

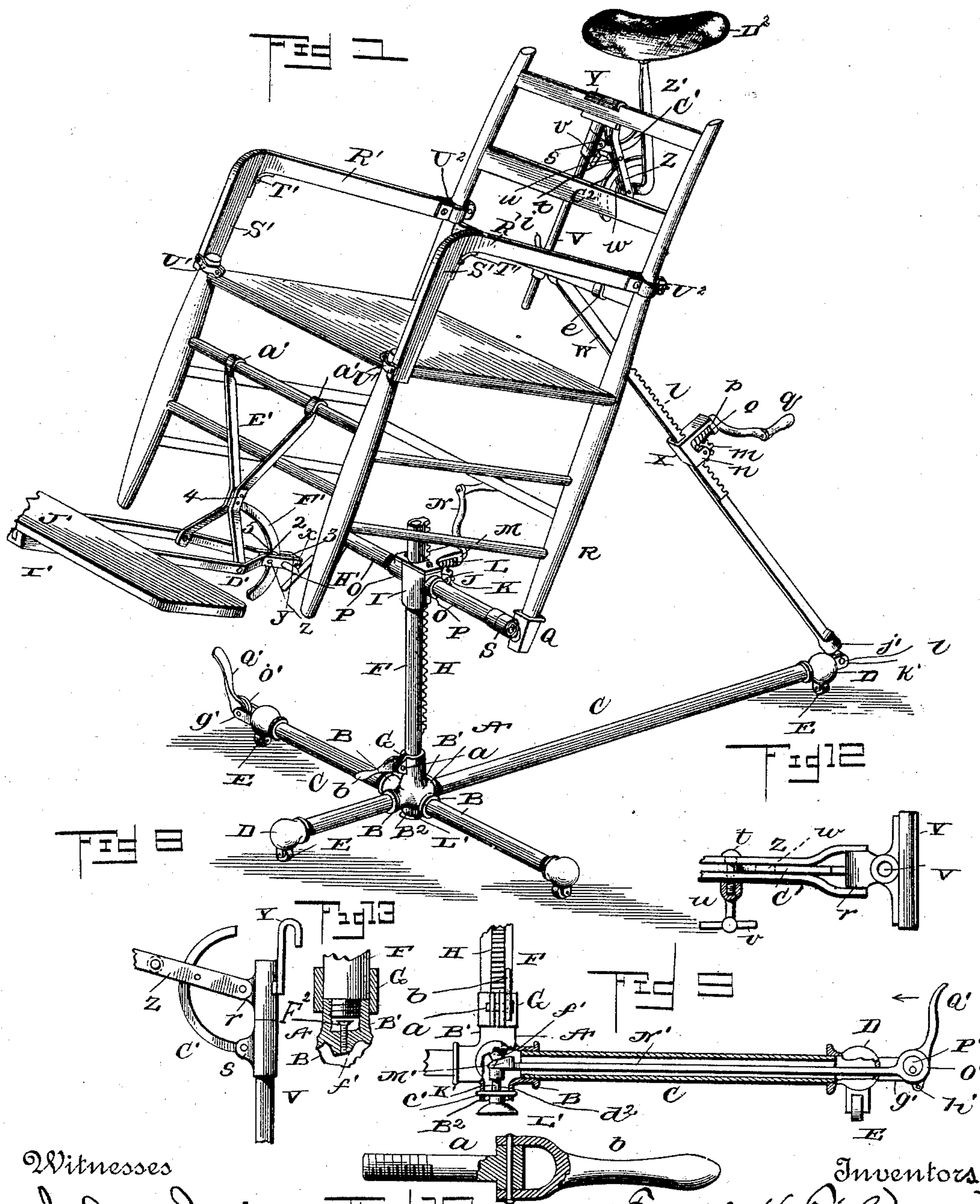
(No Model.)

2 Sheets—Sheet 1.

F. H. & C. H. FIELD.
PORTABLE DENTAL CHAIR.

No. 482,520

Patented Sept. 13, 1892.



Witnesses

John Davie
C. E. Hunt.

