

No. 641,912.

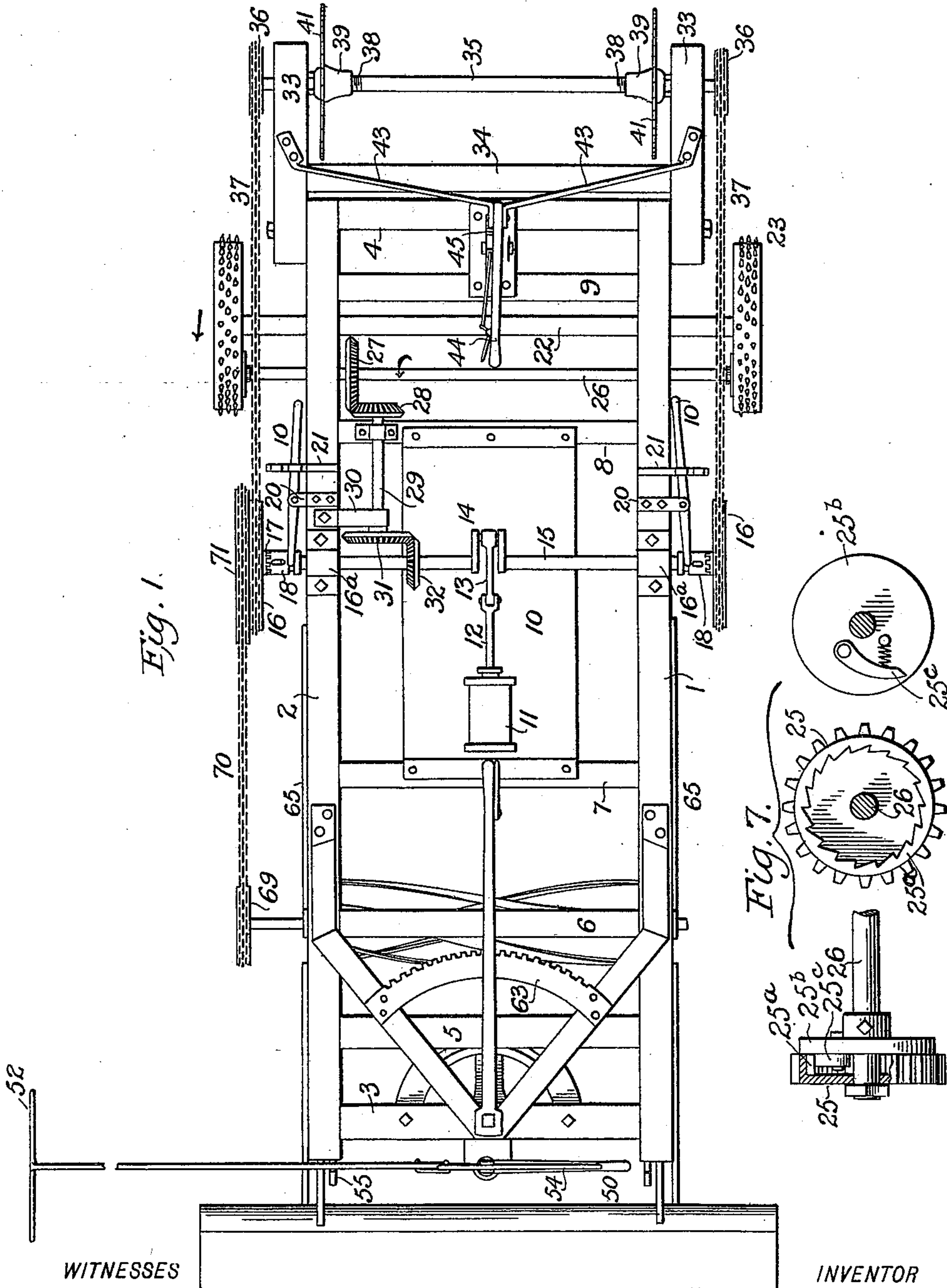
Patented Jan. 23, 1900.

