No. 717,121. Patented Dec. 30, 1902.

C. H. RICHARDSON.

ADJUSTABLE WALL BRACKET.

(Application filed May 27, 1901.)

(No Model.) 2 Sheets—Sheet 1.

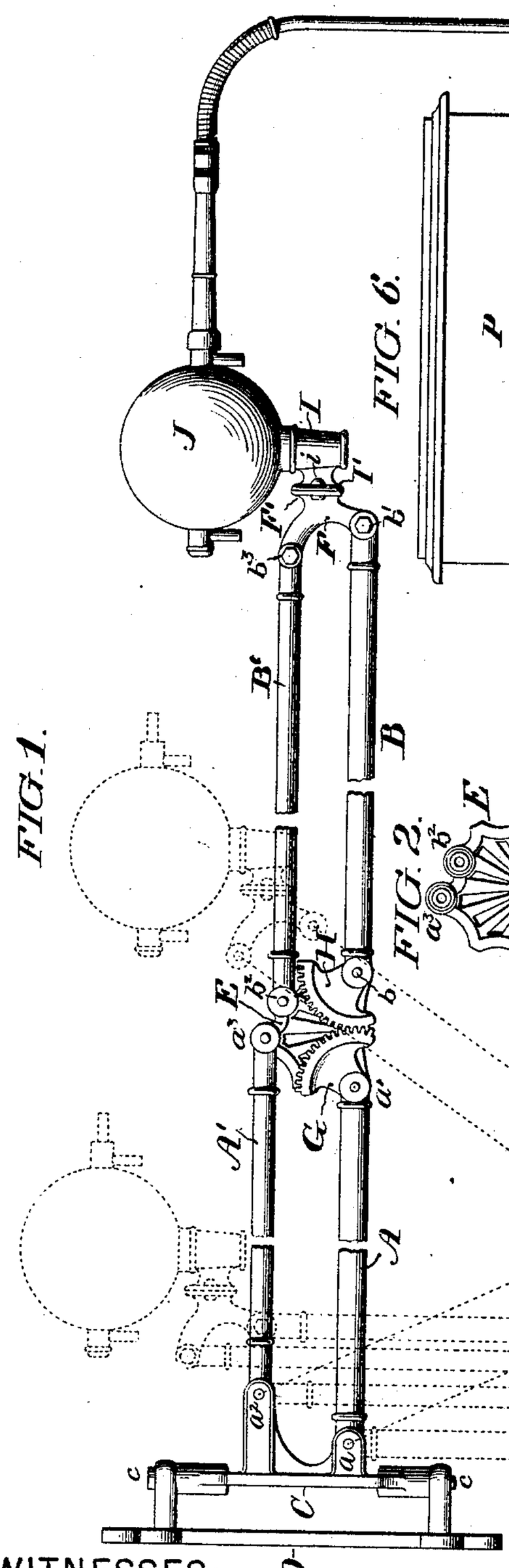

FIG. 1.