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Inventors
Francis H. Field, and
Charles M. Field

H. E. Henderson *Per. Atty.*

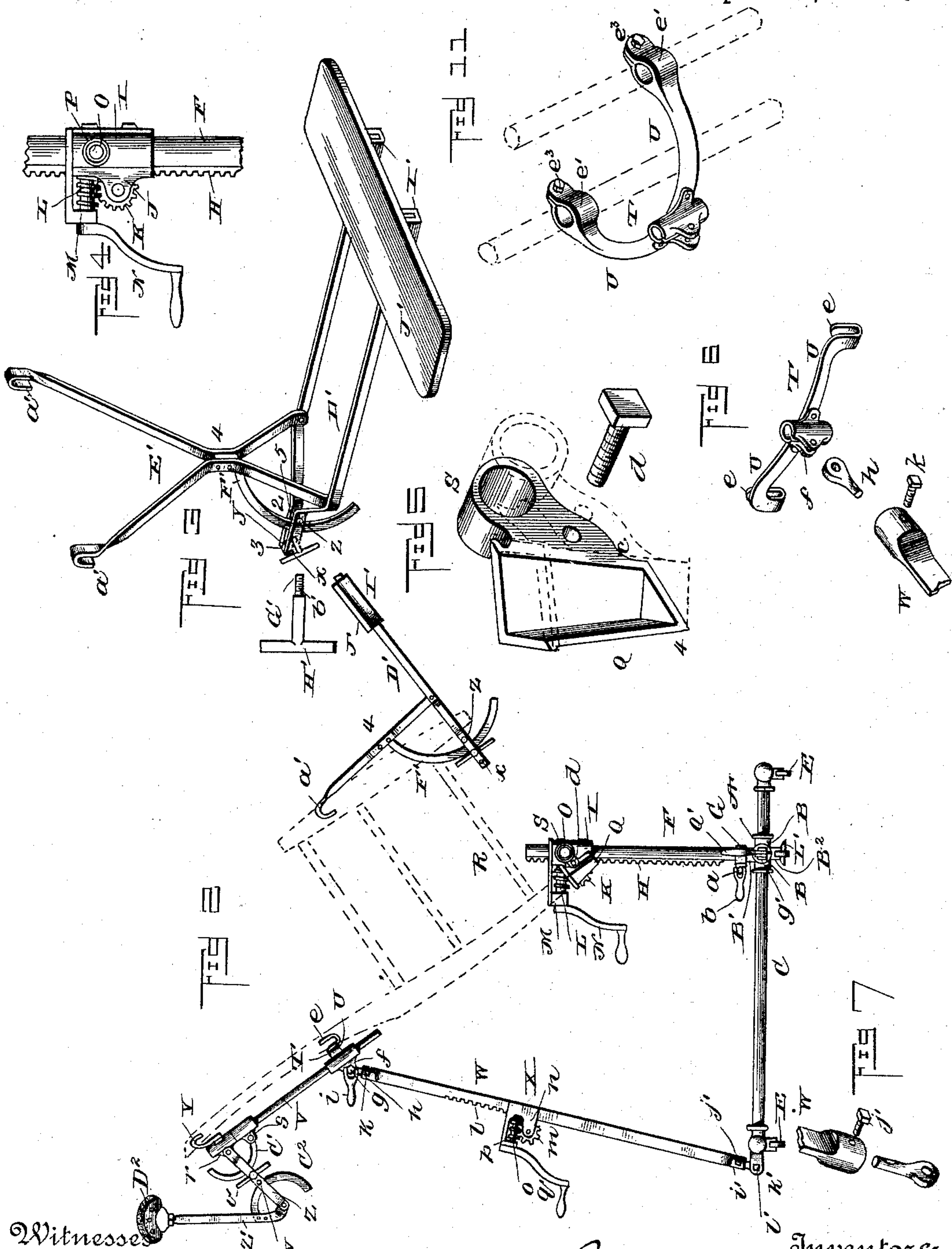
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2 Sheets—Sheet 2.

F. H. & C. H. FIELD.
PORTABLE DENTAL CHAIR.

No. 482,520.

