

(No Model.)

4 Sheets—Sheet 1.

A. P. GOULD.
DENTAL CHAIR.

No. 491,098.

Patented Feb. 7, 1893.

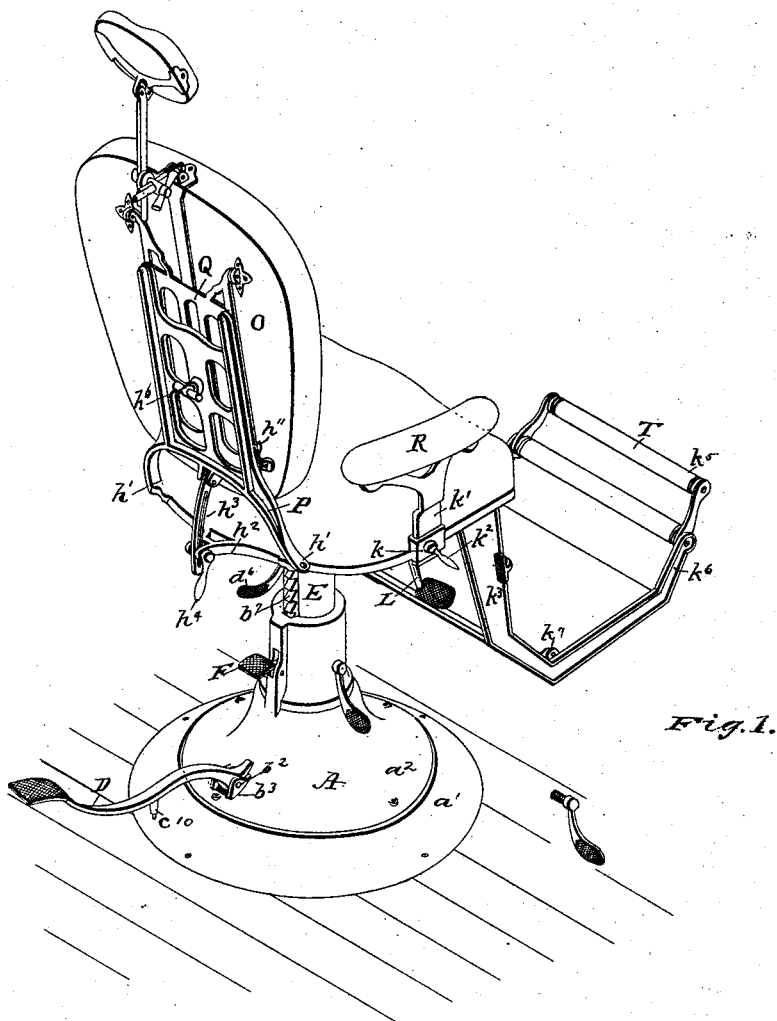


Fig. 1.

