No. 743,509. PATENTED NOV. 10, 1903.

E. G. HOWARD & F. M. WILLIAMS.

ICE SAW.

APPLICATION FILED MAR. 24, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

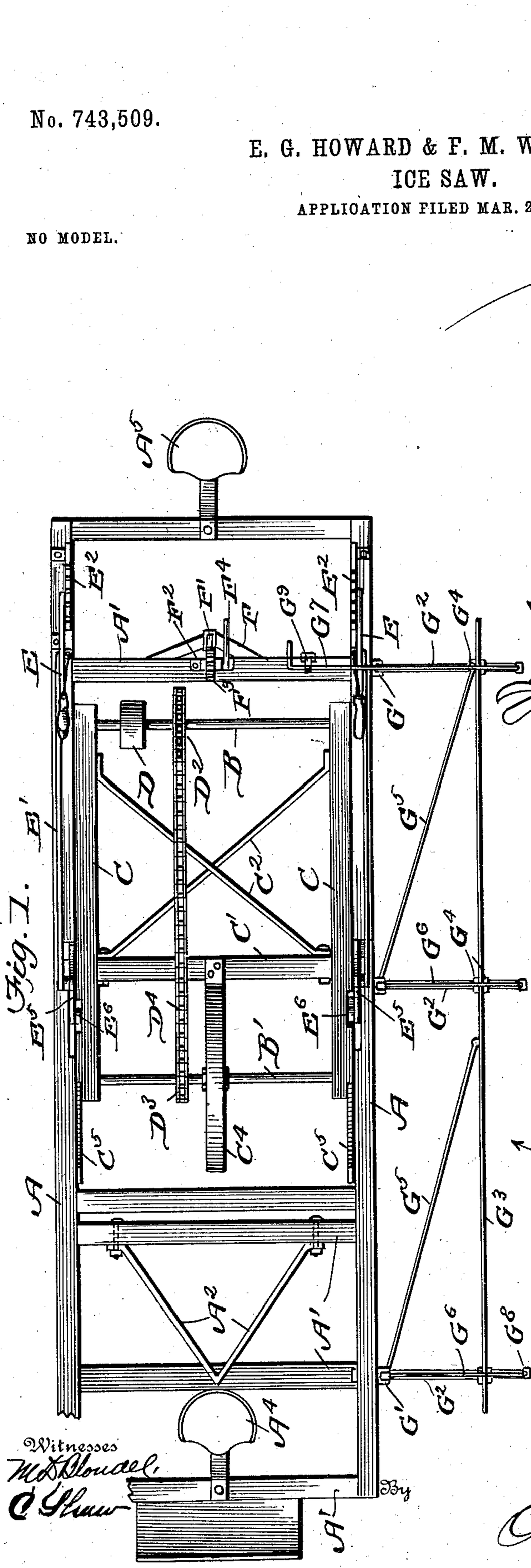

Fig. 1.

