

(No Model.)

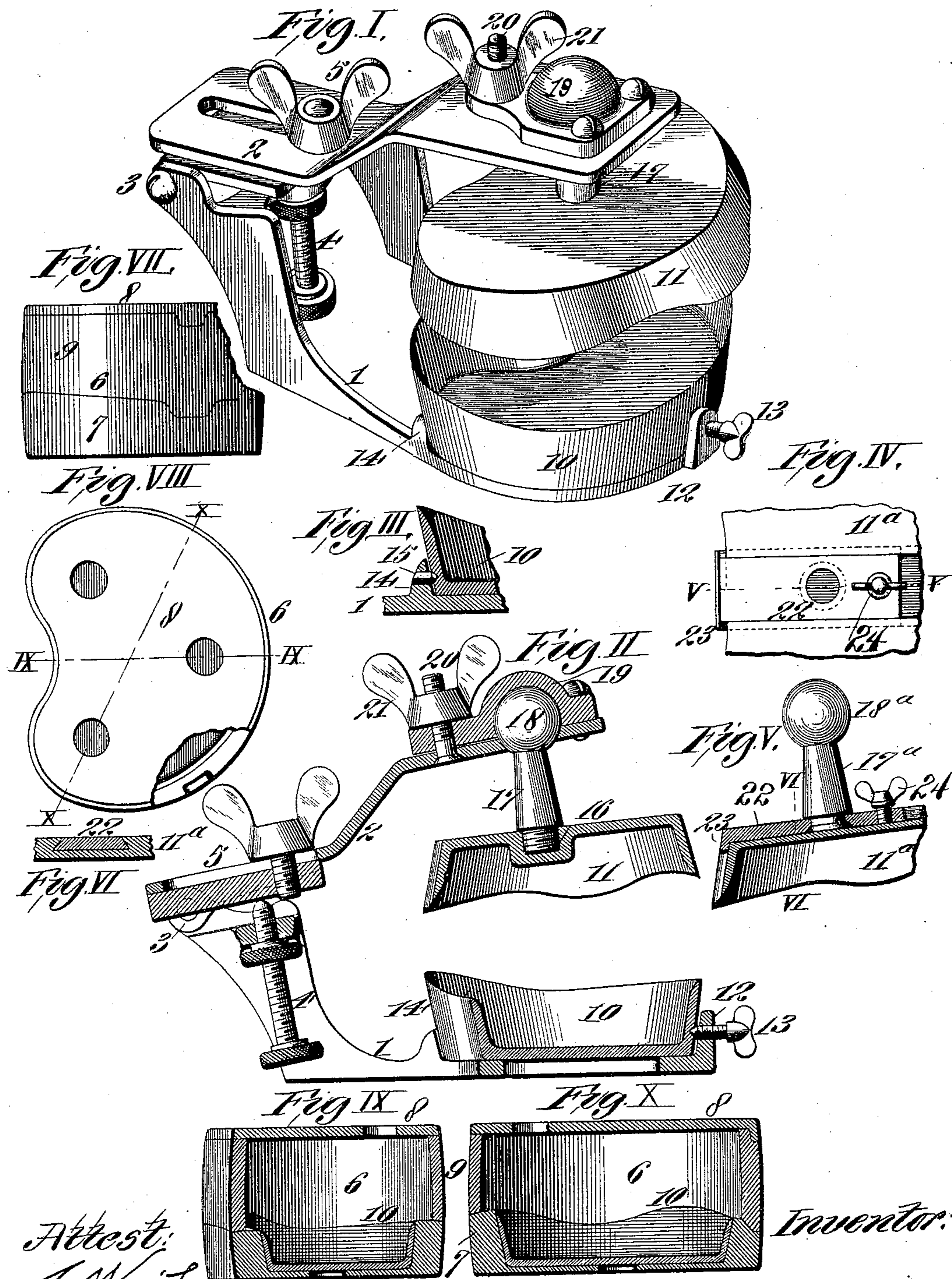
2 Sheets—Sheet 1.

K. R. BRAGG.

COMBINED ARTICULATOR AND FLASK AND DENTAL PROCESS.

No. 565,326.

Patented Aug. 4, 1896.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. XI.

