

K. MOLUF.
 OPERATING MECHANISM FOR BARBERS' CHAIRS.
 APPLICATION FILED JAN. 25, 1912.

1,031,808.

Patented July 9, 1912.

2 SHEETS-SHEET 1.

Fig-1-

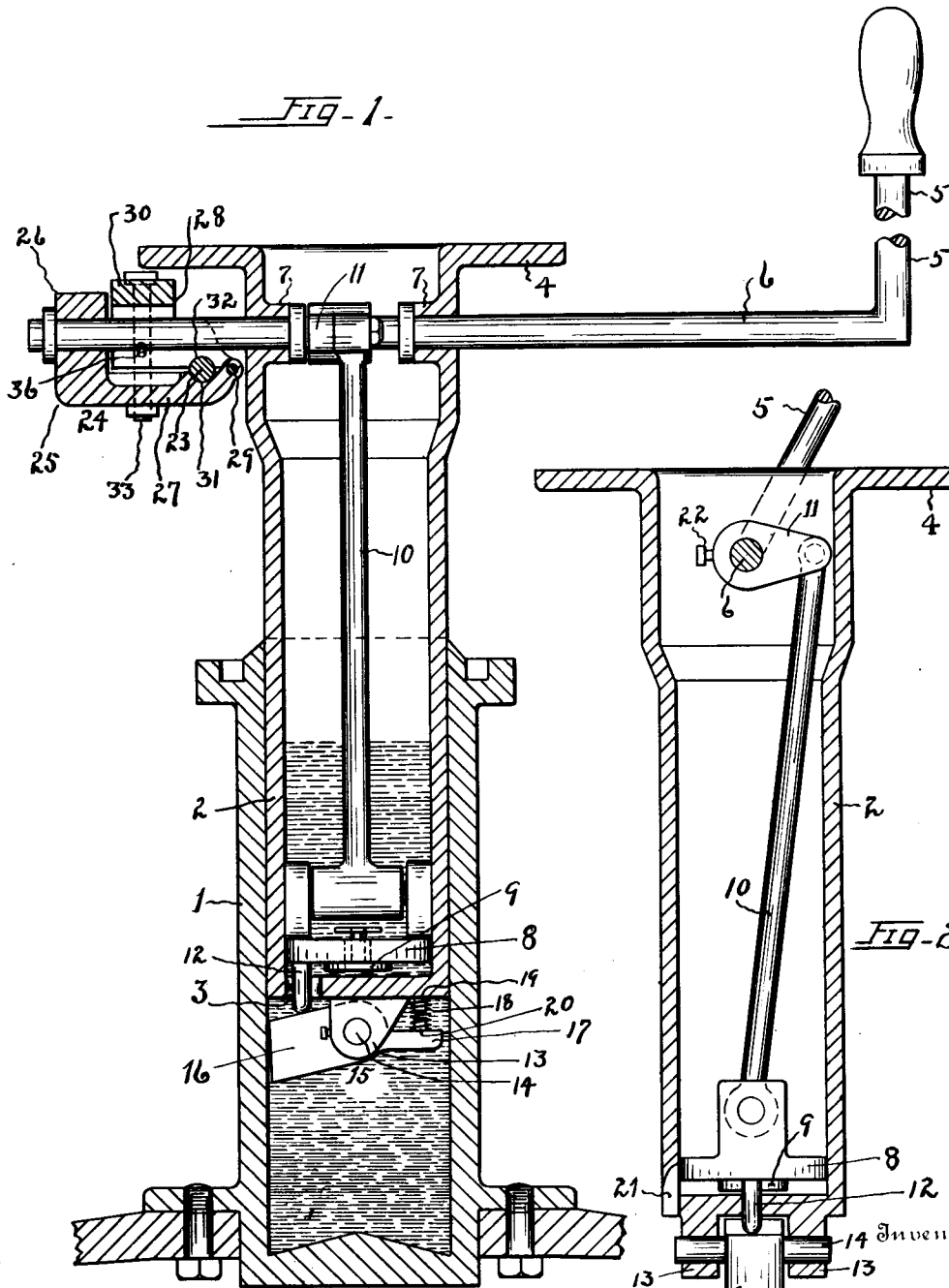


Fig-2-

Witnesses
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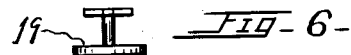