A. W. WINTERS.
ICE CUTTING MACHINE.

(Application filed Mar. 21, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES

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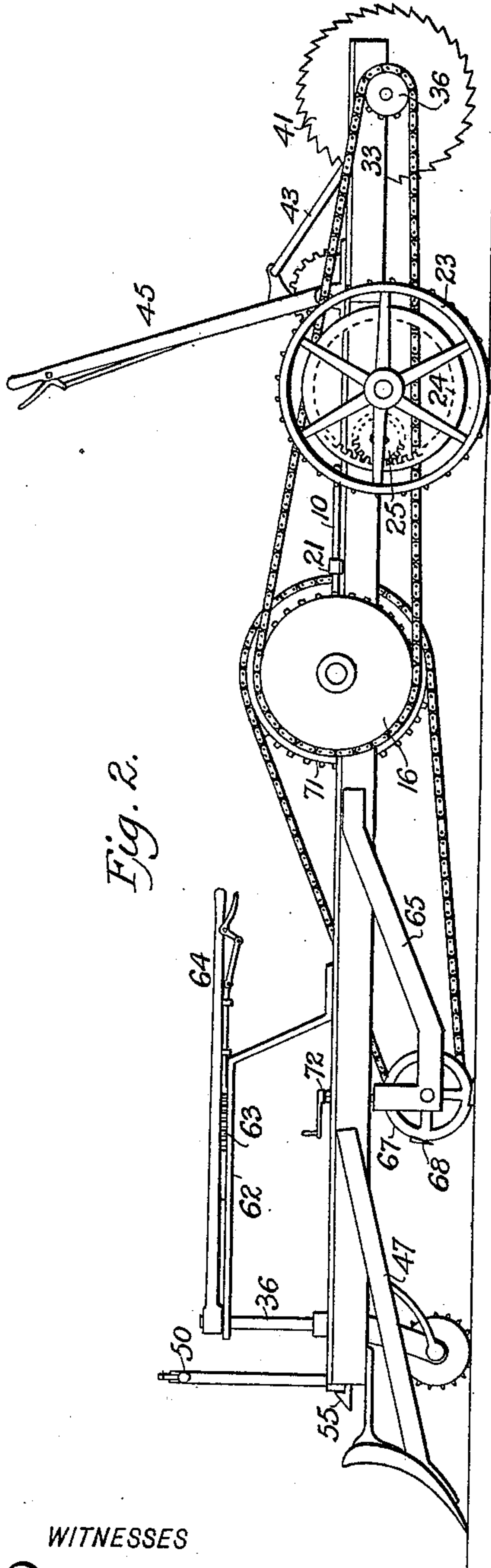


Fig. 2.

