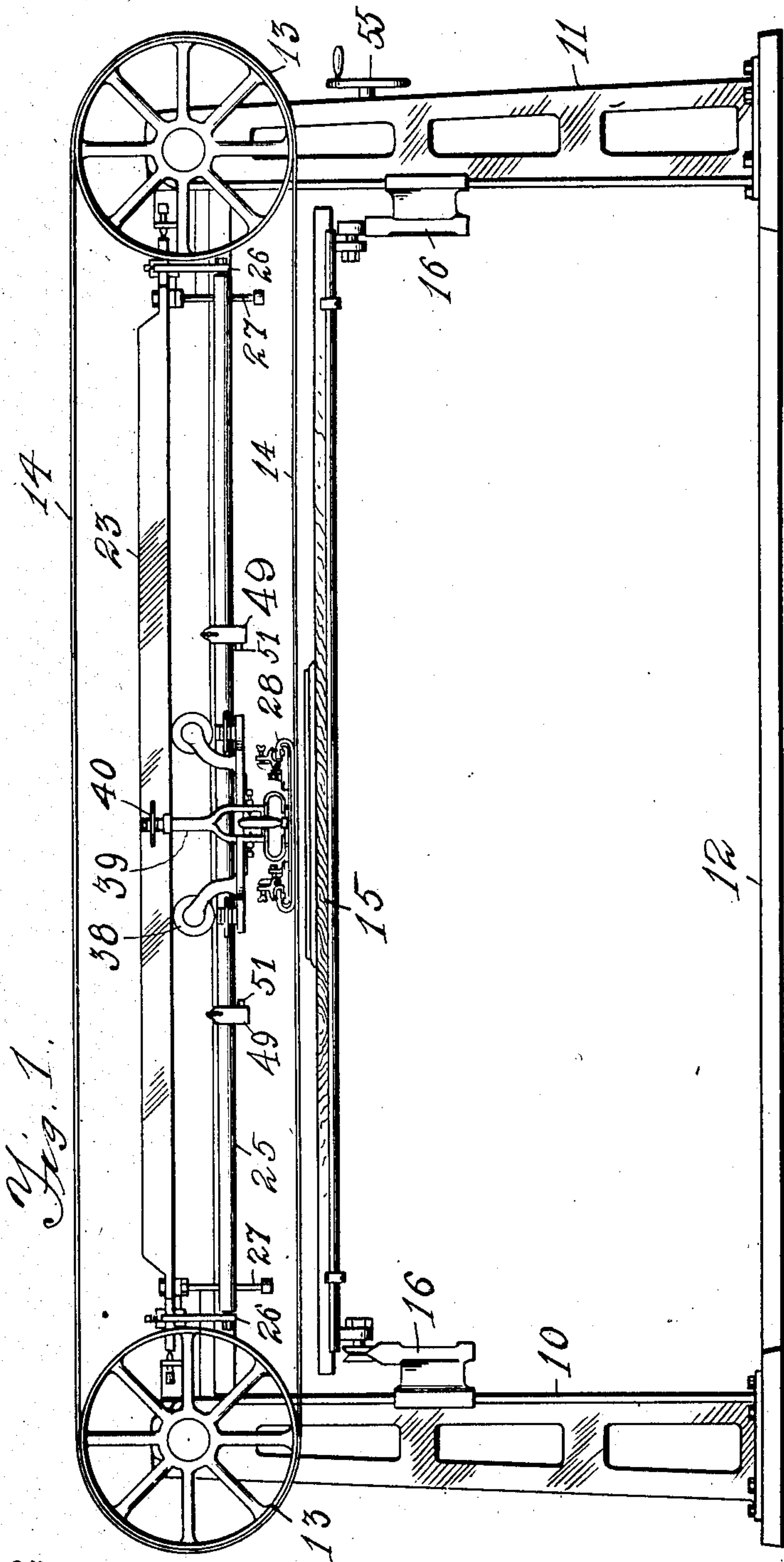


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SANDING MACHINE.
APPLICATION FILED DEC. 21, 1908.

