

H. PETERSEN.
MACHINE FOR COLLECTING AND MELTING SNOW.
APPLICATION FILED AUG. 6, 1910.

993,400.

Patented May 30, 1911.

4 SHEETS—SHEET 1.

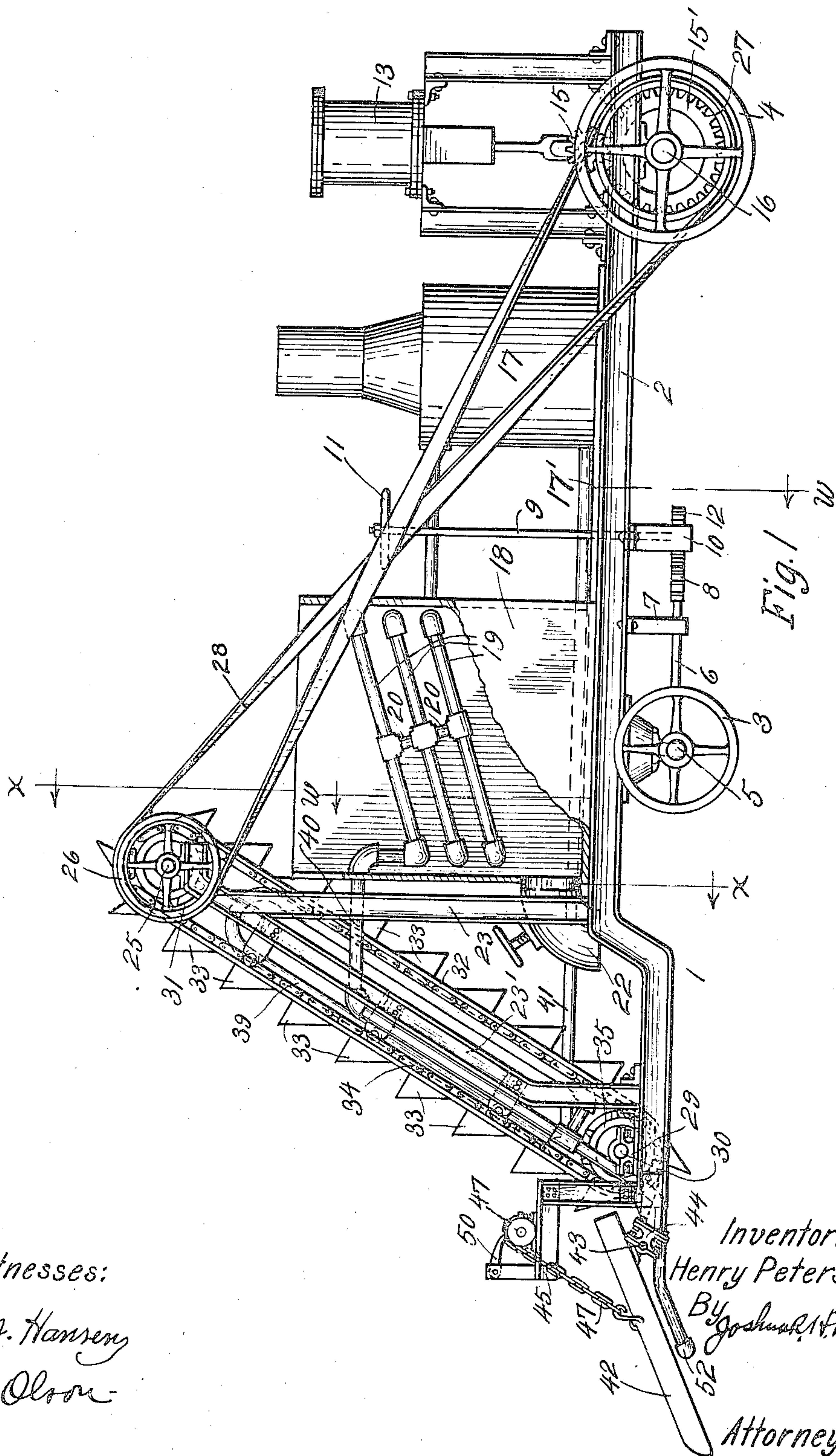


Fig. 1

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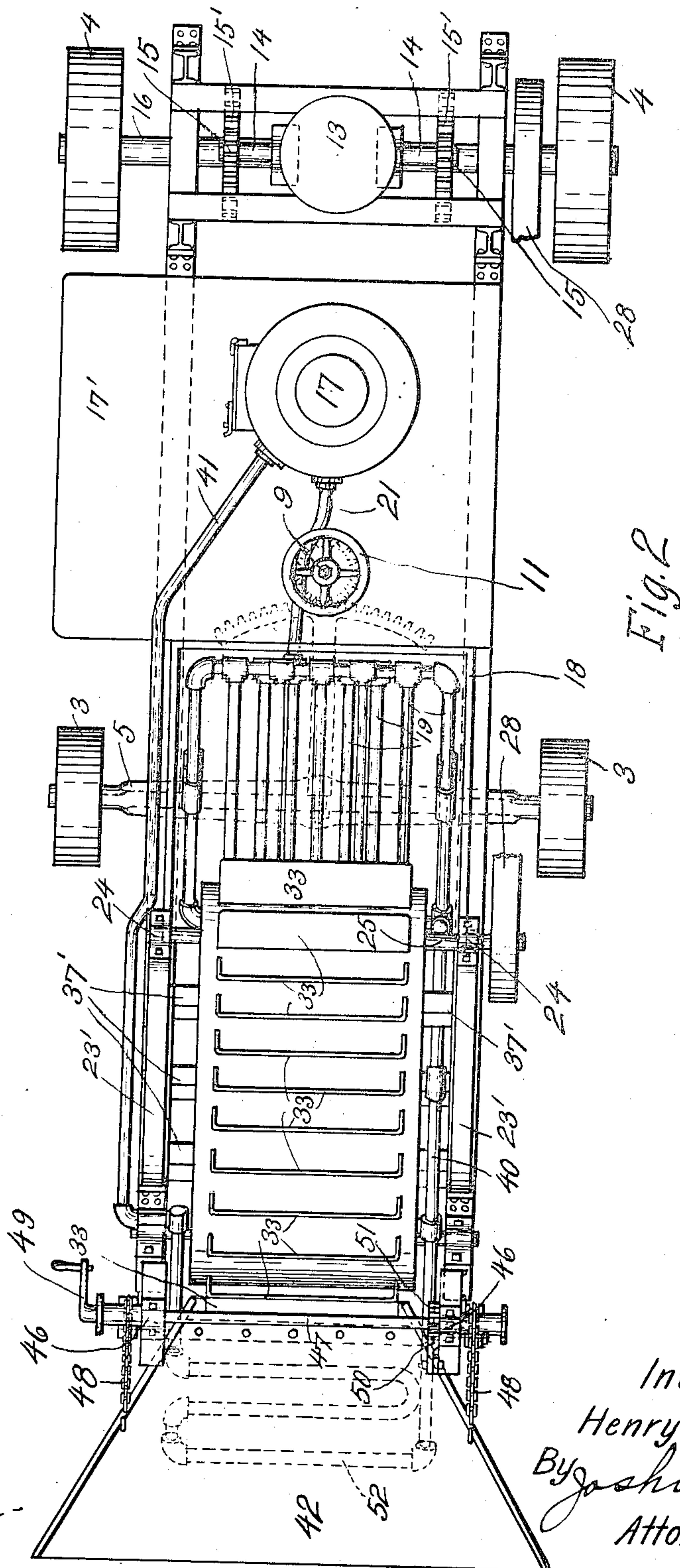


