

(No Model.)

O. F. JARVIS.
ICE CUTTING IMPLEMENT.

No. 428,563.

Patented May 20, 1890.

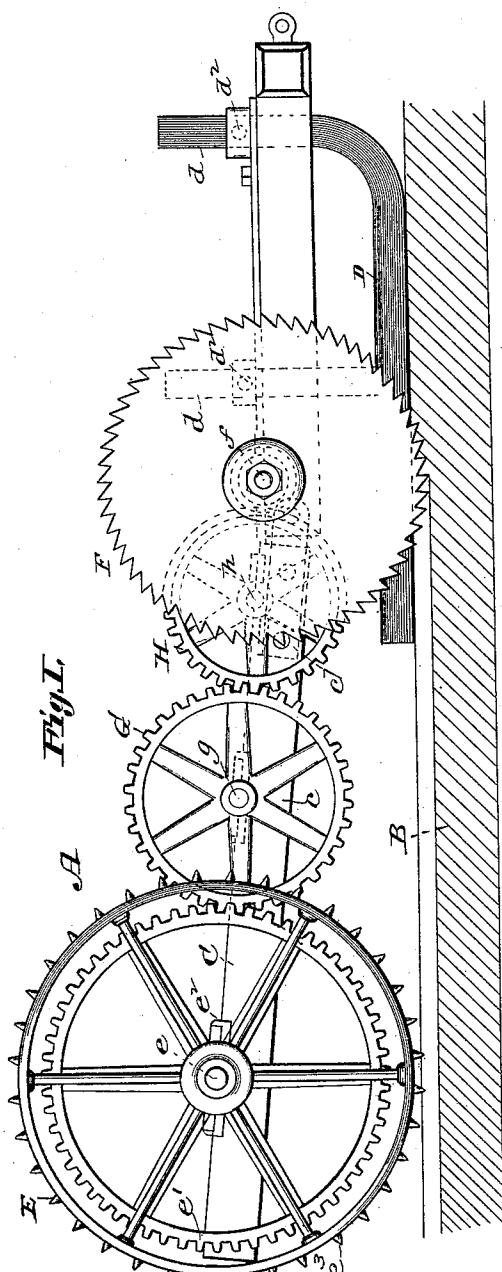


Fig. 1.

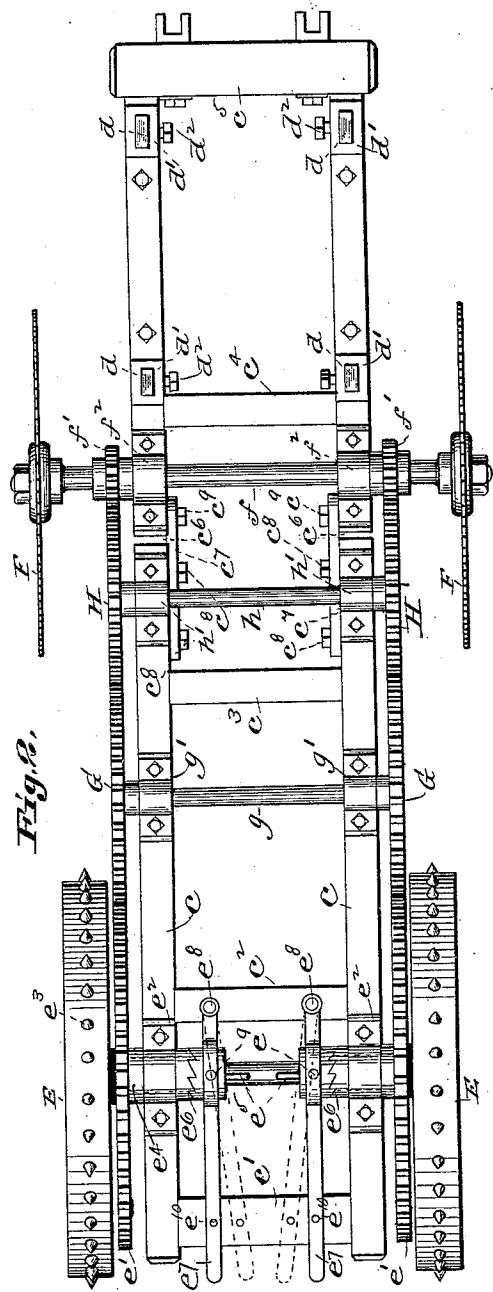


Fig. 2.