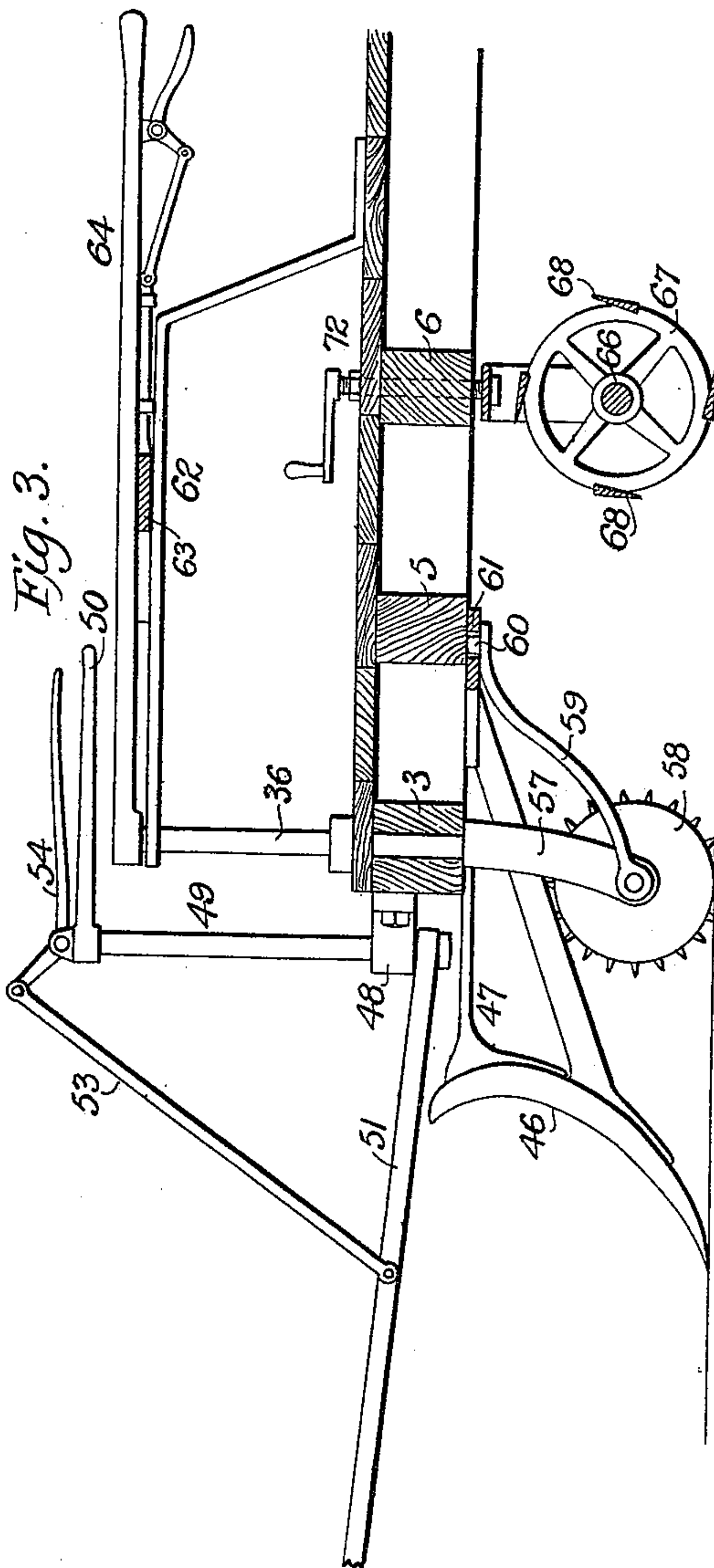


Fig. 3.

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Fig. 4.