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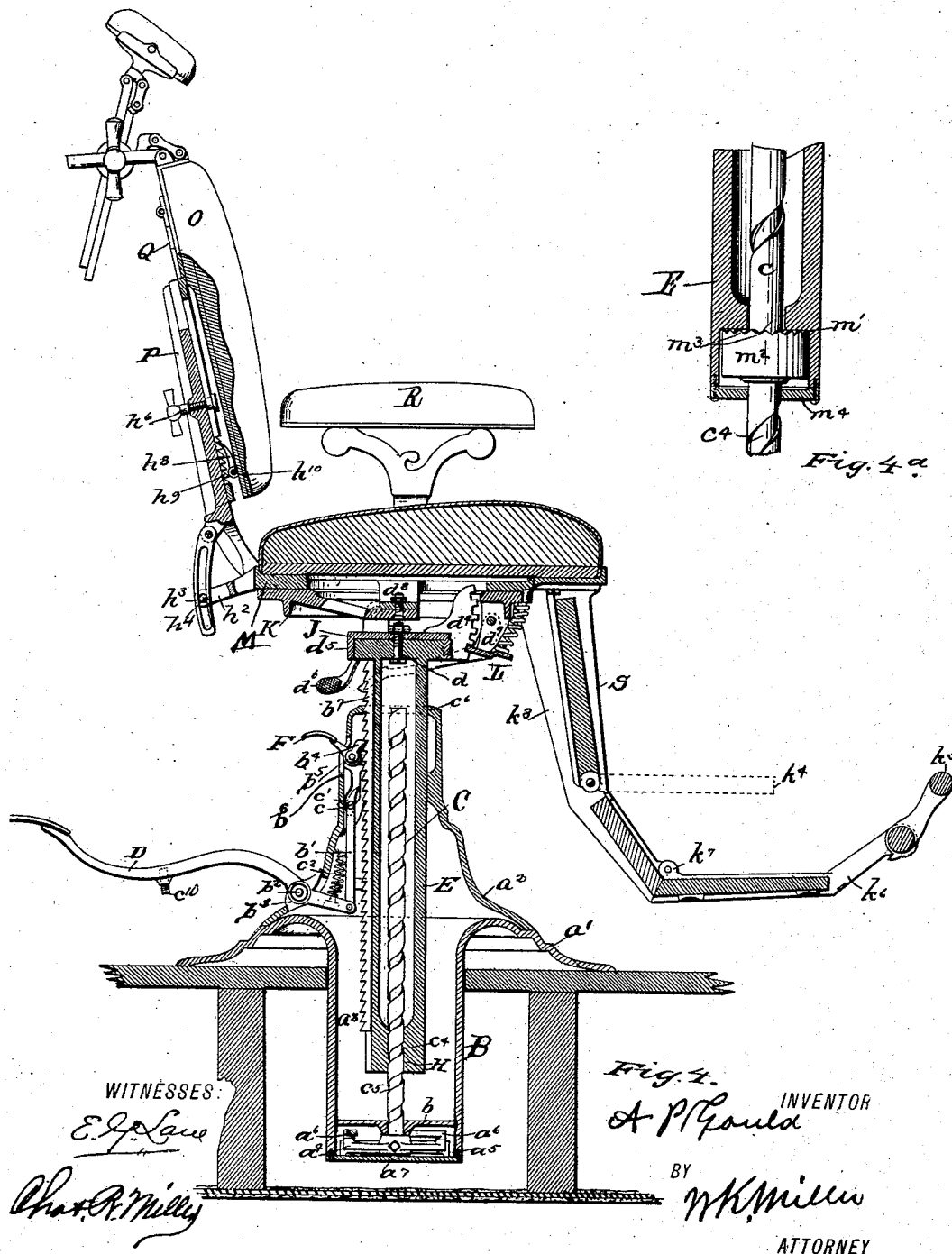
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4 Sheets—Sheet 3.

