

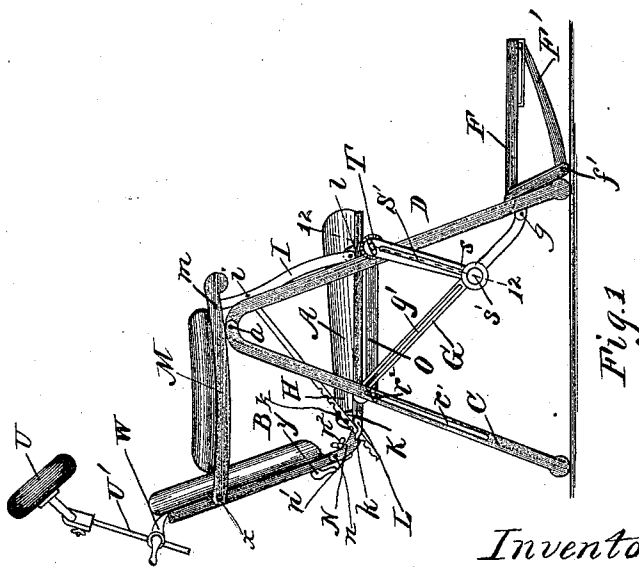
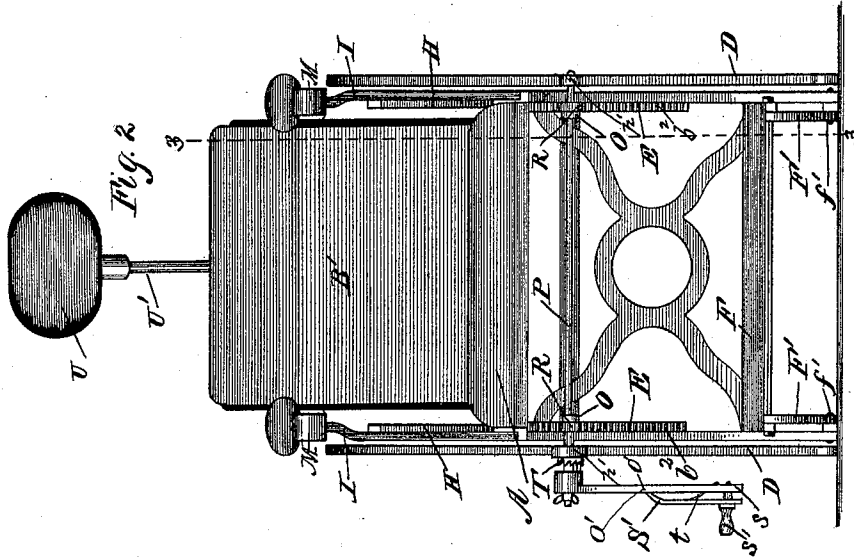
(Model.)

3 Sheets—Sheet 1.

S. T. HENKLE.
DENTAL CHAIR.

No. 485,383.

Patented Nov. 1, 1892.



