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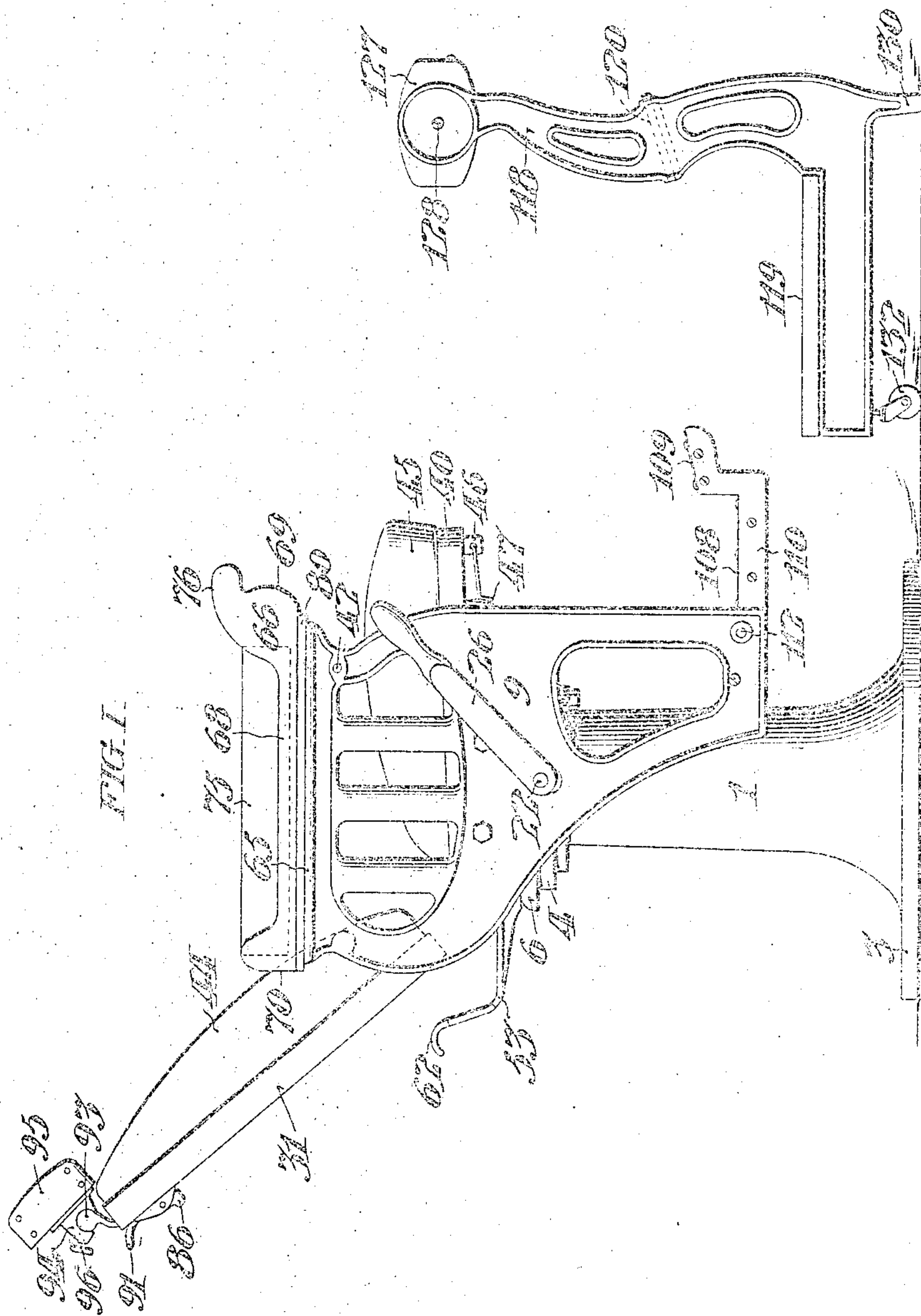
PATENTED AUG. 6, 1907.

S. KLINE.

ADJUSTABLE CHAIR.

APPLICATION FILED JULY 20, 1904.

4 SHEETS—SHEET 1.



WITNESSES:

Clifton C. Halliwell
John C. Bergner.