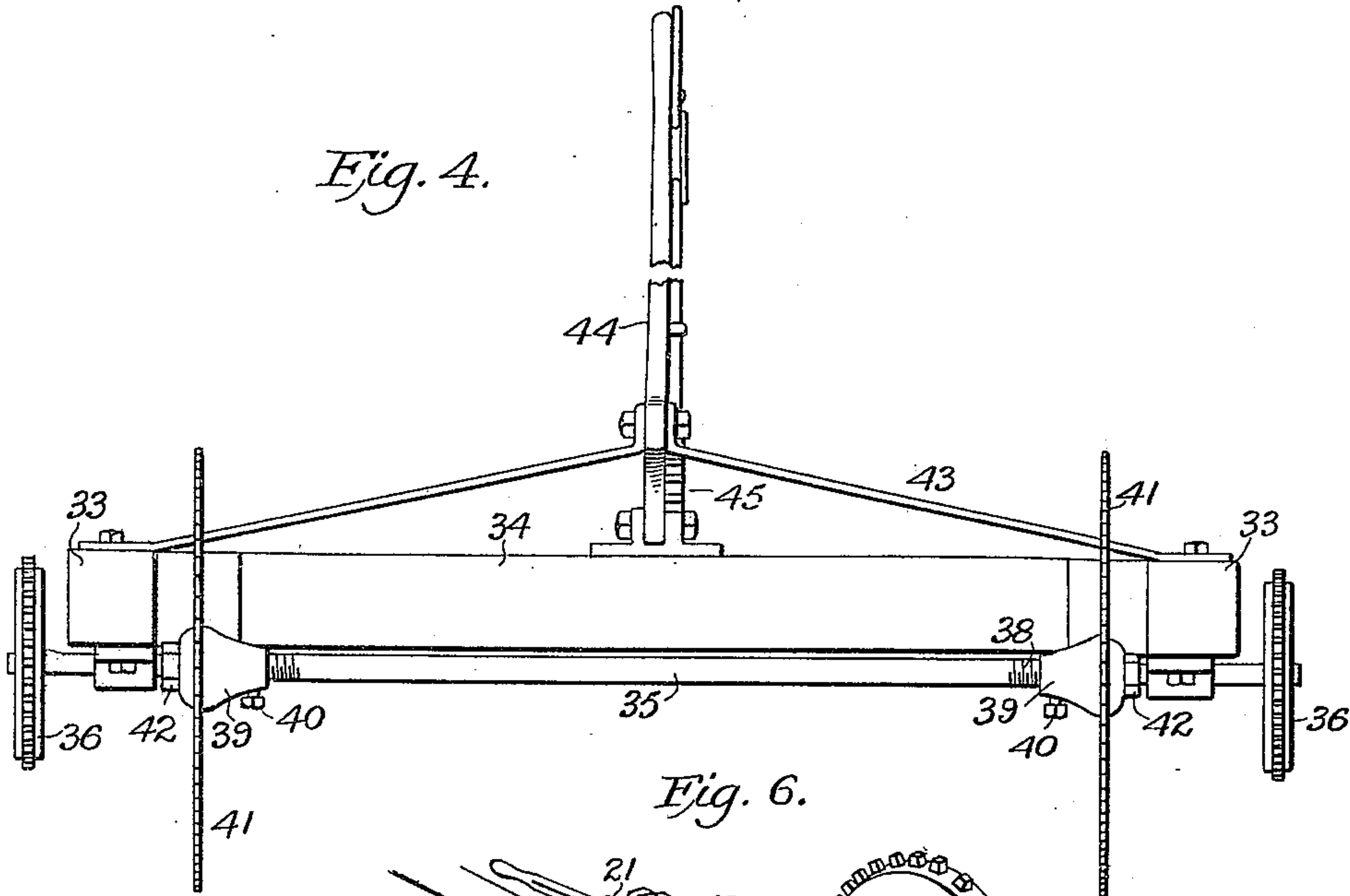


Fig. 6.