Patented Sept. 13, 1892.



Witnesses

John J. Moore
C. E. Hunt.

By

Inventors:
Frank H. Field, and
Charles H. Field.

A. B. Henderson, his Atty.

UNITED STATES PATENT OFFICE.

FRANK HENRY FIELD, OF NEW ORLEANS, LOUISIANA, AND CHARLES
HARMAN FIELD, OF DALTON, GEORGIA.

PORTABLE DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 482,520, dated September 13, 1892.

Application filed June 20, 1891. Serial No. 396,929. (No model.)

To all whom it may concern:

Be it known that we, FRANK HENRY FIELD,
residing at New Orleans, parish of Orleans,
and State of Louisiana, and CHARLES HARMAN
5 FIELD, residing at Dalton, in the county of
Whitfield and State of Georgia, citizens of the
United States, have invented certain new and
useful Improvements in Portable Dental
Chairs; and we do declare the following to be
10 a full, clear, and exact description of the in-
vention, such as will enable others skilled in
the art to which it appertains to make and
use the same, reference being had to the ac-
companying drawings, and to the letters of
15 reference marked thereon, which form a part
of this specification.

Our invention relates to dental chairs, and
has for its object a construction that will al-
low of the use of an ordinary house-chair by
20 securing it to the supporting-frame of the
chair so that the supporting mechanism can
be easily and readily transported, thus adapt-
ing it for the use of itinerant dentists.

It has, further, for its object to render the
25 parts simple, strong, and inexpensive in con-
struction, and so that they will allow of ready
adjustment to suit varying conditions, and
may be folded and packed into compact form
in a small space.

30 It has, further, for its object to provide for
lifting the chair by the manipulation of a le-
ver, so that the whole chair can be readily
and easily turned around, as upon a pivot.

To the accomplishment of the above and
35 such other objects as may appear the inven-
tion will be hereinafter more particularly de-
scribed and claimed, reference being had to
the accompanying drawings, forming a part
hereof, and in which—

40 Figure 1 is a perspective of the chair set up
in position for use. Fig. 2 is a side elevation
of the invention, showing the chair in dotted
lines with the arms omitted. Fig. 3 is a per-
spective, on an enlarged scale, of the foot-
45 rest. Fig. 4 is a detail view on same scale as
Fig. 3 of the ratchet movement for raising
and lowering the chair. Fig. 5 is a detail per-
spective, on an enlarged scale, of the cups in
which the chair-legs rest, one-half in full lines
50 and one-half in dotted lines. Fig. 6 is a rear
perspective in detail of the lower lateral arms

and their connection to the brace-bar. Fig.
7 is a detail perspective, same scale as Fig. 6,
of the connection of the lower end of the
brace-bar to the base. Fig. 8 is a side eleva- 55
tion in detail, same scale as Figs. 6 and 7, of
a portion of the head-rest mechanism which
engages the chair-frame. Fig. 9 is an en-
larged side view, parts broken away and in
section, showing the means employed to raise 60
the structure when it is desired to turn the
same. Fig. 10 is an enlarged side view, parts
being in section, showing the means of at-
tachment of the handles to the screw-bolts.
Fig. 11 is a perspective, on an enlarged scale, 65
of a modified form of the lower lateral arms.
Fig. 12 is a detail plan view, on an enlarged
scale, of the head-rest-adjusting mechanism,
a part being broken away. Fig. 13 is an en-
larged side view, parts being in section, of 70
the means for attaching the standard to the
base.

In the drawings the letter A designates the
base of the supporting-frame, which has four
hollow arms B extending horizontally there- 75
from and two hollow arms B' and B², one ex-
tending upward and the other downward, the
whole forming a six-way T or coupling. This
coupling receives in its horizontally-extend-
ing portions the four arms C, which may screw 80
into the coupling so as to be readily sepa-
rated for transportation. These arms C are
preferably made of metal tubing, and the end
of each arm may have a knob or elbow D
screwed onto the same, which knobs are rep- 85
resented as provided with rollers E, so that
the chair may be easily moved from one po-
sition to another.