Witnesses,
W. C. Corlies
A. M. Best

Inventor,
Samuel T. Henkle,

By *Coburn & Mackay* Attys

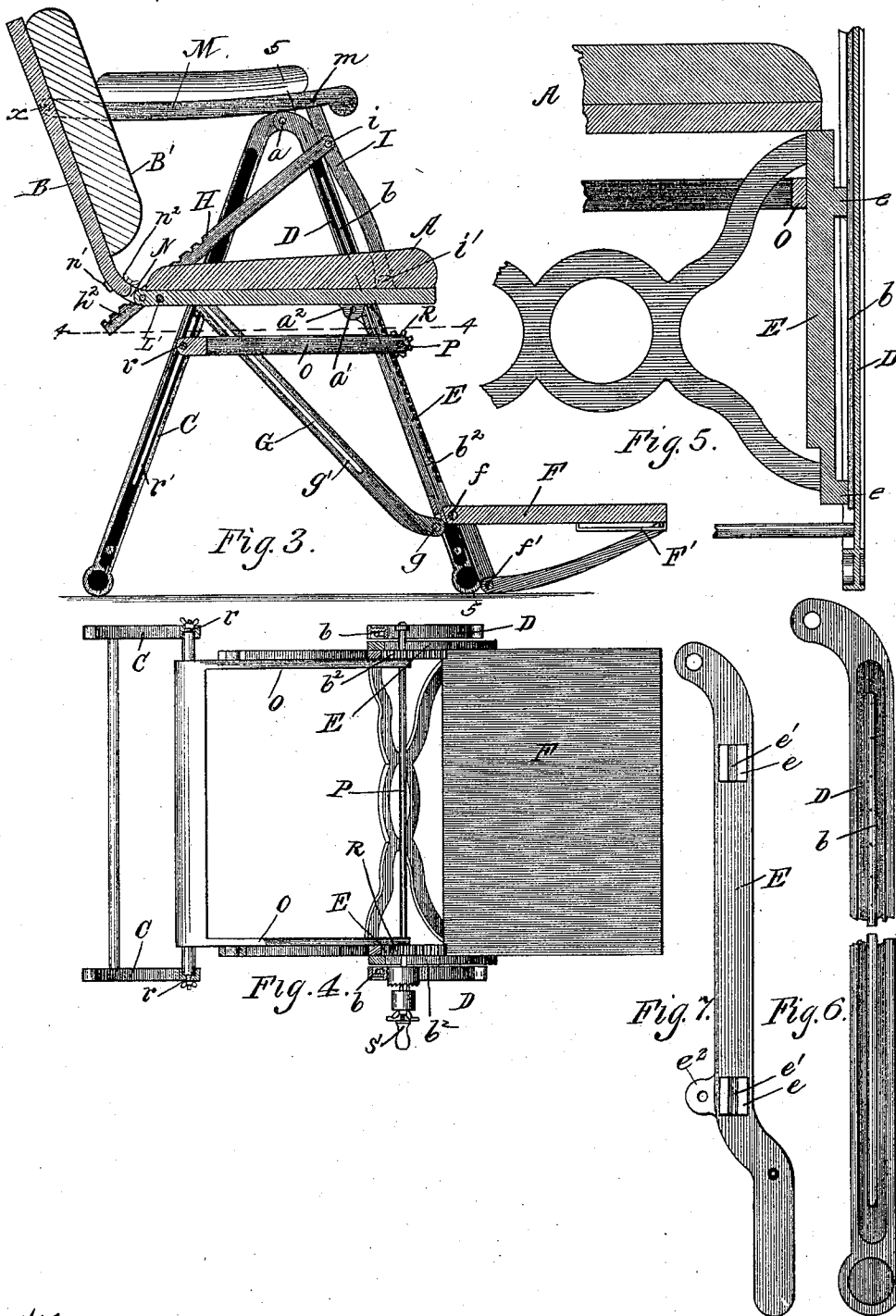
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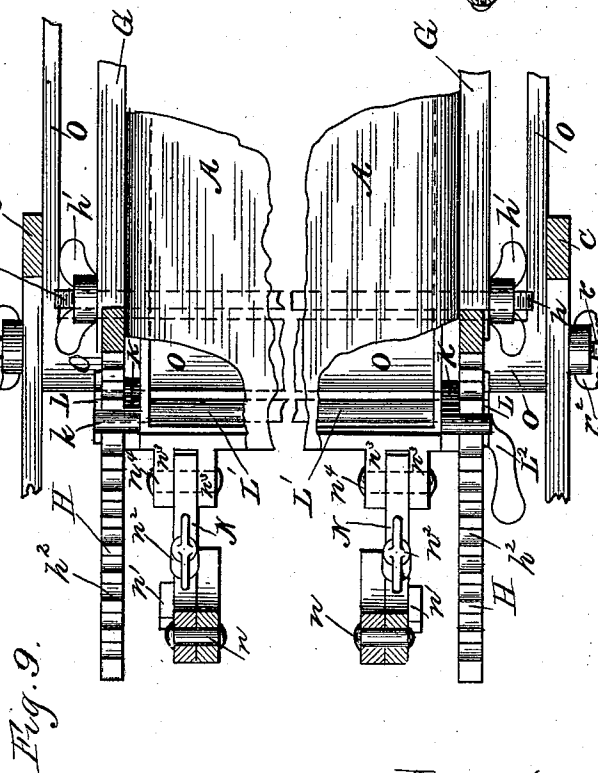
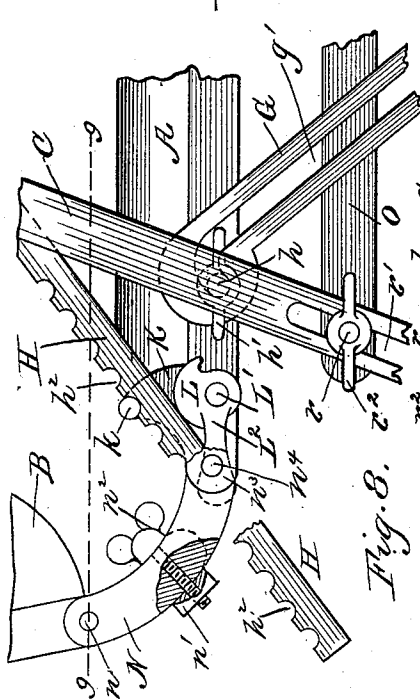
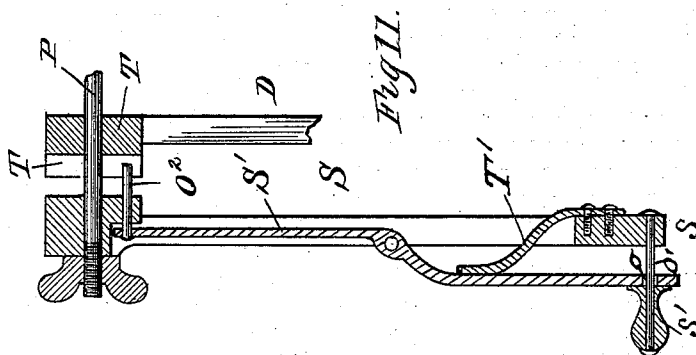
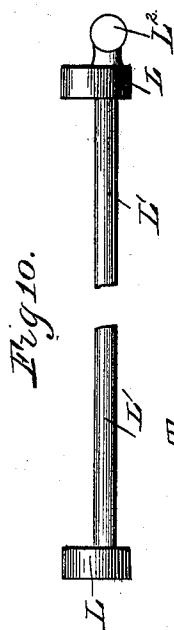
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Patented Nov. 1, 1892.



