

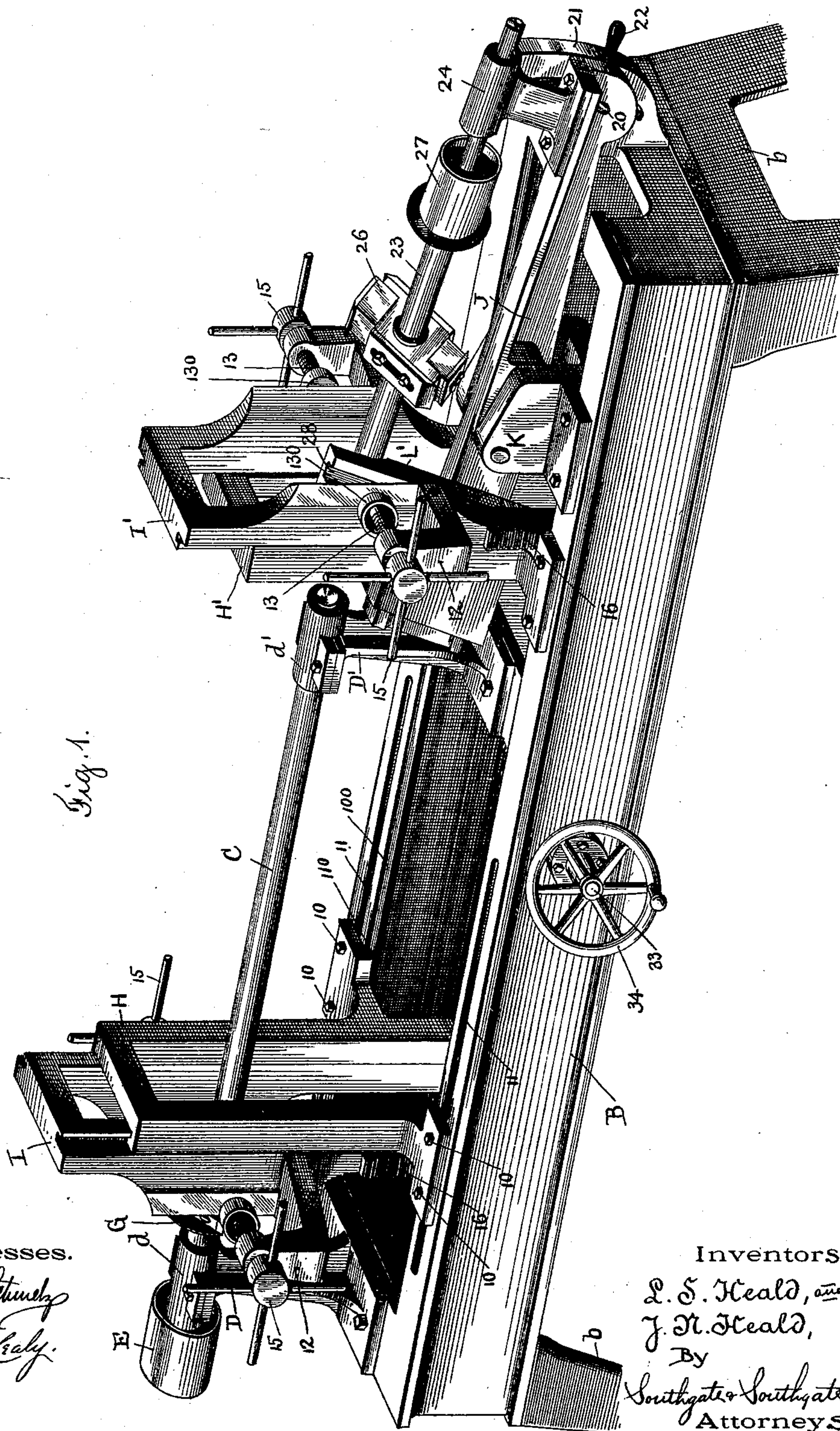
(No Model)

4 Sheets—Sheet 1.

L. S. & J. N. HEALD.
WOODWORKING MACHINE.

No. 547,991.

Patented Oct. 15, 1895.