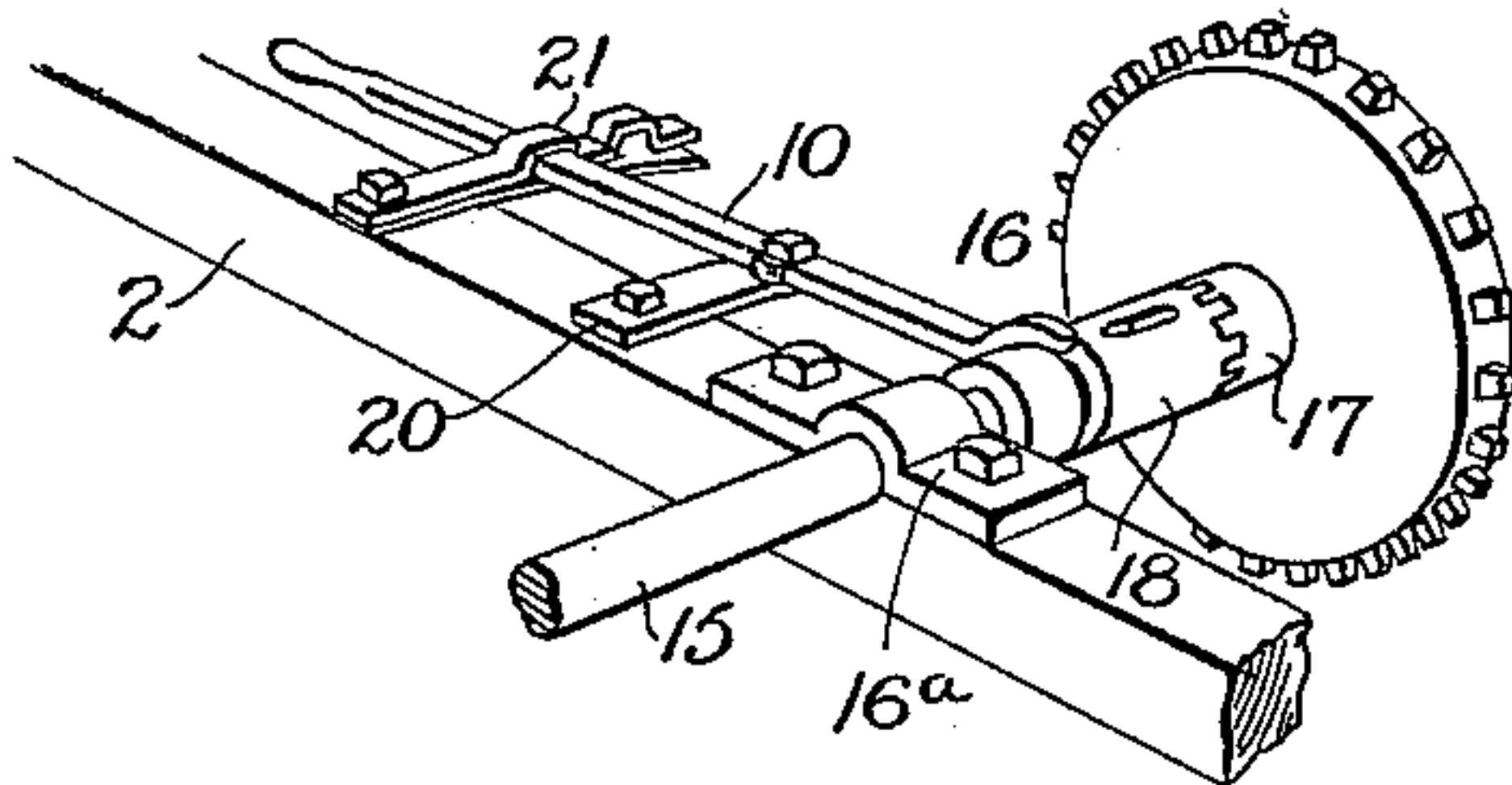
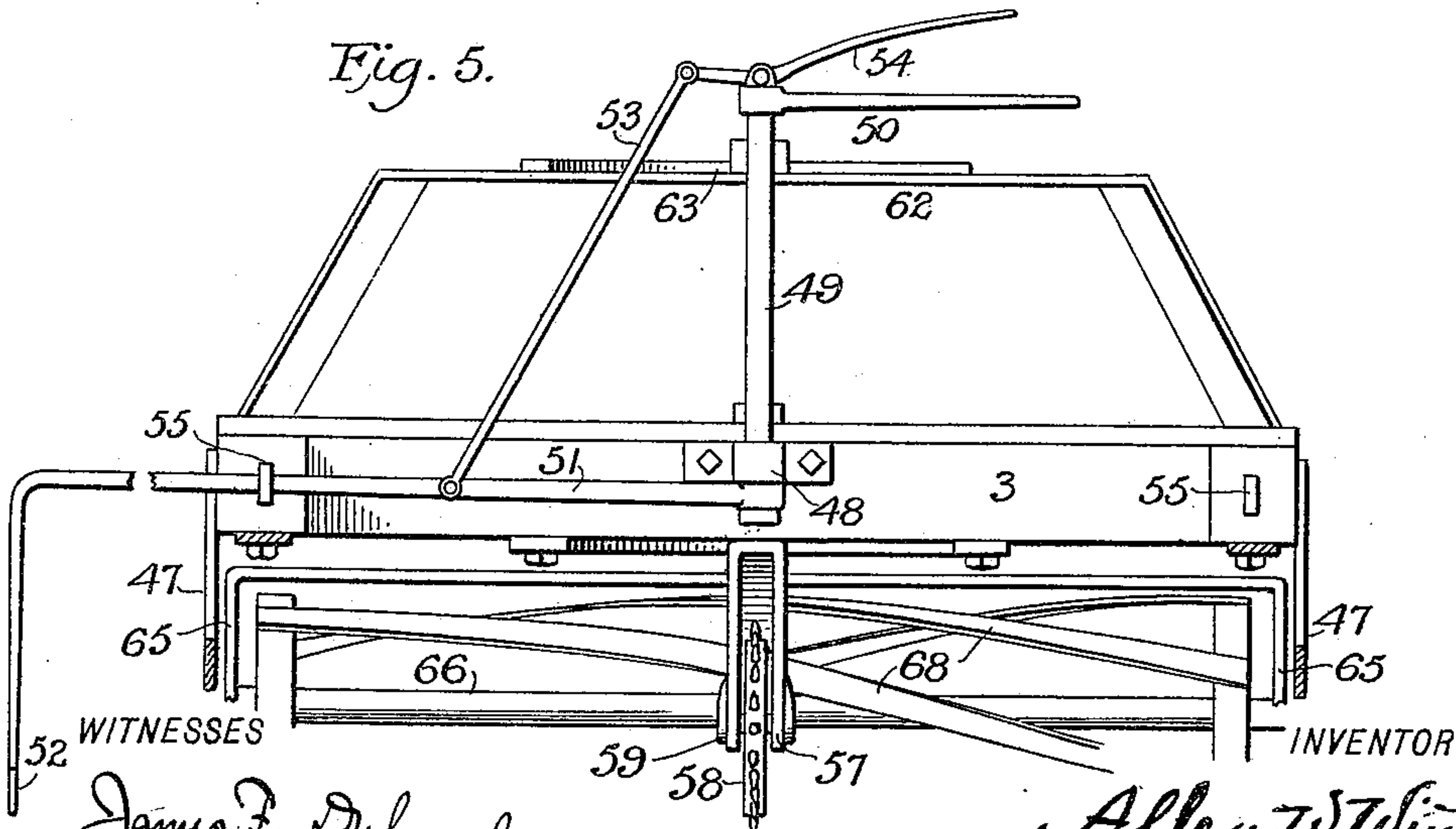