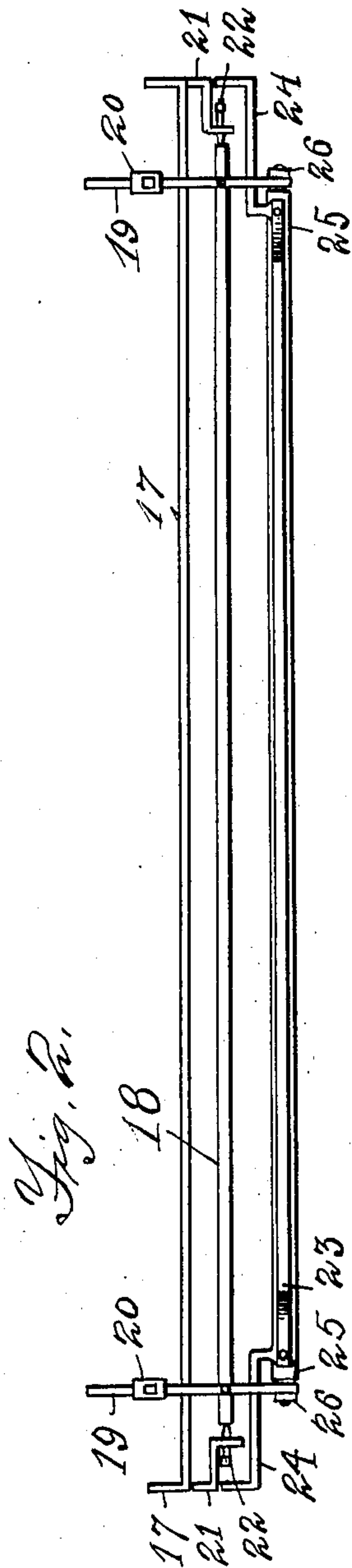
916,740.

Patented Mar. 30, 1909.

3 SHEETS—SHEET 1.



Witnesses
E. Q. Hultgren
J. A. Ellsworth



Inventor

Louis Lucas

By S. Arthur Baldwin.