INVENTOR:

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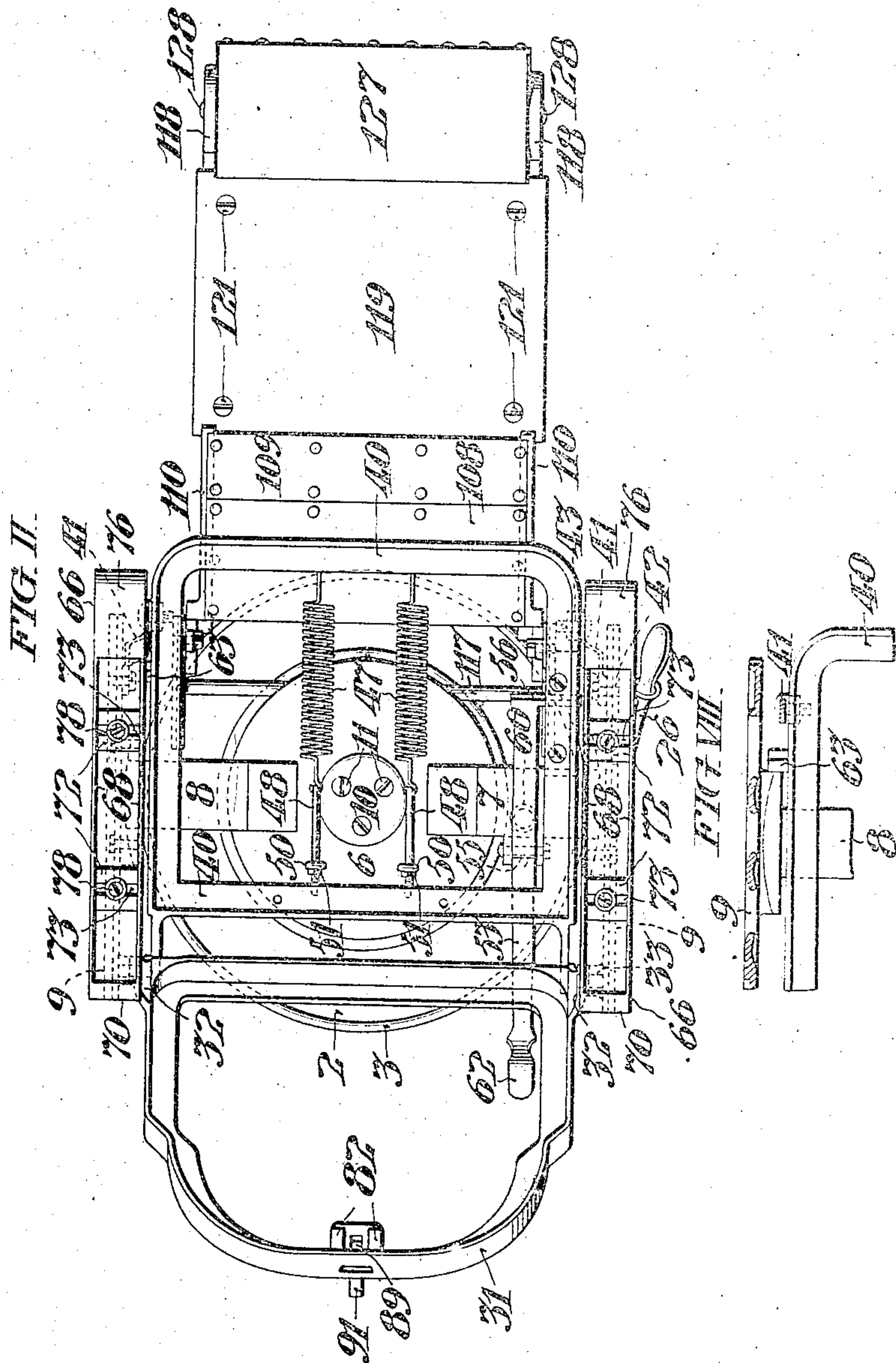
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4 SHEETS—SHEET 2.