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UNITED STATES PATENT OFFICE.

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DENTAL CHAIR.

SPECIFICATION forming part of Letters Patent No. 485,383, dated November 1, 1892.

Application filed January 22, 1891. Serial No. 378,685. (Model.)

To all whom it may concern:

Be it known that I, SAMUEL T. HENKLE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a certain new and useful Improvement in Dental Chairs, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improvement in dental chairs. Fig. 2 is a front elevation of the same on an enlarged scale. Fig. 3 is a vertical section taken on the line 3 3 of Fig. 2. Fig. 4 is a plan section taken on the line 4 4, of Fig. 3, showing the position of the guide-rod. Fig. 5 is a vertical section of one of the front legs and the parts adjacent thereto on line 5 5 of Fig. 3. Fig. 6 is an inside view of one of the front legs detached. Fig. 7 is a side view of the frame supporting the foot-rest. Fig. 8 is a detail side elevation of a portion of the seat, showing the manner of adjustment of the back. Fig. 9 is a detail plan section of the same, taken on the line 9 9, Fig. 8. Fig. 10 is a detached elevation of the cams L and the rod L'. Fig. 11 is a detail sectional view of the handle, somewhat enlarged, taken on the line 12 12 of Fig. 1. Figs. 5 to 11, inclusive, are also on an enlarged scale.

Like letters refer to like parts in the drawings.

My invention relates more particularly to improved methods of folding a dental chair in a convenient form for transportation and storage when not in use, and also in various devices for raising and lowering the seat of said chair.

A is the seat of the chair; B, the back; C, the rear legs of the chair; D, the front legs, and E is the frame composed of two vertical side bars connected by cross-bars.

The legs D are channeled on their inner faces, and within the space thus formed is secured a rod *b*, all the parts being preferably of metal. The front and rear legs are hinged together at the top by pins *a*, as shown in Fig. 3. The front legs, as well as the rear legs, are connected with each other by bars, the whole forming a supporting-frame for the chair.

E is a frame supporting the seat A and the

foot-rest F, and by means of which these parts with the back are vertically adjustable, as hereinafter stated. The frame E is pivotally connected to the seat by pins *a'*, passing through the top of the frame and through lugs *a*², depending from and attached to the seat. The frame E has cast upon its upper and lower parts, as shown in Fig. 7, lugs *e*, having depressions *e'* in them in the shape of a segment of a circle, so as to hold and embrace the rod *b* in the legs D. The frame E is vertically adjustable in the legs D, and rods *b*, seated in the depressions *e'* in the lugs *e*, permit this vertical movement of the frame, and at the same time secures the frame to the leg and prevents its movement in any other direction. Cogs *b*² are formed in a plate secured to the inner side of the frame E for the purposes hereinafter shown. Said plate may be cast in one piece with the frame or it may be a separate plate secured to it.

The frame E is curved outwardly at its lower end, and at the point of curvature the foot-rest F is pivoted to the frame at *f*. The lower end of the outer part of the foot-rest F is slotted, as shown in Fig. 3, so as to allow the foot-rest support F' to move in said slot when the foot-rest is folded on its pivot *f*. The foot-rest support F' is pivoted to the bottom of frame E by a pin *f'*. Both the foot-rest and its support fold on their respective pivots *f* *f'*.