Fig. 2

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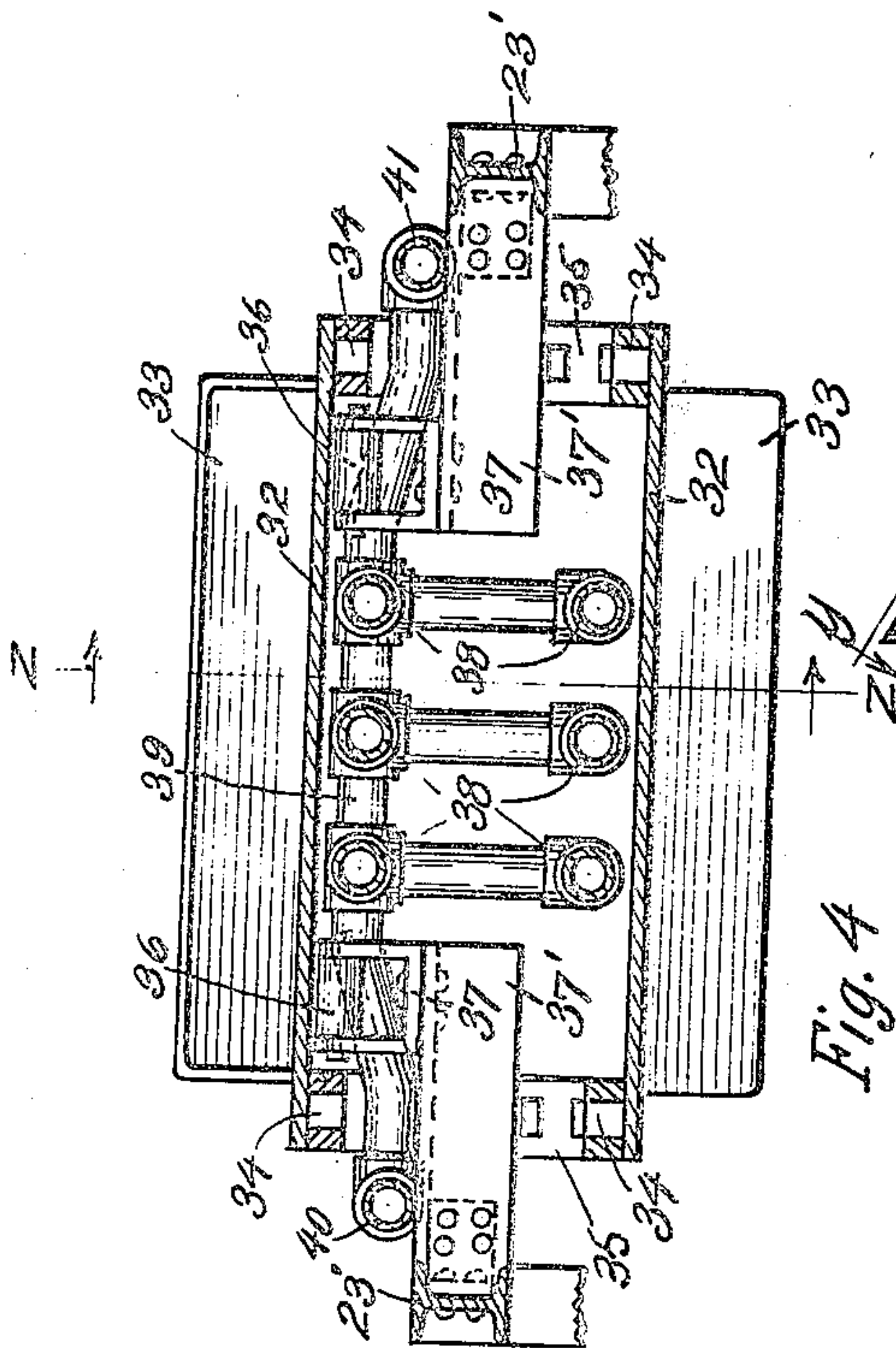


