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PATENTED APR. 14, 1908.

G. L. LIBBY & P. J. CONNOR.

SAWING MACHINE.

APPLICATION FILED MAY 15, 1907.

3 SHEETS—SHEET 1.

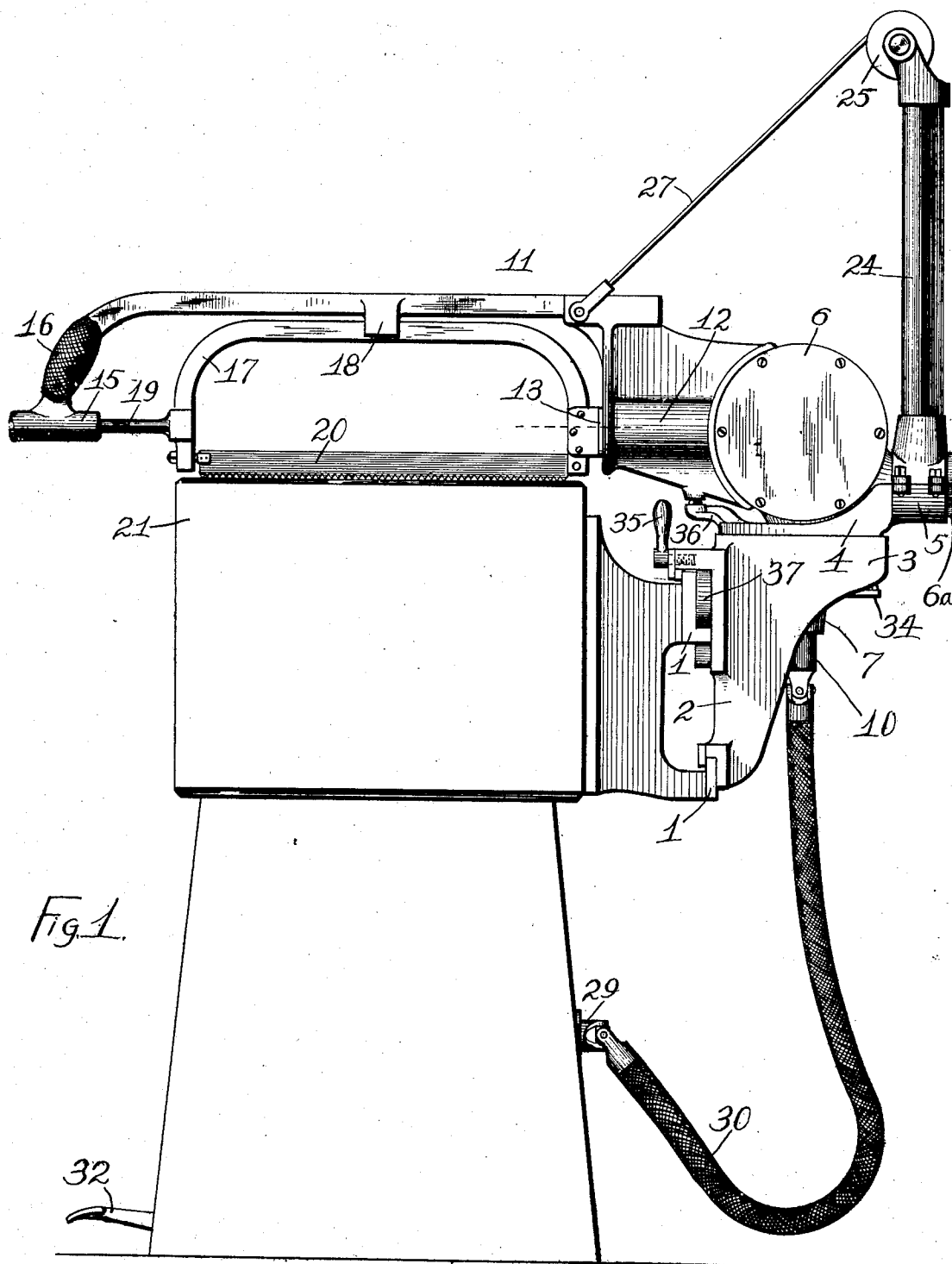


Fig. 1.