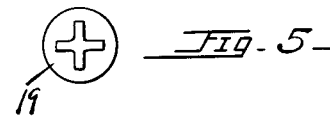
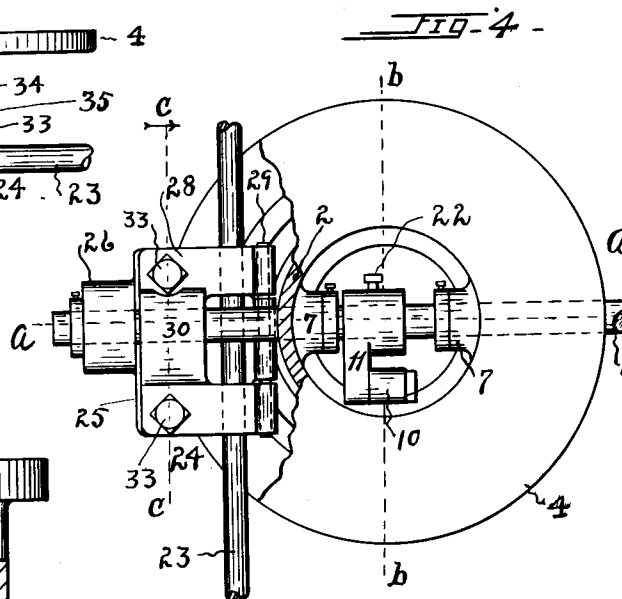
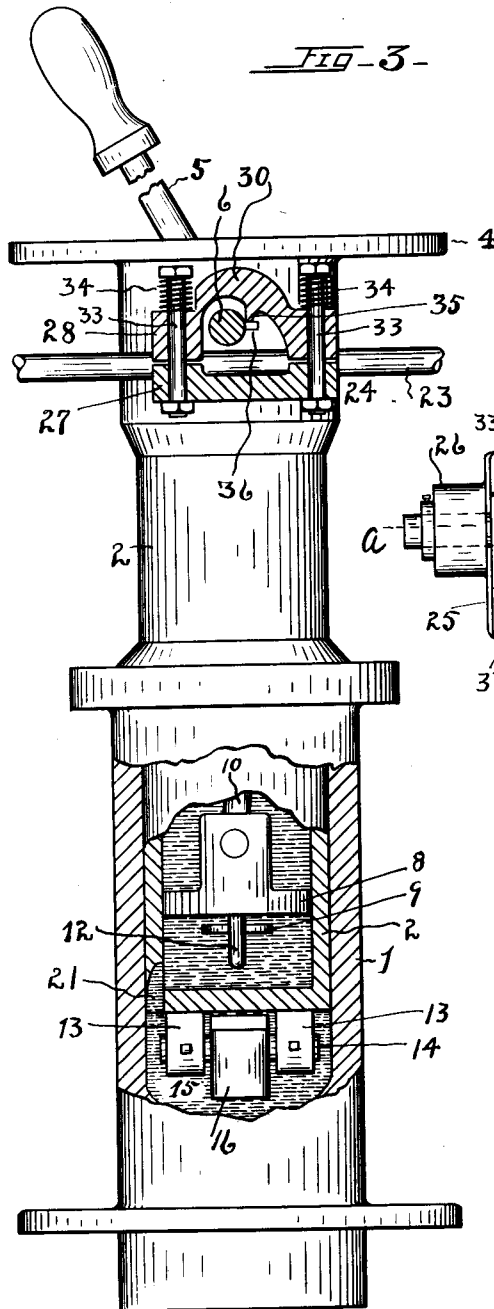
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2 SHEETS-SHEET 2.



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OPERATING MECHANISM FOR BARBERS' CHAIRS.