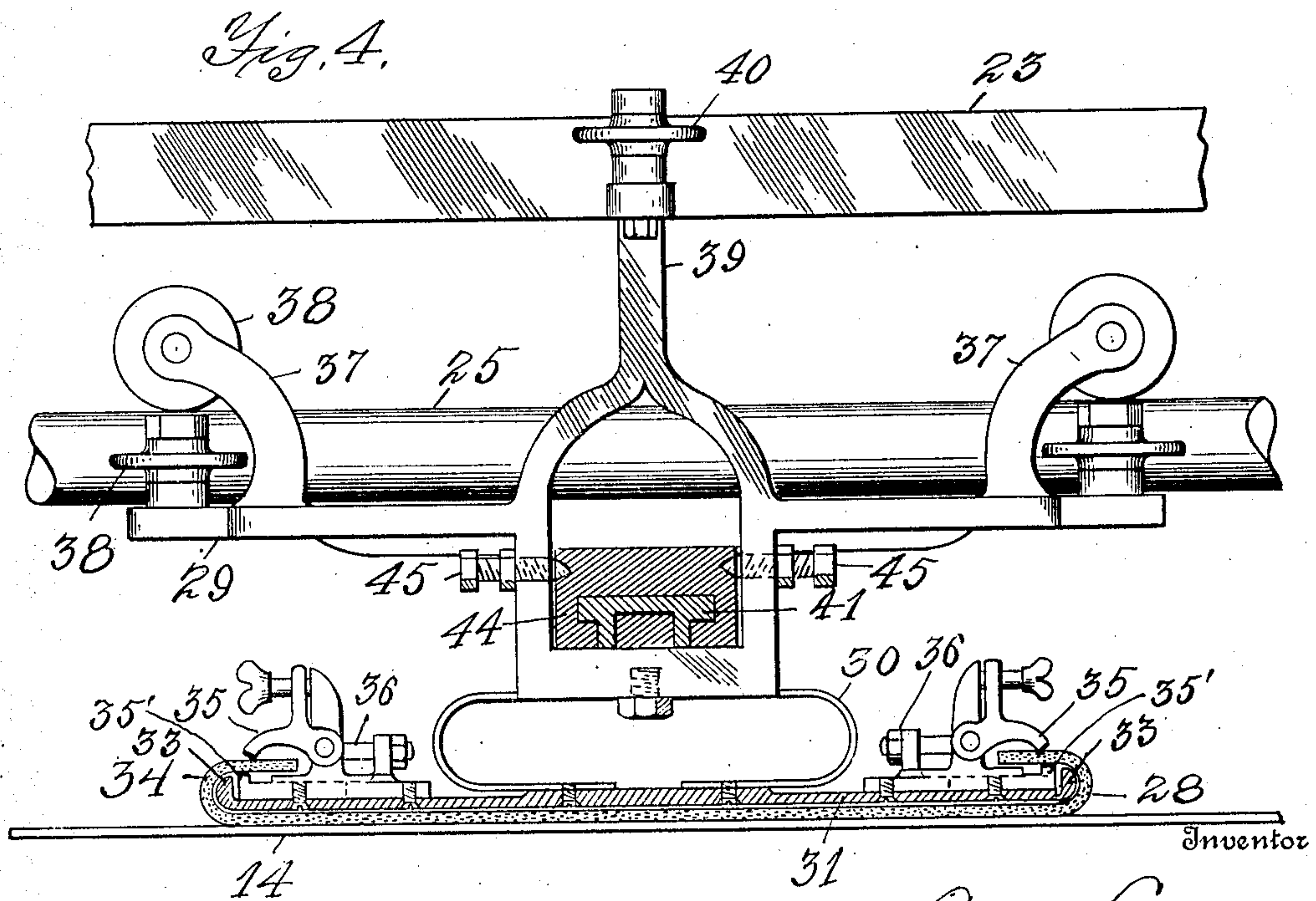
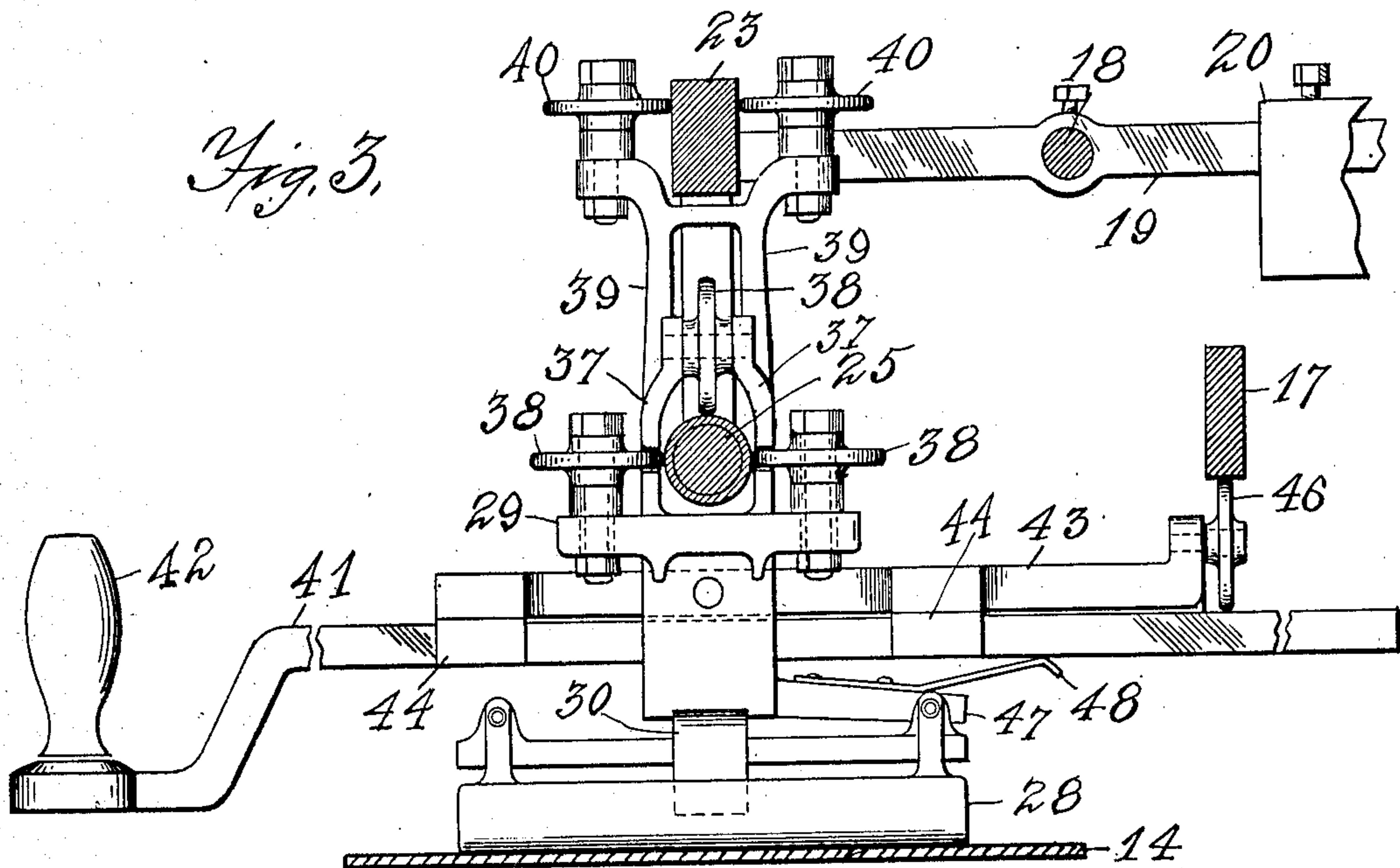
Attorney

