

No. 689,064.

Patented Dec. 17, 1901.

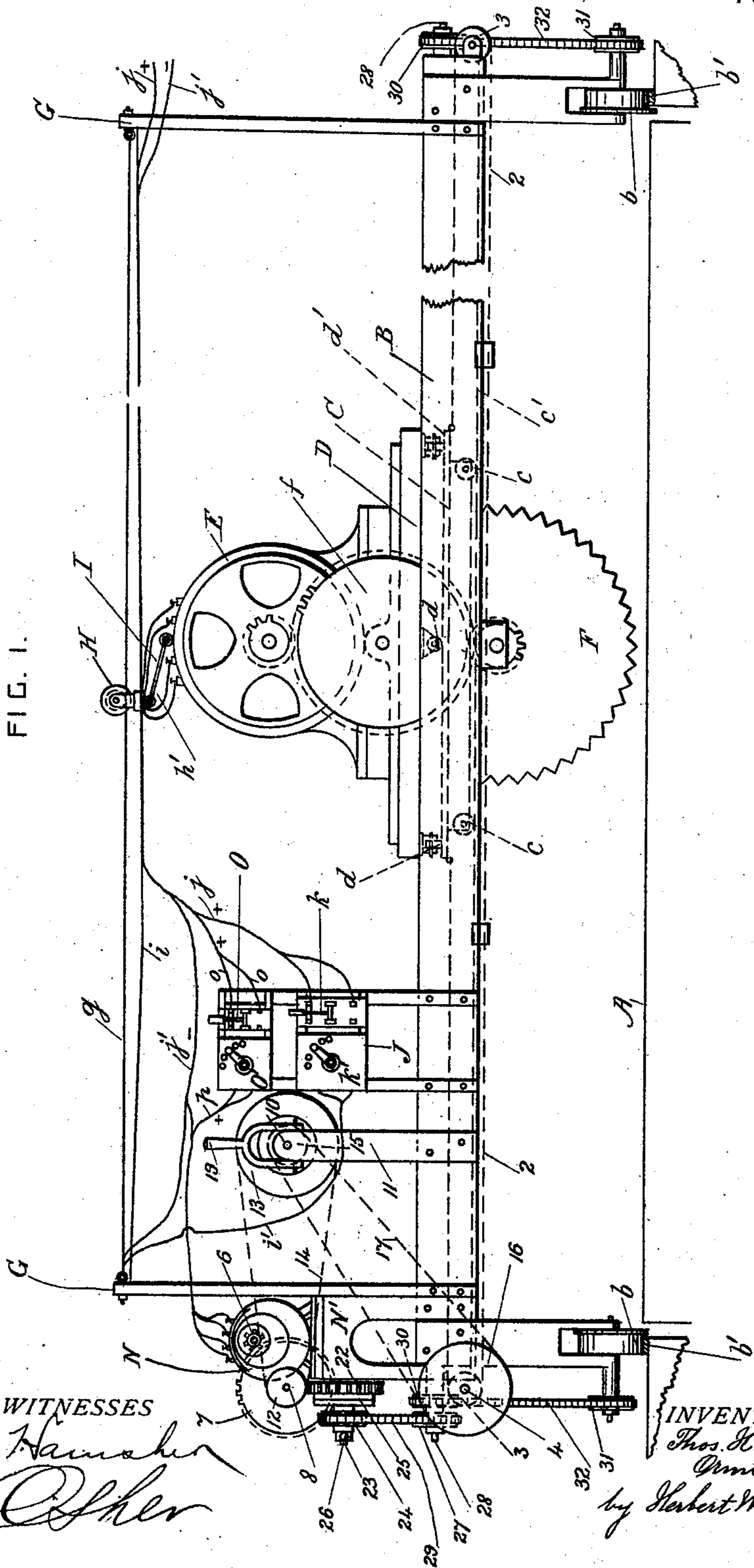
T. H. BUTLER & O. HAMMOND.

ICE CUTTING MACHINE.