Witnesses:
Elmer R. Shipley.
M. S. Belden

Charles Seon Sibby
Peter J. Connor Inventors
by *James W. See*
Attorney

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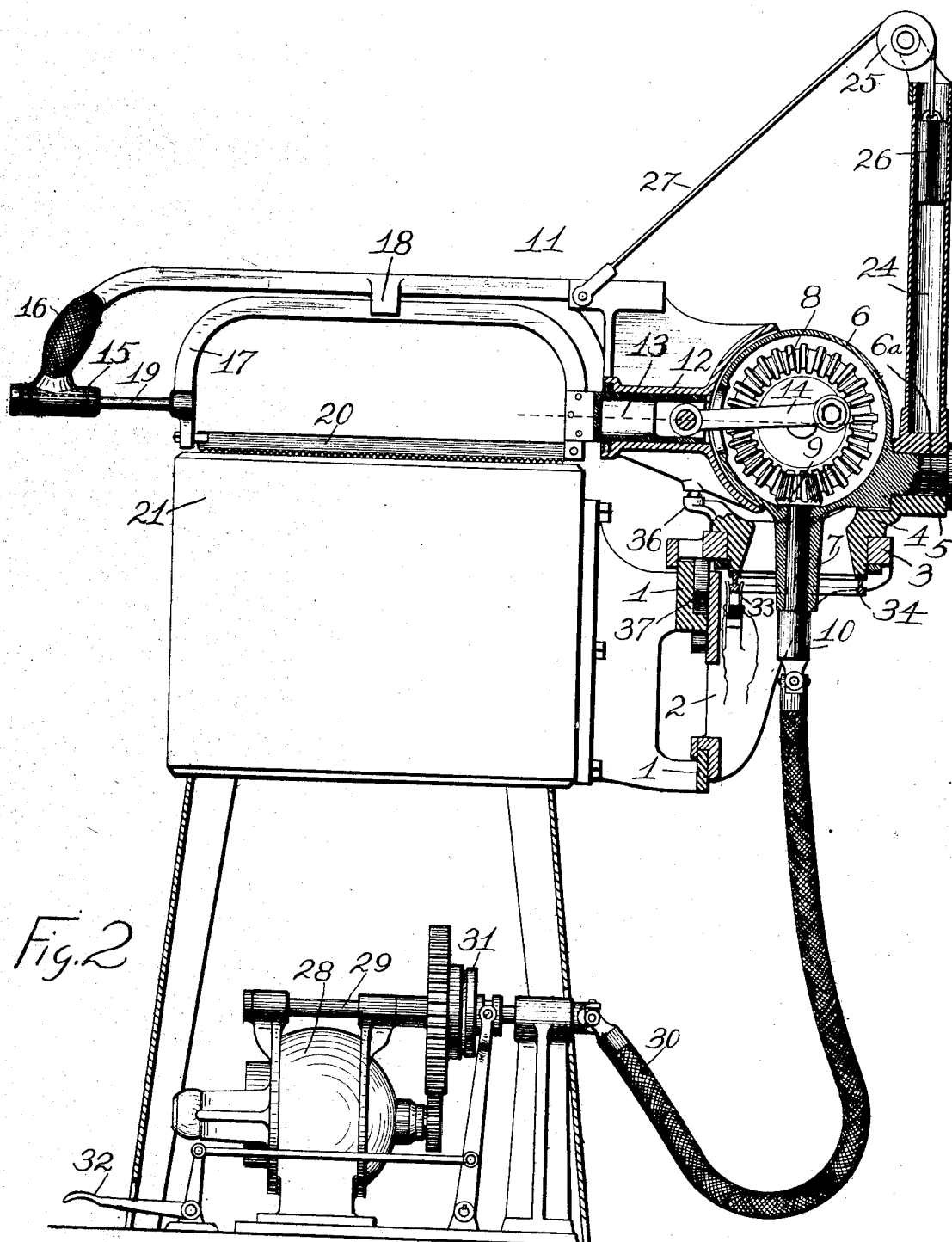


Fig. 2

Witnesses:
Elmer R. Shipley,
M. S. Belden.

