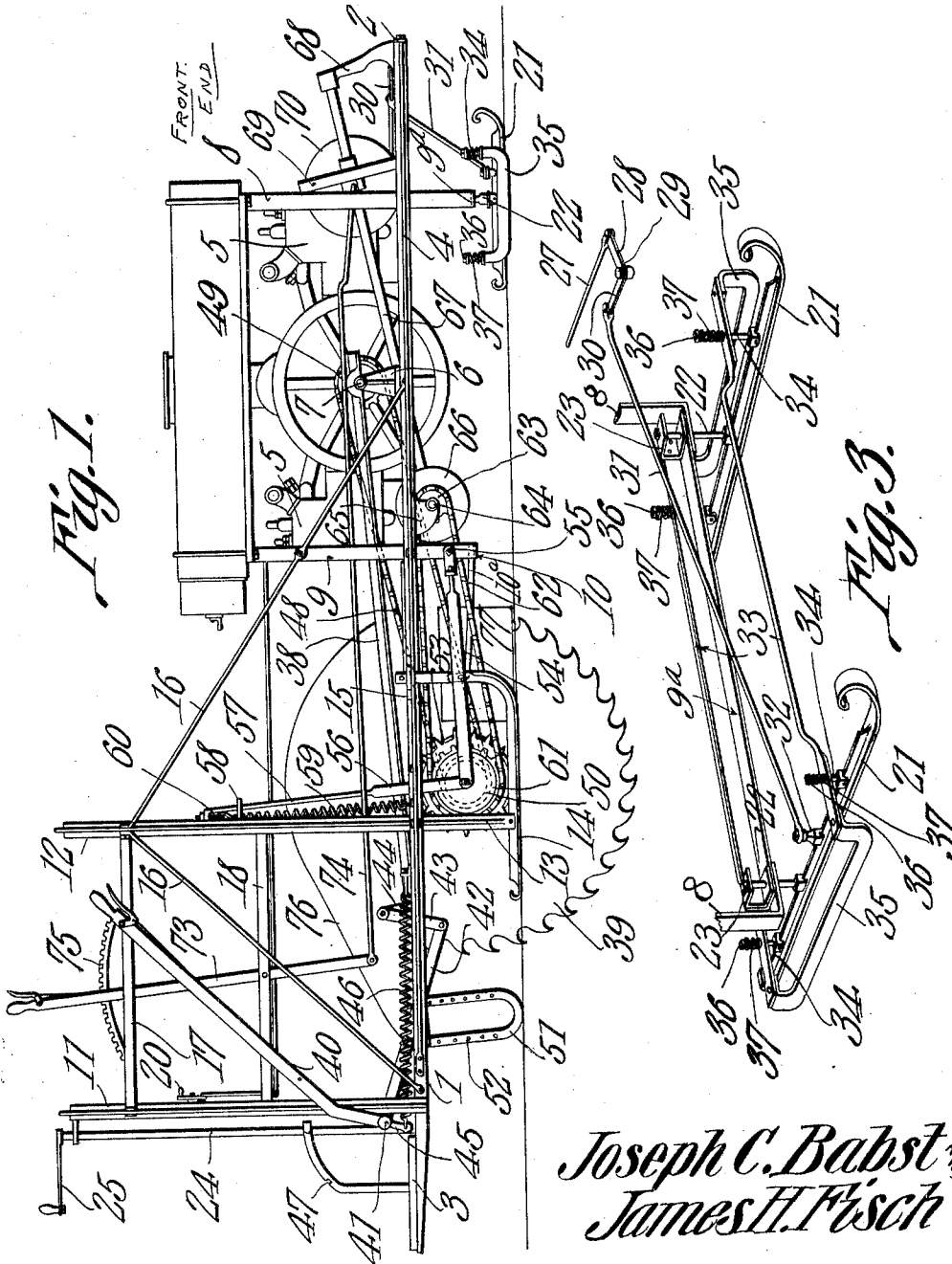


J. C. BABST & J. H. FISCH.
ICE CUTTING MACHINE.
APPLICATION FILED APR. 21, 1910.

1,009,884.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.