G are braces or supports for the seat A. They are pivoted to the frame E at its lower part by pins *g*, passing through lugs *e*² on the frame E (shown in Fig. 7) and through the end of the braces G. The braces G have slots *g'* at their upper ends, as shown in Fig. 3. These braces are intended to support the chair-seat A and are attached to said seat by pins *h*, rigidly secured to the seat-frame and passing through slots *g'*, as shown in Fig. 8. The pins *h* are screw-threaded at their outer ends, as shown in Fig. 9, and wing-nuts *h'*, adapted to be screwed on these pins, rigidly secure the braces G and the seat together when the chair is in use.

I will now describe the means of adjusting and folding the back B.

H are brace-bars pivoted to the arm-sup-

porting standards I at i . The upper sides of the lower parts of the bars H have rack-teeth h^2 for the purpose hereinafter described.

K are lugs rigidly secured to the frame of the seat A and having pins k secured to them, which fit into the rack-teeth h^2 . The seat-frame lugs and pins are preferably cast in one piece.

L are cams riveted to a rod L' , extending through the chair-seat frame, as shown in Figs. 9 and 10. One of these cams has a handle L^2 attached to it, by means of which both cams are operated. The rod L' has a bearing in the seat-frame A, in which it may be revolved. The purpose of the cams L is to hold the rack-teeth in contact with the pins k , and thus adjust the back at any required angle, this adjustment being accomplished by said rack-bars acting through or upon the following parts of the chair: The arm-supporting standards I, to which the braces H are pivotally secured, are pivoted to the arms M at m , and the arms M are pivotally secured by pins x to the back B. The arm-supports I at their lower ends are pivoted to the seat-frame at i' .

Whenever the handle of the cam L is pulled up the braces H fall away from the pins k , and the back can then be inclined to such position as may be desired.

The back and seat frame are heavily upholstered usually. The cushion of the back-frame B, I have designated as B' . To provide means for folding the back and seat so that they will lie flat against each other when folded, I provide links N, which are pivoted to the back-frame B at n , as shown in Figs. 8 and 9. The lower part of the back-frame B curves inwardly toward the seat-frame A, and near its lower end and formed therewith are lugs n' , (shown in Fig. 8,) which have holes screw-threaded. The links N have correspondingly-screw-threaded holes, and said links and the back-frame B are rigidly secured together by thumb-screws n^2 , which are screwed into the holes in the links N and the lugs n' , as shown in Fig. 8, thus rigidly securing together the link and back B when it is desired. The link N is pivotally connected to the seat-frame A by pins n^4 , which pass through lugs n^3 on the rear end of the seat-frame A and through the end of the link, which is thus secured between the lugs. Through the links N the back is pivoted to the seat.

Whenever it is desired to fold the chair the thumb-screws n^2 are unscrewed, loosening the link N from the back B, the effect of which is to make a double joint in the connection of the lower part of the back and the seat, so that they can be folded onto each other and lie flat.

O are cross-bars rigidly secured at their rear ends to the rod r , which is movably secured to the legs C in the manner hereinafter described. The front ends of the bars O are pivoted to the rod or shaft P, which has its

bearings in the lugs p' and in the boss T, through which it passes, as shown in Fig. 2. The lugs and boss are secured to the front legs D, as shown in Fig. 2. To this rod P are secured pinions R, which mesh in with the rack-teeth b^2 of the frame E. On one end of this rod is a handle S, consisting of a crank s and handle proper s' , by means of which rod P, with the pinions R, can be revolved, so as to lower or elevate the seat and back.

For the purpose of holding the frame E, with the other parts attached to it, at any point desirable I use the following devices: S' is a lever pivotally connected midway between its ends to crank s and at its lower end loosely mounted on the pin o' at o . The pin o' is rigidly secured to the crank s of the handle. At the other end of the lever S' is a pin o^2 , (shown in Fig. 11,) rigidly secured to the end of the lever, and which meshes into the teeth on the boss or ratchet T on the legs D. The pin o^2 is held in contact with the teeth of the boss T by a flat spring T' , one end of which is secured to the crank s , and the free end presses against the lower end of the lever s' , as shown in Fig. 11, thus securely locking the frame E at any point at which it may be adjusted by the operator. Whenever the operator desires to adjust the frame E the lower end of the lever is pressed in by the hand of the operator, which withdraws the pin o^2 from contact with the boss T, thus allowing the rod P, with the pinion R, to be revolved and moving the frame E. The rear ends of the bars O are rigidly secured to the rod r , which passes through the slots r' in the legs C. This rod r is screw-threaded at each end, and upon these ends are placed wing-nuts r^2 , as shown in Fig. 8. By means of these wing-nuts the rod r is rigidly secured to the legs C.