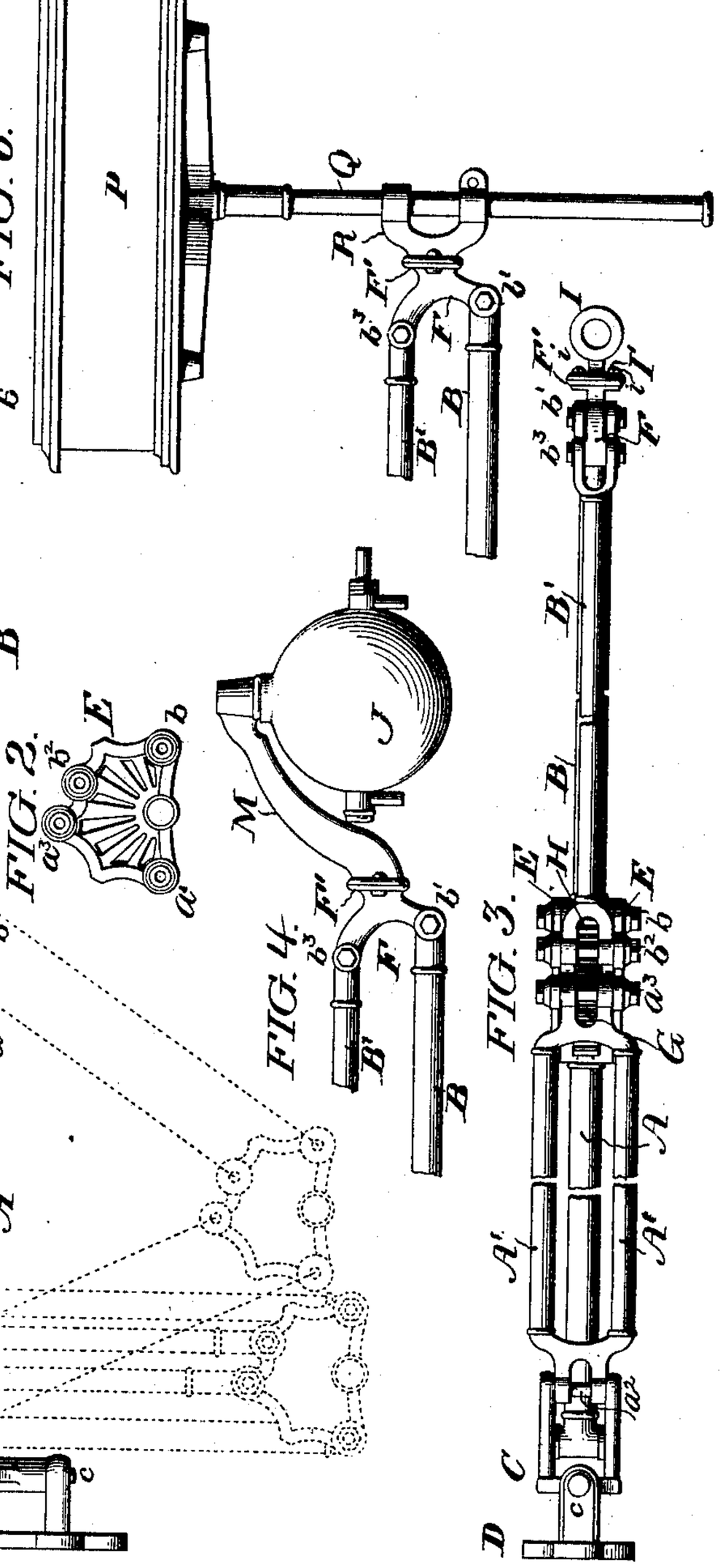

FIG. 6.

FIG. 2.

FIG. 4.

FIG. 3.

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FIG. 7.