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UNITED STATES PATENT OFFICE.

OSCAR F. JARVIS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-THIRD TO
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ICE-CUTTING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 428,563, dated May 20, 1890.

Application filed January 25, 1889. Serial No. 297,553. (No model.)

To all whom it may concern:

Be it known that I, OSCAR F. JARVIS, of St. Louis, Missouri, have made a new and useful Improvement in Ice-Cutting Implements, of 5 which the following is a full, clear, and exact description.

This improvement relates to that class of ice-cutting implements adapted to score the ice on which the implement is moved, and operated by being drawn or propelled on the surface of the ice by horse-power or any other suitable power. The leading elements of its construction are a horizontally-extended frame, runners and traction-wheels adapted 15 to bear and travel on the ice to be cut and to support said frame, and properly mounted on said frame two ice-cutting circular saws and gearing adapted to transmit motion from said traction-wheels to said circular saws, all combined and operating substantially as herein-after described and claimed, aided by the annexed drawings, forming part of this specification, of which—

Figure 1 is a side elevation of the improved 25 ice-cutting implement, and Fig. 2 a top view thereof.

Like letters of reference applied to the drawings denote like parts.

A represents the improved ice-cutting implement as in operation on the ice B.

C represents the frame of the implement; c, the side pieces; c', the head-piece; and c² c³ c⁴ c⁵, cross-pieces thereof. The frame at its forward end is supported by the runners D D, 35 which are adapted to slide on the ice. The frame at the forward end thereof is made vertically adjustable by extending the forward end and the upright arm d of the runner upward through sockets d', attached to 40 the side pieces c of the frame, and thereby adapting the frame to be raised and lowered upon the runner. The frame is secured at any desired level by means of set-screws d², which work through the piece c and bind 45 against the runner parts, as shown. The rear of the frame is supported by attachment thereof, by the bearings e², to the axle e of the two traction-wheels E E, which are provided with spikes e⁸ and adapted to roll on and engage with the ice.

F F are two circular saws attached to a

shaft f at the ends thereof, respectively, and adapted to revolve and engage with the ice and cut it as the implement progresses, said shaft being mounted in the bearings f² on 55 the forward part of the frame C. In order to transmit motion to the circular saws, the shaft f thereof is provided with gear-wheels f', firmly attached thereto, and the axle e of the traction-wheels is also provided with 60 gear-wheels e', arranged to revolve, when desired, with the traction-wheels and their axle e. The revolving motion of the traction-wheels and their axle e is transmitted therefrom to the circular saws by means of 65 two pairs of intermediate gear-wheels, as follows, namely: the two gear-wheels G, attached to a shaft g at the ends thereof, respectively, said shaft being attached to the frame C by the bearings g', and said gear-wheel G 70 adapted to engage with the gear-wheel e', attached to the traction-wheel axle, and the two gear-wheels H, attached to a shaft h at the ends thereof, respectively, said shaft being attached to the frame C by the bearings h', and said gear-wheel H adapted to engage 75 with the gear-wheels G and f', said series of gear-wheels E G f' H being proportioned and arranged so that the motion of the traction-wheels is sufficiently multiplied when applied 80 to the circular saws.

