

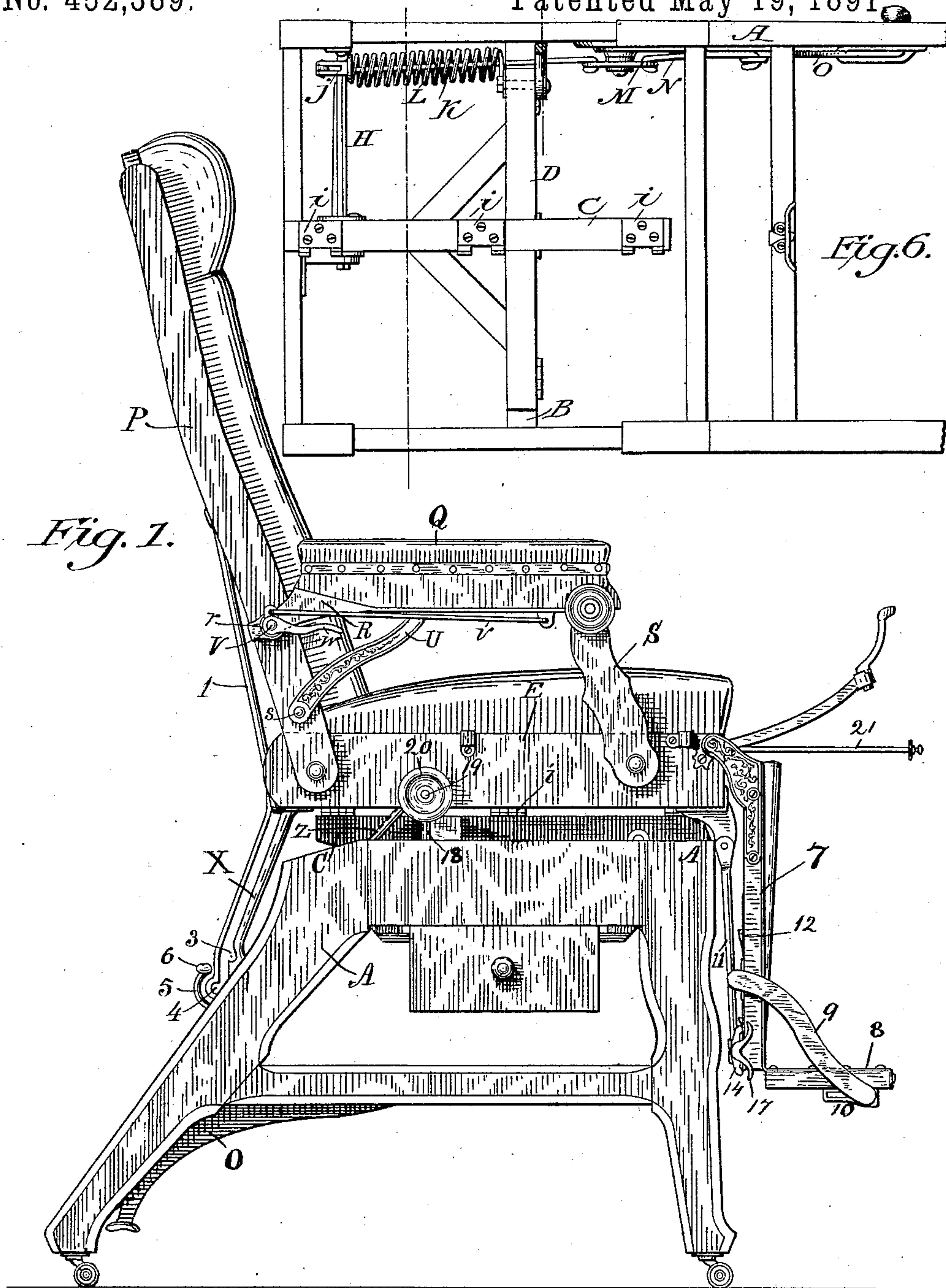
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4 Sheets—Sheet 1.

R. B. ROBERTS, W. D. ALLISON & C. N. LEONARD.
SURGEON'S OPERATING CHAIR.

No. 452,389.

Patented May 19, 1891.



WITNESSES:

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Frank A. Jacob.