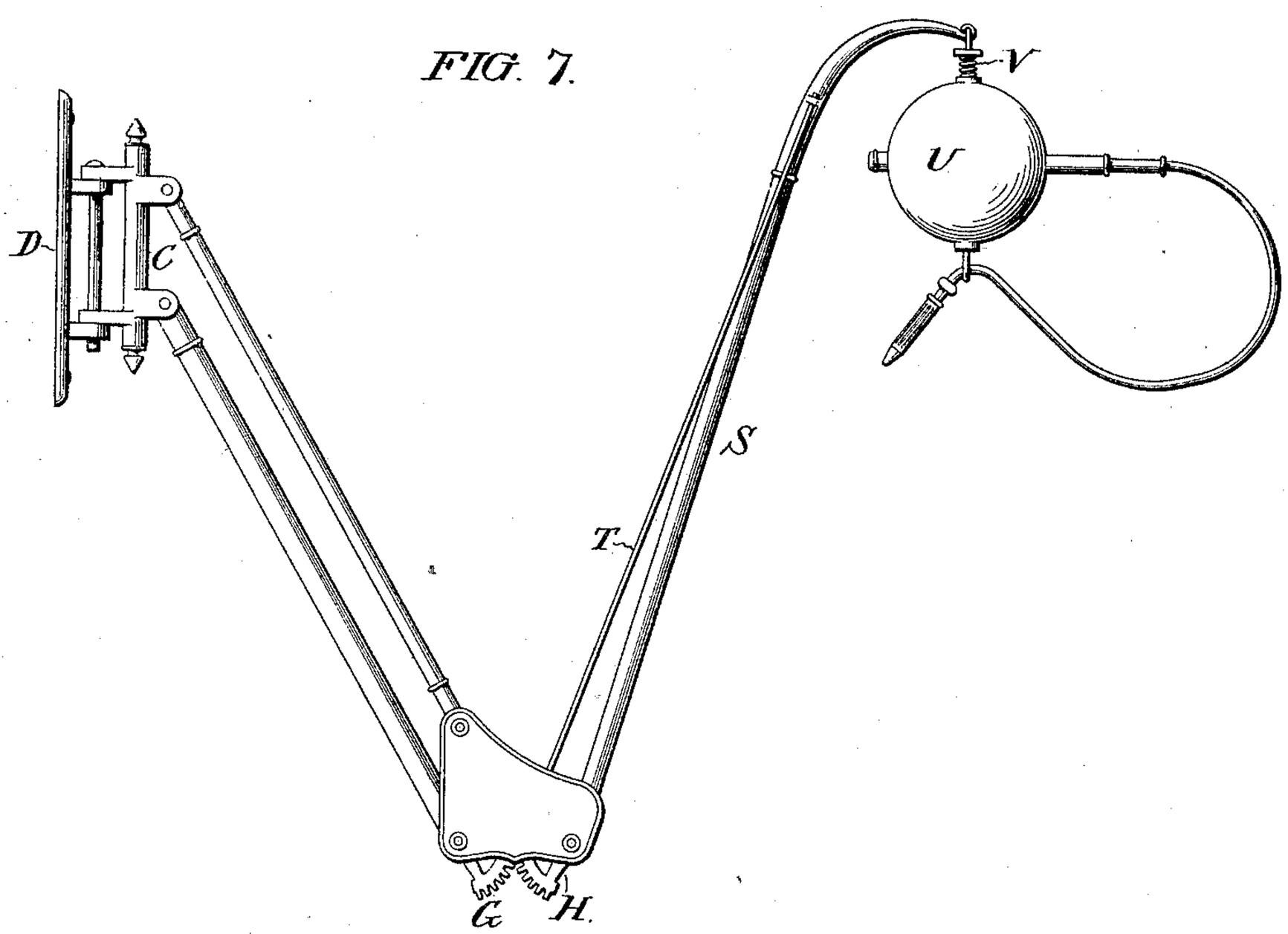
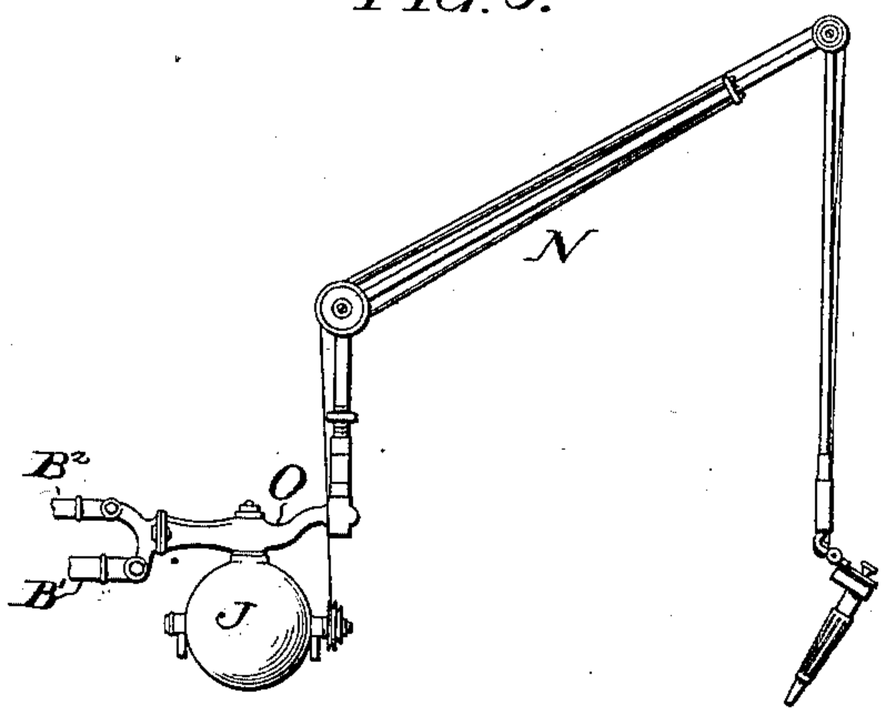