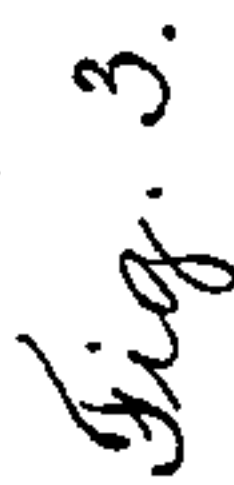


Witnesses.
Chas. F. Feltus
E. M. Healy

Inventors.
L. S. Heald, and
J. N. Heald,
By
Southgate & Southgate
Attorneys.

4 Sheets—Sheet 2.

Patented Oct. 15, 1895.



Chas. F. Schuch.
E. M. Healy.

By
Southgate & Southgate
Attorneys

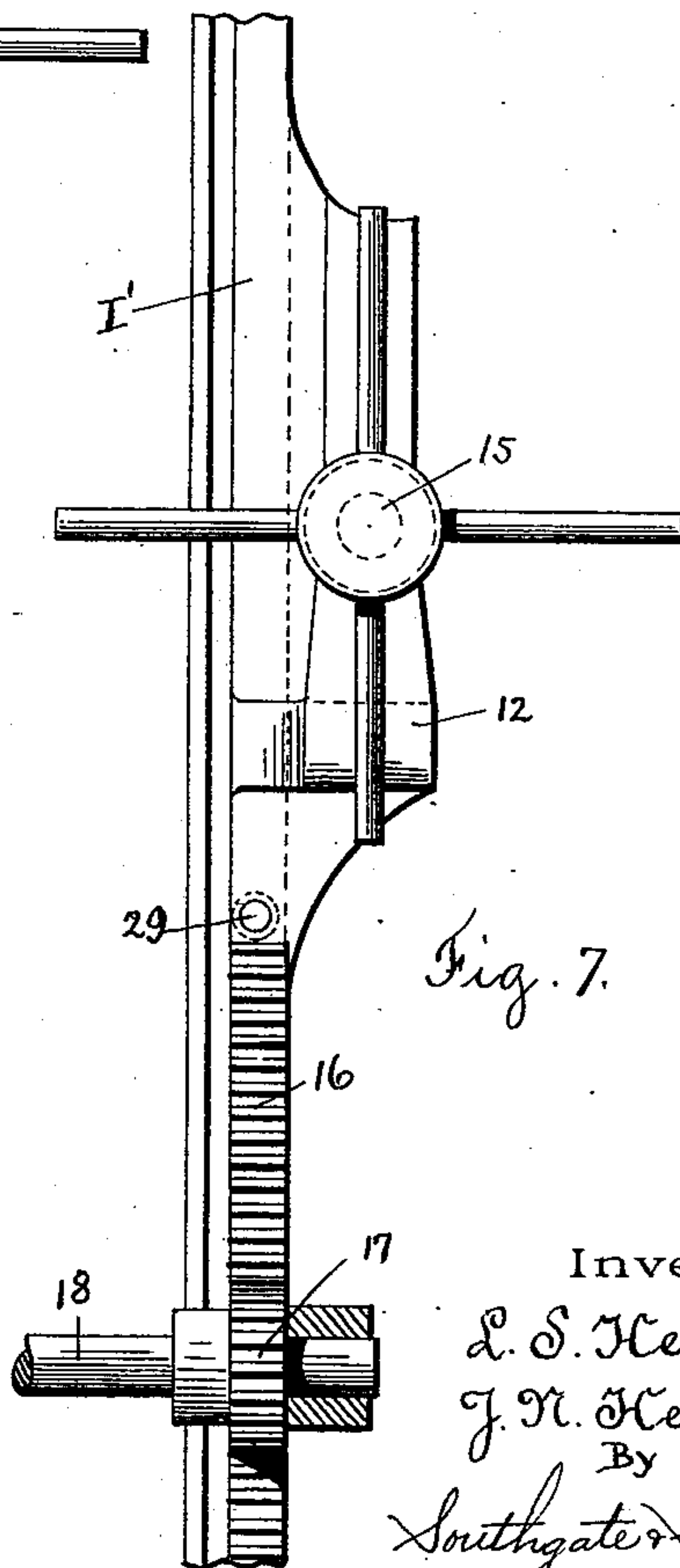
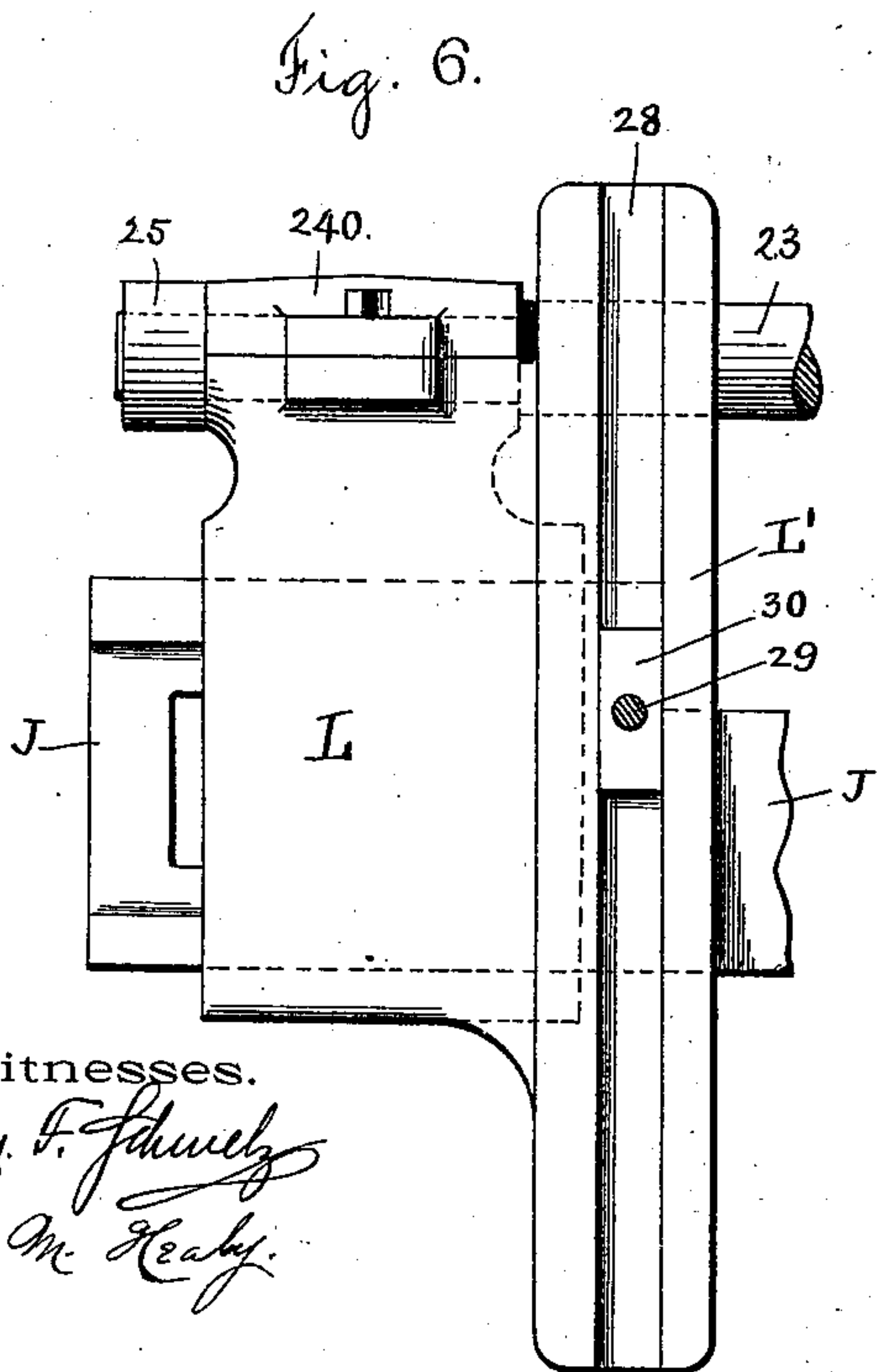
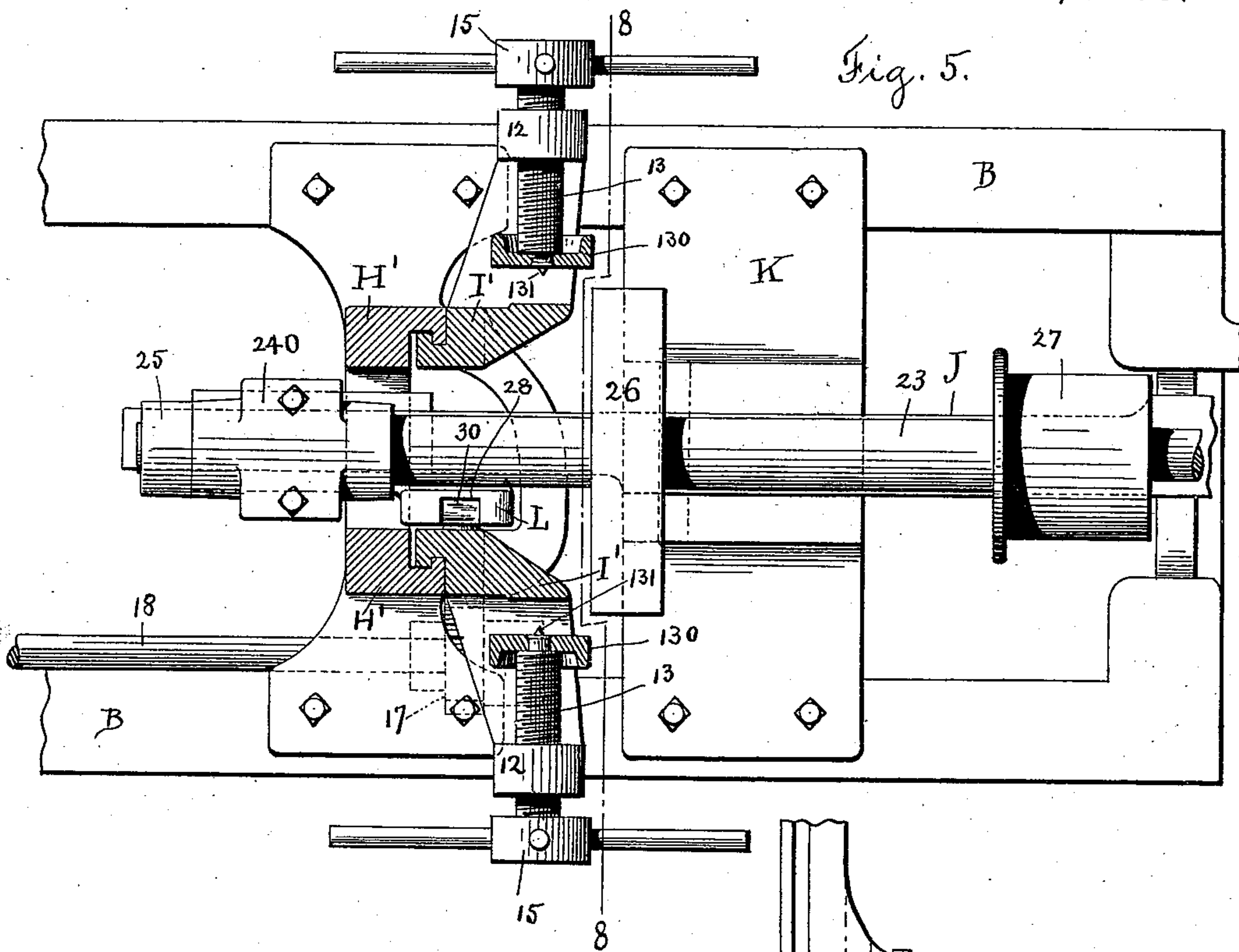