Joseph C. Babst
James H. Fisch

Witnesses

[Signature]
[Signature]

Inventors

by

C. Snow & Co.

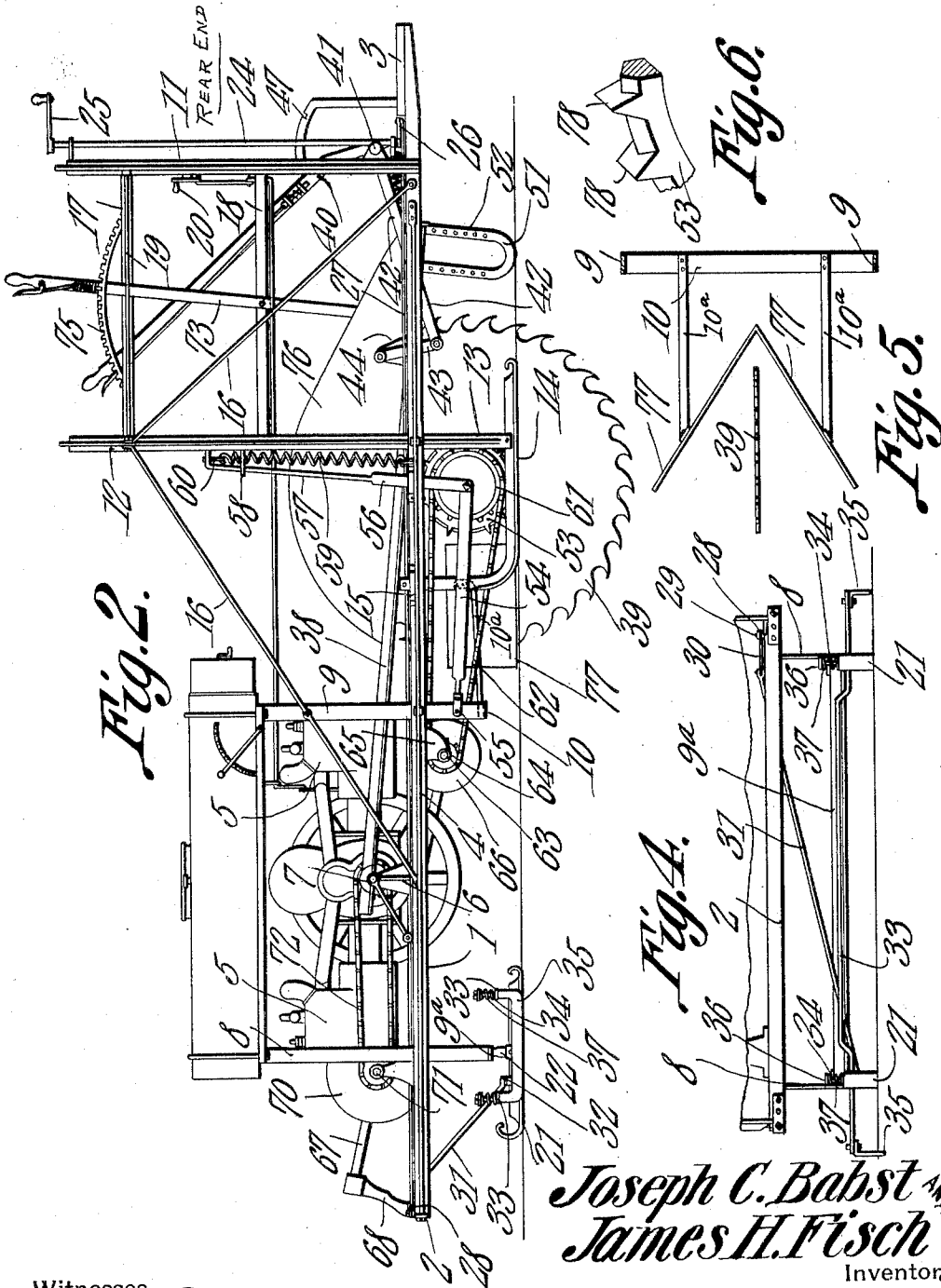
Attorneys

J. C. BABST & J. H. FISCH.
 ICE CUTTING MACHINE.
 APPLICATION FILED APR. 21, 1910.

1,009,884.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 2.



Joseph C. Babst AND
 James H. Fisch

Inventors

by

C. A. Snow & Co.
 Attorneys

Witnesses

E. H. Babst
M. A. Fisch

UNITED STATES PATENT OFFICE.

JOSEPH C. BABST AND JAMES H. FISCH, OF BARNESVILLE, MINNESOTA, ASSIGNORS TO
FERGUS FALLS ROTARY ICE PLOW COMPANY, OF FERGUS FALLS, MINNESOTA, A
CORPORATION OF MINNESOTA.

ICE-CUTTING MACHINE.

1,009,884.

Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed April 21, 1910. Serial No. 556,813.

To all whom it may concern:

Be it known that we, JOSEPH C. BABST and JAMES H. FISCH, citizens of the United States, residing at Barnesville, in the county of Clay and State of Minnesota, have invented a new and useful Ice-Cutting Machine, of which the following is a specification.

This invention relates to that class of ice cutting machines characterized by a sled on which is mounted a circular saw, and a motor for operating the saw, as well as for propelling the machine over the ice.