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALLEN W. WINTERS, OF GREENWOOD LAKE, NEW YORK.

ICE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 641,912, dated January 23, 1900.

Application filed March 21, 1899. Serial No. 710,004. (No model.)

To all whom it may concern:

Be it known that I, ALLEN W. WINTERS, a citizen of the United States, residing at Greenwood Lake, in the county of Orange and State of New York, have invented certain new and useful Improvements in Ice - Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to ice-harvesting apparatus, and particularly to machines for cutting ice before the "field" has been marked out; and some of the objects of the invention are to provide a machine of this general character which is simple, strong, and light in construction and at the same time positive and effective in operation.

Another object is to provide for the transmission of power directly to the operated parts in the simplest and most operative manner and dispense with counter-shafts, a multiplicity of gearing, belting, and like mechanism whereby much of the power generated is not utilized.

A further object of the invention is to provide in one machine a scraper, a planer, and saws or cutters, and to provide for the adjustment of the planer and saws or cutters, and also provide steering mechanism whereby the machine can be set to run in any desired direction.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as hereinafter more fully described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of my improved ice-machine with the flooring thereof removed to facilitate the illustration of the machine. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal central section of a portion of my improved ice-machine, showing the floor in position. Fig. 4 is an enlarged detail end elevation of the ice-cutting mechanism. Fig. 5 is a front elevation of the steering mechanism and planer with the scraper removed. Fig. 6 is an enlarged de-

tail view of the clutch mechanism of the drive-shaft, and Fig. 7 are details of engagement mechanism.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, and particularly to Fig. 1 thereof, I have illustrated a preferably rectangular frame comprising side bars or members 1 and 2, connected by end pieces 3 and 4, and between said end pieces are preferably secured cross-pieces 5, 6, 7, 8, and 9. Said pieces are preferably constructed of wood or similar material to afford lightness.

Mounted between the cross-pieces 7 and 8 in any desired manner is a foundation or bed 10, of any preferred construction, adapted to receive an engine or motor of any preferred character, here indicated by a cylinder 11, and piston-rod 12, carrying a link 13, engaging a crank portion or offset 14 in a transverse drive-shaft 15, suitably journaled at 16^a in the side bars or members 1 and 2 of the framework of the machine.