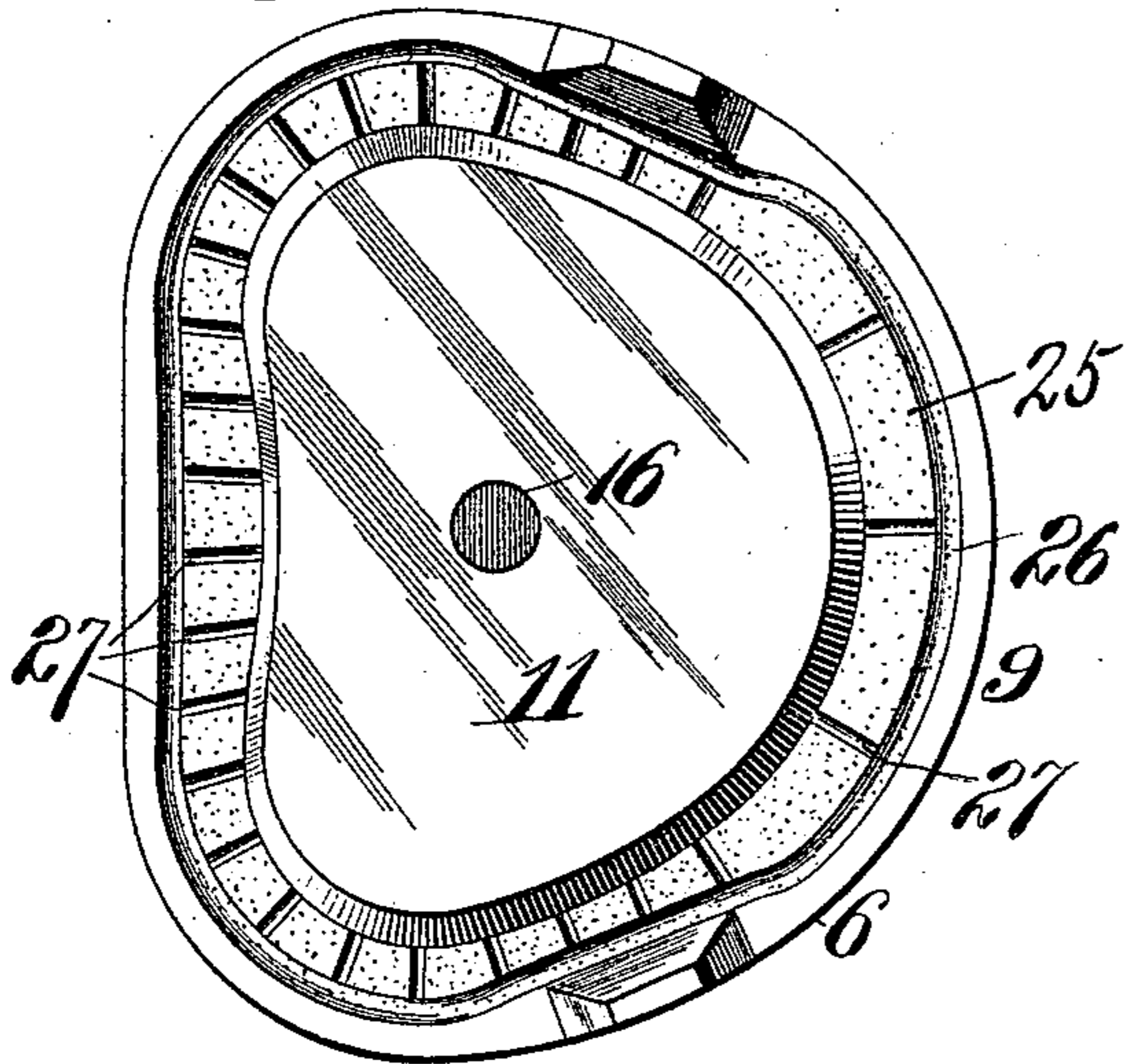


Fig. XII.