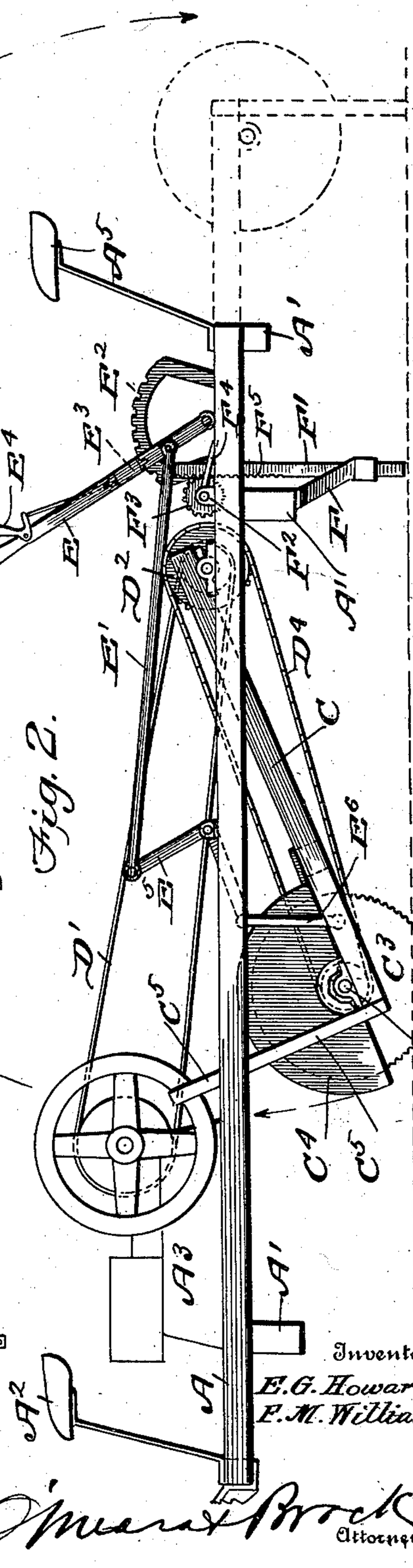

Fig. 2.

Witnesses
M. L. Blondel,
C. Shaw.

Inventors
E. G. Howard
F. M. Williams.
By Howard & Brock
Attorneys

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3a.

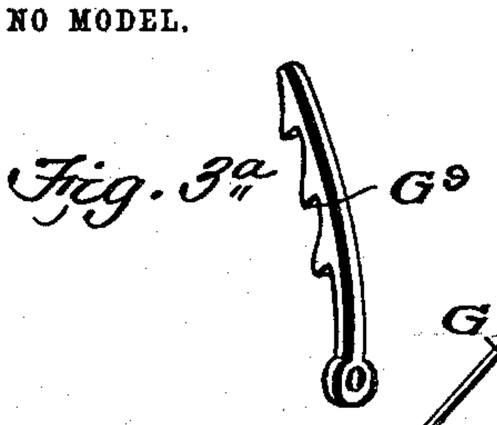



Fig. 3.




Fig. 4.