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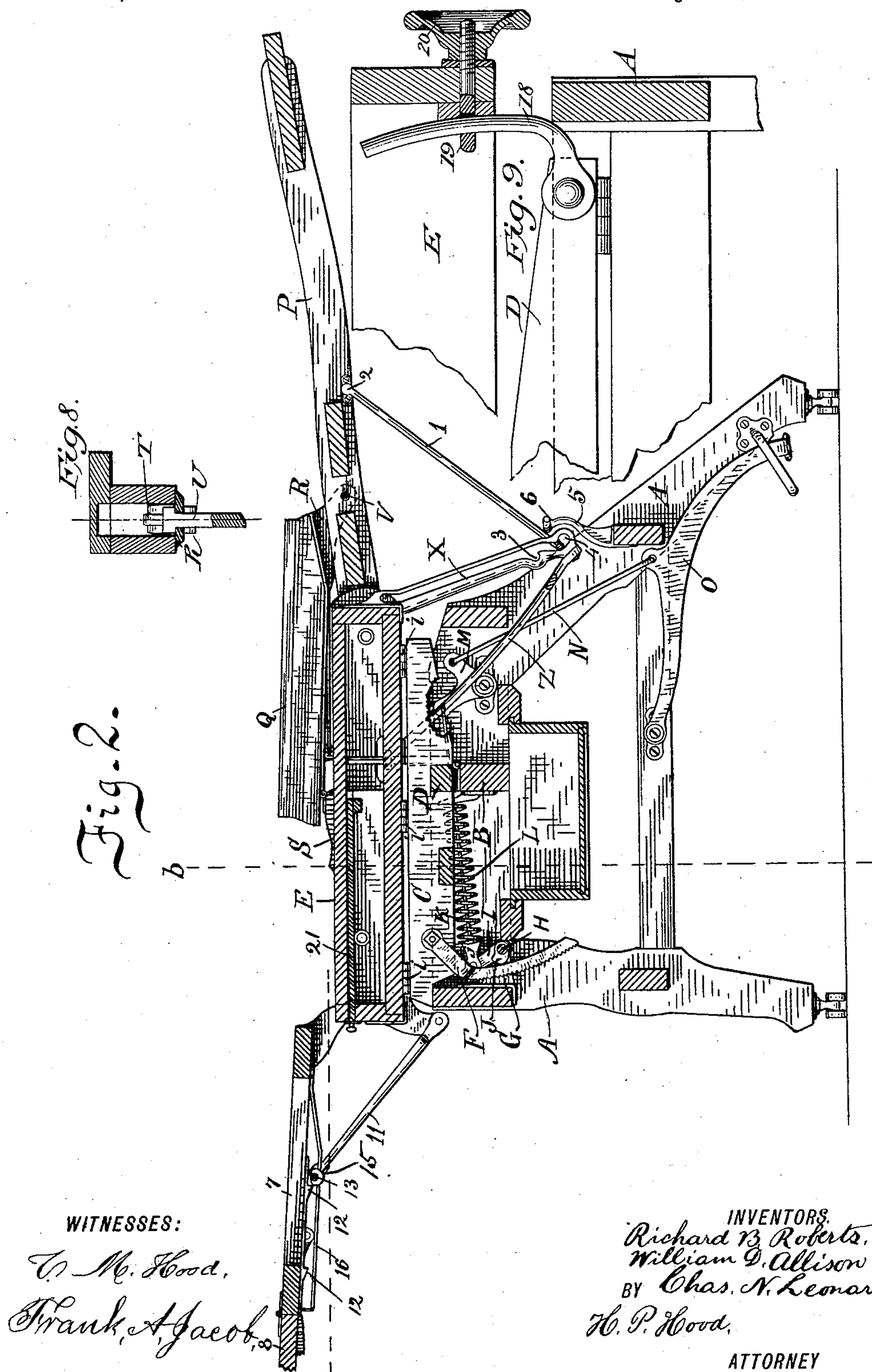
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