WITNESSES:

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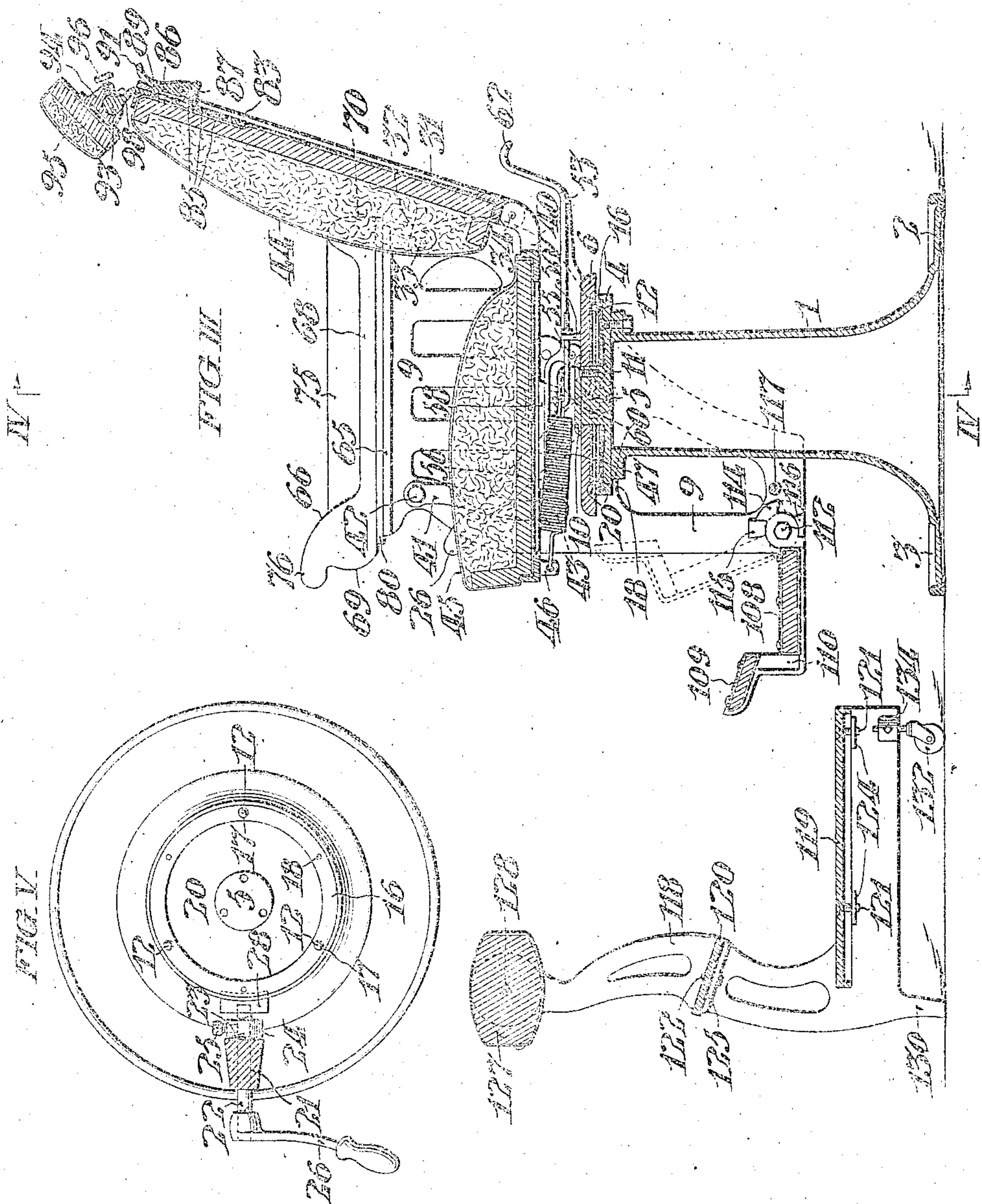
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4 SHEETS—SHEET 3.



WITNESSES:

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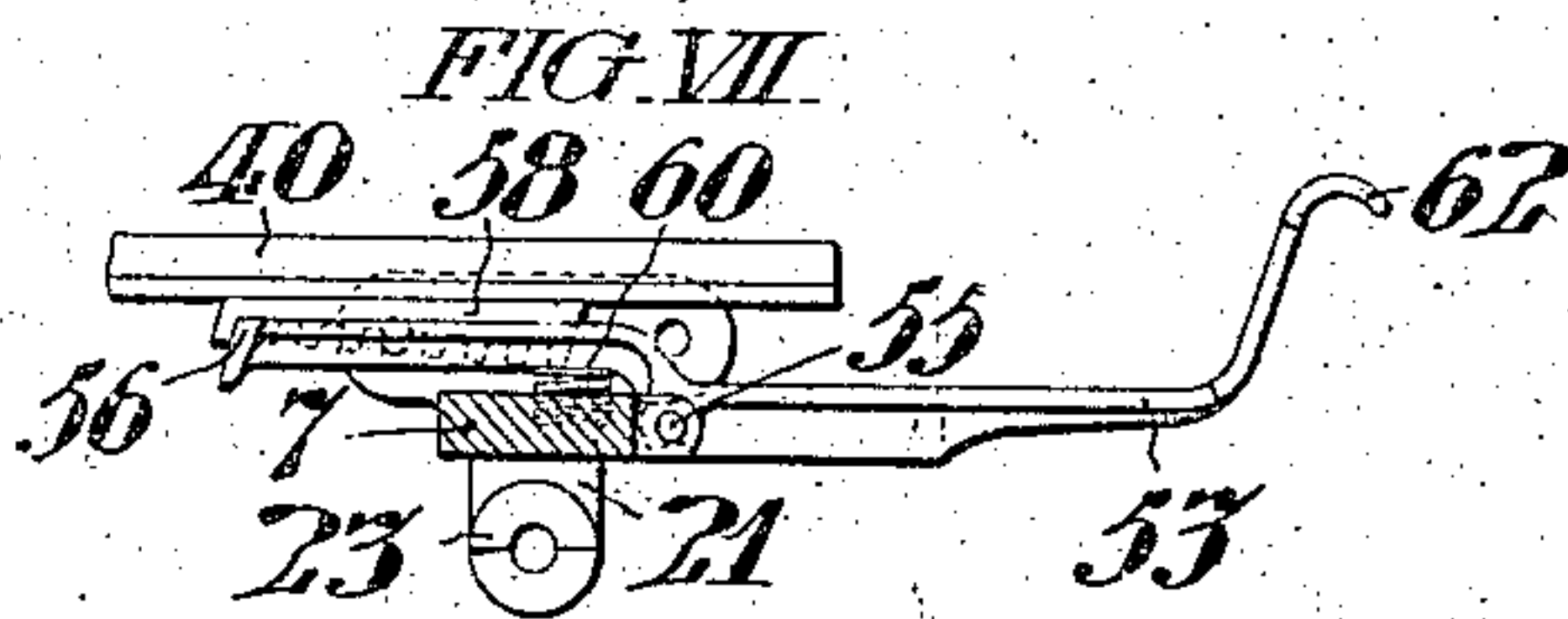
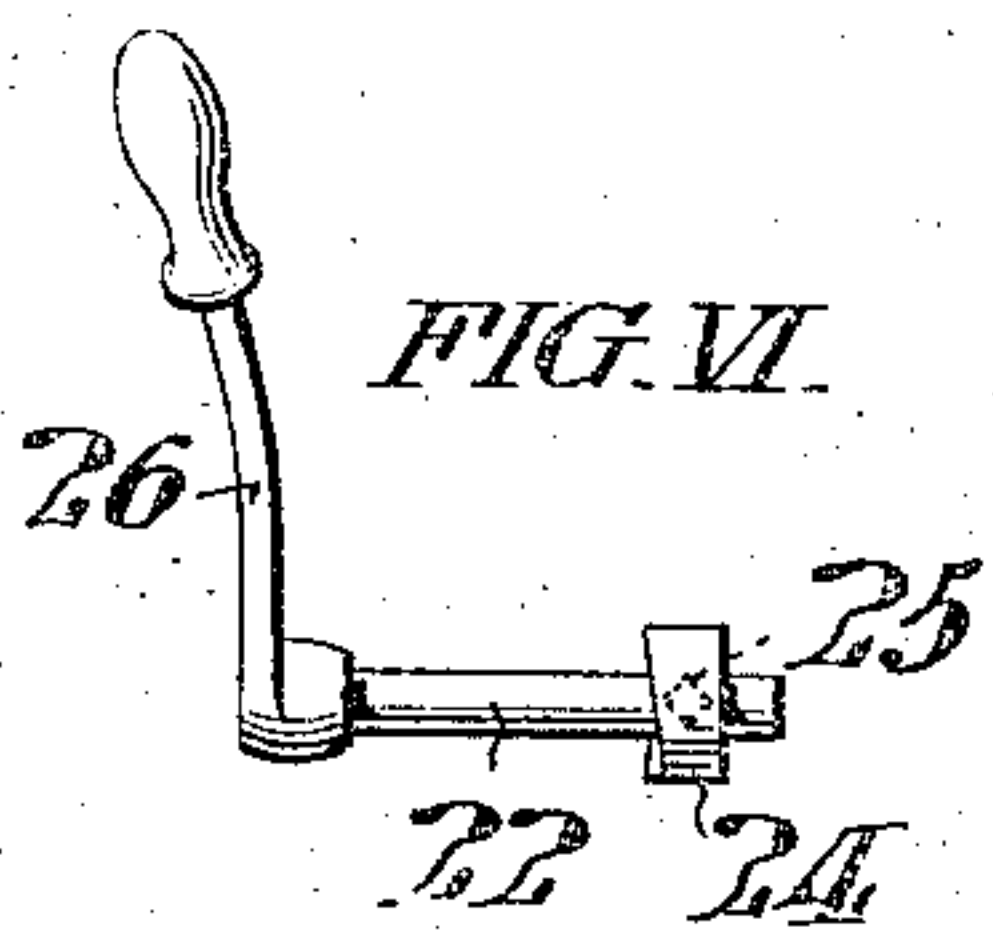