Charles Leon Sibby
Peter J. Connor Inventors
by *James W. See*
Attorney

No. 884,744.

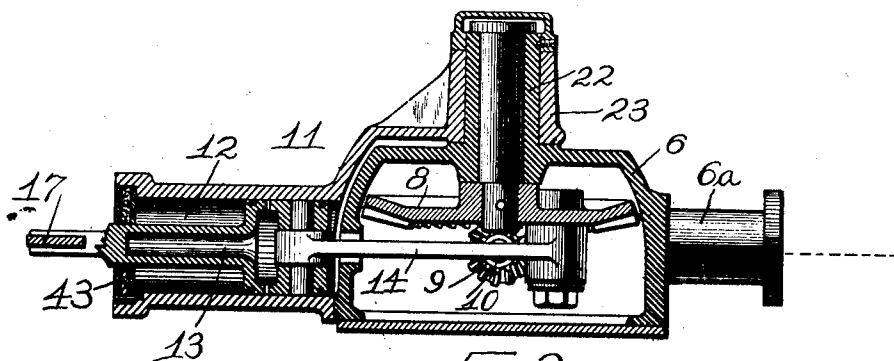
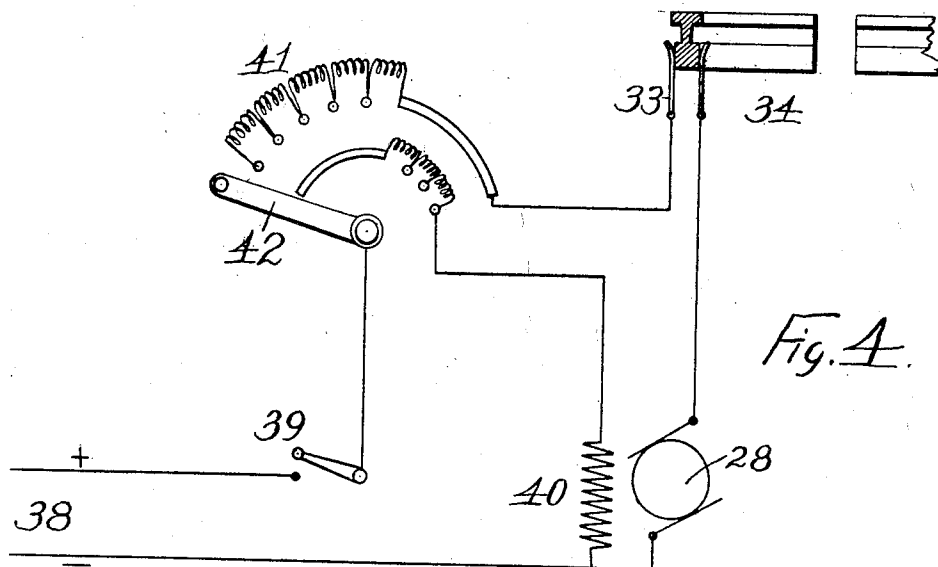
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SAWING MACHINE.

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3 SHEETS—SHEET 3.



Witnesses:
Elmer R. Shipley.
M. S. Belden.

Charles Leon Sibby
Peter J. Connor
Inventors
by James W. See
Attorney

UNITED STATES PATENT OFFICE.

CHARLES LEON LIBBY, OF INDIANAPOLIS, INDIANA, AND PETER J. CONNOR, OF MADISON, WISCONSIN.

SAWING-MACHINE.

No. 884,744.

Specification of Letters Patent.

Patented April 14, 1908.