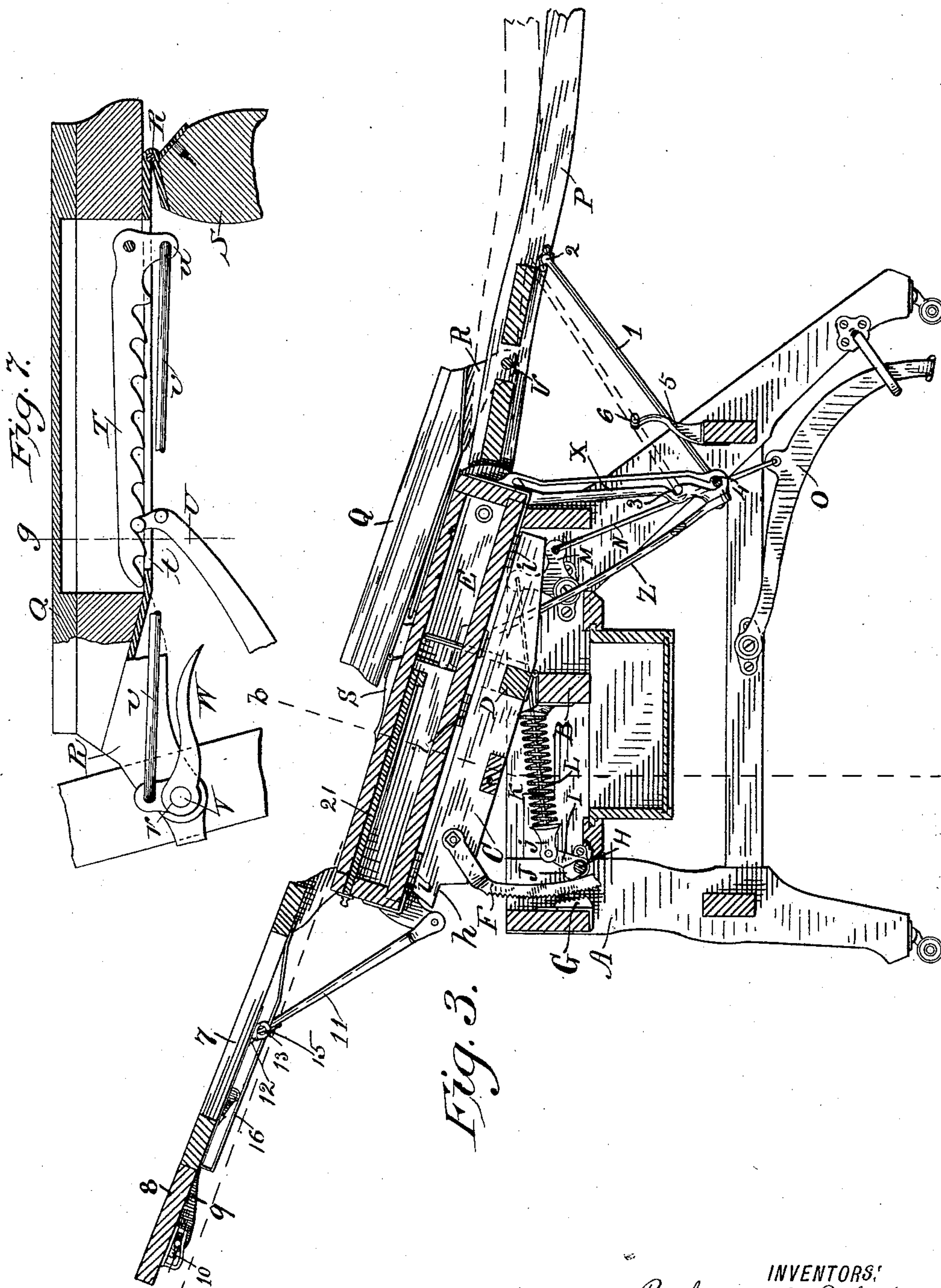
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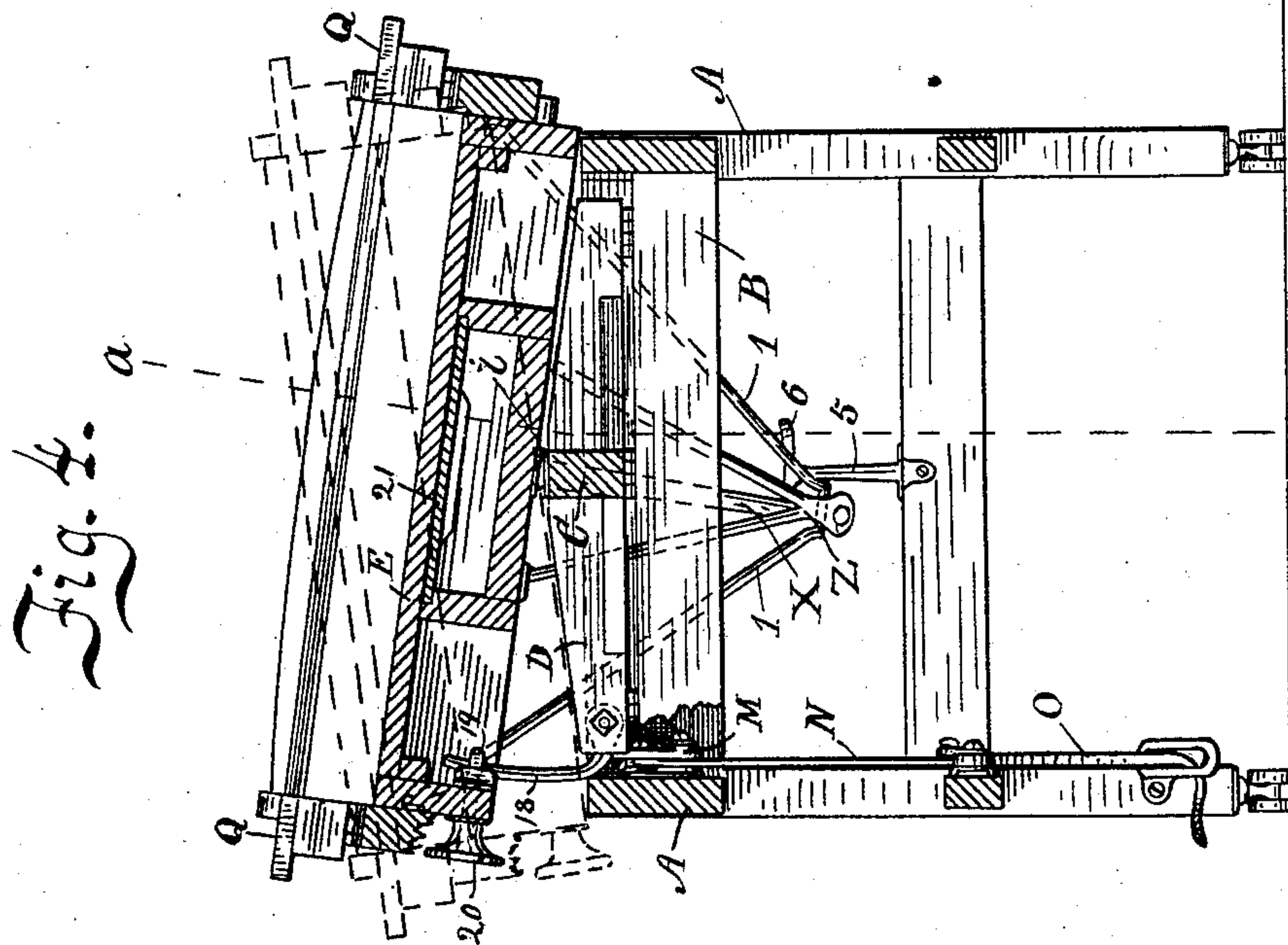
