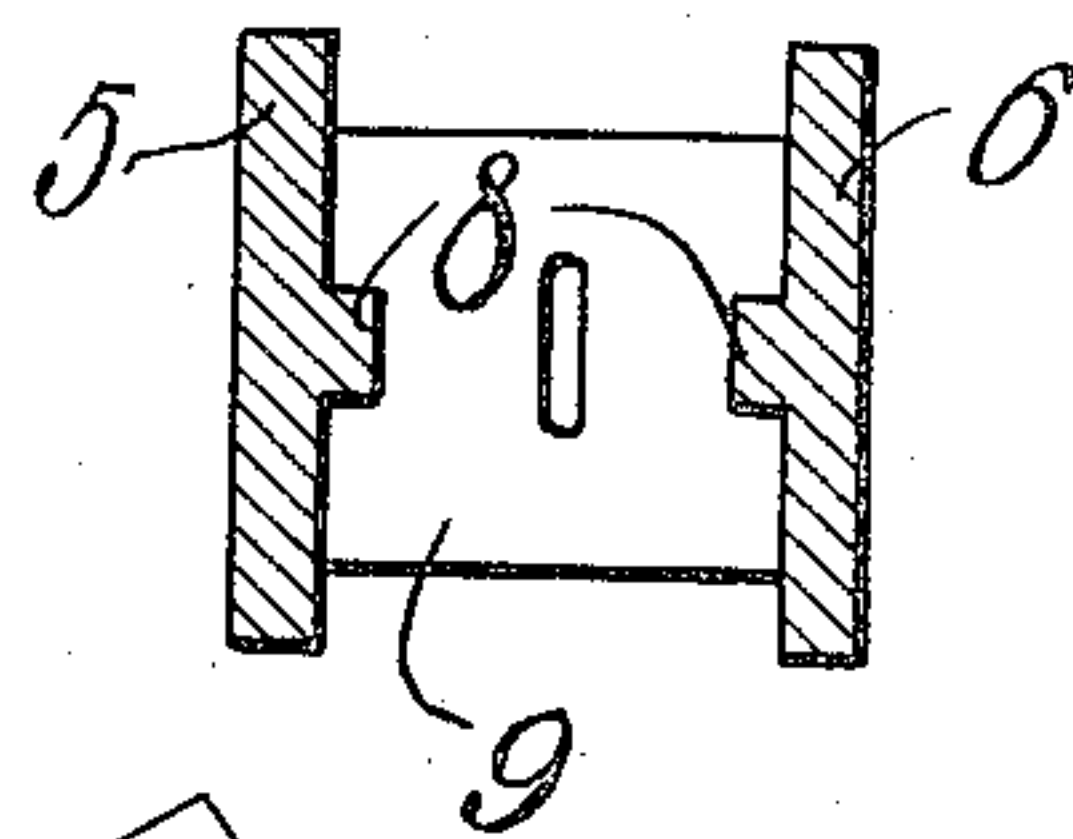


Fig. 5.