FIG. 5.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE WALL-BRACKET.

SPECIFICATION forming part of Letters Patent No. 717,121, dated December 30, 1902.

Application filed May 27, 1901. Serial No. 62,019. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. RICHARDSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Adjustable Wall-Brackets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to folding or adjustable wall-brackets for supporting objects in such a manner that they may be moved into an inoperative position close to or against the wall, where they will be out of the way.

The purpose of my invention is to produce a bracket of this description in which the weight of the object or load supported serves to poise the bracket as well as the object itself, by virtue of which the object may be freely moved toward and away from the wall and remain inert in whatever position it is placed, a practically perfect equipoise of the bracket and its load being secured without the use of springs or weights other than the load itself. I attain this result by so constructing a folding bracket that the object supported by it when moved in and out from the wall is forced to traverse a substantially horizontal plane. Such a bracket must comprise a main section having vertical rocking connection with a wall or other support to which it is secured, a forearm-section adapted to support an object or load at its outer extremity, connections between the two sections which enable the forearm-section to rock vertically toward and away from the main section, and means for causing said sections when the object or load is moved or placed in different positions to move in unison toward and away from each other and maintain corresponding angular relations with respect to a vertical line drawn centrally between said sections.

Brackets of the counterpoise type usually cause the object supported when adjusted to move in a vertical plane or in the arc of a circle, and, moreover, employ either weights or springs to counterbalance the weight of the bracket and its load.

Suitable mechanism exemplifying applications of my invention will be hereinafter fully described with the aid of the accompanying drawings, and the invention will then be pointed out in the claims.

While my invention is applicable to adjustable wall-brackets of various kinds and usable for a large variety of purposes, I have herein shown it as embodied in dental brackets designed particularly for supporting electric dental-engine motors and parts carried thereby and also for supporting dental tables.

In the accompanying drawings, Figure 1 is a view in side elevation of such a dental bracket with one of its link-plates detached. Fig. 2 is a view of said link-plate detached from the bracket shown in Fig. 1. Fig. 3 is a top view of said bracket. Fig. 4 is a side view of the outer extremity of the forearm of the bracket, showing a different form of dental-engine motor from that shown in Fig. 1. Fig. 5 is a similar view showing still a different form of dental engine. Fig. 6 is a similar view showing a dental table attached to the bracket. Fig. 7 is a view in side elevation of a bracket of modified construction.

The bracket illustrated in Figs. 1, 2, and 3 consists of the main section A and the forearm-section B. The main section A is pivoted or hinged at its inner end at *a* to a bracket-plate C, having horizontal turning connection at *c c* with a stationary wall-plate D. The outer end of said section is pivoted at *a'* to a link, composed, preferably, of two plates E E, one of which is shown detached in Fig. 2. The forearm B is pivoted at its inner end to the link-plates E E at *b* and at its outer end to an end piece F at *b'*. The end piece F is provided with a vertical attaching-plate F' for the attachment of the object to be supported by the bracket, as will hereinafter be explained.