Application filed May 15, 1907. Serial No. 373,742.

To all whom it may concern:

Be it known that we, CHARLES LEON LIBBY, a citizen of the United States, residing at Indianapolis, Marion county, Indiana, and PETER J. CONNOR, a citizen of the United States, residing at Madison, Dane county, Wisconsin, have invented certain new and useful Improvements in Sawing-Machines, of which the following is a specification.

This invention, pertaining to improvements in sawing machines, adapted for a variety of uses but designed with special reference to butchers' use, will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a side elevation of an exemplifying machine embodying our invention: Fig. 2 a similar view with a number of the parts shown in vertical section: Fig. 3 a horizontal section of the saw-housing: and Fig. 4 a diagram exemplifying a preferred system of electrical connections when the machine is driven by electric motor.

In the drawings: 1, indicates a horizontal guideway: 2, a carriage arranged for free adjustment lengthwise of the guideway: 3, a turn-table bearing supported by the carriage and having its axis vertical: 4, a turntable mounted for rotation in said bearing: 5, a horizontal bearing carried by the turntable: 6, a swivel, in the form of an inclosing casing, supported by the horizontal bearing of the turntable: 6^a, a trunnion carried by the swivel and engaging the horizontal bearing of the turntable: 7, a vertical bearing carried by the swivel and, in the present case, projecting downwardly through the turntable, the turntable having a central opening of sufficient size to permit the free movement of the swivel through the desired angle: 8, a bevel-gear journaled within the swivel with its axis horizontal and at right angles to the trunnion of the swivel, this gear forming also a crank: 9, a bevel-pinion disposed within the swivel and engaging the bevel-gear: 10, the shaft of the bevel-pinion, journaled in the bearing 7: 11, the saw-housing, considered as a whole, this housing being connected with the swivel and projecting outward therefrom at right angles to the axis of the bevel gear: 12, a guideway in the heel of the saw housing, this guideway being in the form of a cylinder with its axis intersecting the axis of the bevel

gear: 13, a crosshead working in this guideway, the crosshead having the form of a piston at its rear, its forward portion being flattened at the sides and working through the front head of the cylindrical guideway: 14, a connecting rod connecting the crank pin of the bevel gear with a wrist in the crosshead: 15, a guideway at the outer end of the saw-housing with its axis preferably in line with that of the crosshead: 16, a handle at the front portion of the saw-housing: 17, the saw-frame, having its heel attached to the crosshead: 18, a guide carried by the saw-housing and engaging an intermediate portion of the saw-frame: 19, a guide-rod projecting from the front portion of the saw frame and engaging guideway 15 of the saw housing: 20, the saw blade, with its toothed edge parallel with the path of reciprocating motion of the saw frame: 21, the work table, in the present case the meat-cutters block: 22, a stud carried by the swivel with its axis at right angles to the trunnion of the swivel, and preferably concentric with the axis of the bevel gear: 23, a sleeve carried by the heel of the saw housing and engaging this stud: 24, a column supported by the turntable: 25, a sheave carried by the upper end of the column: 26, a counterbalance weight moving vertically in the column: 27, a flexible connection engaging the counterbalance weight and sheave and saw housing to counterbalance the latter as it is raised and lowered angularly with stud 24 as the center of motion: 28, an electric motor: 29, a countershaft geared to the motor: 30, a shaft, shown as of flexible type, articulately connecting the countershaft with the shaft of the bevel pinion: 31, a friction clutch to serve in connecting the countershaft at will with the motor: 32, a treadle connected with the clutch and serving, when depressed, to cause the motor to transmit motion to the mechanism of the machine: 33, a pair of brushes in a circuit controlling the running of the motor: 34, a pair of semi-circular metallic segments carried by the turntable and straddled by and making electrical connection between the brushes, the gaps between the ends of these segments being wider than the brushes so that when the turntable is in such position that the brushes are at a gap in the segments there will be no electrical connection between the brushes: 35, a clamp connected with the carriage and serving, if desired, to

lock it firmly to its horizontal guideway: 36, a stop carried by the turntable and adapted to arrest the downward movement of the saw-housing when the toothed edge of the saw reaches the block: 37, anti-friction wheels coöperating with the carriage and its horizontal guideway to facilitate the shifting of the carriage: 38, the supply mains of the motor: 39, the starting switch: 40, the motor field: 41, a rheostat in the motor circuits: 42, the rheostat arm; and 43, the front head of the cylindrical guideway of the cross-head, this head carrying packing to engage the front portion of the crosshead.