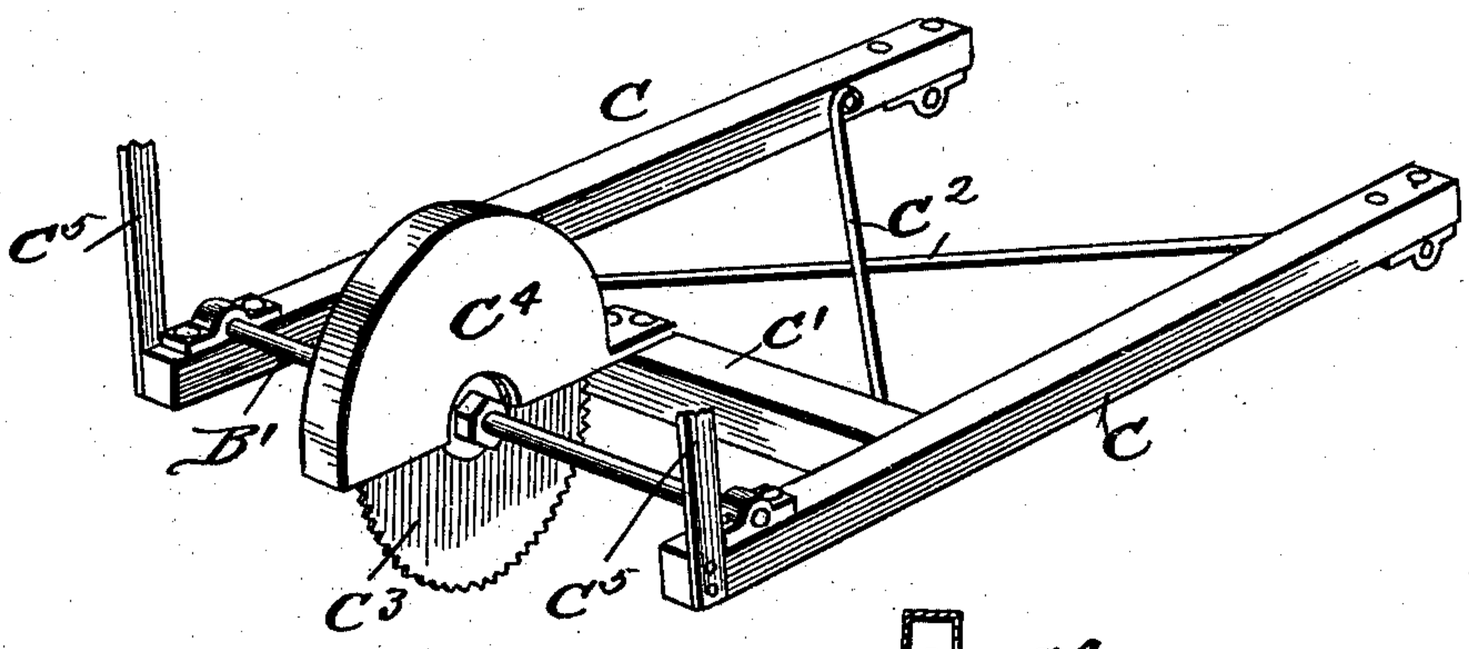
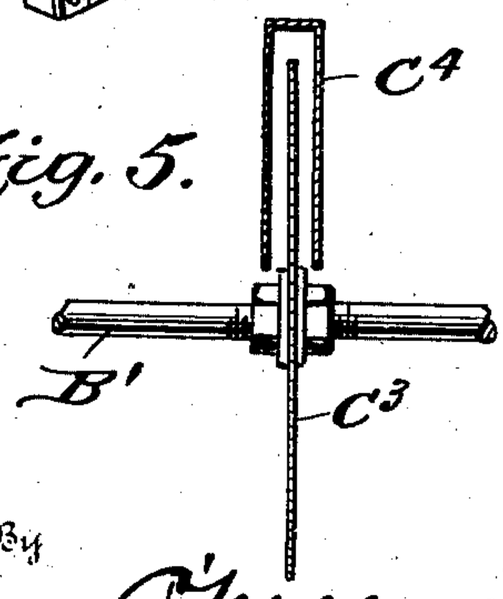



Fig. 5.




Witnesses
M. D. Blondell,
C. C. Shaw

Inventors,
E. G. Howard,
F. M. Williams.

By O'Meara & Brock
Attorneys.

No. 743,509. Patented November 10, 1903.

# UNITED STATES PATENT OFFICE.

ELMER G. HOWARD AND FRANK M. WILLIAMS, OF BRANDON, IOWA.

## ICE-SAW.

SPECIFICATION forming part of Letters Patent No. 743,509, dated November 10, 1903.

Application filed March 24, 1903. Serial No. 149,309. (No model.)

*To all whom it may concern:*

Be it known that we, ELMER G. HOWARD and FRANK M. WILLIAMS, citizens of the United States, residing at Brandon, in the county of Buchanan and State of Iowa, have invented a new and useful Ice-Saw, of which the following is a specification.

Our invention is an improvement in ice-saws, our object being the construction of a saw of this kind which can be mounted on an ordinary bob-sleigh and which can be utilized both for the work of cutting the ice into the original cakes and for recutting the cakes at the ice-house.

Our invention consists of a main frame adapted to rest on a sleigh and to carry a small engine, and pivotally secured within this main frame is a smaller reversible frame in which is journaled the saw.

Other features and the details of our invention are described hereinafter, particularly pointed out in the claim, and shown in the accompanying drawings, in which—

Figure 1 is a plan view of our device, the engine being removed. Fig. 2 is a side elevation, the position of the engine being shown in diagram and the reversed position of the smaller frame in dotted lines. Fig. 3 is a rear elevation. Fig. 3ª is a detail view of the hook for holding up the gage. Fig. 4 is a perspective view of the saw and saw-frame. Fig. 5 is a vertical section through the guard, the saw and axle being in elevation.