The upright portion B' will have a stand-
ard F suitably secured to it, preferably by 90
screwing into it, and further braced thereto
by a clamp G, which can be tightened or loos-
ened by turning the bolt *a* by the handle *b*,
which is pivoted to the head of the bolt.
This standard is formed with gear-teeth or 95
rack-bar H on one face extending lengthwise
thereof, which face is preferably flat or formed
with flat sides, as shown, for the purpose of
guiding and preventing from turning a sleeve
fitted to the standard. The teeth of this bar 100
are set so that a worm-pinion may gear with
them. This sleeve just referred to is desig-

nated by the letter I and is made to encircle the standard or so nearly encircle it as to bring its opposite edges against the flat sides of the rack, which will thus prevent the sleeve from turning, and yet permit it to slide. The sleeve I is formed with ears or lugs J, in which will be journaled a worm-pinion K, with the teeth of which a worm L meshes, the worm being journaled in an overhanging arm M, carried by the sleeve I. By turning the worm-wheel through the instrumentality of a crank N the sleeve I can be raised or lowered to adjust the chair to the desired height. This worm also serves to lock the sleeve to its adjustment so that it cannot slip. The sleeve I is also formed with laterally-extending arms O, which are preferably tubular and fitted into sockets P, formed in the sleeve, and which arms carry at or near their ends cups or sockets Q, set in a position to receive the rear legs of a chair R. These cups or sockets are made separate from the arms O and cast with collars S, through which the arms will pass and to which they will be secured, so as to be free to turn, as on a hinge, and by thus forming them they may be adjusted to or from each other to suit the width apart of the chair-legs, and at the same time turned, as on a hinge, to suit the inclination desired. It is preferred to make these sockets, as well as their collars, in two parts, the line of division being vertically through the sockets and the neck *c*, which connects them to their collars, and transversely through the collars, as indicated in Fig. 5. In such case the two parts will be held together by a bolt *d*, passed through the two parts of the neck *c*, as illustrated in the same figure. By constructing the sockets in the manner just described they may be adjusted to fit the foot of the leg of an ordinary chair.

The upper portion of the chair is supported against a bracket T, which is provided with laterally-extending arms U, formed at their ends with the upwardly-turned hooks *e* to fit under a cross-bar of a chair, as illustrated. This bracket T is preferably in the form of a sleeve, through which a bar or rod V may pass, and is slitted vertically and formed with ears *f*, through which a bolt *g* will pass, so that by tightening up the bolt the sleeve will be clamped around the rod, and thus hold the rod at the adjustment desired. Between the ears *f* of the sleeve-bracket T there is placed one end of a pin or stem *h*, formed with an eye at that end, through which the bolt *g* passes to hold the pin in place. The connection between the pin and bolt is loose, so that the pin acts as a pivot or hinge for the bracket. The head of the bolt *g* has a handle *i*, swiveled or pivoted to it, by which to turn the bolt. The lower end of the pin or stem *h* fits into a socket formed in the upper end of a two-part braced rod or bar W and is held therein by a set-screw *k*. The two parts of the brace-bar W enter a sleeve X, which is secured rigidly to the lower part

of the bar, but in which the upper part of the bar is free to slide. The upper part or sliding portion of the bar is provided with teeth *l*, with which engage a pinion *m*, journaled in ears *n* to the sleeve, said pinion being revolved by a worm *o*, journaled in an overhanging arm or bracket *p* of the sleeve and operated by a crank *q*. By means of the crank *q* the brace-rod W is lengthened or shortened as the inclination of the chair is changed, the inclination of the chair being accommodated by the hinging of the bracket T to the brace-rod W, as hereinbefore set forth. In the lower part of the bar W a socket is formed, into which fits a pin *j'*, pivoted between the ears *k'* and held in the socket by a set-screw *l'*, thus hinging the rod at its lower end.

The upper part of the rod V has secured to it a hook Y, designed to fit over a cross-bar or round to the chair, so as to prevent the chair from slipping or being accidentally pushed upward out of place, and also to aid in preventing it from accidentally tilting forward.