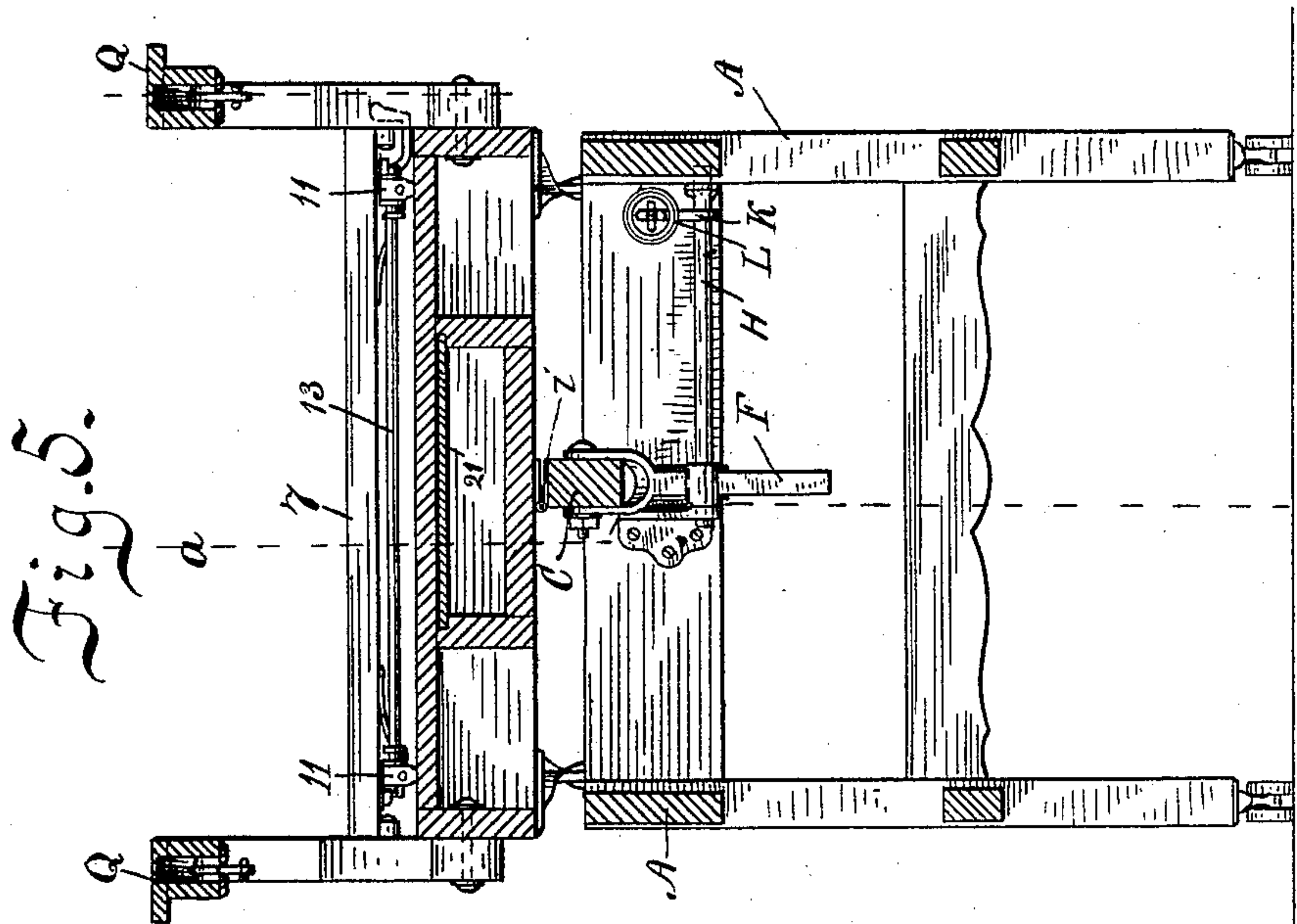
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UNITED STATES PATENT OFFICE.