U is a head-rest secured to the chair by a rod U' , passing through the end of the rod W, to which it is locked in any well-known manner. The head-rest may be of any well-known construction and need not be described here.

The cushion B' of the chair-back is composed of a frame and any suitable upholstery.

The manner of folding my chair is as follows: The wing-nuts r^2 are unscrewed on the rod r , so as to loosen it, when the legs C and D may be turned on the pin a and brought together at their lower ends, the rod r sliding in the slot r' in the leg C. This folds the legs. The foot-rest F and braces F' are then folded on their respective pivots $f f'$. The back B, with its cushion B' , is folded onto the seat A by turning the cams L, which allows the bars H to fall away from the pins k , as before stated, the thumb-screws n^2 being turned so as to disconnect the links N and the back B, as before stated, so that the back may be folded onto the seat. The wing-nuts h' are unscrewed, so as to loosen the braces G, which support the seat at its rear end when the seat turns and folds on its pivot a' , folding and resting against the legs, the pins h passing through the slots g , and at the same time this

movement of the pin *h* brings the braces *G* to a vertical position near the legs, thus completely folding the chair.

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

1. In a dental chair, a vertically-adjustable frame composed of vertical side bars connected by cross-braces, a seat pivoted to and supported through suitable devices by said adjustable frame in such a manner as to be capable of being folded on said frame, a folding supporting-frame composed of legs pivoted to each other at the top and having cross-braces so secured to the legs as to be capable of being folded therewith, the front legs of said supporting-frame having suitable guides, in which said adjustable frame moves, an operating rod or shaft journaled to the front legs of said supporting-frame, with suitable devices secured to said adjustable frame and to said shaft, whereby the adjustable frame may be raised and lowered on the supporting-frame, and a ratchet rigidly secured to one of the front legs of the supporting-frame and adapted to receive a locking-pin operated by a lever pivoted to the operating-crank of said rod, whereby said adjustable frame may be locked at any desired point, substantially as shown and described.

2. In a dental chair, the vertically-adjustable frame *E*, provided with lugs having depressions in the shape of a segment of a circle, braces *G*, pivoted at their lower ends to the frame *E* and having slots *g'*, with offsets at the upper ends of the slots, the seat *A*, pivoted at its front to the frame *E* and having at its rear pins *h* rigidly secured thereto and adapted to enter the offset of the slots *g'*, of the braces *G*, by means of which the seat is supported at its rear end, a supporting-frame carrying on the inner faces of its front legs guiding-rods for the adjustable frame, a cross-shaft having bearings in the supporting-frame and carrying suitable gearing adapted to connect it with the adjustable frame, the handle *S* for operating said cross-shaft, whereby the adjustable frame can be raised and lowered, and the lever *S'*, pivotally connected

to the handle *S* and having at one end a locking-pin *o*², and the ratchet *T*, rigidly secured to said supporting-frame and adapted to engage with the locking-pin *o*², so that the adjustable frame can be locked at any desired point, substantially as shown and described.

3. In a dental chair, the back *B*, link *N*, pivoted to the back at a short distance from its lower end, with suitable devices for making the link rigid with the back when desired, the seat *A*, to which said link is also pivoted, the bars *H*, having rack-teeth on their free ends and pivoted at their upper ends to the supporting-piece *I*, which is pivoted to the seat at its lower end and to the arm proper *M* at its upper end, *M* being pivoted to the chair-back, the lugs *K*, having pins *k* secured to the seat and adapted to fit in said rack-teeth, the rod *L'*, passing through the chair from side to side, and the cams *L*, rigidly secured thereto, with suitable devices for operating the same and so arranged under and with reference to the bars *H* as to hold said bars in contact with the pins *k* or withdraw them from contact with the pins and allowing the back to be adjusted at any point and to be folded onto the seat, substantially as shown and described.

4. In a dental chair, the combination of the back, links pivoted to the back a short distance from its lower end, with suitable devices for making the link and back rigid with each other when desired, a seat to which the link is also pivoted, and arms pivoted to the back and to their supports with suitable devices whereby the back can be adjusted and secured at any desired angle with the seat whenever the link and back are made rigid and arranged so that the back and seat can be folded on each other whenever the link has a pivotal connection only with the back, and an adjustable folding frame supporting said seat through suitable devices, substantially as shown and described.

SAMUEL T. HENKLE.

Witnesses:

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H. H. TALCOTT.