The means for causing the object or load to traverse a substantially horizontal plane when it is moved in or out from the wall and the main and forearm sections to move in unison toward and away from each other, as

hereinbefore set forth, may be as follows: A gearing is located between the bracket-sections, consisting in this instance of a toothed sector G, rigidly secured to the outer end of the main section, with the pivot a' as its center, and a similar sector H, meshing with the first-mentioned sector and rigidly secured to the inner end of the forearm, with the pivot b as its center. In addition to the gearing means must be provided for preserving the horizontality of the link connection between the sections. For this purpose the main section is provided with a rod A', (in this instance two such rods being employed for giving additional strength, see Fig. 3,) arranged parallel with the main section and pivoted at one end at a^2 to the bracket-plate C and at its opposite end at a^3 to the link E.

For the purpose of maintaining the verticality of the attaching-plate F', and consequently the horizontality of the object supported by the bracket, the parallel construction of the main arm or some equivalent construction is applied to the forearm-section. This consists of a rod B', pivoted at b^2 to the link E and at b^3 to the end piece F. Obviously in this particular construction it is necessary in order to preserve the horizontality of the link connection, as well as that of the object supported by the bracket, that the distance between the pivotal points a and a^2 be the same as that between the points a' and a^3 and the distance between the points b and b^2 be the same as that between the points b' and b^3. The attaching-plate F' affords means for readily attaching any desired form of motor or dental-engine arm or other object to be supported by the bracket. In Fig. 1 a socket-piece I is secured to the attaching-plate by way of its plate I' and bolts i. An electric motor J is swiveled upon the socket-piece I, so that it may be horizontally turned relatively to the bracket. Connected to the shaft of said motor is a dental-engine arm consisting of a flexible cable and sheath K and handpiece L, all of usual construction.

In Fig. 4 the motor J instead of being swiveled upon the top of the socket-piece I is suspended from a bracket M, secured to the attaching-plate F'. The cable and engine-arm are omitted in this view.

In Fig. 5 the well-known Doriot engine-arm N is shown in connection with my improved bracket, an attaching-bracket O serving as the connecting medium.

Fig. 6 illustrates a dentist's tool bracket-table P, of ordinary construction, supported by my improved bracket, the vertical supporting-rod Q of which has vertically-adjustable connection with a bifurcated clamp R, secured to the attaching-plate F'.

When the object supported by the bracket, as the motor J, is moved from its extreme outer or operative position (see full lines, Fig. 1) to its inoperative position close to or against the wall, (see dotted lines, Fig. 1,) and vice versa, it moves in a practically horizontal plane, the bracket in this instance folding downwardly when the object is moved toward the wall and straightening out when said object is moved outwardly. The weight of the object or load nicely poises itself and the bracket, and the main and forearm sections thereof are caused to move in unison toward or away from each other, whereby each section at any given point always bears the same angular relation to a vertical line drawn centrally between the sections as does the other section. Therefore the object supported by the bracket is always equipoised and may be freely moved back and forth within the limits of the bracket and remain in whatever position it may be placed until positively moved therefrom. In other words, the object will remain inert when placed in either its extreme inner or outer positions and also when placed in any intermediate position.

The forearm of the bracket should be somewhat longer than the main section, the difference in length varying according to the weight of the load supported by the bracket. This causes the object to move in a slightly-inclined plane instead of in an absolutely horizontal plane, although for all practical purposes the object may be said to move in a substantially horizontal plane.

In addition to the in-and-out movements of the object afforded by the folding-bracket arm the bracket and object may be swung horizontally by reason of the pivotal connection between the plate C and the wall-plate D, and as the engine-arm or cable is flexible and the motor swiveled to the bracket it will be seen that the apparatus affords a very wide range of adjustment.

The pivotal points a and a^2 instead of being in a direct vertical line are arranged one in advance of the other in order that the bracket-sections may assume a vertical position when folded, the positions of the other pivotal points being arranged accordingly. Thus the bracket may be folded compactly and when so folded may be swung around on the pivots c c to lie flat against the wall to occupy the minimum amount of space.