Loosely mounted upon the drive-shaft 15 are sprocket - wheels 16, provided with a toothed hub or arbor 17, adapted to engage with a feathered or splined clutch 18, slidably mounted upon said drive-shaft, said clutch having an annular recess or groove adapted to receive the bifurcated end of a lever 19, pivoted at 20 to the side bars or members 1 and 2, the free end of said lever being adapted to be retained in position by a spring 21, also secured to said bars or members, so that said clutch can be held into or out of engagement with the sprocket-wheel, as clearly shown in Figs. 1 and 6 of the drawings. Suitably journaled beneath the said bars or members 1 and 2 of the frame is a transverse shaft 22, carrying wheels 23, preferably provided upon the periphery thereof with projections or ribs to prevent the slipping upon the ice, and said wheels are preferably provided with an internally-toothed ring 24, adapted to engage with a pinion 25, Figs. 2 and 7, loosely mounted upon a shaft 26, also journaled in said bars or members, and the pinion 25 is preferably provided with interior ratchet-teeth 25^a, with which engages a spring-actuated pawl or dog 25^c, carried by a disk 25^b,

fixed upon the shaft 26, so that when the shaft 26 is revolved in the direction of the arrow in Fig. 1 the pawl 25^c will engage the ratchet-teeth 25^a and cause the pinion 25 to rotate, thereby rotating the vehicle-wheel 23, while when the wheels 23 are turned in a reverse direction the dogs or pawls 25^a will run or slip over the ratchet-teeth to enable the machine to be turned about or reversed, as will be readily understood. The shaft 26 also carries a beveled gear 27, engaging with the beveled pinion 28, carried by a short longitudinal shaft 29, journaled in a cross-piece 8 and a bracket 30, connected with said bar or member 2, said shaft 29 being provided with a beveled gear 31, adapted to engage with a beveled pinion 32 upon the drive-shaft 15, as clearly shown in Fig. 1. By means of the construction just described power is transmitted from the drive-shaft 15, beveled pinion 32, beveled gear 31, shaft 29, beveled pinion 28, beveled gear 27, and pinions 25 of the driving-wheels 23 of the machine, whereby the same is propelled over the ice.

Preferably pivotally connected with the rear end of the frame of the machine is a cutter-frame comprising side bars 33 and a cross-bar 34, and in the free ends of said bars 33 is journaled the cutter-shaft 35, carrying sprocket-wheels 36, connected by means of a sprocket-chain 37 with the sprocket-wheel 16 on the drive-shaft 15, by means of which the cutter-shaft 35 is rotated, and the cutter-shaft is preferably screw-threaded, as shown at 38, Figs. 1 and 4, to receive internally-screw-threaded sleeves or arbors 39, carrying set-screws 40, by means of which construction said arbors may be adjustably secured to the cutter-shaft and provide for the regulation or adjustment of the circular saws or cutters 41 by means of the jam-nuts 42 and said arbors in order to provide for the cutting of any desired width, as will be readily understood. The cutter-frame is also provided with vertical adjustment by means of the pivotal connection thereof with the frame of the machine, as before stated, and this adjustment is effected through or by means of suitable braces 43, connected with the cutter-frame and ratchet-lever 44, Figs. 1 and 4, operated in connection with the rack-bar 45, suitably mounted upon the cross-piece 9 and end piece 4 of the machine-frame by means of a bed-plate 45, bolted to said pieces in any suitable manner.

It will be observed that by means of the construction just described the cutters or saws are provided with vertical and horizontal adjustment, so that the width of the cake of ice to be cut can be determined and the depth of the cut regulated, which is one of the essential features of my machine.

Referring particularly to Figs. 1, 2, and 3, the reference-numeral 46 designates a scraper of any preferred construction, but desirably of that shown, mounted upon the forward portion of the frame of the machine, preferably

by means of brackets or braces 47, suitably connected with the forward portion of the machine, and it will be understood that the function of the scraper 46 is to remove in advance of the machine any snow or fragments of ice or other obstruction upon the ice, and thus clear the way for the machine.

Pivotally mounted in a bracket 48, secured to the end piece 3 of the frame, is a vertical shaft 49, carrying a turning-lever 50, said shaft carrying upon the lower end thereof a guide 51, provided with a plate 52, adapted to run in the furrow or cut last made by the machine in order to regulate the distance or width of the next cut to be made and to afford uniformity in the cuts made by the machine, and said guide is preferably operated by means of a link 53, connected thereto and to the short arm of a bell-crank lever 54, pivotally mounted in the upper end of said shaft 49.