1,031,808.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, KNUT MOLUF, a citizen of the United States, residing at Benson, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Operating Mechanism for Barbers' Chairs, of which the following is a specification.

This invention relates to an improved operating mechanism for barbers' chairs, and has for its object, broadly, to provide few and simple parts for this purpose so that manufacture may be economical, and which will be effective and convenient in use for moving the chair to the various positions required.

While the invention is described in connection with a barber's chair, the same mechanism may be employed to advantage in the manufacture of operating chairs for surgeons or dentists.

The invention has reference to mechanism for elevating and lowering the chair, for releasing the chair-support or plunger, so that it may be rotated or may be secured non-rotatively, and for releasing the reclining-rod, the construction being such that the movements of all of the parts may be effected by a single hand-lever which the operator may swing forwardly or rearwardly.

The invention consists of the novel construction, combination and arrangement of parts as described herein and claimed, and as illustrated in the drawing, wherein,—

Figure 1 is a view partly broken and in longitudinal section of the cylinder, the plunger, and the gripping device for the reclining rod, the view being on line *a a* of Fig. 4. Fig. 2 is a view in longitudinal section of the plunger on line *b b* of Fig. 4. Fig. 3 is a side view, partly broken away and in section, showing the seat-flange, the plunger and cylinder, and showing the gripping device for the reclining-rod in section on line *c c* of Fig. 4. Fig. 4 is a plan view showing the seat flange, a part of the shaft for the operating lever and reclining-rod, the seat flange being broken away to disclose the gripping-device for the reclining-rod. Figs. 5 and 6 are, respectively, plan and side views of the valve.

Referring now to the drawing for a more particular description, numeral 1 indicates an upright cylinder which may be partly filled with oil or other suitable liquid, and

within which may be seated for vertical reciprocation the plunger 2 formed in its bottom near its side wall with a passageway 3 communicating with the cylinder, its upper end preferably being open and provided with an annular, transverse flange 4.

It will be understood that the parts mentioned provide the support for a chair seat which may be mounted upon the terminal flange 4; and devices are provided and will now be described, by means of which the chair may have various movements. All of these movements, with the exception of the operation of certain springs, are effected by the use of a single hand-lever, this being indicated at 5. The single, operating shaft for the hand-lever is indicated at 6; it is disposed horizontally and traverses the upper part of the plunger with bearings in bosses 7 formed on the inner wall and at opposite sides thereof.

At 8 is indicated a piston provided with a valve 9, the piston rod 10 having its lower end mounted upon the piston, its upper end being mounted upon crank-arm 11, said arm being keyed upon shaft 6. Rigidly mounted upon the bottom near the periphery of the piston and disposed in the vertical plane of passageway 3, is a downwardly projecting contact-finger 12. Upon the lower end of the plunger are provided the pair of brackets 13 to provide bearings for the pivot or shaft 14 upon which is secured the detent-member 15, said member consisting of a buffer or block 16 and a tail piece or arm 17. Shaft 14 is therefore disposed below and preferably is in alinement with the longitudinal axis of the plunger. The buffer block of the detent member may be disposed between shaft 14 and the wall of the cylinder, and upon occasion may engage said wall. Between arm 17 and the lower end of the plunger is mounted a coiled spring 18, said spring being preferably mounted upon stop-lugs 19 and 20 which extend toward each other, lug 19 being mounted upon the bottom of the plunger and lug 20 being mounted upon the upper side of arm 17. The detent member may have limited swinging movements, its block and arm moving upwardly and downwardly. The upward movement of block 16 will be caused by the expansion of spring 18, the block thereupon making engagement with the side wall of the cylinder, and at this time the entire weight of the plunger

and parts carried thereby will be sustained by the frictional engagement of the block with the wall of the cylinder, and while this engagement continues, a rotatable movement of the plunger in the cylinder or a vertical movement thereof will be prevented. By referring to Figs. 1 or 2 it will be seen that a downward movement of the piston 8 under control of hand-lever 5 will cause finger 12 to engage with block 16, said finger moving downwardly through passageway 3 for said engagement. Spring 18 will thereby be compressed, and the adjacent ends of lugs 19 and 20 may make contact. The contact of these lugs will limit the downwardly swinging movement of block 16 and will prevent compression of the lower part of valve 9 between piston 8 and the bottom of the plunger.