Fig. 4

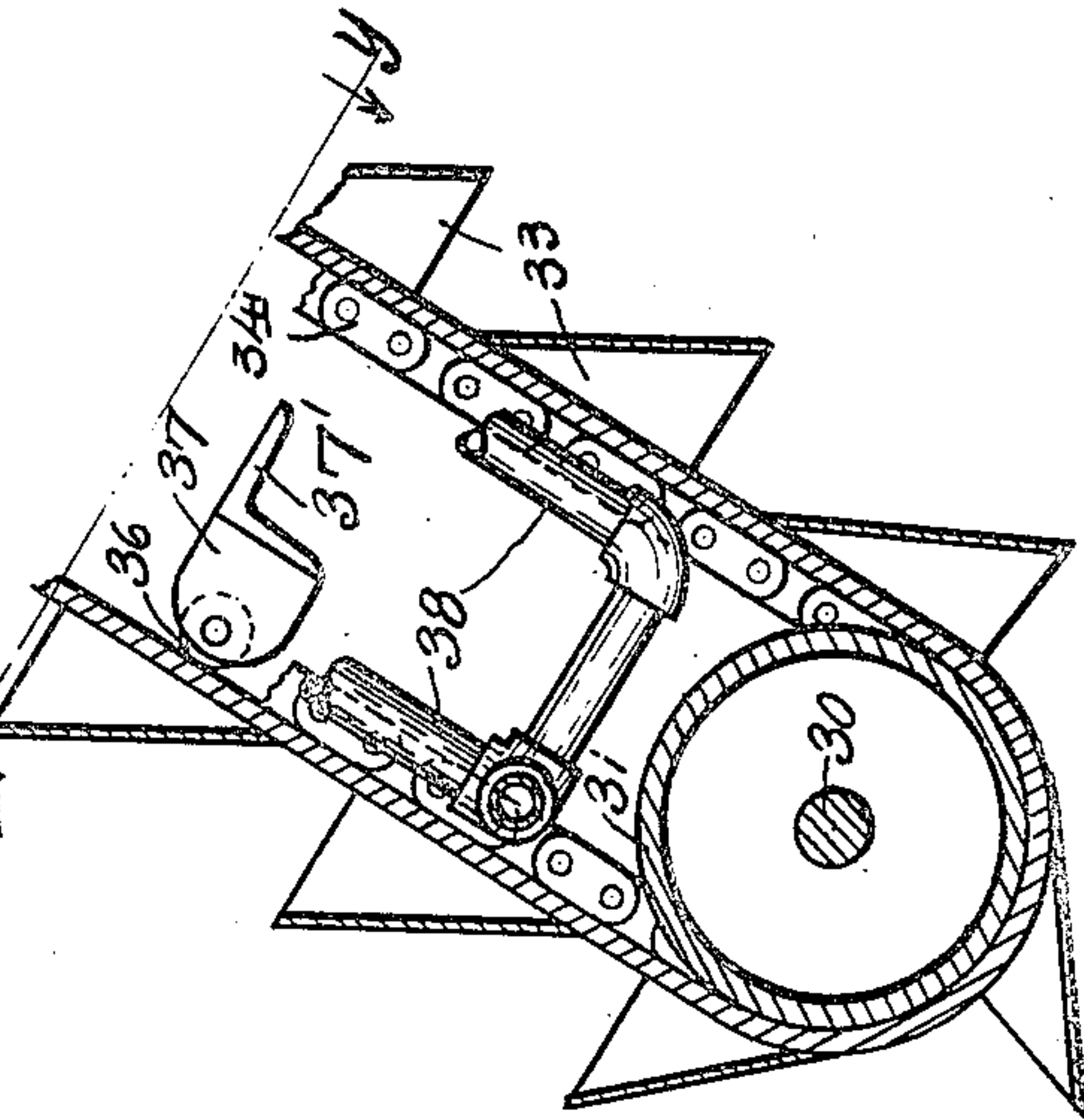


Fig. 5

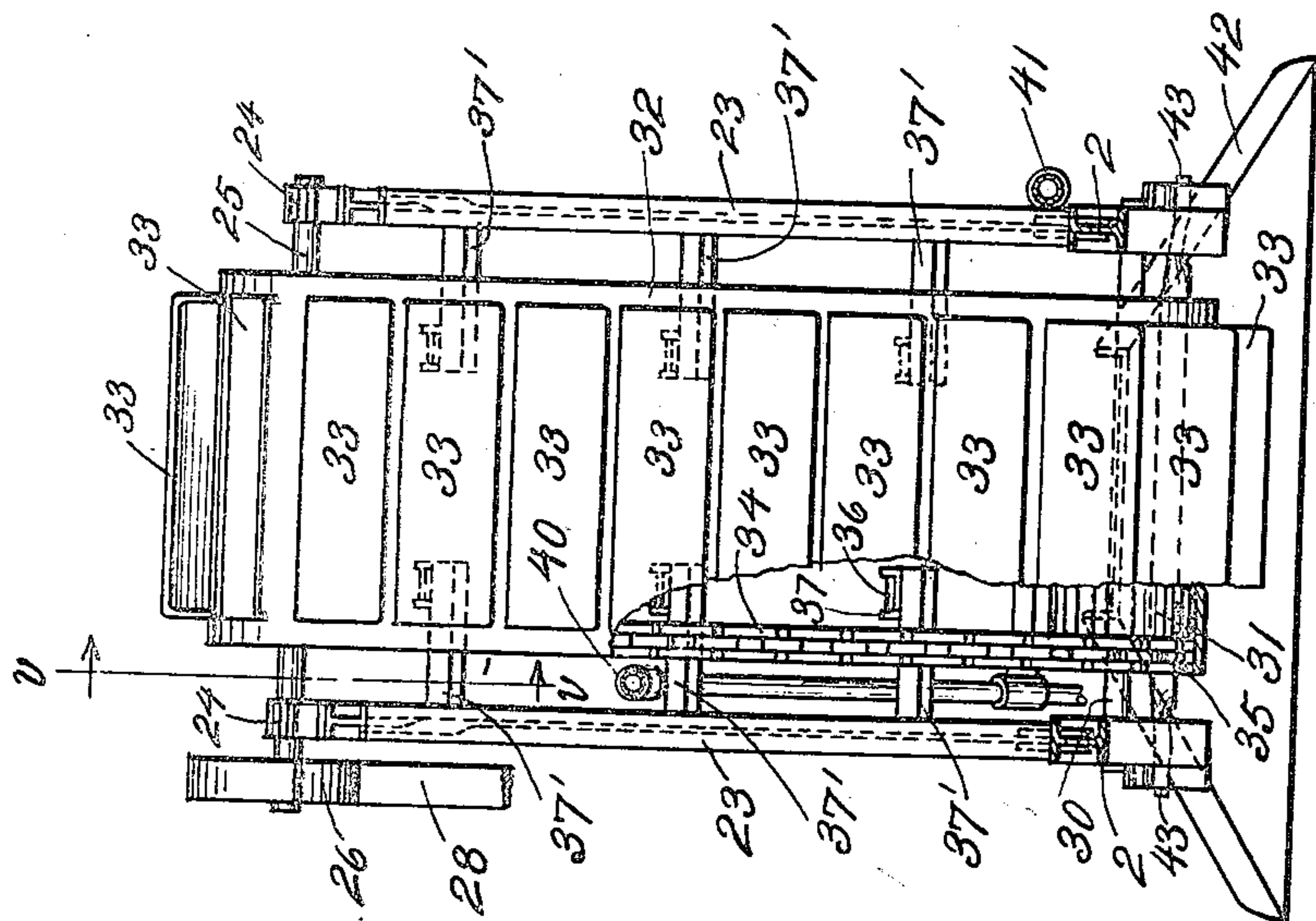


Fig. 3

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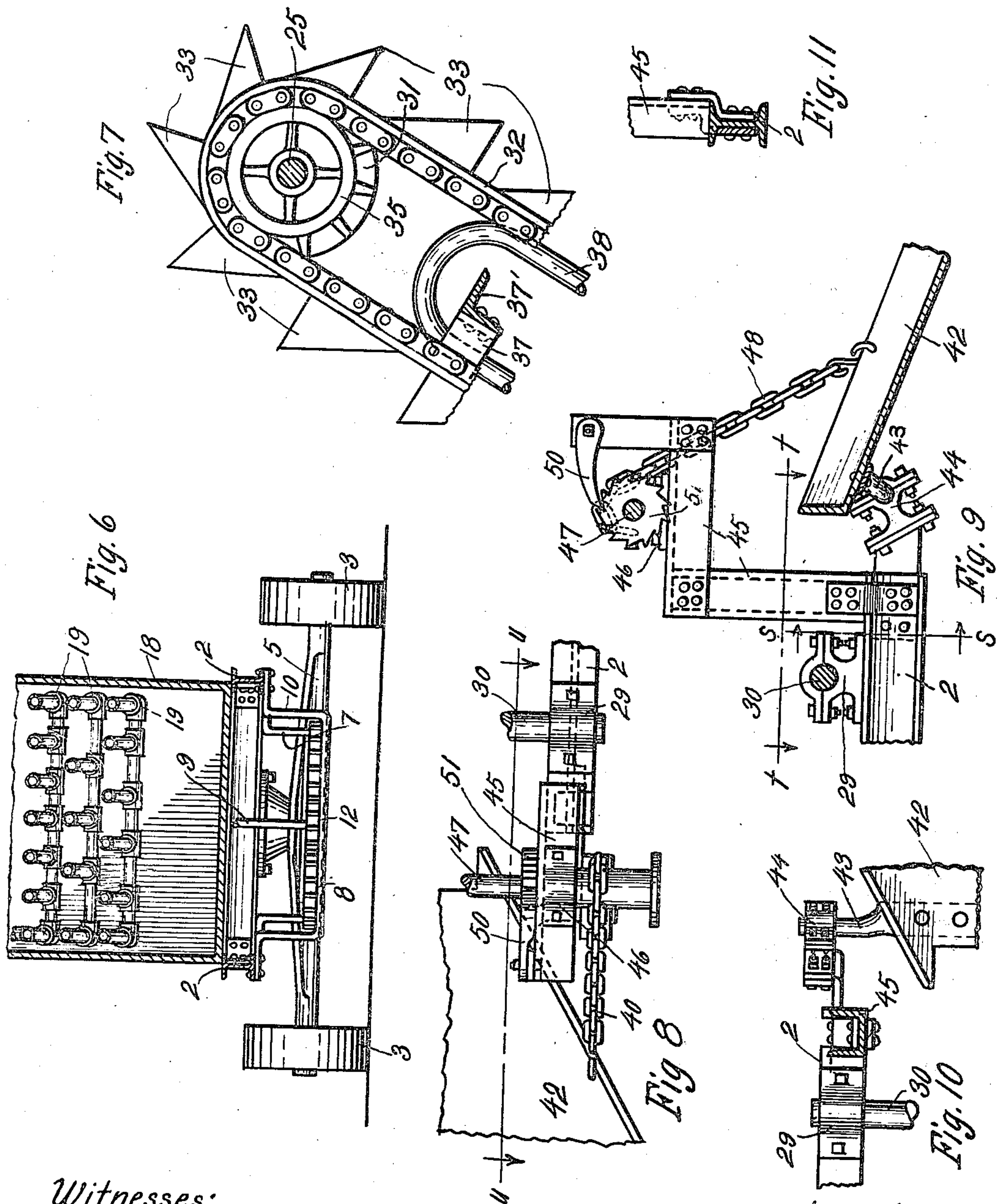
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HENRY PETERSEN, OF CHICAGO, ILLINOIS.

MACHINE FOR COLLECTING AND MELTING SNOW.

993,400.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed August 6, 1910. Serial No. 575,978.

To all whom it may concern:

Be it known that I, HENRY PETERSEN, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Machine for Collecting and Melting Snow, of which the following is a specification.

My invention relates to machines for collecting and melting snow, and has for its object the production of a machine of this character especially adapted for employment in collecting snow from the