(Application filed Feb. 23, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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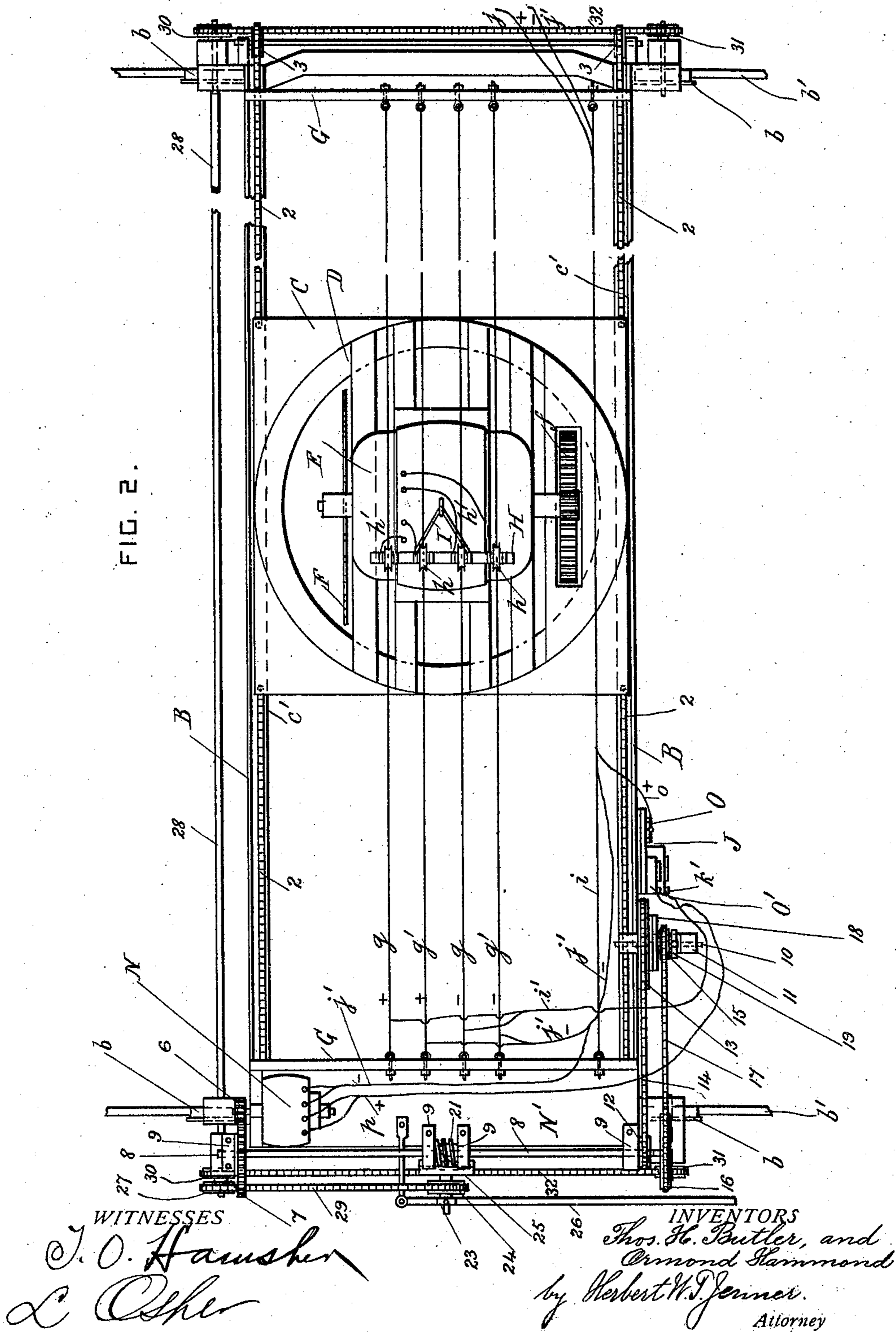
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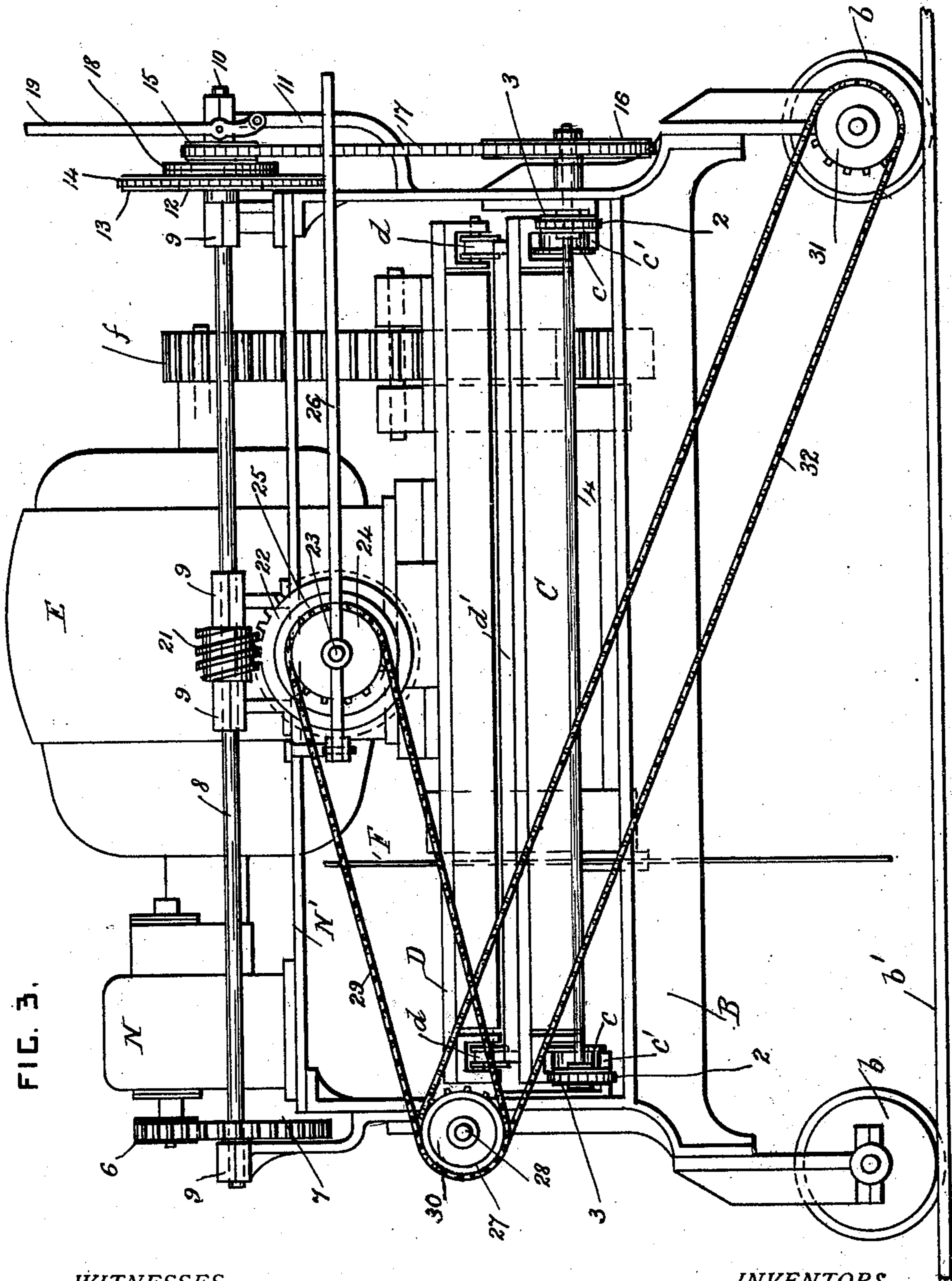