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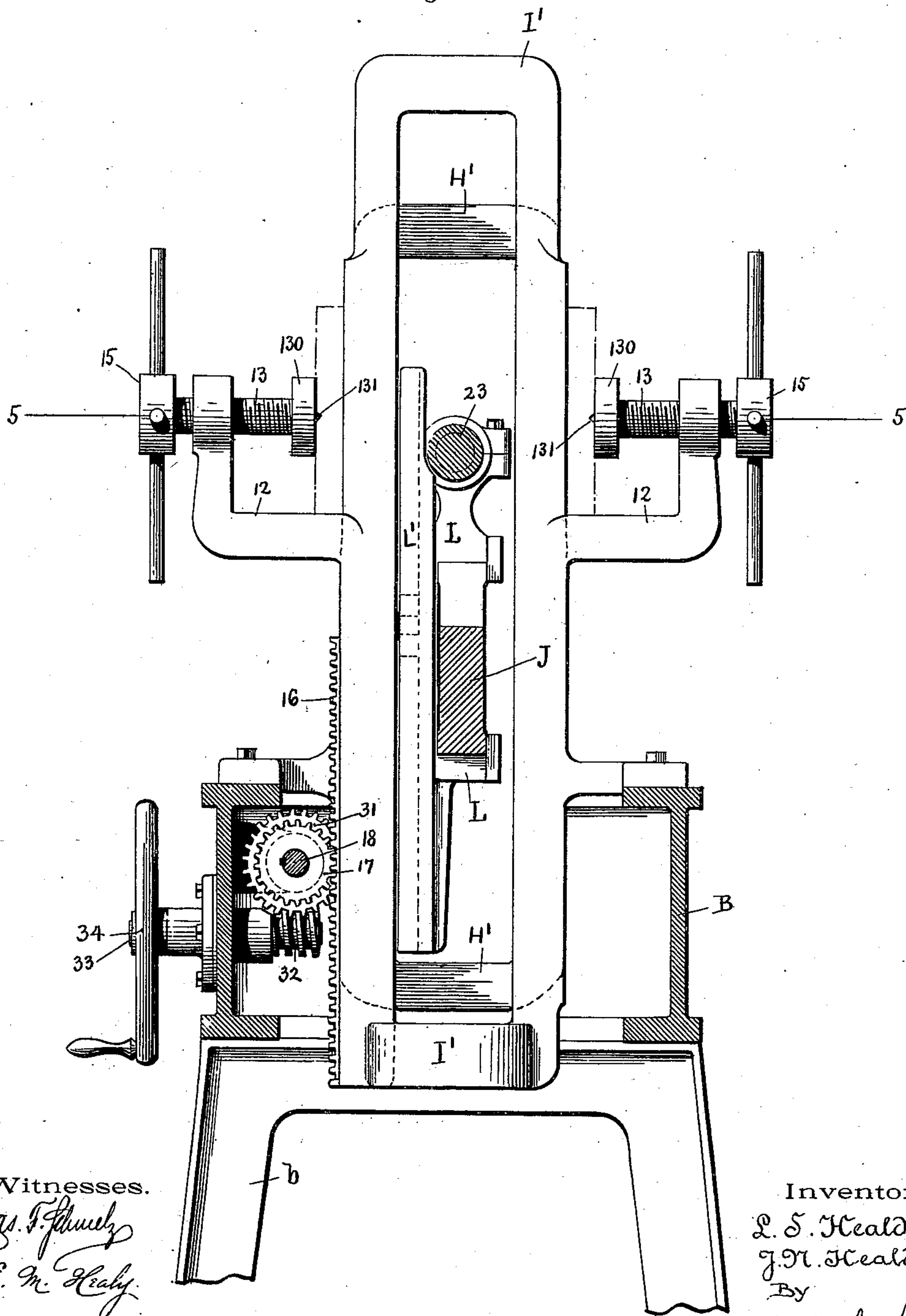
4 Sheets—Sheet 4.