RICHARD B. ROBERTS, WILLIAM D. ALLISON, AND CHARLES N. LEONARD, OF INDIANAPOLIS, INDIANA; SAID LEONARD ASSIGNOR TO SAID ROBERTS AND ALLISON.

SURGEON'S OPERATING-CHAIR.

SPECIFICATION forming part of Letters Patent No. 452,389, dated May 19, 1891.

Application filed March 27, 1890. Serial No. 345,470. (No model.)

To all whom it may concern:

Be it known that we, RICHARD B. ROBERTS, WILLIAM D. ALLISON, and CHARLES N. LEONARD, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Surgeons' Operating-Chairs, of which the following is a specification.

Our invention relates to certain new and useful improvements in surgeons' operating-chairs, whereby the position of the patient may be more perfectly adjusted and controlled; and the objects of our improvements are, first, to provide improved means for tilting the seat of the chair both backward and sidewise and for securing it in position, and, second, to provide improved means for adjusting and securing the back relatively to the seat.

The accompanying drawings illustrate our invention.

Figure 1 represents a side elevation showing the chair in its normal position. Fig. 2 represents a central longitudinal section, as at *a*, Figs. 4 and 5, showing the seat in its normal position and the back and leg-rest extended. Fig. 3 represents the same section as Fig. 2, showing the seat tilted backward. Fig. 4 represents a transverse section at *b*, Fig. 2, looking toward the back, and showing the seat tilted sidewise. Fig. 5 represents the same section looking toward the front and showing the seat level. Fig. 6 represents a plan of the base-frame on which the seat is mounted. Fig. 7 represents, on an enlarged scale, a longitudinal section of one of the arms of the chair, showing part of the mechanism for adjusting and supporting the back. Fig. 8 represents a transverse section of the arm at *g*, Fig. 7. Fig. 9 represents, on an enlarged scale, a detail showing the means for controlling the sidewise tilting of the seat.