In carrying out our invention we employ a main frame A, rectangular in shape and braced by the cross-pieces A′. It is further strengthened by brace-rods $A^2$, which support the engine $A^3$. At the forward end of the frame is a seat $A^4$ for the driver and at the rear a seat $A^5$ for the operator in charge of the cutting and gaging mechanism. Adjacent the rear of the frame A is revolubly journaled in the sides of the frame a transverse shaft B. On this shaft is loosely journaled one end of the saw-frame C, strengthened by the cross-piece C′ and rods $C^2$. In the forward portion of this frame, which swings down within and below the main frame, is journaled a revoluble shaft B′, on which is fixedly secured the saw $C^3$, the upper portion of the saw being hooded by the guard $C^4$, which is supported from the cross-piece C′.

To drive the saw, a pulley D is fixedly mounted on the shaft B and receives its motion through the belting D′, running from the engine. A sprocket-wheel $D^2$ is secured on the shaft B and a sprocket-wheel $D^3$ on the shaft B′, the two being connected by the sprocket-chain $D^4$. To adjust the distance of the saw below the main frame, levers E are pivotally secured to the sides of the main frame adjacent the seat $A^5$ and pitman-rods E′ are pivotally secured at their rear ends to the levers E and at their forward ends to the elbow-levers $E^5$ and $E^6$. A rack-segment $E^2$ is arranged by each lever E and is engaged by the usual bolt $E^3$, operated by the hand-grip $E^4$, this portion of the mechanism being of the ordinary construction. To prevent lateral movement of the saw-frame, guide-bars $C^5$ extend upward from and at right angles to the frame C and are adapted to slide within the side members of the frame A.

To the under side of the rear cross-piece A′ is secured a downwardly and rearwardly extending bracket F, in which slides vertically a flat bar F′. This bar is in alinement with and its lower end travels in the track of the saw. In a bracket $F^2$ on the upper side of this cross-piece is a revoluble shaft having a pinion $F^3$ rigidly secured thereon, and to the shaft is also rigidly secured a hand-lever $F^4$. This pinion engages rack-teeth $F^5$, formed on the upper portion of the bar F′, and by throwing the lever the shaft and pinion will be rotated, raising the bar F′. The object of having this bar extend into the cut made by the saw is to prevent the sleigh on which the frames are mounted from sliding sidewise.

On one side of the frame are secured angle-brackets, their vertical members G being pivoted, as shown at G′, while the horizontal members $G^2$ are threaded. A gage $G^3$ for laying off the size of the cakes to be cut is carried by the threaded members, sliding on said members, and being held in the desired position by nuts $G^4$, fitting on the members $G^2$. Suitable brace-rods $G^5$ and $G^6$ serve to hold the gage steady. To raise the gage, a

handle $G^7$ is pivotally secured to the block $G^8$, which is threaded onto the outer end of the member $G^2$, and the gage is held in the desired position by the handle $G^7$, engaging a rack-bar $G^9$. This bar is pivoted to the cross-piece, so that it can be turned down out of the way when the frame C is reversed.

The operation of our device is as follows: The frame A being mounted on the sleigh, it is driven over the ice to be cut, the operator lowering the saw the desired distance, adjusting the bar F′, and attending to the gage. When the saw is to be used at one point, as at the ice-house, the forward ends of the levers E′ are detached from the frame C, handle $G^7$ and rack-bar $G^9$ are turned out of the way, and the frame C swung into the position shown by dotted lines in Fig. 2, the guides $C^5$ serving in this position as supporting-legs, while the hood $C^4$ may remain in or may be removed, as desired.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The combination with a main frame, of a smaller frame reversibly connected thereto, a circular saw carried by said frame, bars carried by and at right angles to the smaller frame and normally adapted to serve as guide-bars, and also adapted to act as supporting-legs when the frame is reversed.

ELMER G. HOWARD.
FRANK M. WILLIAMS.

Witnesses:
ALONZO B. CHAPPELL,
LOUIS F. SPRINGER.