The following means are provided to enable the implement to travel and the traction-wheel to revolve without necessarily causing the circular saws to revolve—namely, the shafts 85 or axles e⁴ of the gear-wheels e' are hollow and revolve on the axle e of the traction-wheels. The axle e is feathered at e⁵, and is provided with two ratchet-clutches e⁶, of ordinary construction, which are operated by 90 the levers e⁷ and adapted to engage and disengage, respectively, with and from the two hollow axles e⁴, as shown. The levers work on the pivots e⁸ and are pivoted at e⁹ to the sliding ratchet-clutches e⁶, respectively. The 95 ratchets are shown as when engaged, the broken lines showing the position of the levers e⁷ when the clutches are disengaged, allowing the traction-wheels to revolve while the other wheels and the saws remain at rest. The levers e⁷ and the cross-piece e' are provided 100 with corresponding holes e¹⁰ for the insertion

therein of pins to hold the levers in the desired position. The described clutch-coupling device allows the gear on either side to be engaged or disengaged independent of the other side.

When it is desired to put the implement in operation, the height of the forward part of the frame is vertically adjusted by the means above described, so that the saws will clear the ice or ground, and by means of the levers e^1 the gear-wheels e' are thrown out of engagement with traction-wheel axles e , so that the forward part of the implement will slide by means of its runners and the rear end will 10 be supported by the traction-wheels, which will revolve like railroad-car wheels as the implement progresses, while the remaining mechanism remains at rest, having arrived 15 on the ice which it is intended to cut with the implement. The height of the forward end thereof is adjusted by means previously described, so that the saws when revolving will cut as deeply as desired. The gear is thrown 20 into engagement with the traction-wheels 25 axle, as described, and the power applied. The spikes of the traction-wheels engage with the ice, causing the wheels to revolve and to transmit their motion, multiplied by the gearing, as described, to the circular saws, which 30 also engaging with the ice cut it to the desired depth as the implement progresses.

It is desirable that the runners should at all times bear horizontally and with equal pressure upon the ice. This could not be 35 easily effected with integral and therefore perfectly rigid side rails. In order to obviate this difficulty, each side of the frame is cut in two at c^6 , and the two parts of the frame connected by suitable joints, which joints in the 40 present instance consist of flat bars of metal c^7 , firmly bolted by the bolts c^8 to the rear parts of the frame, said bars being jointed to the forward parts of the frame by the bolt c^9 , by which device the rear part of the frame 45 may be inclined forward, so as to enable the saws to cut deeply, while at the same time the forward part of the frame, the lower part of the runners, and the ice retain a position parallel to each other.

I claim—

1. In an ice-cutter, the combination, with the main frame in two parts pivoted together, of the traction-wheels provided with spikes or spurs on their peripheries and mounted on a transverse shaft having bearings secured to the rear part of the main frame, the vertically-adjustable runners attached to the front end of the main frame, the saws mounted on a shaft having bearings secured to the front part of the main frame, and the gearing mounted on the rear part of the main frame and connecting the shafts of the traction-wheel and saws, substantially as described.

2. In an ice-cutter, the combination, with the main frame having parallel side rails, each composed of two sections pivoted together at opposite points on each side, of the traction-wheels having spurs or spikes on their peripheries, and mounted on a transverse shaft journaled in bearings on the rear section of the main frame, the saws mounted on a transverse shaft journaled in bearings secured to the front section of the main frame, the gearing connecting the shafts of the traction-wheels and saws, and the vertically-adjustable runners attached to the front end of the main frame, substantially as specified.

3. The combination, with the main frame having side rails c , composed each of two sections pivoted or hinged together at c^6 , of the traction-wheels, the saws, the gearing connecting the shafts of the traction-wheels and saws, the vertically-adjustable runners attached to the front end of the main frame, the splined and toothed clutches on the shaft of the traction-wheels, the lever-handles pivoted to the main frame and to the inner sections of said clutches, and the pins or stops, by means of which the rear arms of said levers can be held in proper positions to keep said clutches either open or closed, substantially as specified.

Witness my hand this 23d day of January, 1889.

OSCAR F. JARVIS.

Witnesses:

C. D. MOODY,

D. W. C. SANFORD.