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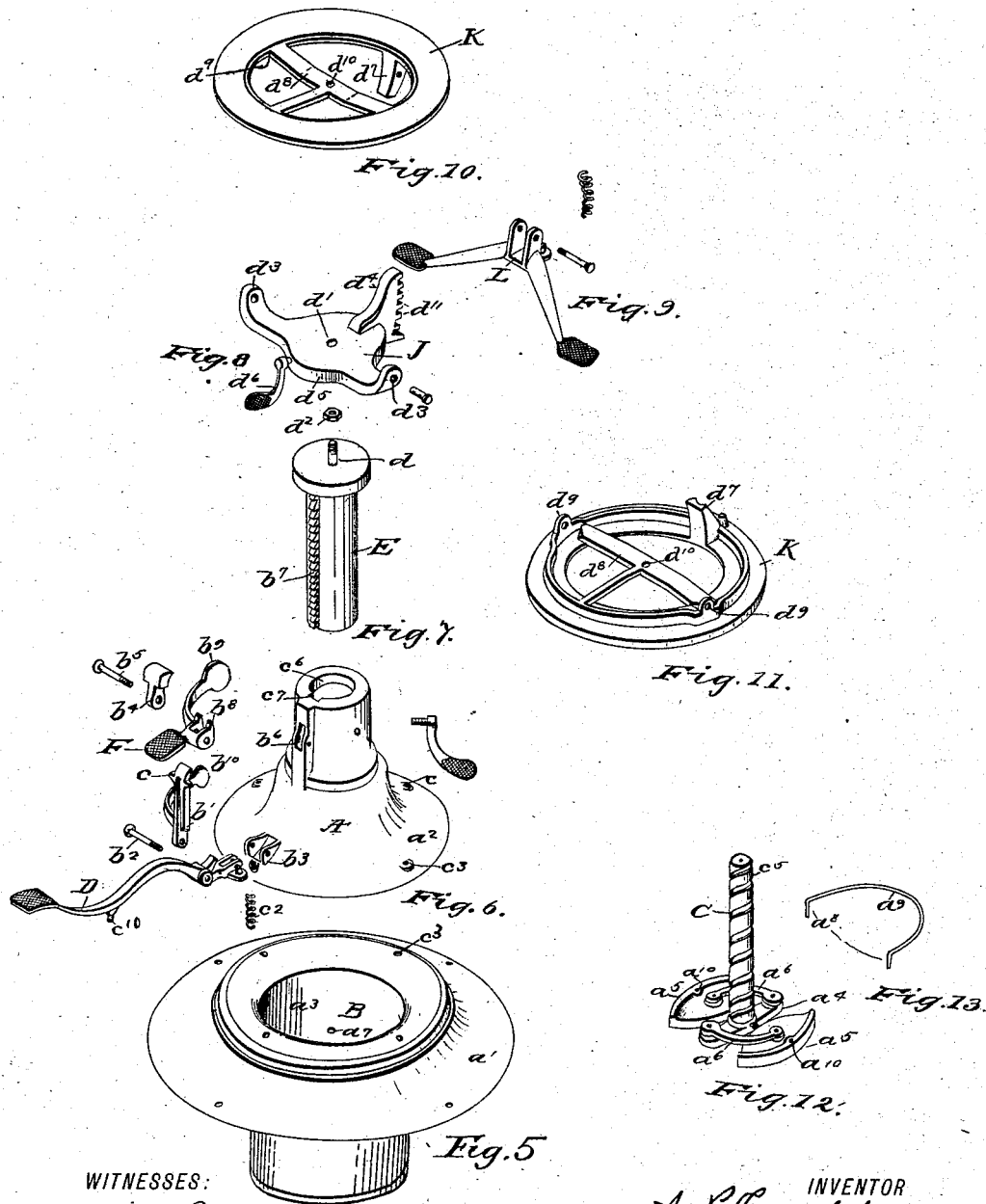
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UNITED STATES PATENT OFFICE.

AARON P. GOULD, OF CANTON, OHIO.

DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 491,098, dated February 7, 1893.

Application filed January 17, 1890. Serial No. 337,260. (No model.)

To all whom it may concern:

Be it known that I, AARON P. GOULD, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Dental and Surgical Chairs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to an improvement in dental, surgical and other chairs.

The object of my invention is to produce a chair that will be comparatively simple in construction and which may be easily manipulated without inconvenience to the patient.

With these ends in view, my invention consists of certain features of construction and combination of parts as will be hereinafter described and pointed out in the claims.

Figure 1. of the accompanying drawings is a view in perspective of a dental chair, illustrating my invention. Fig. 2. is a similar view of the base and adjustable body support, from rear and above. Fig. 3. is a similar view of the chair body, from rear and below. Fig. 3^a is a detail perspective view of one of the pawls. Fig. 4. a section taken vertically through the base, the lowering mechanism, the body of the chair and through a portion of the back. Fig. 4^a is a detail view partly in section of a modification hereinafter described. Fig. 5. is a perspective of the lower portion of the base. Fig. 6. is a similar view comprising the upper portion of the base, and the levers and pawls belonging thereto. Fig. 7. is a similar view of the vertically adjustable body, supporting stem. Fig. 8. is a similar view of the body supporting yoke and rack. Fig. 9. is a similar view of foot lever and pawl. Fig. 10. a similar view of a circular way or turn table. Fig. 11. is a similar view showing the lower portion of the turn table inverted. Fig. 12. is a similar view of screw and brake shoes, and: Fig. 13. a similar view of the spring hereinafter explained.