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Fig. 8.



Witnesses.

Wm. F. Flinch
E. M. Healy

Inventors,
L. S. Heald, and
J. N. Heald,
By

Southgate & Southgate
Attorneys.

UNITED STATES PATENT OFFICE.

LEANDER S. HEALD AND JAMES N. HEALD, OF BARRE, MASSACHUSETTS;
SAID JAMES N. HEALD ASSIGNOR TO SAID LEANDER S. HEALD.

WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,991, dated October 15, 1895.

Application filed January 26, 1895. Serial No. 536,298. (No model.)

To all whom it may concern:

Be it known that we, LEANDER S. HEALD and JAMES N. HEALD, citizens of the United States, residing at Barre, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Woodworking-Machines, of which the following is a specification.

The object of our invention is to provide a machine for finishing or working the side pieces or stiles for window-frames, and the especial object of our invention is to provide a machine which will simultaneously receive and operate upon two planks or boards, whereby a pair of accurately corresponding pieces may be produced at a single operation of the machine.

To these ends our invention consists of the parts and combinations of parts, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying four sheets of drawings, Figure 1 is a perspective view of a machine constructed according to our invention. Fig. 2 is a perspective view of a side piece for a window-frame. Fig. 3 is a diagrammatic view illustrating the operation of the machine. Fig. 4 is a longitudinal sectional view of the machine. Fig. 5 is a sectional view taken on the line 5 5 of Fig. 8, the pivoted yoke being shown as secured in a horizontal position instead of inclined, as in Figs. 1 and 4. Figs. 6 and 7 are detail views to be hereinafter referred to. Fig. 8 is a sectional view taken on the line 8 8 of Fig. 5, and Fig. 9 is a detail view to be hereinafter referred to.

A window-frame, as ordinarily constructed, comprises a pair of side pieces, a top piece or header, which is mortised into the side pieces near the upper ends thereof, and an inclined bottom piece or sill, which is suitably inclined to shed water and is mortised into said side pieces near the lower ends thereof.

In making a window-frame it is essential that the grooves or mortises in the side pieces should be exactly corresponding.

The specific object of our invention is, therefore, to provide a machine which will groove or mortise a pair of side pieces so that said grooves will be cut to exactly correspond in

size and position, and so that the two side pieces will be exact rights and lefts.

Referring to the drawings and in detail, B designates a bed-piece or casting, which may be mounted upon and supported by suitable legs *b*, as shown. Mounted upon and supported by the bed-piece B are two vertical frames H and H'. The vertical frame H' is rigidly bolted and secured in place upon the bed-piece B. The vertical frame H is longitudinally adjustable with respect to the bed-piece B and may be secured in its adjusted position by means of bolts 10, which extend through slots 11 in the bed-piece. The frame H is preferably guided by lips 110, which fit the inside edges 100 of the bed, the said edges being accurately planed to a straight line. Movably supported by and gibbed upon the outer faces of the vertical frames H and H' are vertically-movable carriages I and I'. The carriages I and I' may be simultaneously moved up and down by means of vertical racks 16, which mesh with and engage suitable gears or pinions 17 and 170, which are secured upon a longitudinal feed-shaft 18, which is journaled in the bed-piece B, as most clearly illustrated in Figs. 8 and 9. The gear 170, which actuates the carriage I, is fitted loosely upon the shaft 18, and has a key fitting into a keyway cut in the shaft, said pinion being held in position by means of a bracket 181, extending from the frame H, whereby as the frame H is longitudinally adjusted the pinion 170 will be free to move on the shaft, as shown in Fig. 9. The carriages I and I' are provided upon their opposite sides with extending brackets 12, having clamping-screws 13 threaded therein. The clamping screws 13 are provided on their inner ends with face-plates 130 and spurs 131 for holding and securing a pair of planks or boards firmly in place in the vertically-movable carriages, the screws being provided on their outer ends with suitable operating-handles 15, as most clearly illustrated in Fig. 8.

Fastened upon and secured to the bed-piece B are brackets D and D', having boxes *d* and *d'*, which form bearings for a longitudinal shaft C. At its outer end the longitudinal shaft C is provided with a pulley E, which may be driven by belt from any suit-

able source of power. Mounted upon and adjustably secured upon the longitudinal shaft C is a rotary cutter F, and also preferably a cross-cut circular saw G. The cutter F and the circular saw G may be clamped and secured in their adjusted position upon the shaft C by any of the ordinary fastening devices, as by means of set-screws.

Bolted upon and secured to the bed-piece B is a cross-piece or casting K, having a yoke or casting J pivoted therein, as shown in Figs. 1 and 4. At its outer end the pivoted yoke J is provided with a clamping-stud 20, which extends through a slotted bracket 21 of the bed-piece B and is provided with a clamping-handle 22, whereby the pivoted yoke J may be secured in any desired inclined position. A carriage or casting L is mounted upon and is longitudinally movable upon the yoke J, as most clearly illustrated in Fig. 6. A journal or box 24 is supported by and secured in position near the opposite end of the pivoted yoke J. A rotatable shaft 23 is journaled at one end in the bearing or box 240, carried by the casting or carriage L, and is arranged to move longitudinally with said bearing by means of a shoulder 250 and a collar 25, as shown. At its opposite end the shaft 23 is arranged to turn in the journal or bearing 24 and may freely move longitudinally with respect to said bearing. Fastened upon the shaft 23 is a rotary cutter 26. The rotary cutter which we prefer to employ may be made of two parts or sections, one of said sections being longitudinally adjustable with respect to the shaft 23, as most clearly illustrated in Fig. 1, whereby said cutter may form a groove or mortise of variable width.