There extends rearwardly from the rod V a bifurcated arm Z, which at its inner end is hinged or pivoted to ear *r*, projecting from a portion of the rod. There also projects from the rod V a segment C', pivoted or hinged at one end to ears *s*, projecting from a portion of the rod and passing through the bifurcation of the arm Z. The purpose of this segment is to hold the arm Z at the necessary inclination to sustain at the desired height a head-rest hereinafter described, the object being effected by clamping the arm to the segment by appropriate means, suitable means therefor to be presently described. The segment C' might be rigid, but it is preferred to pivot it, as it can then be more easily placed in position in the bifurcated arm Z. To the end of this arm there is pivoted or hinged an arm Z', which is provided with a segment C², passing through the bifurcation of the arm Z. The purpose of this segment C² is to hold the arm Z' to the position to which it may be adjusted to or from the chair, the segment being clamped at the desired position by the bifurcated arm Z. By the use of the two arms Z and Z', hinged as described, and the two segments C' and C² the head-rest D², supported by the arm Z', may be raised or lowered and adjusted to or from the chair to the position desired by simply loosening the means which clamp the two segments and afterward tightening them up to hold the head-rest to its adjusted position. The preferred means for clamping the segments to the arms Z consists of a shouldered and threaded bolt *t*, passed through the bifurcated arm Z and having a nut *u*, provided with a handle *v*, applied to it, so that by turning said nut the two sides of the bifurcated arm will be drawn toward each other and caused to bear against and clamp the two segments, thereby holding the arms Z and Z' to the adjustment desired. It is obvious that either arm may be adjusted independently of the other. It is preferred to place a block *w*

in the arm Z adjacent to the bolt t , so as to guide the segment C' if it be pivoted.

A detachable foot-rest is provided for the chair and consists of two bars D', whose inner ends converge, as shown at 2, and are connected together at 3 by a bolt x , at which point there is also preferably placed a spacing-block y , and at or about the point 3 there is passed through the bars a bolt z in such manner as to prevent the bars from spreading apart, but allowing them to be brought together by the screw G'. The bars D' have pivoted to them the suspending-arms E', provided at their upper ends with hooks a' , intended to fit over a round of the chair, so as to suspend the foot-rest from the chair. It is preferred to bolt together the arms, as at 4. There is connected to them a segment F', which passes between the bars D', as shown at 5, and is clamped and held rigid by drawing the two arms tightly against it by means of a threaded bolt or screw G', passed through the two arms and formed with a shoulder b' to bear against one arm and with a handle H' for convenience in manipulating it. By loosening the screw or bolt G' the foot-bars D' can be adjusted to the angle of inclination desired and held there by tightening the bolt.

It is preferred to have the foot-rest bars to diverge somewhat from each other at their free ends, but so that they may be pressed inwardly toward each other, in order that when they are passed through the sleeves I' to the foot-rest board J' the tendency of the bars to spread outwardly to resume their normal state will create friction or pressure enough against the sleeves to hold the foot-board in any position to which it may be adjusted on the bars.

Into the downwardly-projecting portion B² of the six-way T there extends a stem K' from the base-iron L', said parts being held against becoming detached by a pin c' , passing through the part B² and fitting in the reduced portion d^2 of the stem K'. While the parts are thus held against detachment the coupling is permitted to move up and down on the stem K' as well as to turn about the same, so that the rollers E, which constitute the feet of the structure, may be lifted wholly from off the floor, and thus permit the whole structure to be swung or turned around to any extent desired. The lifting of the structure is effected by means of a wedge M', bearing against the top of the stem K' and a portion of the T-coupling, which portion may be a bearing-block f' , cast as a part of the coupling and having a beveled under face, as indicated in Fig. 9. This wedge is attached to a rod N', extending through one of the hollow arms C and knobs D and formed with a collar O' at its outer end, which fits around an eccentric P', having its bearing on the ears g' and provided with a lever Q', adapted to be operated by the foot to turn the eccentric and through it move the rod N' in or out, the

lever Q' being provided with a pin h' , bearing against the periphery of the collar O' and serving to limit the throw of the lever. The normal position of the foot-lever Q' and wedge M' is shown in Fig. 9. By pressing the foot-lever in the direction of the arrow the wedge M' is forced between the stem K' and bearing f' , and as it is pushed between said parts it forces the whole structure above the base-iron L' upward, so as to lift the feet from off the floor and allow the structure to be swung around to the extent desired. It is obvious that the eccentric P' could be so placed that the rod N' will be pushed inward to lift the structure by pressing down the lever Q' instead of pressing said lever up. Such slight change is merely mechanical and such as any skilled mechanic might make and is too obvious to need illustration.