Normally the motor is in motion but with the friction clutch disengaged and the machine at rest. The machine may be started at any time by pressure on the treadle and will remain in motion so long as the treadle is depressed. The saw-housing is grasped by the handle 19 and is swung up or down as desired, rocking on stud 22 as a pivot, the weight of the rocking parts being counterbalanced by the weight 26 which, if desired, may be made to overbalance the parts so that they are normally in an upper position and require to be pressed down. This rocking motion of the parts is quite independent of the other motions which are provided for.

The carriage may be shifted along on the guideway as desired or it may be clamped in fixed position upon the guideway. The shifting of the carriage along on the guideway permits the saw to operate at various points along on the block, it being understood, of course, that the block may have any length desired represented either by a single long block or by a plurality of blocks placed in line.

The general upper structure may be tilted on a horizontal axis parallel with the saw blade, trunnion 6^a forming the axis of this tilting motion, and this tilting is independent of the other motions of the saw housing. It is to be observed that the axis of trunnion 6^a on which this tilting takes place coincides with the tooth edge of the saw, in other words, with the tooth edge of the saw down on the block that edge represents the axis of tilting motion.

The saw-housing may be swung round horizontally, the turn-table forming the pivot, this motion being independent of the other motions. The saw structure may be swung to various angles on the block or it may be swung around in a complete circle to coöperate with the circular series of blocks, or it may be swung to idle position off of the block. The brush arrangement is manifestly such that when the saw is swung around into an idle position at right angles to that illustrated in Fig. 2, the gap between segments 34 comes opposite the brushes, thus breaking the motor circuit and causing the motor to come to rest. The reciprocating

mechanism therefore automatically ceases its motion when the operator's foot is taken from the treadle, and the motor automatically ceases its motion when the saw is swung round to idle position.

It is to be observed that the structure is provided with such inclosing features as to satisfactorily provide for lubrication without serious danger of the lubricant getting onto the block. The motor circuits illustrated are merely exemplifying in character.

The location of the motive mechanism below instead of above the saw apparatus is a matter of preference; as is also the employment of an electric motor as a motive device.

The particular use to which the apparatus is to be put will in many cases control specific features of design and the device well lends itself to many modifications at the hands of the skilled machine constructor, the particular organization set forth being a mere exemplification. It has been our purpose herein merely to explain the principle of our invention and the best mode in which we have contemplated applying that principle.

We claim:—

1. A sawing machine comprising a turntable, a horizontal pivot supported by the turn-table, a crank with its axis coinciding with the axis of said pivot, a saw-housing mounted on said pivot, a guideway carried by the heel of the housing at right angles to said pivot, a crosshead reciprocating in said guideway, a connecting rod uniting the crank and crosshead, a saw-frame mounted for reciprocation in the housing and connected with the crosshead, a bevel gear on said crank, a shaft supported by the turn-table at right angles to the axis of the crank, a bevel pinion on said shaft and engaging the bevel gear, and means for imparting motion to said shaft, combined substantially as set forth.

2. A sawing machine comprising a saw-housing, a cylindrical guideway in the heel thereof, a slotted head for said guideway, a crosshead having a cylindrical portion fitting said guideway and having a flattened portion fitting the slot in said head, a crank, a connecting rod connected to the crank and to the cross-head within its cylindrical part, a saw-frame mounted for reciprocation in the housing and connected with the crosshead, and means for turning the crank, combined substantially as set forth.

