C. CHADWICK.

ICE-CUTTING MACHINE.

No. 191,515. Patented June 5, 1877.

FIG. 1.

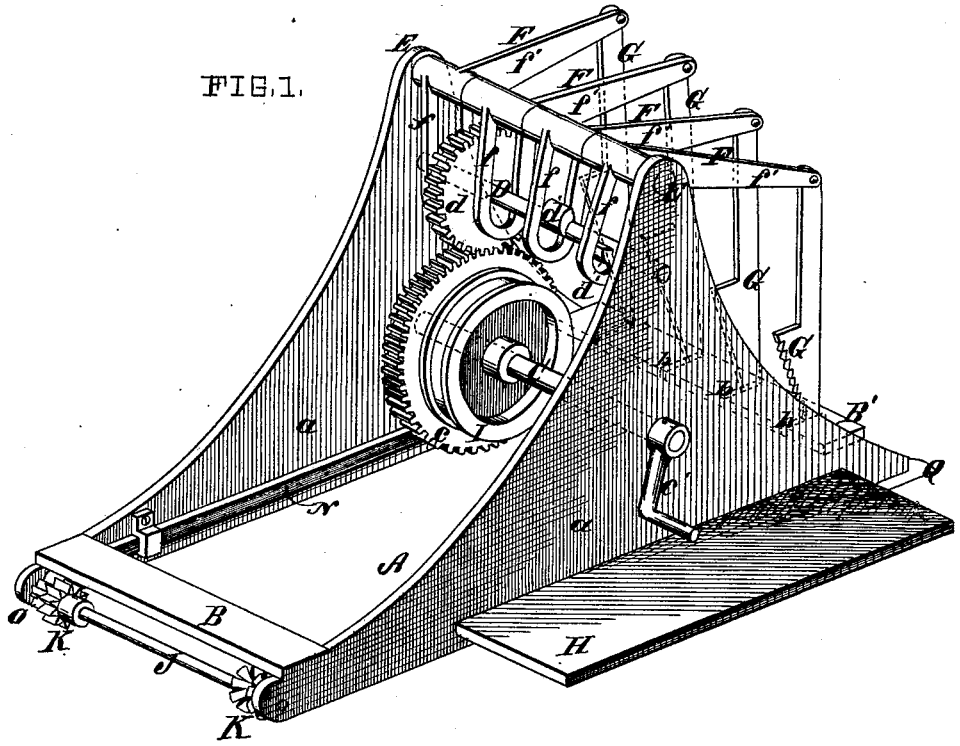
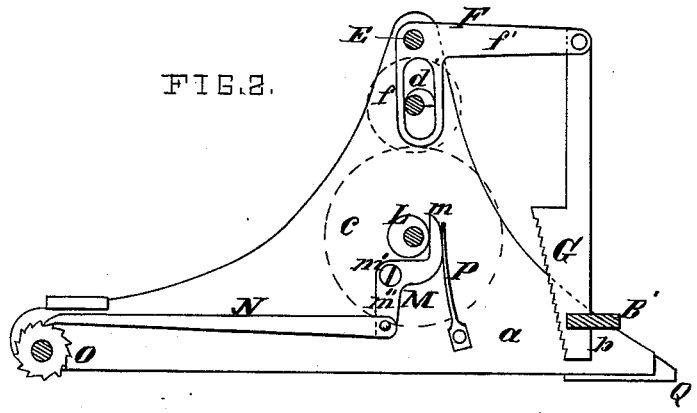


FIG. 2.



ATTEST.

Charles Pickles

Paul Bakewell

INVENTOR.

Chas. Chadwick.

by Chas. D. Moody,

his atty.

UNITED STATES PATENT OFFICE.

CHARLES CHADWICK, OF HANNIBAL, MISSOURI, ASSIGNOR OF ONE-HALF HIS RIGHT TO LYMAN P. MUNGER AND WILLIAM A. MUNGER, OF SAME PLACE.

IMPROVEMENT IN ICE-CUTTING MACHINES.

Specification forming part of Letters Patent No. **191,515**, dated June 5, 1877; application filed April 4, 1877.

To all whom it may concern:

Be it known that I, CHARLES CHADWICK, a resident of Hannibal, Missouri, have made a new and useful Improvement in Ice-Cutting Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a view in perspective of the invention, and Fig. 2 a longitudinal sectional elevation of the same.

Similar letters have reference to the same parts.

By means of the present improvement the ice of a pond or river can be readily cut into strips.

Considered generally, the invention consists of a sled carrying a gang of saws for cutting the ice, a device by which the sled is caused to move upon the ice, and a system of gearing, cams, and levers for operating the saws and feeding device.

The sled consists, mainly, of two uprights, *a a*, connected by the cross-pieces B B′, and also by the shafts C, D, E, and J.

Upon the first-named shaft C is a gear-wheel, *c*, that engages with a gear, *d*, upon the shaft D. This last-mentioned shaft is further provided with a series of cams, *d′ d′ d′ d′*, in number corresponding to the ice-saws.

Upon the shaft E (which is stationary) are pivoted a series of bell-crank levers, F F F F, which in number correspond to the ice-saws G G G G, and in arrangement are opposite, respectively, the cams *d′ d′ d′ d′*, one arm, *f f f f*, of the lever being slotted to receive the cam, and the saw being pivoted to the outer end of the other arm *f′ f′ f′ f′*. Now, as the shaft C is turned the motion is communicated through the gears *c d* and cams *d′ d′ d′ d′* to the levers F F F F, causing the latter to oscillate, and, in consequence, to impart a reciprocating movement to the saws G G G G. The latter are arranged suitably to cut the ice; for that purpose extending below the cross-piece B′, which is slotted at *b b b b* to serve as a guide for the saws.

To facilitate the working of the saws I have found it desirable to bring them into operation successively. To that end the cams *d′ d′ d′ d′* are arranged at different angles, as shown, upon the shaft D, and so as to prevent the simultaneous operation of any two or more of the saws.

The motion may be given to the shaft C by hand-power applied to the crank *c′*, in which case the operator stands upon a platform, H, that is attached to the side of the sled. Steam-power, however, may be used—the engine being located, say, upon the forward end of the sled, upon the cross-piece B, and its motion being transmitted by a belt passing over a pulley, I, upon the shaft C.

The improvement further relates to the mechanism for moving the sled.

The shaft J is furnished with serrated disks K K. These disks constitute the support for the forward end of the sled, and by turning them the sled is caused to move. This is effected in the following manner:

Upon the inner end of the shaft C is a cam, L, which, as the shaft turns, bears against and moves backward the upper end *m* of a lever, M, that is pivoted at *m′* to the upright *a*. This causes a dog, N, that is pivoted to the lower end *m″* of the lever, to be thrust forward and turn a ratchet, O, that is attached to the shaft J.

As the shaft C continues to revolve a spring, P, operates to replace the lever M and to withdraw the dog N to be again thrust forward against the ratchet as the cam L comes around again.

The rear end of the sled rests upon runners Q Q.

It will be seen from the above description that the device is self-operative—that is, it contains within itself both the means for operating the saws and for moving the sled upon the ice.

I claim—

1. The combination of the sled A, shaft C, cam L, lever M, dog N, ratchet O, spring P, shaft J, and disks K K, substantially as described.

2. The combination of the sled A, shafts C D E J, cams *d d d d*, levers F F F F, saws G G G G, wheels *c d*, cam L, lever M, dog N, ratchet O, spring P, and disks K K, substantially as described.

CHARLES CHADWICK.

Witnesses:

JNO. F. E. PHILLIPS,

JOSIAH OWENS.