An adjusting pin or screw F² can be passed through the bearing-block f' , so that by causing it to project below the bearing-block the block is practically made thicker at that point and the structure accordingly can be raised higher from off the floor.

By the construction described an ordinary domestic chair can be used and it will be given all the movements of a specially-constructed costly dental chair. Furthermore, the several parts can be easily taken apart in a short time without the use of special tools and without the services of a skilled mechanic, and they can be compactly packed into a small space for convenience and saving of expense in transportation. The parts are also simple, strong, and durable and render the support comparatively inexpensive to construct.

We provide arms for the chair composed of a horizontal bar R' and vertical bar S', the two being connected together by a hinge T'. The bar S' at its lower end is provided with a clasp U' to pass around the leg of the chair, as illustrated, and be clamped thereto by suitable means, while the outer end of the bar R' is provided with a similar clasp U² to pass around the back post of the chair, as illustrated, and be clamped thereto by suitable means. These arms can be easily applied and detached when necessary to have arms to the chair.

Instead of using the particular means illustrated in Fig. 2 for securing the upper portion of the chair to the rod V we may employ the modified form of bracket T, (illustrated in Fig. 11,) where the arms U are illustrated as in a curved form, with sockets e' at their ends intended to receive the back posts of a chair. These sockets will preferably be made so that they can be sprung around the back posts and be clamped thereto by the bolts e^3 . The bracket will be provided with the socket for the bar V, the same as shown in Fig. 2 of the drawings. The head-rest can be omitted when desired, as it is not necessary.

Instead of forming the clamping-band G separate from the upright portion of the T,

as shown in Fig. 13, we may form the clamp integral with the portion B' of the base, as illustrated in Fig. 1.

We have described what we consider to be the best construction; but it is obvious that changes can be made without departing from the spirit of our invention, and therefore we wish it understood that we do not confine ourselves to such details of construction.

Having described our invention and set forth its merits, what we claim is—

1. In a dental-chair support, the combination of a base, an upright standard, a sleeve secured on said standard, arms extending laterally from the said sleeve, sockets mounted on said arms, adapted to receive the feet of a chair, and a support for the chair-back, substantially as described.

2. In a dental-chair support, the combination of a base, an upright standard, a sleeve adjustably secured on said standard, arms extending laterally from the said sleeve, the laterally-adjustable sockets mounted on the said arms, adapted to receive the feet of the chairs, varying as to the width between their legs, and a support for the chair-back, substantially as described.

3. In a dental-chair support, the combination of a base, an upright standard, a sleeve adjustably secured on said standard, arms extending laterally from the said sleeve, the rotatable sockets mounted on the said arms, adapted to receive the feet of a chair and to be moved with the same on the tilting of the chair, and an adjustable support for the chair-back, substantially as described.

4. In a dental-chair support, the combination of the base, the upright standard, the sleeve adjustably secured on the said standard, the arms projecting laterally from the sleeve, the rotatable and laterally-adjustable sockets mounted on the said arms to receive the legs of chairs, varying as to the width between their legs, and to move with the legs on tilting the chair, and an adjustable support for the chair-back, substantially as described.

5. In a dental-chair support, the combination of a base, an upright standard, a sleeve adjustable on said standard, the arms carried by the sleeve, the sockets made in sections to be adjustable to chair-legs of variable sizes mounted on said arms, and a support for the chair-back, substantially as described.

6. In a dental-chair support, the combination, with a base-support, of the back-support consisting of a rod and hooks secured on its ends, one of the said hooks being adjustable, and the brace-rod hinged at its ends to the supports, substantially as described.