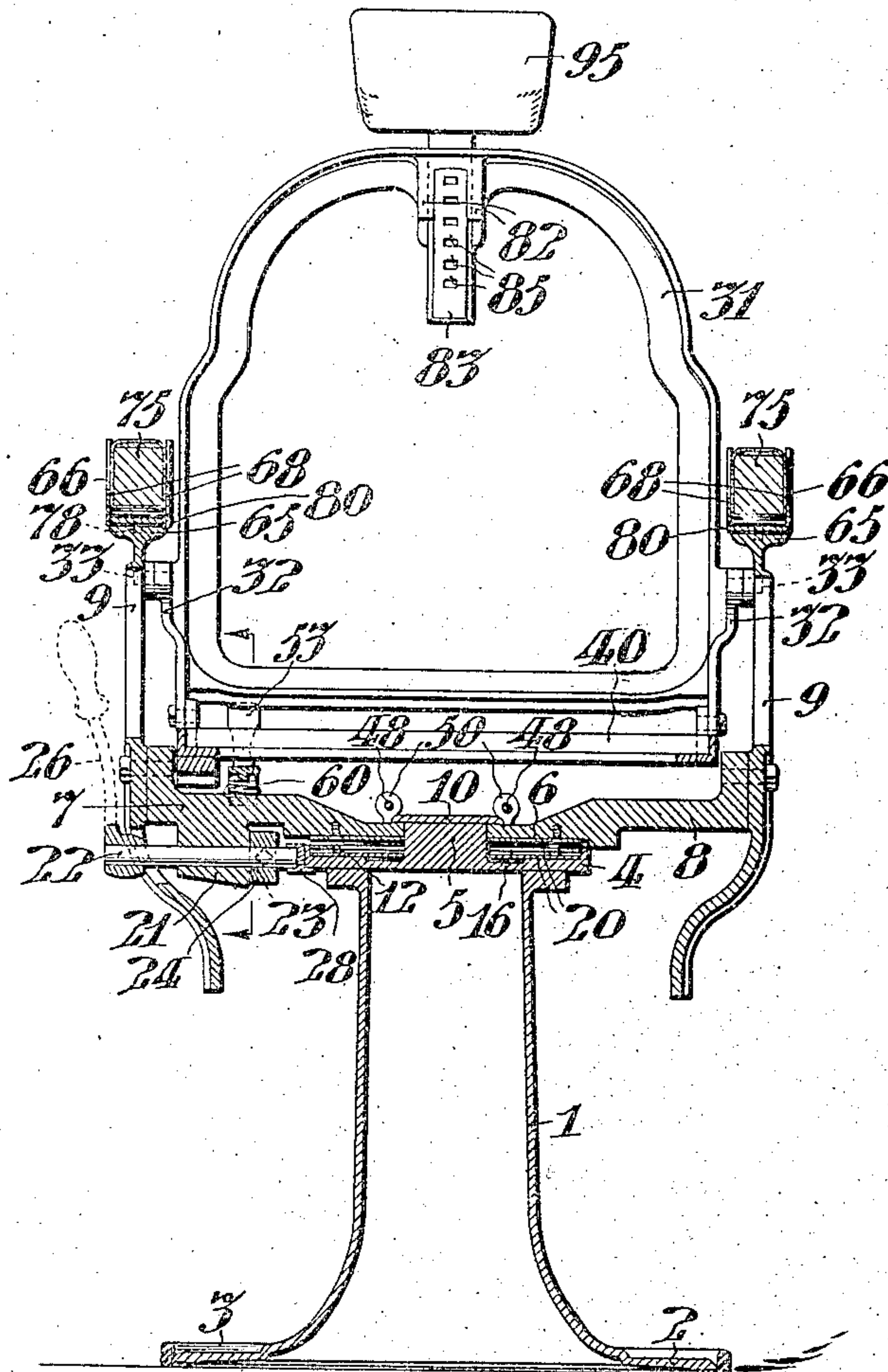
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4 SHEETS—SHEET 4.