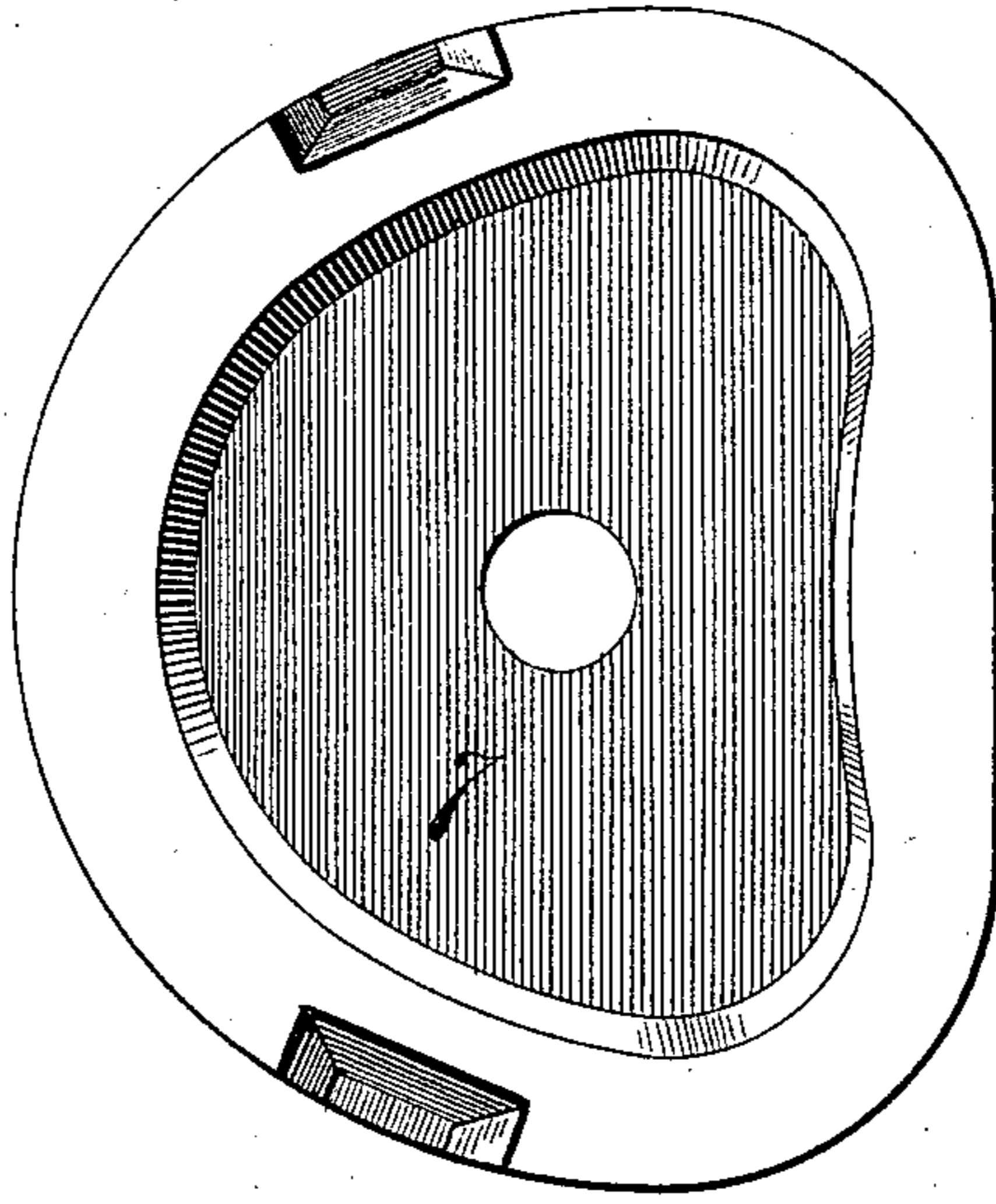


Fig. XIII.