7. In a dental-chair support, the combination of a base-support, the back-support consisting of a rod, a hook secured to the upper end of the rod, the bracket secured to the lower end of the rod, and means for securing the said bracket to the chair-back, and the

brace-rod hinged at its ends to the said support, substantially as described.

8. In a dental-chair support, the combination, with a base-support, of a support for the back of the chair, comprising a rod provided with hooks to engage a portion of the chair, at least one of which hooks is vertically adjustable on the rod, a brace-rod hinged at its ends to the said supports, and a hinged connection between said back-support and brace-rod, substantially as and for the purposes set forth.

9. In a dental-chair support, the combination, with a base-support, of a support for the back of the chair, comprising a rod having a slitted sleeve carrying a hook to engage a part of the chair, means for clamping said sleeve to its rod, a brace-rod hinged at its ends to the said supports, and a hinged and detachable connection between said brace-rod and sleeve, substantially as and for the purposes set forth.

10. In a dental-chair support, the combination, with a base-support, of a support for the back of a chair, provided with means for securing a chair thereto, a sectional brace-rod hinged at one end to said back-support and at the other end with the base-support and formed with teeth, a pinion supported by one section of said brace-rod and engaging said rack-teeth, and means for turning said pinion to adjust the length of the brace-rod and lock it to its adjustment, substantially as and for the purposes set forth.

11. In a dental-chair support, the combination, with the chair-back support for the attachment of a chair, of a head-rest bar, an arm hinged at one end to said bar and at the other end to said back-support, a segmental brace attached at one end to said back-support and at the other to said hinged arm, a segmental brace connected at one end to said head-bar and at the other end to said hinged arm, and a clamp for securing said braces in their adjustment to said hinged arm, substantially as and for the purposes set forth.

12. In a dental-chair support, the combination, with the base-support and the standard provided with an adjustable sleeve carrying sockets for the legs of a chair, of an adjustable back-support for the upper part of the chair, the brace-rod hinged at its ends to the said support, and a head-rest supported from said back-support and adjustable both vertically and to the inclination of the chair, substantially as and for the purposes set forth.

13. In a dental chair, the combination, with a base-piece, of a superstructure sliding vertically on said base-piece and having feet to rest upon a floor, a wedge fitting between said base-piece and a portion of the superstructure, and an eccentrically-actuated rod for forcing said wedge between the base-piece and superstructure to raise and lower the feet of the structure from and to the floor, substantially as and for the purposes set forth.

14. In a dental chair, the combination, with a base-piece, of a superstructure sliding vertically on said base-piece and having feet to rest upon a floor, a hollow arm to said superstructure, and an eccentrically-actuated rod working in said arm and carrying a wedge to be forced between the base-piece and the superstructure to raise the superstructure and lift its feet from off the floor to permit the superstructure to be easily revolved, substantially as and for the purposes set forth.

15. In a dental chair, the combination, with a base-piece, of a superstructure sliding vertically on said base-piece and having feet resting upon a floor, a wedge fitting between said base-piece and a portion of the superstructure, and the screw passing through the said portion of the superstructure to form an adjustable bearing for the wedge, substantially as described.

16. In a dental chair, a detachable foot-rest consisting of the bars D', joined at their inner ends to form a guide and clamp, the board carried on the outer ends of the said bars, the suspending-arms pivoted to the

said rods and provided with hooks at their upper ends, the segment connected at one end to the said suspending arms and the free end passing through the guide or clamp formed in the inner ends of the bars D', and the screw for clamping the guide, substantially as described.

17. In a dental chair, a removable arm consisting of the arm proper, the standard hinged to the front end of the arm, and the clamps or collars attached to the lower end of the standard and the rear end of the arm proper for the purpose of securing the arm to the front leg and back post of its respective side, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK HENRY FIELD.

CHARLES HARMAN FIELD.

Witnesses to Frank H. Field:

C. EDMUND KELLS, Jr.,

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Witnesses to Charles H. Field:

W. P. HAMILTON,

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