FIG. 3.

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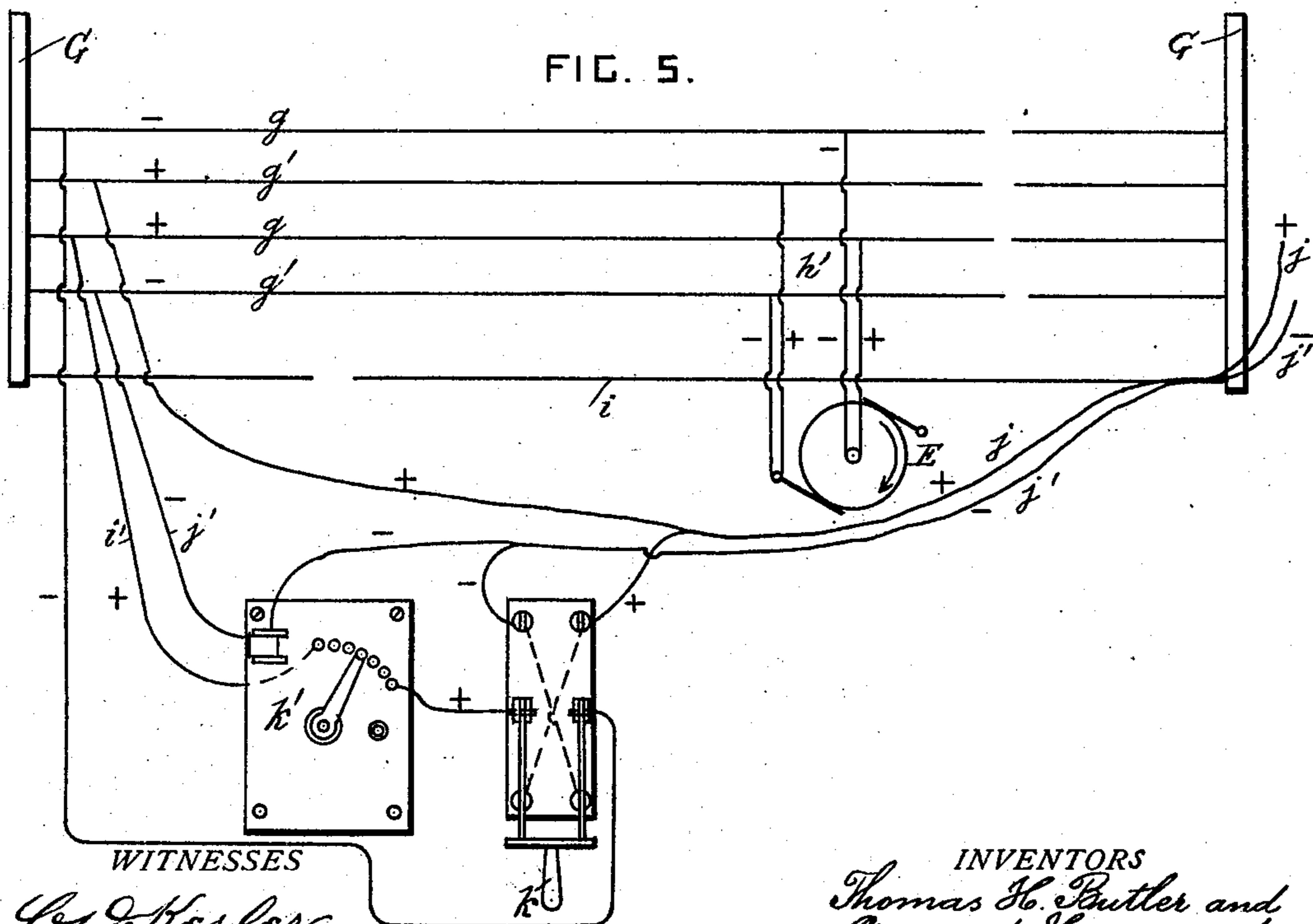