It is quite important that operating-chairs of the class described be held in a stationary position after they have been elevated or lowered. By swinging lever 5 rearwardly to the position shown in Fig. 2, finger 12 will be disposed within passageway 3. A somewhat farther rearward swinging movement of lever 5 will cause the finger to engage block 16, spring 18 resisting a movement of the block, and if the lever is swung rearwardly still farther, block 16 will be disengaged from the wall of the cylinder, the resistance of spring 18 being overcome, and the plunger may then be revolved, raised or lowered in the cylinder.

At 21 is indicated a recess or passageway formed in the side wall of the plunger to open upon its bottom; the length of the recess, longitudinally of the plunger is somewhat greater than the combined thickness of the piston and the bottom of the plunger, so that when the piston moves to its lowermost position in the plunger, recess 21 will provide a passageway for the upward movement of oil from the cylinder within the plunger. By reason of the described construction, to lower the plunger, the operator may swing hand-lever 5 rearwardly, as above mentioned, and since the upper face of the piston will then be disposed below the upper part of passageway 21, said passageway will be unobstructed, and oil may flow upwardly, and block 16 will be disengaged from the wall of the cylinder with the result that, on account of the weight of the plunger and parts mounted thereon, said plunger will slide downwardly in the cylinder. When the plunger has been lowered to the desired altitude, the operator, by a slight forward swinging movement of the hand lever, may cause the piston to be raised above the upper end of passageway 21; this prevents any further flow of oil through the passageway from the cylinder into the plunger, and the block of the detent member will again engage the wall of the

cylinder to hold the parts in rigid relation. To elevate the plunger within the cylinder, hand-lever 5 may be swung forwardly and rearwardly a few times, pump-valve 9 operating in the usual manner; and since the action of suction pumps is well known, no explanation is required, except to state that while the plunger moves upwardly, the end of block 16 will remain in engagement with the wall of the cylinder and will drag or slide upwardly thereon. During the operation of pumping for the purpose of elevating the plunger, the piston is caused to reciprocate within a suitable range somewhat above the bottom of the plunger, the uppermost position of the piston at this time being as shown in Fig. 3. The extent of the rearward swing of hand-lever 5 while pumping, however, is not important, for if, at this time, block 16 is disengaged from the wall of the cylinder by the finger 12, occasioned by an extreme rearward throw of hand-lever 5, it will be understood that upon the reverse swinging movement of lever 5, block 16 will immediately engage the wall of the cylinder and will detain the plunger from a downward sliding movement. If recess 21 is formed to provide a considerable length transversely of the wall of member 2, the descent of this member within the cylinder may be comparatively rapid. It will be understood, of course, that during this downward movement of member 2, no oil passes through valve 9, since the compression of oil in the cylinder will cause this valve to be closed.

Crank-arm 11 may be of any suitable length to determine the required extent of the longitudinal movement of the piston within the plunger. By means of set-screw 22 an adjustment may be made so that the piston will be disposed below the upper end of recess 21, when hand-lever 5 is thrown rearwardly, as and for the purpose above mentioned.

At 23 is indicated the reclining-rod. It is disposed at right angles to and below shaft 6 at the side of member 2, opposite to hand-lever 5. Rod 23 is quite generally employed in connection with the manufacture of barbers' chairs, and the subject is so well understood that no particular explanation is needed. It may be stated, however, that it is a necessary requirement that this reclining rod shall have a longitudinal movement at the time the back of the chair is swung rearwardly to a reclining position; also that a gripping device be provided so that said rod 23 may be held in a stationary position, to sustain the back of the chair at the desired inclination, when it has been swung rearwardly. Devices will now be described for the control of the jaws or wings of this gripping member, the same to be operated by hand lever 5.