In the drawings, A is the base-frame forming the support on which the other parts are mounted. To the upper side of a central cross-beam B of the frame A a tilting frame consisting two beams C and D, crossing each other at a right angle, is hinged so as to lie level or tilt backward upon the base-frame. One end of beam C is notched, as at *h*, so as

to rest upon the front beam of frame A, and thus prevent the tilting frame from tilting forward. Beam D of the tilting frame is tapered on the upper side each way from beam C, as clearly shown in Fig. 4, so as to permit a limited sidewise tilting of the seat E. The seat E is a flat box-like structure, which is mounted on the beam C of the tilting frame by means of hinges *i i i*, secured to the upper edge of the beam and the under side of the seat along the center, so as to permit the seat to tilt sidewise, as shown in full and dotted lines in Fig. 4.

For the purpose of adjustably controlling the backward tilting of the seat we pivot to the front end of beam C a serrated segment-bar F, which engages a similarly-serrated block G, rigidly secured to the base-frame. Bar F is held normally in engagement with block G by the following means: A shaft H extends back of the segment-bar across the base-frame, and is mounted at its ends so as to turn in the frame. An arm I is secured to shaft H near one end, and a cam J is secured to the shaft in the center opposite bar F. A rod K, having an enlarged head *j*, is connected at one end to arm I, and passes backward from thence through the cross-beam B of the base-frame. A spiral spring L is mounted on rod K between the head *j* and beam B in such a manner as to force cam J constantly against the segment-bar F. Rod K is connected to a bell-crank lever M, pivoted to the base-frame, and this is connected by a rod N with a foot-lever O, and shaft H is turned and cam J thus withdrawn from bar F by the depression of lever O.

The back P is pivoted at its lower end to the seat so as to swing in a vertical plane thereon.

The arms Q Q are each mounted on a casting R, which is pivoted at one end to the back at *r* and is hinged at the front end to the upper end of a short standard S, which is pivoted at the lower end to the seat. For the purpose of holding the back adjustably in position relative to the seat within certain limits we pivot to the upper sides of each of the castings R, near the front end, a ratchet-toothed rack-bar T, which extends backward

along the casting within the arm and engages a pawl U, which is pivoted to the back at s and projects its free end through a slot t in the casting R.

5 For the purpose of enabling the operator to raise the rack-bars T in both arms simultaneously and at the same time hold the back and control its adjustment, each rack-bar is provided with a lug u, which extends from a
10 point opposite the pivot which connects the rack-bar with the casting R downward through the slot t. A shaft V extends across the back of the chair and through the casting R on each side, thus forming the
15 pivot on which the casting turns, and projects through on each edge of the back far enough to receive on each end a bell-crank lever W, which is rigidly secured to the shaft. The short arms of the levers W are connected
20 with the lugs u of the respective rack-bars by a connecting-rod, as at v, the whole arrangement being such that the operator holding the back with one hand may raise the lever W on either side of the chair, and thus raise
25 the rack-bars T in both arms simultaneously.

It is desirable at times to swing the back down parallel or nearly parallel with the seat, and in such a position the rack-bars T and pawls U cease to be operative to sustain
30 and properly support the back, and we therefore support the back in its extended position by means of a slotted arm X, which is secured to the back edge of the seat and extends downward and backward therefrom,
35 and is further supported and secured by a forked brace Z, secured to the seat and to the lower end of the arm. A bail 1 is pivoted at its ends to opposite edges of the back, as at 2, and the bight of the bail slides in the slot
40 of arm X and rests in a notch 3 or at the bottom of the slot, as shown in Fig. 2.

It is desirable at times to tilt the seat and the extended back backward, as shown in Fig. 3, and it is desirable that when in this
45 position the back should be rigidly locked in position relatively to the seat, so that by lifting on the back, the back and seat may move as one. For this purpose we form at the lower end of the slot in arm X, an outwardly-extended notch 4, into which the bight
50 of the bail 1 falls and locks the back in position.