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3 SHEETS—SHEET 2.



Witnesses
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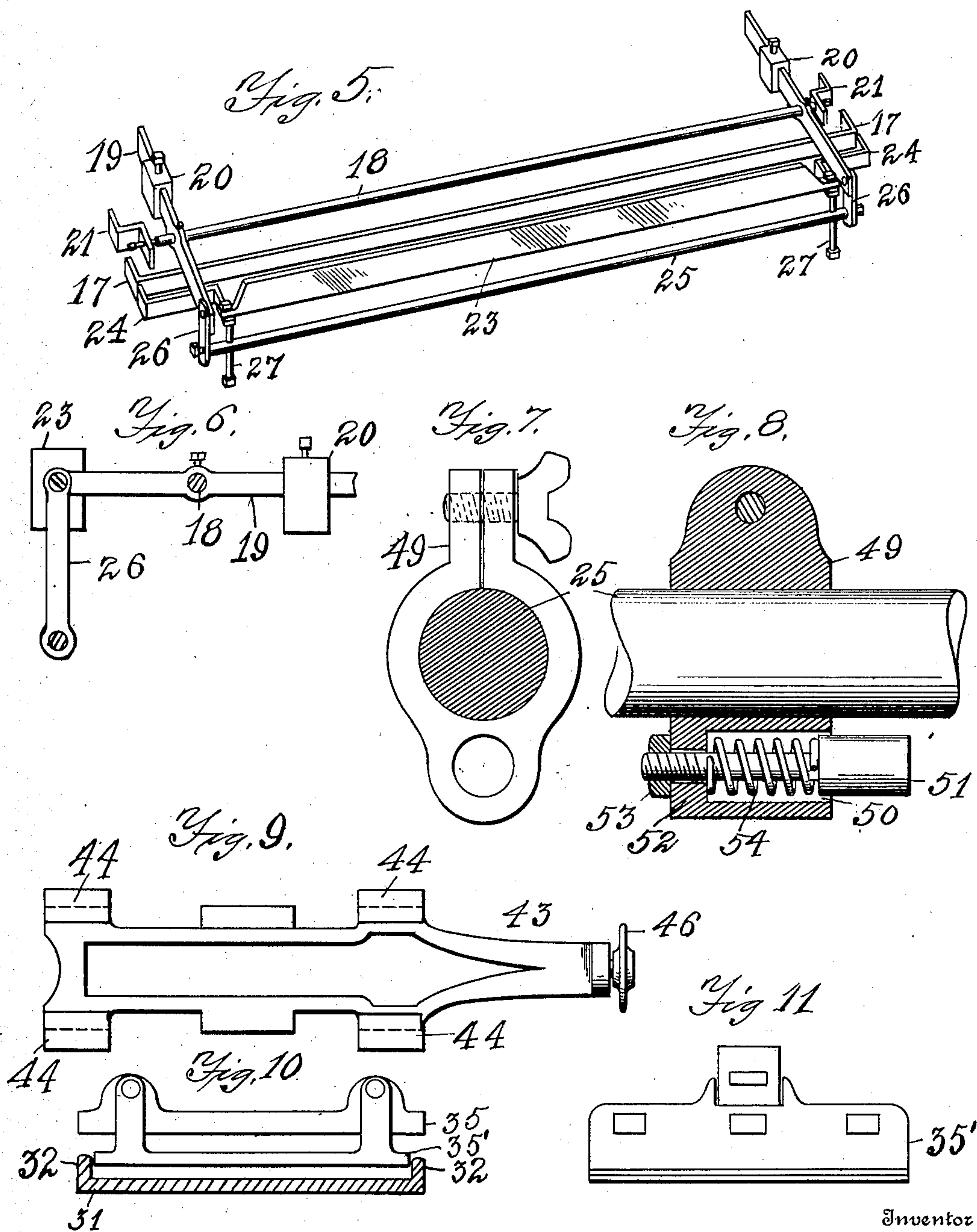
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

LOUIS LUCAS, OF JAMESTOWN, NEW YORK.