It is obvious, however, that any of the ordinary or common forms of rotary cutter may be employed, and as we do not base any claim in this application on the form of cutter which is used, it is not necessary that said cutter should be herein shown or described further at length. Fastened upon and secured to the shaft 23 we also provide a pulley 27, which may be driven by a belt from any suitable source of power.

As most clearly illustrated in Figs. 1, 5, and 6, the carriage or casting L is provided with a section L', having a groove or guide 28 formed therein.

The vertically-movable carriage I' is provided with a pin or stud 29, carrying a pivoted piece 30, which fits into the way 28. By means of this construction it is to be noted that as the carriage I' moves up or down the stud 29 and the piece 30 will move in the slot or way 28, and when the yoke J is secured in an inclined position this relative movement of the parts will longitudinally shift or move the cutter 26 and its shaft 23.

In Fig. 8 of the drawings we have illustrated one manner in which the longitudinal feed-shaft 18 may be actuated. Referring to this figure, 31 designates a worm-wheel which

is secured upon the shaft 18. The worm-wheel 31 meshes with and may be actuated by a worm 32, fastened upon a short transverse shaft 33, having a hand-wheel 34 secured on in its outer end. It is obvious, however, that instead of actuating the feed-shaft 18 by hand we may provide connections for driving said feed-shaft by power in any of the ordinary or approved manners.

In some cases it may be desirable to arrange the parts so that a smaller amount of power will be required to raise the vertically-movable carriages. In such cases we contemplate counterweighting or counteracting the weight of the carriages by means of suitable counterweights, which may be arranged in any of the ordinary or approved manners.

In order that the planks or boards to be operated upon may be properly set, the machine is provided with suitable gages or stops.

Referring to Fig. 4, M designates a stop or gage which may fit into and be adjustably secured in the vertically-movable carriage I'. A similar adjustable stop may be provided on the opposite side of the machine, and by means of these stops or gages the ends of the planks may be properly positioned.

In operating a machine constructed according to our invention, the carriages I and I' are elevated or raised. A pair of planks or boards will then be clamped and secured in place, and the hand-wheel 34 will be operated to feed the planks down and present the planks to the rotary cutters, these parts having substantially the relation illustrated in Fig. 3. As the carriage I moves downward, the stud 29 and the piece 30 will shift the shaft 23 longitudinally, and the resultant travel of the rotary cutter 26 with respect to the planks or boards will be such that said cutter will cut inclined mortises or grooves in the inner faces of said planks. At the same time the rotary cutter F will cut transverse grooves or mortises near the opposite ends of the planks, and where a circular saw G is employed the said saw will cut or square off the ends of the planks or boards.

Side pieces of different lengths may be mortised and finished in a machine of this character by adjusting the rotary cutter F upon its shaft C, and as it is desirable to have the work firmly clamped in proximity to the cutter F, the vertical frame H and the vertically-movable carriage I may also be adjusted to the desired position, as before described.

The inclination of the groove or mortise for receiving the sill may be regulated or changed, as desired, by adjusting the inclination of the pivoted yoke J.

It is also to be noted that inasmuch as the shaft 23 and the cutter 26 are shifted longitudinally by means of the piece 30, fitting into the groove or way 28, the cutter 26 will always be located in a plane parallel with the inclined mortises or grooves which will be cut.

Whenever it is desired to use our machine to cut a mortise or groove which does not extend completely across the plank or board which is being operated upon, or, as, for instance, if it is desired to use our machine for notching or partially mortising a sill, the vertically-movable carriages I and I' may be fed down a portion only of their travel, and, if desired, the machine may be provided with adjustable stops, which may be adjusted to limit the vertical movement of the carriages.

With our machine as thus organized a pair of side pieces can be very rapidly cut or grooved, as described.