FIG. IV



WITNESSES:
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UNITED STATES PATENT OFFICE.

SAMUEL KLINE, OF TRENTON, NEW JERSEY.

ADJUSTABLE CHAIR.

No. 862,565.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed July 20, 1904. Serial No. 217,342.

To all whom it may concern:

Be it known that I, SAMUEL KLINE, of Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Adjustable Chairs, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to a chair particularly designed for barbers use, comprising a frame mounted to rotate on a base and support adjustable seat and back members, in cooperative relation with a combined foot and leg rest, which latter is so constructed as to be readily adjusted to and from the chair to accommodate persons of different heights; the foot rest being stationary and the leg rest oscillatory.

As hereinafter described, my invention comprehends such a relation of the chair back and seat members, that when the back is tilted to the position in which the occupant reclines, the seat is automatically and differentially inclined upward toward the front of the chair; but when the back is returned to its normal or substantially upright position said seat returns to a horizontal position. Such automatic differential adjustment of the chair seat and back affords the occupant a sense of comfort and security, which has heretofore only been obtainable by separate manipulation and adjustment of the back and seat.

My invention comprehends the various novel features of construction and arrangement herein more definitely specified.

In the accompanying drawings, Figure I, is a side elevation of a chair, in reclining position, conveniently embodying my improvements. Fig. II, is a plan view of said chair, as shown in Fig. I, with the upholstered seat, back, and arm rests removed. Fig. III, is a central vertical sectional view of said chair, in its normal position. Fig. IV, is a vertical sectional view of said chair, taken on the line IV—IV in Fig. III. Fig. V, is a plan view of the chair base, showing the clamping mechanism and its support. Fig. VI, is a detail view of the clamping lever with its cam. Fig. VII, is a detail view of the lever and rack for securing said chair in adjusted position. Fig. VIII, is a fragmentary plan view of the frame.

In said figures, the base 1, has its bottom flange 2, resting upon the rubber annulus 3, which frictionally engages a floor having a tiled or other slippery surface, to prevent displacement of the chair and to protect said base flange from defacement by the shoes of the operator. Said base 1, is capped with a stationary horizontal bearing cup 4, having a central hub 5, on which the inverted bearing cup 6, is arranged to rotate. Said cup 6, has horizontal transverse arms 7, and 8, to which the chair side frames 9, are attached. Said bearing 6, is retained by the plate 10, which is

secured in stationary position on the hub 5, by the screws 11. Between said bearing cups 4, and 6, is a series of bearing balls 12, conveniently three in number. As shown in Fig. V, said balls 12, are properly spaced by a ball retaining or spacing ring 16, provided with apertures 17, to receive said balls, and lugs 18, on its under side intermediate of said apertures arranged to support said ring centrally between said bearing cups. I find it desirable to provide said cups 4, and 6, with race plates 20, of hardened metal. Said arm 7, is provided with the depending lug 21, in which the shaft 22, is journaled. Said lug 21, has the cam surface 23, upon its inner side, which is engaged by the cam disk 24, fixed upon said shaft 22, by the set screw 25. Said shaft has the operating lever 26, extending to a convenient position at the side of the chair, so that by turning said lever 26, and shaft 22, to the right, (referring to Fig. I,) said shaft 22, is thrust inward by the cooperation of the cams 23, and 24, so as to press the loosely mounted friction shoe 28, against the periphery of the stationary bearing cup 4, thereby clamping the rotary portion of the chair in any desired position of rotation.