3. A sawing machine comprising a turntable having a vertical axis, a saw-housing connected with the turn-table by a pivot having a horizontal axis, a saw-frame mounted for reciprocation in the housing, mechanism supported by the turn-table for reciprocating the saw-frame, a power device for actuating said mechanism, and a device carried by the turn-table for severing the power connection when the saw-housing is

turned to a given position; combined substantially as set forth.

4. A sawing machine comprising a turn-
table having a vertical axis, a saw-housing
5 connected with the turn-table by a pivot
having a horizontal axis, a saw-frame
mounted for reciprocation in the housing,
mechanism supported by the turn-table for
reciprocating the saw-frame, an electric motor,
10 operative connections between the motor
and said mechanism, separated contact
devices in the motor circuit, and a contact
device carried by the turn-table and normally
connecting the first-mentioned contact
15 devices and having a gap for leaving them
disconnected when the turn-table is in a
given position, combined substantially as
set forth.

5. A sawing machine comprising a pivoted
20 saw-housing, a saw-frame reciprocating therein,
mechanism at the heel of the housing for
reciprocating the saw-frame, an electric motor,
a shaft connecting the motor and said
mechanism, a clutch connected with said
25 shaft and serving to engage it with and dis-
engage it from the motor, a treadle for controlling
said clutch, and a motor-controlling
device at the heel of the saw-housing and arranged
to open the motor circuit when the
30 saw-housing is turned to a given position,
combined substantially as set forth.

6. The combination of a work-table, supporting
means, sawing mechanism carried by
said means movably in a linear direction in
35 relation to the table and comprising a saw, a
saw-housing carrying the saw reciprocably,
means intermediate the saw and supporting
means permitting the saw-blade to swing toward
and from the work and to be placed at
40 various angles in relation to the work with
regard to both the direction of blade-width
and cutting line; a stationary motor, means
for driving the saw from the motor in any of
its positions, and means controlled by the
45 position of the housing for regulating the
motor.

7. The combination of a work-table, supporting
means, sawing mechanism carried by
said means movably in a linear direction in

relation to the table and comprising a saw, a 50
saw-housing carrying the saw reciprocably,
means intermediate the saw and supporting
means permitting the saw-blade to swing toward
and from the work and to be placed at
55 various angles in relation to the work with
regard to both the direction of blade-width
and cutting line, a stationary motor, means
for driving the saw from the motor in any of
its positions, means controlled by the position
60 of the housing for regulating the motor, and
a clutch interposed in the driving means.

8. The combination of a work-table, a casing,
a saw-housing pivotally mounted on the
casing to swing toward and from the table, a
saw reciprocably mounted in guides in the 65
housing, a bearing, a swivel having an axis
perpendicular to the pivot of the housing supporting
the casing in the bearing, means for
supporting the bearing so that it may turn on
an axis perpendicular to both the pivot and 70
swivel axes, a stationary motor and driving
mechanism connecting the motor with the
saw and serving to reciprocate the saw in any
of its adjustable positions.

9. The combination of a work-table, a casing 75
ing, a saw-housing pivotally mounted on the
casing to swing toward and from the table, a
saw reciprocably mounted in guides in the
housing, a bearing, a swivel having an axis
perpendicular to the pivot of the housing supporting
80 the casing in the bearing, a turntable
rotatable on an axis perpendicular to the
axes of the pivot and swivel aforesaid, supporting
means for the turntable permitting
linear movement of the latter in relation to 85
the work-table, a stationary motor, a mechanical
driving means connecting the motor with
the saw and serving to reciprocate the saw in
any of its adjustable positions.

CHARLES LEON LIBBY.
PETER J. CONNOR.

Witnesses as to Libby:

EUGENE ADELBERT HEPBURN,

WILLIAM KNOX MILLHOLLAND, Jr.

Witnesses as to Connor:

JOHN R. CANTWELL,

FRANK W. CANTWELL.