It is the object of the invention to provide in a machine of this kind, improved means for driving the same, as well as for guiding it to run in a straight line, and also to provide a machine embodying certain novel structural details to be hereinafter described and claimed.

In the accompanying drawings, Figures 1 and 2 are side elevations of the machine taken from opposite sides. Fig. 3 is a detail in perspective showing the front runners and the auxiliary runners for guiding the machine. Fig. 4 is a front elevation of said runners. Fig. 5 is a plan view of a fender located in front of the saw. Fig. 6 is a perspective view of a fragment of the rim of one of the propeller wheels.

The main supporting frame of the machine comprises side sills 1 connected at their front ends by a cross bar 2, and carrying at their rear ends a platform 3 on which the operator stands. The frame members are preferably formed of angle iron, and the sills are braced by truss rods 4. Near the front end of the machine, the sills support a frame work carrying the motor 5, and bearings 6 for the crank shaft 7 thereof. The frame work includes spaced uprights 8 and 9 respectively, which also depend for a short distance from the sills, and are connected across at their lower ends, the connection between the front uprights being indicated at 9^a in Fig. 3, and that of the rear uprights at 10 in Fig. 5. The motor may be an ordinary double or four cylinder, or other type of internal combustion engine.

The rear end of the sills 1, in front of the platform 3, also support uprights 11 and 12, respectively, connected across at their upper ends. The uprights 12 depend from the sills as indicated at 13, and carry runners 14

on which the machine is supported at its rear end. The front ends of these runners are curved upwardly and secured to the sills, by a strap 15. The uprights 12 are also braced by guy rods 16 extending to the sills, and on one side of the machine the upright 12 is connected to the upright 11 by horizontal cross bars 17 and 18. On the other side of the machine, said uprights are connected by a rod 19. The space between the uprights 11 may be boarded up, and the wall thus formed in front of the platform 3, carries a hand lever 20 connected to the carbureter of the motor, for controlling the same.

The front end of the machine is mounted on runners 21, from the top of which rise stems 22 which are pivotally mounted in bearing brackets 23 carried by the cross bar 9^a. The runners are thus pivoted to swing in a horizontal plane, in order that the machine may be steered.

The steering gear comprises a vertical steering shaft 24 carried by the platform 3, and fitted at its upper end with a handle 25. To the lower end of the steering shaft is connected an arm 26 which is connected by a rod 27 to one of the arms 28 of a bell crank lever fulcrumed at 29 on the cross bar 2, and having its other arm 30 connected by a rod 31 to a stud 32 on one of the runners 21. The runners are connected so that they will swing together in the same direction when the steering shaft is operated.

The connection between the runners 21 is made adjacent to their front and rear ends, by means of rods 33, and stems 34 rising from the runners and passing through openings made in the flattened outer ends of said rods. These flattened ends of the rods project for a short distance beyond the runners, and carry alongside of the same, on the outside thereof, auxiliary runners 35 for guiding the machine as will be presently described. On the upper ends of the stems 34 are secured nuts 36 or other suitable abutments, between which, and the bars 33, springs 37 are coiled around the stems 34. The bars 33 are free to slide up and down on the stems 34.

In operation, the runners 35 travel over the surface of the ice when the saw is not cutting. After the first cut is made, the machine is positioned for the next cut by plac-

ing one of the runners 35 in the kerf just made by the saw, so that when the next cut is made, it will be in a straight line running parallel to the first cut, and the spaces between the cuts will also be uniform. The auxiliary runners will be positioned as stated at every cut, and as they are located on both sides of the machine, the latter may be guided in the manner stated when traveling in either direction. The springs 37 force the auxiliary runner into the kerf, the runner not operating remaining on the surface of the ice.

Mounted on the shaft 7 as a pivotal axis, is a frame 38 carrying a circular saw 39, this frame being mounted to swing in a vertical plane, so that the saw may be lowered into operative position, and elevated into inoperative position. The frame is raised and lowered as stated by means of a hand lever 40 made fast to a rock shaft 41 mounted on the platform 3, and having projecting arms 42 connected at their extremities to links 43 connected to a bracket 44 made fast to the frame, on opposite sides thereof. From the rock shaft also projects an arm 45 to which is connected one end of a coiled spring 46, the other end of said spring being made fast to the sill 1. This spring is employed to counter-balance the saw-supporting frame, and to make it easier for the operator to elevate the same.

The hand lever 40 is provided with a spring latch for locking the same, the latch being engageable with a notch 47 in a segment carried by the platform 3. The hand lever is locked only when the saw-supporting frame is in elevated position, said lever swinging away from the segment, and being loose, when the frame is in lowered position.