The chair back frame 31, is provided with integral arms 32, which are pivoted for oscillation on the side frames 9, at 33, and support the rear end of the seat frame 40, by the pivotal connections 34. The front end of said seat frame 40, is suspended from the side frames 9, by the depending links 41, which are connected to the frames 9, by the pivots 42, and to said frame 40, by the pivots 43. Said back frame 31, and seat frame 40, are conveniently formed of L shaped cross section, so that their respective cushions 44, and 45, are normally retained rigidly therein, but may be readily removed.

It will be observed that the connections above described are such that when the back frame 31, is inclined as shown in Fig. I, the seat frame 40, is differentially inclined. Said seat frame 40, is provided at its front end with lugs 46, with which the springs 47, are respectively connected. Said springs 47, having their rear ends connected by the bolts 48, with the lugs 50, on the cup 6. Said bolts are provided with nuts 51, whereby the tension of said springs may be accurately adjusted so as to counterbalance the weight of the occupant of the chair and tend to normally return the chair to the position shown in Fig. II. Said back and seat frames may be conveniently locked in any desired position of inclination against the tension of said springs 47, by the pawl lever 53, which is fulcrumed at 55, on the arm 7, its forward end being provided with the tooth 56, arranged to engage the teeth of the rack 58, secured to the under side of the seat frame 40. Said lever is normally presented in engagement with said rack by the spring 60. Said lever 53, is conveniently operated by the handle 62, which ex-

tends upwardly at the back of the chair; and, the movement of the back and seat is limited by the lug 63, on the frame 40, which is arranged to contact with the arm 8, in its rearward movement and with the link 41, in its forward movement.

The horizontal flanges 65, at the top of the side frames 9, are adapted to support arm rest frames 66, in adjustable relation. Each of said frames 66, comprises a hollow casting having side walls 68, front and back walls 69, and 70; and bottom transverse webs 72, the latter having slots 73. Each of said frames 66, is adapted to retain a removable upholstered arm rest block 75, and the front ends 76, of said frames 66, are extended upwardly above said blocks 75, to conveniently support the hands of the occupant of the chair and thereby receive the severe wear that is usually received by the front ends of the upholstered portion of chair arm rests. Said arm rest frames 66, are adjustably secured on the flanges 65, of the frames 9, by screws 78, extending through the slots 73, in threaded engagement with said flanges and, I find it desirable to interpose upholstered slabs 80, between said flanges 65, and said arm rest frames 66, both to ornament the chair and afford a resilient support for the arm rests.

The adjustable arrangement of the arm rest frames 66, above described, avoids the usual necessity for accuracy in drilling the holes for the connections between the arm rests and the chair frame. The removable arm rest blocks 75, are advantageous in that they may be readily removed and replaced when it is necessary to clean them; it being also noted that they are symmetrical and may be reversed in position. The projecting ends 76, of the arm rest frames are advantageous in that they protect the upholstered ends of the blocks 75, and prevent uneven wear of the latter.

The upper central portion of the back frame 31, is provided with the parallel guides 82, in which the head rest supporting bar 83, is arranged to reciprocate. Said bar 83, is recessed to form a series of rack teeth 85, arranged to engage the pawl 86, which is pressed therein by the spring 87. Said pawl 86, has the tooth 89, so shaped that said rack bar 83, may be raised without manipulation of the pawl. However, it being necessary to manually withdraw said pawl 86, when it is desired to lower the rack bar 83, the pawl is provided with the projecting finger 91.

The upper part of the rack bar 83, extends forwardly over the frame 31, and has its cylindrical end 93, fitted in the socket 94, of the head rest 95, so that the latter may be supported at any predetermined angle of inclination by the thumb screw 96, which latter enters the circumferential groove 98, in the end 93, so as to permit said head rest 95, to be oscillated without lateral movement.

Said chair is conveniently provided with the step or child's foot rest, comprising the horizontal member 108, and inclined member 109, both supported in the side frames 110, which latter are connected at their rear ends to the side frames 9, by the pivot studs 112. The lugs 114, on said step frames 110, are arranged to encounter the lugs 115, on the chair side frames 9, which lugs support said step in the normal lowered position shown in full lines in Fig. III. Said step may be upturned to the idle position shown in dotted lines in said figure, but has its upward movement limited by the

lugs 114, encountering the lugs 116, on said frames 9. Said frames 9, are rigidly connected by the cross bar 117, adjacent to said pivot studs 112.