Similar letters of reference indicate corresponding parts in all of the figures of the drawings.

The base A is composed of the bottom portion a^1 and a conical upper portion a^2 . In the central portion of the former, there is

provided a depressed portion, forming a well or cup B, having an annular wall a^3 .

The screw C shown in Fig. 12 has at its bottom portion a cross bar a^4 to which the brake shoes a^5 are held in a yielding relation to the said cross bar a^4 by the yielding arms a^6 , which for the purposes of this case are shown as pivotally secured to the cross bar and the shoes. The arms a^6 are set oblique to the axis of the screw C, and hence when the screw is turned in one direction will throw the brakes outward, and when in the opposite direction will draw them inward. The outside diameter of said shoes is adapted to the inside diameter of the wall a^3 of the well B. The screw with brake-shoes attached as shown is placed in the well B, the lower end of the screw resting in the central step box a^7 , the ends a^8 of a spring a^9 , shown in Fig. 13, being placed in perforation a^{10} in the shoes a^5 . The energy of said spring should be just enough to hold the shoes in position against the wall a^3 . A cross bar as b shown in Fig. 4 having a central perforation is passed over the screw and secured in position, by which the screw is held against vertical movement during the operation of raising the chair.

The foot-lever D, carrying the pawl b^1 , is pivotally secured to the upper portion a^2 of the base A, by the screw-bolt b^2 , and lugs b^3 ; and the foot-lever F and pawl b^4 are secured to the same base-portion by the use of the screw-bolt b^5 passing through cheeks b^6 as shown assembled in Fig. 4, and in detail in Fig. 6. The pawl b^4 is provided with an enlarged upper end-portion, the weight of which will cause the pawl to drop into engagement with the rack-teeth b^7 on the supporting stem E, the foot-lever F having prongs b^8 to engage the upper end-portion of the pawl b^4 by which the pawl may be disengaged from said rack-teeth, and the said foot-lever is provided with a weighted portion b^9 projected inwardly from the pivoted connection, by the weight of which the prongs b^8 are held out of engagement with the pawl when said pawl is engaging the rack-teeth to support stem E in elevated adjustment. The pawl b^1 is also provided with a weighted arm b^{10} by which it may be held in engagement with the rack b^7 and to further secure such engagement trunnions c are projected from each side of the upper end-portion

tion of said pawl, that are adapted to slide in oblique grooves c' by which the pawl is directed into the notches b' .

A spring c^2 is provided as shown, one end of which rests on the inner portion of the foot-lever D, the other end on a stud, and the energy of the spring is exerted downwardly to raise the free end of the lever and to disengage the pawl from the rack. To gage the vibration of the lever to arrest the upper movement of the pawl b' , just as the pawl b^4 drops into engagement with the rack-teeth, a screw c^{10} is placed in a threaded perforation in the lever D, and adapted to be turned in or out, the lower end striking against the base to arrest the movement, at the proper time.

The upper portion a^2 of the base A, with levers and pawls attached as hereinbefore stated is placed over the stem E, and secured by bolts passed through perforations c^3 to the base-portion a' . The hollow stem E having at its lower end-portion H, a female screw thread c^4 to correspond with the thread c^5 of the screw C, is passed into the aperture c^6 of the upper portion a^2 of the base A, the rack b^7 passing into the vertical groove c^7 , the screw C passing through the female-screw threaded-portion H into the cylindrical portion of the stem E, the said stem being held from rotation by the rack b^7 in the groove c^7 . The downward movement of the stem with its screw-thread c^4 engaging the thread c^5 of the screw C will rotate the screw C with its cross-bar a^4 and brake-shoes c^5 thereto attached, and the centrifugal force will cause the shoes to move laterally against the wall a^3 of the well B, thereby resisting the rotary movement of the screw C, for the purpose of regulating the downward movement of the stem E and the chair thereon.