One of the especial advantages of our machine is that the same cutters will simultaneously act upon both side pieces, whereby the grooves cut therein will be of exactly the same width and will have exactly the same position on the pieces. This is very essential in work of this character, as a window-frame necessarily must be accurately put together, and the grooves are what determine the relative position of the parts that constitute the frame.

Another especial advantage of our machine is that both the grooving and the trimming or squaring operations take place simultaneously and are performed at one operation.

Another advantage, as before recited, is that both side pieces or the right and left pieces for a single frame are produced at one operation, or in the time ordinarily required to produce a single piece.

We are aware that many changes may be made in the construction of our machine by those who are skilled in the art, and we do not wish, therefore, to be limited to the construction which we have shown and described; but

What we do claim, and desire to secure by Letters Patent, is—

1. The combination of a movable yoke, means for fastening said yoke in an inclined position, a piece or casting mounted upon and longitudinally movable with respect to said yoke, a rotary cutter connected to move longitudinally with said movable piece, and a movable carriage having a projection engaging with a guide in said movable piece, substantially as described.

2. The combination of a pivoted yoke, means for fastening said yoke in an inclined position, a longitudinally movable piece mounted on said yoke, a shaft journaled in said movable piece and longitudinally movable through a fixed bearing, carried by said yoke, a cutter secured upon said shaft and a movable carriage having a projection engaging with a slot in said movable piece, substantially as described.

3. The combination of a bed-piece, a pivoted yoke, a clamping bolt carried by said pivoted yoke and extending through an adjusting slot in the bed-piece, a piece or casting mounted on and longitudinally movable

with respect to said yoke, a rotary cutter connected to move longitudinally with said movable piece, and a movable carriage having a projection engaging with a guide in said movable piece, substantially as described.

4. The combination of a movable yoke, means for fastening said yoke in an inclined position, a piece or casting mounted upon and longitudinally movable with respect to said yoke, a rotary cutter connected to move longitudinally with said movable piece, and a movable carriage having a projection engaging with a guide in said movable piece, said carriage being provided with clamping devices for holding a pair of boards, and presenting said boards upon opposite sides of the rotary cutter, substantially as described.

5. The combination of a bed-piece, grooving cutters, means for securing one of said cutters in an inclined position, frames mounted on said bed-piece, one of said frames being longitudinally adjustable thereon, carriages movably mounted in said frames, means for simultaneously feeding said carriages to present a plank or board to said cutters, and means for simultaneously shifting the inclined cutter, substantially as described.

6. The combination of a bed-piece, grooving cutters mounted thereon, frames carried by said bed-piece, one of said frames being longitudinally adjustable, carriages movably mounted in said frames, a longitudinal feed shaft having gears meshing with racks on said carriages, one of said gears being splined, and longitudinally adjustable on said feed-shaft, substantially as described.

7. The combination of a bed piece, grooving cutters, means for securing one of said grooving cutters in an inclined position, frames carried by said bed-piece, one of said frames being longitudinally adjustable thereon, carriages movably mounted in said frames, adjustable gages, and clamping jaws for securing a plank or board in position in said carriages, means for simultaneously feeding said carriages to present the plank or board to said cutters, and means for shifting the inclined cutter, substantially as described.

8. The combination of a bed piece, frames carried by said bed-piece, one of said frames being longitudinally adjustable thereon, a rotary cutter longitudinally adjustable with respect to said bed-piece, a movable yoke, means for fastening said yoke in an inclined position, a movable piece carried by said yoke, a rotary cutter connected to move longitudinally with said movable piece, movable carriages mounted in said frames, one of said carriages having a projection engaging a guide in said movable piece, and means for simultaneously feeding said carriages, substantially as described.

9. The combination of a bed-piece, grooving cutters, frames carried by said bed-piece, one of said frames being longitudinally adjustable, carriages movably mounted in said frames, a

longitudinal feed shaft having gears meshing
with racks on said carriages, one of said gears
being splined and longitudinally adjustable
on said feed shaft, and a hand-wheel con-
5 nected to operate said feed-shaft, substan-
tially as described.

In testimony whereof we have hereunto set

our hands in the presence of two subscribing
witnesses.

LEANDER S. HEALD.
JAMES N. HEALD.

Witnesses:

CLINTON C. COOK,
WILLIAM R. SPOONER.