SANDING-MACHINE.

No. 916,740.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed December 21, 1908. Serial No. 468,473.

To all whom it may concern:

Be it known that I, LOUIS LUCAS, a citizen of the United States, resident of Jamestown, county of Chautauqua, and State of New York, have invented new and useful Improvements in Sanding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of the specification, and to the figures and reference-numerals marked thereon.

The invention relates to machines for sanding or polishing plain surfaces, or substantially plain surfaces, of the type having an endless abrading or sanding belt running on spaced pulleys; and the object of the improvement is to provide a simple and easily operated yet powerful means for manually pressing the belt to its work, which also gives ease of control of the length of the stroke; said length of the stroke and strength of pressure being under the instant control of the operator.

In the drawings, Figure 1 is a front elevation of the sanding machine. Fig. 2 is a plan view showing the arrangement of the guide rails and pressure bar for controlling the pressure block. Fig. 3 is a side elevation of the pressure block and operating lever showing the guide rails and pressure bar in section; and Fig. 4 is a front elevation of the same. Fig. 5 is a perspective view of the guide rails and pressure bars showing the arrangement of the balancing levers and weights at each end of one of the bars; and Fig. 6 is a detail elevation of said balancing lever and weight, the rails or bars being shown in section. Fig. 7 is an end elevation of the resilient stop on the guide bar for the pressure block, the guide bar being shown in section; and Fig. 8 is a lengthwise sectional view of said resilient stop showing the construction of the same. Fig. 9 is a detail plan view of the upper plate of the operating lever for the pressure block. Fig. 10 is a crosswise sectional view of the pressure block showing the clamp on the end of the same; and Fig. 11 is a plan view of one end of the pressure block.

In the drawings, the numerals 10 and 11 indicate the end standards of the supporting frame which are connected at their lower ends by the bed plate 12. The upper ends are connected by a number of guide

rails and pressure bars, hereinafter described.

On the upper end of each of the standards 10 and 11 in suitable boxes are mounted the shafts for the pulley wheels 13 upon which runs the sanding or abrading belt 14. A work table 15 is mounted upon suitable wheels which bear upon horizontal rails 16, which rails may be fixed as to their position but are preferably adjustably mounted on uprights 10 and 11 so that by means of any suitable elevating mechanism, which is common to such machinery and hence is unnecessary to describe in this specification, by means of which said rails 15 and 16 may be adjusted to any desired height in relation to belt 14.

The guide rails and pressure bars connecting the upper ends of uprights 10 and 11 consist of the rear fulcrum pressure bar 17, the pivotally mounted bar 18 which has levers 19 with weights 20 keyed thereon by suitable set screws near each end. Bar 18 is mounted at each end on said uprights by means of brackets 21 and the pointed screw bolts 22 which bear against the opposite ends of the bar 18, thereby pivotally mounting said bar so that levers 19 can turn in either direction. An upper guide bar 23 is provided which is attached to the uprights 10 and 11 by means of brackets 24 which brackets are so formed as to pass under and not interfere with weight levers 19 at each end. The lower guide bar 25 which controls the movement of the pressure block 28 is so mounted as to be freely movable upward and downward in the following manner: at each end it is connected to the forward end of levers 19 by means of links 26. A guide bolt 27 extends down from guide bar 23 at each end so as to hold bar 25 vertically in line, yet allowing it to move upward and downward with perfect freedom.

A pressure block 28 is provided on the inner side of belt 14 so as to press said belt to its work. Pressure block 28 is mounted on a suitable carriage 29 which may be moved backward and forward upon bar 25. Block 28 is connected to carriage 29 by means of a metal strap 30. Said block comprises a pressure plate 31 preferably formed with flanges 32 at each side and a round flange 33 at each end to receive thereon the sheet 34 of felt and canvas or other resilient material for pressing upon the belt

14. Sheet 34 is held at each end by means of the screw clamp plates 35 and 35'; which clamps are adjustable lengthwise by means of the screw bolts 36 so that sheet 34 may be stretched tightly upon said block after being clamped to place.