street pavement and which will be adapted, upon the collection of the snow, to melt the same for discharge in the form of water into the street drainage pipes or other suitable place adapted to accommodate the same.

A further object is the provision of a machine as mentioned which will be of durable and economical construction and efficient in operation.

Other objects will appear hereinafter.

With these objects in view my invention consists in a snow collecting and melting machine characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter fully described and more particularly pointed out in the appended claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of a snow collecting and melting machine embodying the preferred form of my invention, a portion thereof being shown in section, Fig. 2 is a top plan view thereof, Fig. 3 is a vertical transverse section on substantially line $x-x$ of Fig. 1, Fig. 4 is a detail transverse section of the conveyer included in the construction, the section being taken on substantially line $y-y$ of Fig. 5, Fig. 5 is a detail longitudinal section of the lower end portion of the conveyer taken on substantially line $z-z$ of Fig. 4, Fig. 6 is a transverse section taken on substantially line $w-w$ of Fig. 1, Fig. 7 is a detail section of the upper end portion of the conveyer taken on substantially line $v-v$ of Fig. 3, Fig. 8 is a fragmentary top plan view of an end

portion of the snow collector or shovel of the machine and the adjacent parts cooperating therewith, Fig. 9 is a detail section taken on line $u-u$ of Fig. 8, and Figs. 10 and 11 are detail sections taken on lines $t-t$ and $s-s$ respectively of Fig. 9.