The yoke J shown in Fig. 8 has a pivot or axle connection with the stem E, which may be made by an upwardly-projected portion of the stem, or by the use of the bolt d shown in Fig. 7. The bolt d is passed through a perforation d' about central to the yoke, and is secured therein by the nut d^2 . The yoke is also provided with outwardly and upwardly-extending arms d^3 and a rack d^4 , and there is also provided a downwardly-projected flange portion d^5 which in this case is annular and embraces the top portion of the stem E. In said flange portion is provided a set screw d^6 by which the yoke is locked against rotation.

A circular way or turn-table K, is provided having a depending lug d^7 cross bar d^8 and lugs d^9 , said lugs being diametrically opposite or thereabout; and in said cross bar or central portion of said turn table there is provided a perforation d^{10} , central to said table, and to said depending lug d^7 is pivotally secured a spring actuated pawl L, to engage the teeth d^{11} of the rack d^4 . The turn table K is pivotally secured, by its lugs d^9 , to the upper end portion of the arms d^3 of the yoke J by which

the table and chair body attached thereto may be tipped or rocked forward and backward, about said pivotal connection, or laterally over the base A, and be secured in adjustment by the pawl L engaging the teeth d^{11} of the rack d^4 .

In the seat frame M of the chair body is provided a circular turn table N, adapted to rest and turn upon the turn-table K, to which it is secured by a bolt passed through the perforation d^{10} in the bar d^8 and perforation d^{13} in cross bar d^{14} , in the seat frame, by which the two portions K and M are pivotally secured together for horizontal rotation and in the rear upper portion of the latter is provided a set screw h that may be adjusted against the outer edge of the table K to prevent rotation. The back frame P is pivoted to the rear portion of the frame M, as shown at h' , said frame M having a rearwardly projected portion h^2 bifurcated at its rear end, the prongs to embrace a rod h^3 pivotally secured to the back frame P, a set screw h^4 passed through the prongs h^2 and by which they are secured against the rod or bar h^3 to hold the back in desired adjustment.

To provide for vertical adjustment of the upholstered portion O of the back, a frame Q is provided having a sliding connection with the frame P, and to hold the frame Q in vertical adjustment, a turn screw h^6 is provided by which the said frame Q is held in adjustment with the frame P, the upper portion of the frame P having a pivoted connection with the back O, as shown at h^7 by which the lower portion of said back may be swung out at its lower end portion, and be held in such desired outward adjustment, by the pawl h^8 engaging the rack h^9 . The said pawl is operated by the rod h^{10} and handle h^{11} ; these parts are shown disconnected from the chair in the drawing designated as Fig. 3^a.

On the side portion of the seat frame is provided a loop or socket k in which the arm rest R is supported by its arm k' which is secured in desired vertical adjustment by the screw k^2 .

In Fig. 4 I have shown an intermediate foot rest S folded up between the side bars k^3 of the foot rest frame, which for use may be dropped down to a point shown by the dotted lines k^4 and to provide for convenience in shipping, I have provided a folding extension portion k^5 which in use will occupy the position shown, in Figs. 1, 3 and 4 and when not in use, or packed for shipping, the projection k^5 may be folded in and down upon the bottom portion k^6 which may be folded up against the front portion of the foot rest support by means of the hinge k^7 at the lower end portion of the side bars k^3 .

In Fig. 4 of the drawings I have shown the female screw thread integral with the stem E.