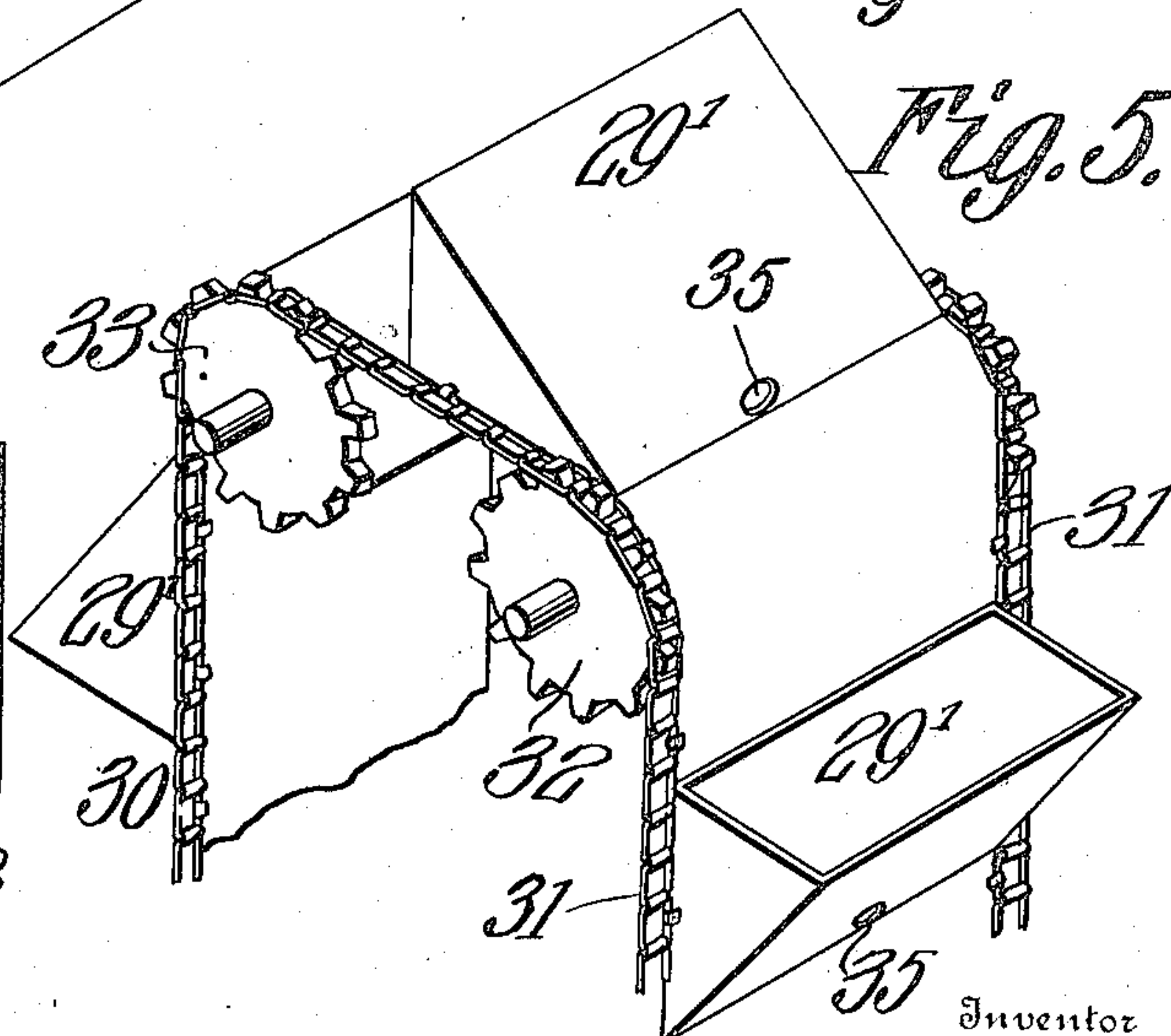


Fig. 7.

Witnesses

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# UNITED STATES PATENT OFFICE.

ALBERT V. CULVER, OF FRANKFORT, INDIANA.

## ICE CRUSHER AND ELEVATOR.

No. 894,425.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed November 25, 1907. Serial No. 403,793.

*To all whom it may concern:*

Be it known that I, ALBERT V. CULVER, a citizen of the United States, residing at Frankfort, in the county of Clinton and State of Indiana, have invented a new and useful Ice Crusher and Elevator, of which the following is a specification.

This invention relates to ice crushers and has for its object to provide means for cutting cakes of ice into cubes or blocks and delivering the same to refrigerator cars and the like.

A further object of the invention is to provide an ice crusher including a supporting frame or derrick having a cutting table combined therewith and provided with a gravity actuated crushing element adapted to bear against the block of ice for forcing the latter in contact with the cutting blades of said table.

A further object is to provide a tower having an endless conveyer mounted for rotation therein and provided with a plurality of buckets for elevating ice from the crusher to the upper portion of the tower from whence it is delivered through a spout to the refrigerator car.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a side elevation partly in section of an ice crusher and elevator constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1. Fig. 4 is a perspective view of the cutting table. Fig. 5 is a detail perspective view of the upper portion of the conveyer. Fig. 6 is a bottom plan view of the gravity actuated crusher. Fig. 7 is a vertical sectional view of the crusher.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved ice crusher forming the subject matter of the present invention includes a derrick or support comprising uprights 5

and 6 having their upper ends united by a transverse beam 7 and their lower ends anchored in any suitable manner to the ground, as shown. Secured to the inner faces of the uprights 5 and 6 are longitudinal guide strips 8 between which is slidably mounted a gravity actuating crushing element or weight 9. The weight 9 is provided with oppositely disposed grooves 10 for the reception of the strips 8 thereby to prevent lateral movement of said weight when the crusher is operated.

Secured to the upper portion of the weight 9 is one end of a cable or other flexible medium 11, the opposite end of which passes over a pulley 12 depending from the transverse beam 7 and is extended downwardly for attachment to a reel or drum 13. The reel or drum 13 is mounted for rotation in suitable supporting brackets 14 and is provided with a terminal pinion 15 which meshes with the teeth of a mutilated master gear 16. The master gear 16 is journaled in suitable brackets 17 similar in construction to the brackets 14 and is so arranged that when the teeth 18 engage the teeth of the pinion 15 the weight 9 will be moved to elevated position, said weight dropping by gravity to lowered or operative position when the mutilated portion of the master gear registers with said pinion. Secured to or formed integral with the master gear 16 is a pulley 19 carrying a belt 20 which extends to a motor, engine or other suitable source of power for rotating the master gear thereby to elevate the crushing element or weight 9.