The chair above described is advantageous in that it may be rotated to receive and discharge an occupant within a space limited to substantially the width of the chair; thus permitting the employment of the maximum number of chairs in a given area. In order to retain said advantage and also provide a suitable foot and leg rest for the occupant, it is necessary to support such rests independently of the rotary portion of the chair. Therefore, I find it convenient to provide a combined foot and leg rest, which while structurally independent of the chair base is normally retained in stationary relation therewith, independently of the rotary portion of the chair; and is also adapted to be adjusted toward and away from said base so as to cooperate with said seat in the accommodation of persons of different heights.

The combined foot and leg rest comprises the side frames 118, which are rigidly connected by the lower and upper foot rests 119, and 120, secured therein by bolts 121, and 122, respectively entered through flanges 124, and 125, on said frames. The leg rest 127, which is conveniently formed of an upholstered block, is mounted in the upper portion of said frames 118, so as to be oscillated to any desired angle upon trunnions 128, at the opposite ends thereof; it being understood that said leg rest is retained in any desired position of angular adjustment by frictional engagement with the opposite frames 118. Said frames have front feet 130, which normally retain said combined foot and leg rest in any desired position of adjustment relatively to the chair base 1, by frictional engagement with the floor, and, the rear ends of said frames are provided with casters 132, which are mounted to rotate in sockets 134, in said frames. It is to be understood that said foot and leg rest may be tilted to raise its feet 130, from the floor, whenever it is desired to shift it toward or away from the chair base 1, upon said casters.

It is to be noted that the head rest and arm rest herein described, are respectively claimed in divisional Letters Patent of the United States #823,792, dated June 19, 1906, and #828,670, dated August 14, 1906.

I do not desire to limit myself to the precise details of construction and arrangement herein shown and described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention.

I claim:—

1. In an adjustable chair, the combination with a base; of a frame mounted to rotate on said base; a back member having forwardly extending integral arms pivoted on said frame; a reciprocatory seat member directly pivoted at its rear end to said back member; links pivoted at their upper ends to said frame, and at their lower ends to the front portion of said seat member; a lug carried by said seat member arranged to limit its movement forward and backward; a rack rigidly secured to said seat member; and, a pawl-lever pivoted for vertical oscillation on said frame, arranged to engage said rack, substantially as set forth.
2. In an adjustable chair, the combination with a base; of a frame mounted to rotate on said base; adjustable means arranged to frictionally engage said base and frame and secure the latter in any selected position of rotation; a back member having forwardly extending integral arms pivoted on said frame; a seat member pivoted at its rear

and directly to the back member; links pivoted at their upper ends to said frame and at their lower ends to the front portion of said seat member; a spring connecting the seat and frame, arranged to draw said seat rearwardly; a rack rigidly secured to the seat member; and, a lever pivoted intermediate of its length on said frame, for vertical oscillation, having a tooth at one end arranged to engage said rack in different positions, substantially as set forth.

10 3. In a chair of the class described, the combination with a stationary base; of a rotary frame on said base, provided with a seat; a shaft journaled on said rotary frame; a stationary cam face on said frame; a cam disk on said shaft in operative relation with said stationary cam face; means detachably securing said disk on said shaft; a shoe on said shaft arranged to engage said base; and, an operating handle on said shaft, substantially as set forth.

20 4. In a chair of the class described, the combination with a stationary base; of a bearing cup stationary on said base and having a circular periphery; a rotary frame on said base provided with a seat; a shaft journaled on

said rotary frame; a stationary cam face on said frame; a cam disk on said shaft in operative relation with said stationary cam face; a shoe on said shaft arranged to engage the periphery of said bearing cup; and an operating handle on said shaft, substantially as set forth. 25

5. In a chair of the class described, the combination with a stationary base; of a rotary frame on said base, provided with a seat; a shaft journaled on said rotary frame; a stationary cam face on said frame; a cam disk on said shaft in operative relation with said stationary cam face; means detachably securing said disk on said shaft; a shoe swiveled on the inner end of said shaft, arranged to engage said base; and, an operating handle on said shaft, substantially as set forth. 30 35

In testimony whereof, I have hereunto signed my name at Philadelphia, in the State of Pennsylvania, this 19th day of July, 1904.

SAMUEL KLINE.

Witnesses:

ARTHUR E. PAIGE,
E. L. FULLERTON.