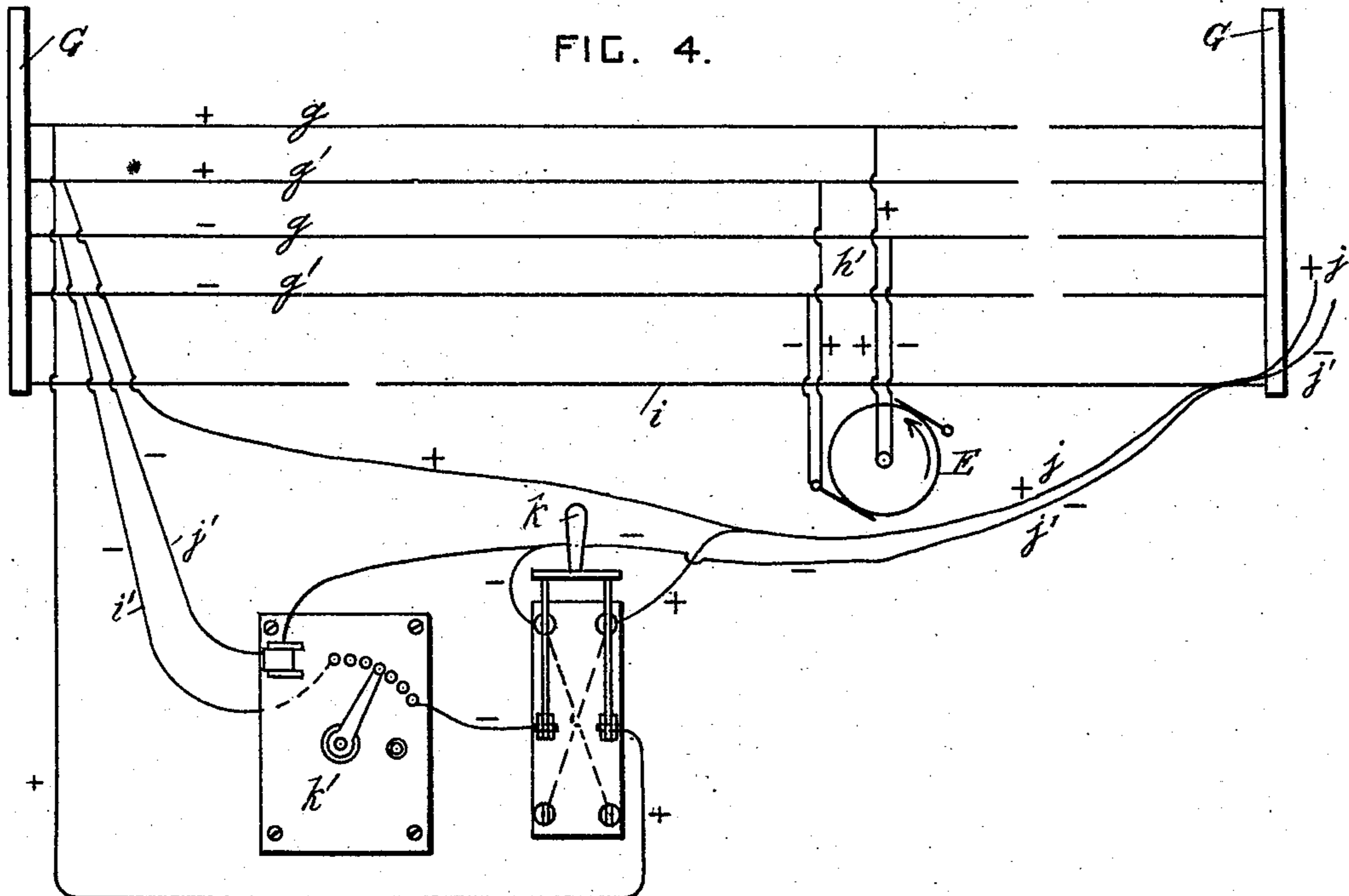
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