The dental-engine bracket illustrated in Fig. 7 is similar in principle and general construction to the bracket first described, with the exception that in the forearm the parallel-arm construction is omitted, said forearm consisting of a single rod S and a brace or strut T, connected at one end to the arm S and at its other end to the sector H, which is rigidly connected to said arm S. In this form of bracket the verticality of the outer extremity of the forearm is obviously not maintained, and therefore it is only adapted to support a dental-engine motor of the suspension type. The motor U herein shown is suspended from the forearm by way of a spring connection V, which permits of the motor freely swinging, and not only gives it great freedom of movement but enables it to

maintain its horizontality when it is moved toward and away from the wall.

Having indicated herein two somewhat-different embodiments of my invention and also instanced various attachments for the same, it will be further understood that other changes may be made without departing from the spirit of my invention. For instance, other suitable forms of gearing may be substituted for the tooth-sectors herein shown, and the general design and details of construction varied as desired. If preferred, the bracket-arm may be constructed so as to fold upwardly instead of downwardly when the object supported thereby is moved inwardly or toward the wall.

I claim as my invention—

1. In a folding or adjustable wall-bracket, the combination of the bracket-arm comprising a main section and a forearm-section, the latter section being adapted to support an object at its outer extremity, pivotal connections between said main section and the wall to which the bracket is connected, between said main section and said forearm-section and between said forearm-section and the object supported thereby, and means for causing the weight of the object supported by the bracket to poise the bracket as well as the object itself and also for causing the main and forearm sections to move in unison vertically toward and away from each other, whereby said object may be freely moved in a substantially horizontal plane toward and away from the wall, substantially as described.

2. In a folding or adjustable wall-bracket, the combination of the bracket-arm comprising a main section having pivotal connection with a wall-support, a forearm-section adapted to support an object at its outer extremity, a pivotal link connection between said sections, all of the said pivotal connections being such that the sections fold and unfold in a vertical plane, gearing between said sections, and means for preserving the horizontality of said pivotal link connection, whereby the object suppported by the bracket may be freely moved in a substantially horizontal plane toward and away from the wall, substantially as described.

3. In a folding or adjustable wall-bracket, the combination of the bracket-arm pivoted to swing vertically, and consisting of a main section composed of two parallel members, and a forearm-section, the latter being adapted to support an object at its outer extremity, a pivotal link connection between said sections, and gearing between said sections, substantially as and for the purpose described.

4. In a folding or adjustable wall-bracket, the combination of the bracket-arm pivoted to swing vertically and consisting of a main section composed of two parallel members and a forearm-section, the latter being adapted to support an object at its outer extremity, a pivotal link connection between said sections, a gear on the outer end of one member of said main section, and a gear on the inner end of said forearm and meshing with said main-arm gear, substantially as and for the purpose described.

5. In a folding or adjustable wall-bracket, the combination of the bracket-arm pivoted to swing vertically and consisting of a main section and a forearm-section, each section being composed of two parallel members, and the latter section being adapted to support an object at its outer extremity, pivotal link connection between said sections, and gearing between said sections, substantially as and for the purpose described.

6. In a folding or adjustable wall-bracket, the combination of the vertically-swinging bracket-arm consisting of two sections each composed of two parallel members, an intermediate link to which the members of each of said sections are pivoted, a toothed sector fast on the outer extremity of the lower member of the inner section and a similar sector on the inner extremity of the lower member of the outer section, said sectors meshing with each other, substantially as and for the purpose described.

7. In a folding or adjustable wall-bracket, the combination of a vertically-folding bracket-arm consisting of two sections each composed of two parallel members, an end piece having pivotal connection with the outer extremity of said bracket-arm, and the vertical attaching-plate of said end piece, the verticality of said plate being always maintained, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. RICHARDSON.

Witnesses:

JAMES H. BELL,

BANKS F. ROUSH.