Referring now to the drawings 1 indicates the frame of the machine, the longitudinally extending channel bars 2 of which are supported upon the front and rear wheels 3 and 4 respectively. The front axle 5, in order to adapt the same for steering, is pivotally connected to the frame 1 at its center. At the point of pivotal connection of said axle the same is provided with a rearwardly projecting arm 6, the latter being slidably supported in a depending strap 7 secured to the under sides of the frame bars 2. At the rearward end of the arm 6 is provided a segmental rack 8. 9 indicates the steering rod which is rotatably mounted in the frame 1, the lower extremity thereof being mounted in a bearing bracket 10 secured to and depending from the frame bars 2. At the upper extremity of the rod 9 is provided the hand wheel 11 whereby the latter may be readily rotated, and at the lower extremity thereof is provided a pinion 12 which meshes with the rack 8. Suitably mounted in the rearward end of the frame 1 is a steam engine 13 which is arranged for driving the counter power shafts 14. Pinions 15 carried by the shafts 14 mesh with gears 15' secured to the rear axle 16. Thus a driving connection is established between the engine 13 and the rear wheels 4 which are fixed to the axle 16. Arranged forward of the engine 13 is the steam boiler 17 of said engine, the latter being mounted upon a platform 17' supported upon the frame bars 2. Said platform, as will be observed, serves as a station for the operator of the machine in conducting the latter.

Mounted in the frame 1 forward of the steering rod 9 is a receptacle 18 preferably substantially square in cross section. Said receptacle is open at its upper end, and arranged in said receptacle adjacent said end are inclined tubular grates 19. Three longitudinal bars or pipes of adjacent grates

being preferably staggered, as clearly indicated in Fig. 6. Adjacent grates 19 communicate with each other through connecting pipes 20, the lowermost grate communicating with the boiler 17 through a pipe 21. At the lower end of the receptacle 18 is provided a spout or stop cock 22 whereby said receptacle may be readily drained when desired.

At the forward ends of the frame bars 2 are provided upwardly extending frame bars 23 and 23', the former being vertically disposed and the latter slightly rearwardly inclined. Rotatably mounted at the upper extremities of the frame bars 23' in bearings 24 is a transversely extending shaft 25. To one extremity of said shaft is secured a pulley 26 around which and a co-axial pulley 27 secured to the rear axle 16 travels a belt 28. Thus an operative connection is established between the rear axle 16 and the shaft 25 so that when the machine is driven said shaft will be rotated. Mounted at the forward extremities of the frame bars 2 in bearings 29 is a transversely extending shaft 30. Secured to each of the shafts 25 and 30 is a drum 31. Traveling around the drums 31 is a flexible endless belt 32 upon which are spaced conveyer buckets 33 so arranged that, when said belt is properly driven the same will be adapted to convey snow deposited therein to a position over the receptacle 18 and to deposit the same thereinto. To the longitudinal edges of said belt 32 are secured sprocket chains 34 which pass over sprocket wheels 35 secured to the shafts 25 and 30 adjacent the extremities of the drums 31 arranged thereon. The sprocket chains 34, as will be observed, effects a positive driving connection between the shafts 25 and 30 and obviates possibility of slipping of the belt 32 upon the drums 31. The upper side of the belt 32 intermediate the drums 31 is supported by rollers 36 mounted in brackets 37, and which brackets are secured to arms 37' inwardly projecting from the frame bars 23'.

Arranged adjacent the inner side of the belt 32 and extending parallelly therewith intermediate the drums 31 are steam or heated fluid conducting pipes 38, the pipes 38 being connected with each other at their lower ends by a header 39, the latter communicating through a pipe 40 with the uppermost of the grates 19 and through a return pipe 41 with the boiler 17.

Arranged at the forward extremities of the frame bars 2 is a snow collector or shovel 42 the forward end thereof which is of divergent form, as indicated, being adapted to extend or pass in close proximity to the pavement of the street, when the machine is in operation, to collect the snow therefrom. The rearward end of the collector 42 is secured to a transversely extending bar

43 the respective extremities of which are rockingly mounted in bearings 44 provided at the forward extremities of the frame bars 2. Upwardly extending from the forward extremities of the frame bars 2 are angular frame portions or arms 45 upon the upper horizontal projecting portions of which are provided bearings 46 for a transversely extending shaft 47. The respective ends of the shaft 47 which are of increased diameter, as indicated, to constitute drums are connected by means of chains 48 with the lateral edges of the collector 42. With this arrangement and by means of a crank 49 provided at one extremity of the shaft 47 the vertical adjustment of the forward end of the collector 42 relative to the surface of the pavement may be readily effected by simply rotating said shaft. A pawl 50 is adapted to cooperate with a ratchet 51 secured to the shaft 47 to maintain the latter and hence the collector 42 in any position of adjustment. Arranged under the collector 42 and extending in close proximity to the under side thereof is a coiled steam or heated fluid conducting pipe 52 the respective extremities of which are connected, as indicated, with the pipes 40 and 41.