When the seat is in its normal position, as shown in Fig. 2, it is desirable to prevent the
55 bight of the bail from falling into notch 4, so that the back may be tilted independently of the seat. For this purpose we secure to the base-frame a guard 5, having at the top a transverse bar 6, of such length that it will
60 engage the divergent arms of the bail near its bight, as in Fig. 2, but will pass between said arms at a point farther from the bight, as in Fig. 3. Pivoted to the front edge of the seat is the leg-rest 7, having at its free
65 end a short hinged section 8, which may be extended so as to form a parallel continuation of the leg-rest, as shown in Fig. 3, or be

supported at a right angle thereto to form a step for mounting the chair, as shown in Fig. 1, by means of a pair of swinging links, like
70 9, arranged one on each side, which are pivoted at one end to the body of the rest and engage a catch 10 on the step. The leg-rest is supported at different angles relatively to the seat by means of a pair of brace-rods 11
75 11, which are pivoted at one end to the seat and engage with their free ends two series of stops 12 12, secured to the under side of the leg-rest. For the purpose of operating the free ends of rods 11 simultaneously they are
80 connected by a shaft 13, having a bearing in each rod, and having secured thereto at each end, so as to turn with the rod, trip-levers 14, and provided also with a pair of grooved collars 15. Rods 11 are held normally against the
85 under side of the leg-rest and in engagement with the stops 12 by wire springs 16 16, which rest in the grooved collars 15 and are secured at each end to the rest. Shaft 13 is turned
90 by means of a handle 17, so that one end of the trip-levers 14 strikes the under side of the leg-rest and forces the shaft and both of the rods 11 downward, thus disengaging them simultaneously from the stops.

The seat is held in position sidewise, either
95 when level or when tilted, by means of the device illustrated in Figs. 4 and 9. A bent bar 18 is pivoted at one end to the cross-timber D of the tilting frame on which the seat is mounted. Bar 18 is bent to form an arc of
100 a circle substantially concentric with the hinges i, which connect the seat to the tilting frame, and it passes through an eyebolt 19, mounted on the frame of the seat and carrying a hand-nut 20 on the outer projecting
105 end. When the bar 18 is released, the seat and the back and leg-rest, which are connected to the seat, may be tilted to either side and secured in position by turning the hand-nut so as to clamp the bar against the
110 inside of the seat-frame.

In treating rectal diseases it is necessary to have the several instruments used readily at hand, and for this purpose we provide in the middle of the front edge of the seat a
115 sliding shelf 21, which may be drawn out when the leg-rest is lowered, as in Fig. 1, or may be slid into the seat out of the way to permit the raising of the leg-rest, as in Fig. 2.

The operation of the several parts is obvious from the above detailed description.
120

We are aware that a somewhat similar mechanism for controlling the relation of the back to the seat and to the arms is shown in United States Letters Patent No. 263,395, and
125 we do not claim anything therein shown; but our device differs from that in using a continuous casting forming a pivoted and hinged support on which the arm is mounted, and in the means provided for raising the rack-bars
130 simultaneously.

We claim as our invention—

1. In a chair, the combination, with the seat, the back pivoted thereto near its edge, the

pair of standards pivoted to the seat near its front edge, the pair of arm-castings, each pivoted at one end to the back and hinged at the other end to one of said standards, the 5 pair of rack-bars pivoted to the arm-castings and each having a downwardly-projecting lug at its pivoted end, the pair of pawls, each pivoted at one end to the back and arranged to engage a rack-bar with the other end, the 10 shaft passing through the back of the chair from edge to edge and forming a pivotal support for both of the arm-castings, the pair of bell-crank levers secured to the opposite ends of said shaft, and the pair of connecting-rods 15 connecting said bell-crank levers and rack-bars, whereby the chair-back is adjustably secured relatively to the seat and the rack-bars are simultaneously lifted, as set forth.

2. In a chair, the combination of the base- 20 frame, the seat hinged to the base-frame so as to tilt thereon, the slotted arm rigidly secured to the seat projecting downward therefrom and provided with notch 4, the back pivoted to the seat and arranged to swing in 25 a vertical plane thereon, the bail pivoted at its ends to the back and arranged to engage the notch in the arm, and the guard secured

to the base-frame and arranged to project into the path of the bail, whereby the bail is prevented from entering the notch when the 30 seat is in its normal position, all substantially as and for the purpose set forth.

3. In a chair, the combination of the base-frame having the cross-beam B, the tilting 35 frame consisting of beams C D, constructed and arranged as described, the hinges connecting beam B and said tilting frame, means, substantially as shown and described, for adjustably holding said tilting frame in position on the base-frame, seat E, hinges *ii*, con- 40 necting said seat and the top of beam C of the tilting frame, the bent bar 18, pivoted to the tilting frame, eyebolt 19, and hand-nut 20, mounted on the seat and arranged to engage said bent bar, all arranged to co-operate 45 substantially as specified, whereby the seat is tilted and adjustably secured at different angles, as set forth.

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