The saw 39 is driven from the shaft 7 by means of a sprocket chain 48 passing over a sprocket wheel 49 on said shaft, and over a sprocket wheel 50 on the saw arbor.

The depth of the cut is regulated by U-shaped gage members 51 carried by the free end of the saw-supporting frame 38, said member having a series of perforations 52 whereby it is adjustably connected to the said frame, so that it may be lengthened or shortened to regulate the depth of the cut. These gage members slide over the surface of the ice, and upon shortening the same, the saw is made to cut deeper, as the frame can swing down closer to the surface of the ice, whereas, an opposite adjustment raises the saw-supporting frame, and thus elevates the saw to make a cut of less depth.

The machine is propelled across the surface of the ice by a pair of wheels 53 located on opposite sides of the machine, said wheels being mounted on independent axles. The axle of each propelling wheel is carried by a swinging arm 54 pivoted at 55 to the depending portion of the upright 9, said arm

swinging in a vertical plane. To the axle of the propelling wheel is also connected a fork 56 having a stem 57 which works in a guide 58 carried by the upright 12. To the upper end of the fork is connected one end of a coiled spring 59, the other end of which is made fast to the sill 1. This spring, through the fork 56, yieldingly holds the propeller wheel in contact with the surface of the ice. The fork stem carries a screw stem 60 to which the upper end of the spring 59 is connected, which provides an adjustable connection for the spring.

On the axle of each propelling wheel 53 is fast a sprocket wheel 61 which is connected by a chain 62 to a sprocket wheel 63 on a drive shaft 64 carried in bearings 65 supported by the sills 1. The shaft 64 extends across the machine, and drives both propelling wheels, it being provided with two sprocket wheels for this purpose. On the shaft is a differential gear 66 of the ordinary beveled gear type, which is driven from a shaft 67 supported in a bearing 68 on a cross bar 2. On the shaft 67 is a friction disk 69 which is engageable by a friction disk 70 on a counter-shaft 71 driven by a chain and sprocket or other suitable gearing 72 from the engine shaft 7.

The friction disk 69 is adjustable on the shaft 67 to vary the speed at which the machine is propelled, this adjustment being effected by means of a hand lever 73 fulcrumed on the bar 18, and connected by a rod 74 to the hub of the disk. The hand lever carries the usual spring latch engageable with a toothed segment 75 for locking the same.

The frame, at the front of the machine supports a water tank or radiator, and also a gasoline tank, and the saw 39 is provided with a hood or cover 76 carried by the frame 38, said hood being provided to prevent chips from being thrown over the machine, and also to protect the operator standing on the platform 3.

In front of the saw is mounted a fender comprising plates 77 located on opposite sides of the saw and converging and connected in front thereof, said plates being connected to and supported from the cross bar 10 by arms 10^a. The plates serve to clear away the snow in advance of the saw.

The propelling wheels 53 are of a special pattern to prevent the snow from sticking thereon. As shown in Fig. 6, the periphery of the rim is brought to an edge, and said rim is armed with projecting wedge shaped calks 78.

A machine constructed as herein described is highly efficient in operation, and it can be easily controlled, the several hand levers being located within easy reach of the operator standing on the platform 3. The speed is readily controlled by shifting the

friction disk 69 back and forth on the disk 70, and the travel of the machine can be reversed by moving the disk 69 from one side of the center of the disk 70 to the other side thereof.

What is claimed is:

1. In an ice cutting machine, a sledged main frame, a vertically swinging arm supported thereon, a shaft carried by the swinging arm, a propeller wheel mounted on the shaft, a stem connected to the propeller wheel shaft, a yielding connection between the stem and the main frame, and driving means for the propeller wheel.

2. In an ice cutting machine, a sledged main frame, a vertically swinging arm supported thereon, a shaft carried by the swinging arm, a propeller wheel mounted on the shaft, a stem rising from the shaft, an adjustable and yielding connection between the stem and the main frame, and driving means for the propeller wheel.

3. In an ice cutting machine, a frame mounted on runners, a saw carried by the

frame, propelling means, stems rising from the runners, cross bars loosely mounted on the stems, and auxiliary runners carried by said cross bars and extending alongside the aforesaid runners, said auxiliary runners being located so as to enter the last kerf made by the saw.

4. In an ice cutting machine, a frame mounted on runners, a saw carried by the frame, propelling means, stems rising from the runners, cross bars through which the stems loosely pass, auxiliary runners carried by the cross bars, and located to enter the last kerf made by the saw, and yielding means for lowering said auxiliary runners into operative position.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

JOSEPH C. BABST.

JAMES H. FISCH.

Witnesses:

N. B. HANSON,

F. A. CATLIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."