I will now call attention to the construction shown in Fig. 4^a partly sectional, in which I have shown the lower end of the stem chambered out a distance to form a cylindrical portion m in which is provided a series of de-

pending rack teeth m' , and in said cylindrical portion a cylindrical nut m^2 , having a thread similar to the thread c^4 on screw C, and a series of upwardly projected rack teeth m^3 to
 5 correspond with and engage the depending teeth m' , the wall of the cylinder m being of greater length than the length of the nut, or if preferred the teeth m' and m^3 may be omitted allowing the friction between the nut m^2
 10 and the stem E to hold the nut from rotation. When the stem E is raised by the foot lever D, the teeth m' will be drawn out of engagement with the teeth m^3 the nut m^2 resting on the cylinder head m^4 in which position it is
 15 free to be rotated about the screw C, which will be held from rotation by the brake shoes a^5 engaging the wall a^3 , of the well B, and when the stem E is lowered the teeth m' will engage the teeth m^3 and hold the nut m^2 in
 20 engagement with the stem E, the downward movement of which will then rotate the screw C, and brake a^5 as hereinafter described.

In operation the chair may be raised by operating the foot lever D, as hereinbefore stated, and lowered by disengaging the pawl b^4 from the rack b^7 . The chair resting wholly on the thread c^4 of stem E or on nut m^2 , the said thread c^4 or nut m^2 resting on the thread c^5 of the screw C will rotate said screw, there-
 30 by throwing the brakes a^5 out against the wall of the well, to resist and regulate the descent of the chair, and when desired the chair body may be rotated horizontally about the base A, by means of the turn table K, or secured against rotation by the use of the set
 35 screw h or as occasion may require the chair, body may be adjusted at any desired angle within the limits of movement, and the body rotated about the base by allowing the yoke
 40 J to rotate on the upper end portion of the stem E, without raising or lowering the chair body, thus maintaining the elevation and angle of the chair with the patient thereon when rotated as beforestated to adjust the subject,
 45 for convenience or light, while in the chair.

Having thus fully described the nature and object of my invention, what I claim and desire to secure by Letters Patent is:—

1. The combination with the base having a
 50 central downwardly extending portion, forming a well or cup, having an annular wall and central step box at its lower end, and the upper portion superimposed upon and secured to said base, of the downwardly extend-
 55 ing supporting stem having a nut at its lower end, a screw journaled in said step box and engaging with the said nut, and a friction brake connected with said screw, substantially as described.

60 2. The combination with the base having a

central downwardly extending portion, forming a well or cup, with a step box at its lower end and the upper portion superimposed upon and secured to said base, of the downwardly
 65 extending supporting stem, having a nut at its lower end, a screw journaled in said step box and engaging said nut, the cross bar secured to the lower end of said screw, the arms connected with said cross bar and the friction shoes pivoted to said arms, substantially
 70 as described.

3. In a chair, the combination with the base, the conical portion secured thereto, and the supporting stem having a series of rack teeth, of the spring-actuated foot lever, the upward-
 75 ly extending pawl pivoted thereto, for operating on the rack a second foot lever provided with prongs and the pawl pivoted on such lever and engaged by said prongs to release it from the rack, substantially as described. 80

4. In a chair, the combination with the base and the conical portion secured thereto provided with oblique grooves in its inner surface and the supporting stem provided with
 85 rack teeth, of the spring-actuated foot lever having an upwardly projecting pawl for operating on the rack and provided with trunnions engaging with said oblique grooves, a second foot lever provided with prongs, and
 90 the pawl pivoted on such lever and engaged by said prongs to release it from the rack substantially as described.

5. In a chair, the combination with the base, the downwardly extending well or cup, the screw journaled in a step block connected
 95 with said well or cup and the supporting stem having a nut at its lower end, with which said screw engages, of the yoke supported by said stem and having a rotary movement in a horizontal plane, a turn table section pivoted to
 100 said yoke and a chair body supported in tilting adjustment with said yoke, substantially as described.

6. In a chair, the combination with the base, the annular well or cup formed integral there-
 105 with, provided with a step block and the screw journaled in said step block, of the supporting stem, having a cylindrical chamber in its lower end, the rack teeth formed therein and the nut having a screw-threaded aper-
 110 ture located in said chamber and provided with upwardly projecting teeth, adapted to engage with said rack teeth, substantially as described.

In testimony whereof I have hereunto set
 115 my hand this 2d day of December, A. D. 1889.

AARON P. GOULD.

Witnesses:

E. G. LANE,

W. K. MILLER.