THOMAS H. BUTLER AND ORMOND HAMMOND, OF BALTIMORE, MARYLAND.

ICE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,064, dated December 17, 1901.

Application filed February 23, 1901. Serial No. 48,464. (No model.)

To all whom it may concern:

Be it known that we, THOMAS H. BUTLER and ORMOND HAMMOND, citizens of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Ice-Cutting-Machines; and we 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 machines for cutting ice; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a front view of the ice-cutting machine. Fig. 2 is a plan view, and Fig. 3 is an end view, of the same. Figs. 4 and 5 are diagrams showing the connection of the motor E with the main wires.

A is a table or platform on which the plate or slab of ice to be cut up is placed.

B is a carriage which straddles the table A and is mounted on wheels *b*, which run on rails *b'* at the sides of the table.

C is a frame provided with wheels *c*, which run on rails or guides *c'*, carried by the carriage B and arranged transversely of the rails *b'*.

D is a turn-table mounted on wheels *d*, which run on a circular track *d'* on the frame C.

E is an electric motor of approved construction carried by the turn-table.

F is a serrated ice-cutting disk or saw, and *f* represents intermediate toothed wheels which connect the ice-saw with the motor. The motor E is reversible, and the ice-saw cuts in whichever direction it is revolved. The frame C and the ice-saw are traversed back and forth upon the carriage B, and the carriage is moved for a short distance between each cut, so that the plate of ice is cut into a series of strips. The turn-table is then moved one-quarter around, and the carriage B and the ice-saw are moved back and forth upon the rails *b'*, the frame C being moved a short distance on the carriage B between each cut, so that the strips are cut into rectangular blocks of convenient size for shipment.

G represents standards at the ends of the carriage B, and *g g'* are conducting-wires stretched in pairs between the said standards.

H is a trolley provided with four wheels *h*, which run on the four wires *g g'*. The trolley is operatively connected in circuit with the motor by four wires *h'*, so that the motor is driven in two different directions by the respective pairs of wires. The wires *g g'* also support the trolley.

I is a flexible connection, such as a cord, which connects the trolley mechanically with the motor, so that the motor pulls the trolley along the wires as it is moved transversely. A slack wire *i* is also supported between the uprights or standards G for the purpose of supporting the line-wires *j j'*, which conduct the current from the generator to the ice-cutting machine. The negative wire *g'* is constantly in circuit with the negative main wire *j'*.

J is a switch-stand carried by the carriage B, and *k* is a double switch provided with a rheostat *k'* for distributing the current to the pairs of wires *g g'*. A wire *i'* connects the rheostat with the wire *g*, which is alternately positive and negative, according to the position of the switch. When the switch is raised, as shown in Fig. 4, one pair of wires *g g* is connected with the line-wires and the motor is revolved in one direction. When the switch is lowered, as shown in Fig. 5, the other pair of wires *g' g'* is connected with the line-wires and the motor is revolved in the reverse direction.

A separate electric motor N of approved construction is provided for moving the frame C and the motor E back and forth on the carriage B and for moving the carriage back and forth on its rails. This motor N is supported on a stand N' at one end of the carriage B and is driven in both directions. In order that the motor N may be driven in each direction, a double switch O and a rheostat O' are provided on the switch-stand J. This switch O is connected with the line-wires *j j'* by branch line-wires *o* and with the motor N through the rheostat O' by two wires *p*. The motor N is driven in one direction or the other, according to the position of the switch O, in a similar manner to the motor E.

The frame C is moved back and forth on the carriage by means of two flexible connections 2, which pass over sheaves 3 at the ends of the carriage and which are secured to the

frame. The sheaves 3 at one end of the carriage are secured upon a shaft 4, which is connected with the motor N by means of intermediate driving devices provided with a clutch of approved construction. The shaft 4 is journaled in suitable bearings and extends across one end of the carriage and has a driving-sheave 16 secured upon it.