The carriage 29 is composed of the frame which bears at each end the projecting arms 37 for upper rolls 38, which with the two side rolls 38 form three rolls 38 which bear against different portions of the periphery of bar 25 so that the frictional contact with said bar is reduced to the minimum in moving carriage 29 backward and forward thereon. Arms 37 pass each side of bars 25 and act as a guide at each end of carriage 29. A further guide to prevent the tipping sidewise of carriage 29 is provided by means of the upright standard 39 and wheels 40 which bear against the opposite sides of guide bar 23. It is apparent that in this manner the friction is reduced to the minimum and that the pressure block 28 can be reciprocally moved backward and forward on bar 25 with perfect ease. Block 28 is moved backward and forward and pressure applied to belt 14 by means of a lever 41 which has a handle 42 at its front end and is mounted on a plate 43 in the central portion of carriage 29. Plate 43 is formed with the downwardly projecting lugs 44 on each side, as shown in Figs. 4 and 9, within which the lever 41 is slidably mounted. Plate 43 is firmly secured within carriage 29 by means of set screws 45 at each side. Plate 43 extends rearwardly and supports a roller which bears on the under side of pressure bar 17. An extension 47 is provided rearwardly beneath lever 41 on carriage 29, which extension 47 supports a leaf spring 48 thereon which bears against the under side of lever 41 pressing it against plate 43. Lever 41 can thus be made of any desired length and it is apparent that the operator can obtain any desired pressure upon belt 14 by pressing downwardly upon the same, thereby carrying down block 28 and bar 25, the lever 41 obtaining a strong leverage or purchase by its bearing on the under side of the fixed pressure bar or fulcrum 17, the wheel 46 freely traveling back and forth on the under side of said pressure bar.

In the sanding of articles wherein an exact length of stroke is necessary, as for example, panel work, a stop 49 is provided on guide bar 25 at the opposite limits desired for the stroke of the block 28, which stops 49 are clamped on bar 25 by means of suitable thumb screws. They are constructed as follows: The stop 49 has a suitable hole 50 in its lower portion with a pin 51 therein which extends through the rear portion 52 of stop 49 and is adjusted by means of a nut 53. A coil spring 54 is provided on said pin to bear against a shoulder thereon with-

in the opening 50 so that when clamped upon guide bar 25, as shown in Figs. 1, 7, and 8, the carriage 29 will strike resilient pin 51, thereby stopping said carriage and limiting the length of the stroke of the pressure block. The pins 51 on the stops 49 at opposite sides of carriage 29 face in opposite directions so that the carriage can not pass beyond said stops.

In order to operate my sanding machine it is only necessary to start the revolution of pulleys 13 and the sanding belt 14 after adjusting the work table 15 by means of hand wheel 55. The operator then grasps the handle 42 and presses belt 14 to its work with any degree of strength or delicacy, and with any desired stroke, moving the pressure block backward and forward as desired, the table 15 being moved horizontally crosswise of belt 14 allows the entire covering of the work with any desired length of stroke.

It is apparent that the guide rail 25 must freely pass up and down vertically on guide bolts 21. The rollers 40 pass up and down on opposite sides of the broad fixed guide bar 23 thereby allowing great range of movement. Also that when the weights 20 are so placed on the levers 19 as to always balance guide rail 25 upward, it is only necessary for the operator to press downward upon lever 41 to overcome said weight balance, and as soon as the pressure is released upon lever 41 the upward balance of weights 20 will raise guide rail 25 and the carriage and pressure block thereon. The weights 20 should be so placed as to raise pressure block 28 entirely free from the sanding belt 14 when the block is in its normal released position. This allows the belt 14 to run freely upon pulleys 13 when said belt is not pressed to its work.

The exceeding simplicity of my sanding machine is its main feature, the novelty largely lying in the means used for overcoming friction so that it is possible for the operator to control the pressure and length of the stroke without undue exertion.

I claim as new:

1. In an abrading machine, the combination of an abrading belt and means for moving said belt, a block for pressing said belt to its work, and suitable leverage to manually reciprocally move and press said block on said belt.

2. In an abrading machine, the combination with an abrading belt and means for moving said belt, a block for pressing said belt to its work, a lever to press and reciprocally move said block on said belt, and a fulcrum for said lever allowing it freedom of horizontal reciprocation.

3. In an abrading machine, the combination with an endless abrading belt, means for driving said belt, a block for pressing said belt to its work, means for raising said

block from said belt, a lever to press and reciprocally move said block on said belt, and means for holding the rear end of said lever while allowing it freedom of horizontal reciprocation.

4. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a block for pressing said block to its work, a lever to reciprocally move said block, and a horizontal bar to slidably receive the rear end of said lever to obtain leverage on said block.

5. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a block for pressing said belt to its work, a vertically movable guide bar for said block, a lever engaging said block to reciprocally move the same, and a horizontal guide fulcrum to slidably receive the rear end of said lever.

6. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a block for pressing said belt to its work, a vertically movable guide bar and a fixed guide bar for said block, said block slidably mounted on said bars, and a bar to the rear of and parallel to said guide bars to slidably receive the rear end of said lever and give resistance thereto, substantially as and for the purpose specified.

7. In an abrading machine, the combination with the endless belt, means for driving said belt, a vertically movable guide bar and means for balancing said guide bar upward from said belt, a block slidably mounted on said movable guide bar, and means for reciprocally moving said block on said bar.

8. In an abrading machine, the combination with the endless belt, means for driving said belt, a vertically movable guide bar and means for balancing said guide bar up from said belt, a block slidably mounted on said movable guide bar, a fulcrum bar to the rear of and parallel to said guide bar, said block having a rear extension to slidably engage said rear bar and a front extension with a suitable handle for reciprocally moving said block.

9. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a block for pressing said belt to its work, a guide bar vertically movable and means for normally raising the same above said belt, said block slidably mounted on said guide bar on roller bearings, a lever to press said block to its work, a roller on the rear end of said lever, and a horizontal surface on said machine to form a track for said lever roller and hold said lever to its work.

10. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a vertically movable guide bar, and means for balancing said bar

upward from said belt, a block pressing said belt to its work, a fixed guide bar parallel to and perpendicularly over said movable guide bar, the carriage of said block slidably mounted on said movable guide bar, suitable rollers on said carriage at each end and an upward extension having rollers each side of said parallel fixed guide bar, and means for moving said block on said bars.

11. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a block for pressing said belt to its work, a fixed guide bar for said block, a vertically movable guide bar for said block, and means for guiding said bars, means for pressing said bar and block up from said belt, a lever for moving said block, a bar parallel to said guide bar to slidably receive the rear end of said lever, said lever slidably mounted in the carriage of said block, and a spring on said carriage to hold said lever, substantially as and for the purpose specified.

12. In an abrading machine, the combination with the endless belt and means for driving the same, a block for pressing said belt to its work and means for reciprocally moving said block, said block comprising a plate having flat under surface and rounded ends, a sheet of resilient material on said plate, a clamp attached to each end of said plate comprising an under jaw having upward extensions, an upper jaw pivotally attached to said upward extensions and having thumb screws bearing against said extensions to press said upper jaw on said resilient material and under jaw, and a screw bolt attached to an upward extension on said plate and said clamping jaw to stretch said sheet of resilient material, substantially as and for the purpose specified.

13. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a fixed guide bar, a vertically movable guide bar, a pivotally mounted bar parallel to said guide bar, levers on said pivotally mounted bar, the front end of said lever attached to said vertically movable guide bar, weights on said levers to raise said vertical guide bar, a block having a carriage slidably mounted on said movable guide bar and engaging said fixed guide bar, a lever for moving said carriage and block, a bar opposite the rear end of said lever to slidably receive said rear end on its under side, substantially as and for the purpose specified.

14. In an abrading machine, the combination with the endless abrading belt, means for driving said belt, a fixed guide bar, a vertically movable guide bar, a pivotally mounted bar parallel to said guide bar, levers on said pivotally mounted bar, the front end of said levers attached to

said vertically movable guide bar, weights
20 on said levers to raise said vertical guide
bar, a block 28 comprising a plate 31 and
resilient sheet 34, clamps 35 on the opposite
5 ends of said plate to hold said resilient sheet,
bolts 36 for stretching said sheet, a carriage
29 slidably mounted on said movable guide
bar having wheels 38 at each end to bear on
said movable guide bar and wheels 40 on
10 each side of said fixed guide bar, a lever 41
for controlling said carriage and block, a bar

17 parallel to said guide bars, a roller 46 on
the rear end of said controlling lever to bear
on the under side of said bar 17, substan-
tially as and for the purpose specified. 15

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

LOUIS LUCAS.

Witnesses:

A. W. KETTLE,
I. A. ELLSWORTH.