At 24 is indicated the gripping-member for the reclining-rod, consisting of a supporting-plate 25 substantially of L-shape, to provide an upright arm 26 for a mounting upon the outer end of shaft 6, and to provide a substantially horizontal arm 27 to be disposed below said shaft. A wing or hood 28 is provided having a pivotal connection 29 of its inner side with the terminal of arm 27, and formed midway between its ends with an arch 30 extending parallel with and adapted to overhang shaft 6. The supporting-plate 25 and the arch-shaped wing 28, in effect, constitute the two members of a hinge, the pintle thereof being the pivot 29. A concaved bearing 31 is formed to extend transversely in the upper face of arm 27 near the pivot 29, and a corresponding bearing 32 is formed in the lower face of wing 28 within which bearings the reclining-rod 23 may be seated. At 33 are indicated a pair of upright bolts traversing wing 28, at the sides of its arched wall 30. The bolts also traverse and are secured to arm 27. Spiral springs 34 are mounted upon the bolts, the lower ends of the springs bearing upon wing 28 and their upper ends bearing upon the bolt heads. The lower side of arch 30 is formed with an inwardly projecting, longitudinal ridge or contact-member 35, and upon shaft 6 is mounted the lug 36 adapted to engage member 35 during a part of the rotatable movement of said shaft, this engagement being when hand-lever 5 is swung forwardly. As thus described the weight of the gripping device is sustained by shaft 6, and this shaft may be rotated in its bearings in arm 26 of the L-shaped plate. On account of the compression of springs 34, wing 28 is compressed or moved in a direction of arm 27 of the L-shaped plate, and therefore the reclining-rod 23 is normally held between and in rigid relation with walls 31 and 32 to prevent a longitudinal movement of this rod. When it is desired to release rod 23 so that it may have a longitudinal movement, the operator swings hand-lever 5 forwardly until lug 36 engages ridge 35, as shown in Fig. 3; and an additional, limited, forwardly swinging movement of the hand-lever will cause an upward swinging movement of wing 28, with the result that rod 23 will be released for the above purpose. It will thus be seen that all of the parts operate automatically with the exception of the parts actuated by the hand-lever. An operator therefore has complete control of all of the required movements of the chair by simply moving the hand-lever forwardly or rearwardly.

Having fully described my invention, what I claim and desire to secure by Letters Patent is,—

1. Mechanism for the purpose described, comprising, in combination with a cylinder,

a plunger mounted therein and having an apertured bottom, a detent-block pivotally mounted upon the plunger and normally in engagement with the cylinder; a piston provided with a valve and a contact-finger; means to reciprocate the piston, said contact finger during one of the reciprocatory movements traversing said aperture in the bottom of the plunger for disengaging the detent block from said cylinder.

2. Mechanism for the purpose described, comprising, in combination with a cylinder, a plunger mounted therein and provided with a pivotally mounted detent-block normally in engagement with the cylinder; a piston provided with a valve and adapted to be reciprocated longitudinally within the plunger, and a contact finger movable by one of the reciprocatory movements of the piston for disengaging the detent block from said cylinder.

3. Mechanism for the purpose described, comprising, in combination with a cylinder, a plunger mounted therein, a transversely disposed detent-block pivotally mounted between its ends and supported by the plunger, a spring mounted upon one end of the detent block for causing normal engagement of the opposite end of said block with the cylinder, a piston provided with a valve and adapted to be reciprocated longitudinally within the plunger, and a contact member movable by the reciprocatory movements of the piston for disengaging the detent block from said cylinder.

4. Mechanism for the purpose described, comprising, in combination with a cylinder, a plunger mounted therein and having an aperture formed in its bottom and a recess formed in its side wall to open upon its bottom; a piston provided with a valve and adapted to be reciprocated longitudinally within the plunger, said piston during one of its reciprocative movements being disposed below the upper part of said recess to provide a passageway communicating with the interior of the cylinder and the interior of the plunger.