I may, if desired, provide catches 55 in the frame of the machine to receive said guide and retain the same in working position, and when it is desired to turn the machine and cut in the opposite direction it is only necessary to depress the free arm of the bell-crank lever and swing the guide around into an opposite position by means of the operating-lever 50, carried by the shaft 49, said guide being shown in operative position in Fig. 1 and in the process of being swung into the reverse position in Fig. 3 of the drawings.

Suitably mounted in the end piece 3 of the frame is a shaft 56, having a bifurcated lower end 57, in which is mounted a toothed wheel 58, and upon the extremities of the shaft carrying said toothed wheel is a brace or support 59, also bifurcated at one end and preferably provided upon the other end with a projection or stud 60, adapted to move within a segmental slot in the segmental guide-plate 61, secured to the under side of the machine-frame, as shown in Figs. 2 and 3 of the drawings.

The upper end of the steering-shaft 56 is preferably mounted in a frame composed of V-shaped braces 62, connected to the frame of the machine and provided with a segmental rack-bar 63, adapted to be engaged by a ratchet-lever 64, connected with the extremity of said steering-shaft. By means of this construction the machine can be readily guided and can be set to run in any desired direction by means of said lever and rack-bar, and, furthermore, all the parts are within easy reach of the operator, and he can guide the machine, release the guide, or raise or lower the cutters by manipulation of the levers, as hereinbefore described.

Adjustably connected with the frame of the machine is a hanging frame 65, wherein is journaled a shaft 66 and upon which is mounted a planer 67, provided with curved plates or cutters 68. One end of said shaft 66 is extended and provided with a sprocket-wheel 69, connected by means of a sprocket-chain 70 to a sprocket-wheel 71 of the drive-shaft 15,

through the medium whereof the planer is operated.

Adjusting-rods 72 are mounted in a cross-piece 67 of the frame and are removably connected with said hanging frame, while the free ends of said rods are provided with cranks or handles 73, by means of which the same may be rotated to elevate or depress said hanging frame to afford adjustment for the planer. The adjustable planer constitutes one of the essential features of this invention.

By means of the construction hereinbefore described my machine is provided with a scraper, an adjustable planer, and adjustable saws or cutters, together with a removable guide and positive steering mechanism, all of which are constructed as simple as possible and with a view to securing the minimum weight.

I do not confine myself to the construction, combination, and arrangement of parts herein shown and described, and I reserve the right to make all such changes in and modifications of the same as come within the spirit and scope of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. An ice-machine provided with a cylindrical planer-frame having a horizontal axis and inclined blades attached at the extremities thereof to the ends of said frame, saws and means for propelling the machine and actuating said parts.

2. An ice-machine provided with a horizontal cylindrical rotary planer having a plurality of inclined cutting-blades attached at both ends thereof to the planer-frame, constructed to cut or shave the ice at one point of the

blade in a gradually-progressing operation along the entire edge of the blade.

3. An ice-machine provided with a planer-frame having a horizontal axis and a movable connection with the sides of the machine, adjusting-rods mounted in the frame of the machine and engaging said planer-frame, constructed to move the planer-frame up and down upon said connections, the planer carried by said frame having inclined cutting-blades and means for operating the parts.

4. An ice-machine provided with a cutter-frame pivoted within the rear end of the machine and carrying a shaft, cutters or saws having screw-threaded connection with said shaft and jam-nuts to afford horizontal adjustment thereon and a ratchet-lever mounted upon the machine and connected with both sides of the cutter-frame to elevate and depress the latter.

5. An ice-machine provided with driving and steering mechanism, a scraper, a cylindrical planer having a horizontal axis and movably connected with the sides of said machine carrying inclined cutter-blades, adjusting-rods mounted in said machine engaging said frame to elevate or depress the same, a cutter-frame movably mounted within one end of the machine and carrying a shaft, cutters having screw-threaded connection with said shaft and means for operating the parts.

In testimony whereof I have hereunto affixed my signature in presence of two witnesses.

ALLEN W. WINTERS.

Witnesses:

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CHARLES S. ROGERS.