With the construction described it will be seen that as the same is propelled over a street pavement through the medium of the engine 13 the snow in the path thereof will be removed by the collector 42. This snow will be forced up the latter and will be deposited in the buckets 33 which pass adjacent the rearward extremity thereof. Said buckets will convey the snow deposited therein upwardly and deposit the same into the receptacle 18. In said receptacle the snow will be brought in contact with the grates 19 which will effect the melting thereof, the water passing to the bottom of said receptacle whence the same may be drawn through the spout 22 and discharged into the street drainage pipes or other suitable place adapted to accommodate the same. By the system of piping extending under the collector 42 and the conveyer belt 32 said collector and belt will be constantly maintained in heated condition so that sticking of snow thereto and consequent collecting will be obviated. By reason of the inclined disposition of the grates 19 snow in dropping thereupon will tend to slide downwardly upon said grates thereby facilitating the process of melting thereof. Through the adjustable mounting of the collector 42 the quantity of snow which it is desired to remove from the street pavement may be regulated.

While I have shown what I deem to be the preferable form of my device I do not wish to be limited thereto as there might be various changes made in the details of construction and arrangement of parts de-

scribed without departing from the spirit of the invention comprehended within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a snow collecting and melting machine, the combination of a snow receptacle, a tubular inclined grate in said receptacle, means for circulating heated fluid through said grate, means for conveying snow to said receptacle, and an outlet in said receptacle at the lower end thereof, substantially as described.

2. In a snow collecting and melting machine, the combination of a snow receptacle, a plurality of tubular inclined grates arranged in said receptacle, means for circulating heated fluid through said grates, means for conveying snow to said receptacle, and an outlet in said receptacle at the lower end thereof, substantially as described.

3. In a snow collecting and melting machine, the combination of a snow receptacle, a plurality of tubular inclined grates arranged in said receptacle, the bars of said grates being staggered in position, means for circulating heated fluid in said grates, means for conveying snow to said receptacle, and an outlet in said receptacle at the lower end thereof, substantially as described.

4. In a snow collecting and melting machine, the combination of a wheeled frame, means mounted in said frame and operatively connected with the wheels of said frame for propelling the latter, a snow receptacle open at its upper end mounted in said frame, tubular inclined grates traversing said receptacle adjacent the upper end thereof, means for circulating heated fluid through said grates, a snow collector at the front end of said frame, an endless belt conveyer for conveying snow from said collector and for depositing the same into said receptacle, and an outlet for said receptacle at the lower end thereof, substantially as described.

5. In a snow collecting and melting ma-

chine, the combination of a wheeled frame, means mounted in said frame and operatively connected with the wheels of said frame for propelling the latter, a snow receptacle open at its upper end mounted in said frame, tubular inclined grates traversing said receptacle adjacent the upper end thereof, the bars of said grates being staggered, means for circulating heated fluid through said grates, a snow collector at the front end of said frame, an endless belt conveyer for conveying snow from said collector and for depositing the same into said receptacle, an operative connection between said conveyer and said propelling means, and heated fluid pipes extending adjacent the under sides of said collector and said belt, substantially as described.

6. In a snow collecting and melting machine, the combination of a wheeled frame, a propelling engine mounted in said frame and operatively connected with the wheels of said frame, a snow receptacle open at its upper end mounted in said frame, tubular inclined grates traversing said receptacle adjacent the upper end thereof, means for circulating steam from the boiler of said engine through said grates, a snow collector at the front end of said frame adapted to pass in close proximity to the surface of the pavement, means for vertically adjusting said collector, an endless belt conveyer for conveying the snow from said collector and for depositing the same into said receptacle, an operative connection between said conveyer and said engine, and steam pipes connected with the boiler of said engine extending adjacent the under sides of said snow collector and said belt, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY PETERSEN.

Witnesses:

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