5. Mechanism for the purpose described, comprising, in combination with a cylinder, a plunger mounted therein and formed with a recess opening upon its lower terminal, a piston provided with a valve and adapted to be reciprocated longitudinally of the plunger, said piston during one of its reciprocative movements being disposed below the upper part of said recess to provide a passageway communicating with the interior of the cylinder and with the interior part of the plunger above said piston.

6. Mechanism for the purpose described, comprising, in combination with a cylinder, a plunger mounted therein, said plunger having an aperture formed in its bottom and a recess formed in its side wall to open

upon its bottom; a piston provided with a valve and adapted to be reciprocated longitudinally within the plunger; a detent block carried by the plunger and adapted to be disposed normally in engagement with the wall of the cylinder; a contact-member arranged to have a movement from one of the reciprocative movements of the piston to cause a disengagement of the detent member from the wall of the cylinder, said piston during a part of said reciprocative movement being disposed below the upper part of said recess to provide a passageway communicating with the interior part of the cylinder and the interior part of the plunger.

7. Mechanism for the purpose described, comprising, in combination with an upright cylinder having a closed bottom, a plunger mounted therein and formed with a recess opening upon its lower terminal; a piston provided with a valve and adapted to be reciprocated longitudinally within the plunger; a detent-block mounted upon the plunger and adapted to be normally in engagement with the wall of the cylinder; a contact-member movable by one of the reciprocative movements of the piston for disengagement of the detent-block from said wall, the piston during a part of said reciprocative movement being disposed below the upper part of said recess to provide a passageway in communication with the cylinder and with that part of the plunger above said piston.

8. Operating mechanism for chairs of the class described, comprising, in combination with an upright cylinder, a plunger mounted therein, a piston mounted in the plunger, and a reclining-rod, a rotatable operating shaft connected with and adapted to reciprocate the piston, said operating shaft being provided with a lug and having bearings in the plunger; a gripping-member for the reclining-rod comprising a plate of substantially L-shape mounted upon the operating shaft, a wing pivotally mounted upon said plate and having a part formed as an arcuate wall with a projection, said wing being pivotally mounted upon said plate and normally in engagement with said reclining-rod; a detent-block carried by the plunger normally in engagement with the cylinder, a contact piece movable by one of the reciprocative movements of the plunger for disengaging the detent-block from said cyl-

inder, the lug of said operating shaft during one of said rotatable movements, being adapted to make engagement with the projection of said arcuate wall for disengaging said wing from the reclining-rod.

9. Operating mechanism for chairs of the class described, comprising, in combination with a cylinder, a plunger mounted therein; a reclining-rod; an operating shaft in suitable bearings and adapted to have rotatable movements; pivotally-connected wings supported by the operating shaft in normal engagement with and for preventing longitudinal movements of the reclining-rod; a piston disposed in the plunger and adapted to have longitudinal reciprocation by the rotatable movements of the operating shaft; a detent-block mounted upon the plunger normally in engagement with the cylinder; a contact-finger movable by one of the longitudinal movements of the piston for disengaging the detent-block from the cylinder; devices connected with the operating shaft and one of the pivotally connected wings whereby said wings may be disengaged from the reclining-rod by one of the rotatable movements of the operating shaft.

10. In combination with a cylinder, a plunger therein; an operating shaft mounted upon the plunger and adapted to have a reciprocative rotary movement; a reclining-rod; a detent-block mounted upon the plunger normally in engagement with the cylinder; a piston mounted within the plunger and provided with a connection with the operating shaft; a pair of pivotally connected wings supported by the operating shaft normally engaging and tending to prevent longitudinal movements of the reclining-rod; devices connected with the operating shaft and one of the pivotally connected wings whereby said wings may be disengaged from the reclining-rod by the rotatable movement in one direction of the operating shaft; said piston, by the rotatable movement in the opposite direction of said operating shaft being adapted to cause disengagement of the detent-block from the cylinder.

In testimony whereof I have affixed my signature in presence of two witnesses.

KNUT MOLUF.

Witnesses:

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A. F. CLARK.