The shaft of the motor N has a toothed pinion 6 secured on it, which gears into a toothed wheel 7, secured on a shaft 8. The shaft 8 is journaled in bearings 9 and extends across one end of the carriage over the shaft 4. A short counter-shaft 10 is journaled in a bracket 11, secured to the carriage. A sheave 12 is secured on the shaft 8 and drives a sheave 13 on the counter-shaft 10 by means of a flexible connection 14. A sheave 15 is mounted on the counter-shaft 10 and drives the sheave 16, secured on the shaft 4 by means of a flexible connection 17. The sheave 15 is connected with the counter-shaft 10 by a clutch of approved construction and preferably by a friction-clutch 18.

19 is a handle or lever for holding the members of the friction-clutch in engagement with each other, so that the motor N may move the frame C back and forth on the carriage by means of the intermediate driving devices.

In order to move the carriage back and forth on its rails, a worm 21 is secured on the shaft 8 and gears into a worm-wheel 22, mounted on a shaft 23, which is carried by the stand N'. A sheave 24 is also mounted on the shaft 23, and 25 is a friction-clutch for connecting the sheave 24 with the worm-wheel. A lever 26 is provided for holding the members of the friction-clutch in operative connection or for moving them apart. The sheave 24 drives a sheave 27, secured on a shaft 28 by means of a flexible connection 29. The shaft 28 extends longitudinally of the carriage and is journaled in suitable bearings. On each end of the shaft 28 are secured sheaves 30, which drive sheaves 31, by means of flexible connections 32. The sheaves 31 are secured to two of the wheels *b* at the opposite ends of the carriage B, which wheels run on the rails *b'* and support the carriage, so that the carriage is moved back and forth on its rails by means of the motor N and the intermediate driving devices.

All the hereinbefore-mentioned flexible connections are preferably drive-chains, and the sheaves are provided with sprockets, so that the driving is effected positively; but other driving devices, such as belts or cords, may be used in carrying out this invention as the mechanical equivalents of the driving devices described and shown.

What we claim is—

1. The combination, with a carriage, a frame movable thereon, and an electric motor car-

ried by the said frame; of conducting-wires supported by the carriage, a trolley bearing against the said wires and connected in circuit with the motor, a switch supported by the said carriage and connected in circuit with the said wires, line-wires connected with the said switch, and a support for the line-wires extending across the said carriage and supported by it, substantially as set forth.

2. The combination, with a carriage, and a frame movable thereon; of an electric motor supported by the said carriage, means for driving the said motor in each direction, sheaves journaled at the ends of the said carriage, a flexible connection passing over the said sheaves and secured to the said frame, and intermediate driving mechanism connecting the said motor with one of the said sheaves, substantially as set forth.

3. The combination, with a carriage, and a frame movable thereon; of an electric motor supported by the said carriage, means for driving the electric motor in each direction, sheaves journaled at the ends of the said carriage, two flexible connections passing over the said sheaves and secured to the said frame one on each side thereof, a shaft driving two of the said sheaves at one end of the carriage, intermediate driving devices connecting the said shaft with the motor, and a clutch controlling the operation of the said driving devices, substantially as set forth.

4. The combination, with a track, a carriage movable thereon, and a frame movable on the carriage transversely of the said track; of an electric motor supported by the said carriage, means for driving the electric motor in each direction, two separate sets of driving devices connecting the motor with the carriage and with the frame respectively whereby the said carriage and frame are moved back and forth, and two clutches controlling the said sets of driving devices and enabling the carriage and frame to be moved independently, substantially as set forth.

5. The combination, with a wheeled carriage, a driving-shaft extending longitudinally of the carriage, and driving devices at each end of the carriage connecting the said shaft with its wheels; of an electric motor supported by the said carriage at one end thereof, means for driving the motor in each direction, intermediate driving devices between the said motor and the said driving-shaft, and a clutch controlling the connection between the said motor and driving-shaft, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS H. BUTLER.
ORMOND HAMMOND.

Witnesses:

A. G. HUNTER,
W. N. FINLEY.