Disposed between the uprights 5 and 6 at the base of the derrick is a cutting table 21, adapted to receive and support the block or blocks of ice to be cut or severed. The table 21 is provided with a plurality of intersecting longitudinal and transverse blades 22 having terminal cutting edges 23 which cut or sever the ice and force the latter through intermediate openings 24 into a chute 25. The chute 25 is inclined downwardly and empties into a substantially semi-circular trough 26 in which are mounted suitable sprocket wheels 27.

Arranged in spaced relation to the derrick is a tower 28, the walls of which are preferably reinforced and packed with saw-dust, asbestos or other non-conducting material so as to prevent melting of the ice. Extending transversely across the storage house or tower is an inclined platform 29 adapted to receive the crushed ice from the buckets 29'



of an endless conveyer 30. The endless conveyer 30 is provided with sprocket chains 31 which engage the sprocket wheels 27 and also engage spaced sprocket wheels 32 and 33 mounted for rotation in the tower above the platform 29, as shown. The sprocket wheel 33 is preferably arranged slightly in advance of the sprocket wheel 32 so that as the conveyer carrying the buckets 29' travels over the forward sprocket wheel 33 the ice in said buckets will fall by gravity onto the platform 29 and in position to be delivered to the car 34. The buckets 29' may be of any suitable construction and in the present instance are shown substantially triangular in shape, and each provided with a drip opening 35 to permit the escape of water during the ascent of said buckets.

Formed in one wall of the tower at a point adjacent the platform 29 are spaced vertically disposed guides 36 in which is mounted for vertical movement a sliding door or closure 37. Secured to the door 37 is a rope or cable 39 which passes over a pulley 40 preferably arranged on the outside of the tower so that the operator by exerting a longitudinal pull on the free end of the cable 39 may move the door to open position to permit the discharge of ice from the inclined platform.

Pivotaly mounted at 41 beneath the platform 29 is a discharge spout 42 through which the ice is delivered into the different compartments of the refrigerator car 34, there being a rope or cable 43 secured to the spout for raising and lowering the same, as shown.

The inclined platform 29 is preferably formed of spaced timbers between which is interposed a packing of asbestos or saw-dust so as to maintain the upper compartment 44 of the tower at the proper temperature.

Keyed or otherwise rigidly secured to the shaft 45 of the master gear 16 is a sprocket wheel 46 carrying a sprocket chain 47 which latter engages a sprocket wheel 48 mounted on the lower shaft 49 of the conveyer thereby to impart movement from the crusher to said conveyer.

The derrick or support of the crushing mechanism is reinforced and strengthened by the provision of one or more lateral braces which extend from the center of the transverse beam 7 and are anchored in any suitable manner to the ground, as shown.

In order to insure a good contact with the ice and prevent the latter from slipping off the table during the crushing operation the lower face of the weight 9 is corrugated

transversely at 51, as best shown in Fig. 6 of the drawings. A box or receptacle 52 also preferably surrounds the cutting table 21 in order to prevent the chips of ice from being thrown laterally when the ice is being cut.

In operation a block of ice is placed on the table 21 after which the engine or motor is started thus transmitting motion through the belt 20 to the master gear 16. As the master gear 16 rotates the teeth 18 will engage the teeth on the pinion 15 and elevate the crushing element or weight 9 and at the same time through the medium of the sprocket chain 47 impart movement to the conveyer. When the mutilated portion of the master gear 16 registers with the pinion 15, the weight 9 will drop by gravity in contact with the ice thus cutting the latter into cubes or blocks which fall through the compartments 24 into the chute 25 and thence to the trough 26 where they are taken up by the buckets of the conveyer and delivered to the inclined platform 29 of the tower. When it is desired to deliver crushed ice from the compartment 44 to the refrigerator car the spout 42 is positioned in the car and the door 37 raised to elevated position thus permitting the ice to pass through the spout into the refrigerator compartment of said car, as will be readily understood.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

The combination with a support, of a cutting table disposed at the base of the support and formed with intersecting blades, a chute arranged beneath the cutting table, a gravity actuated crushing element slidably mounted on the support and provided with a roughened crushing surface, a winding drum, a pinion secured to the drum, a flexible connection between the winding drum and crushing element, a mutilated gear adapted to engage the teeth on the pinion for intermittently elevating the crushing element, and means for rotating the gear.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ALBERT V. CULVER

Witnesses:

FRED HACKERD,  
GEORGE W. BROWN.