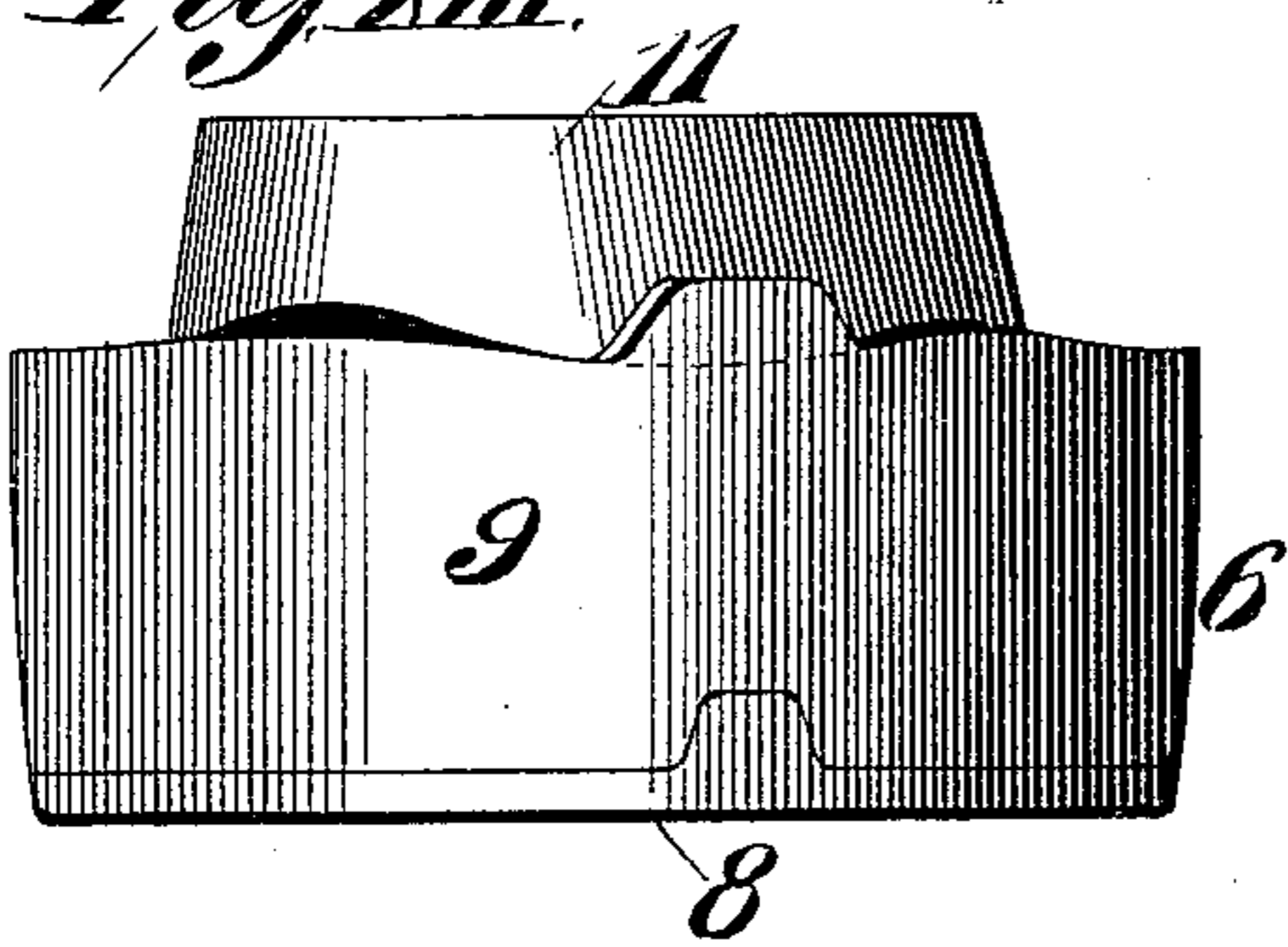


Fig. XIV.

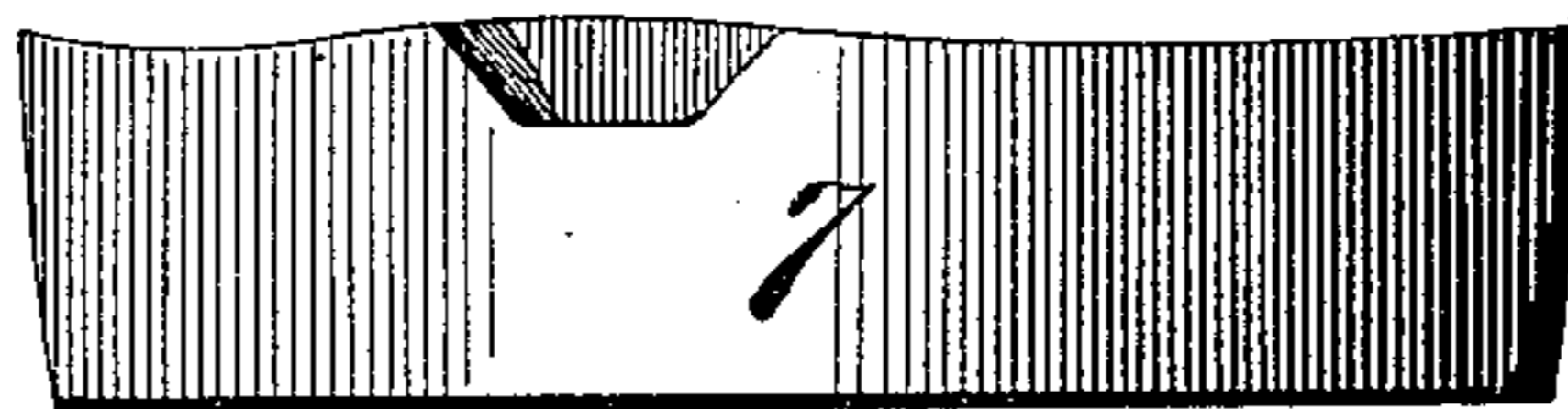
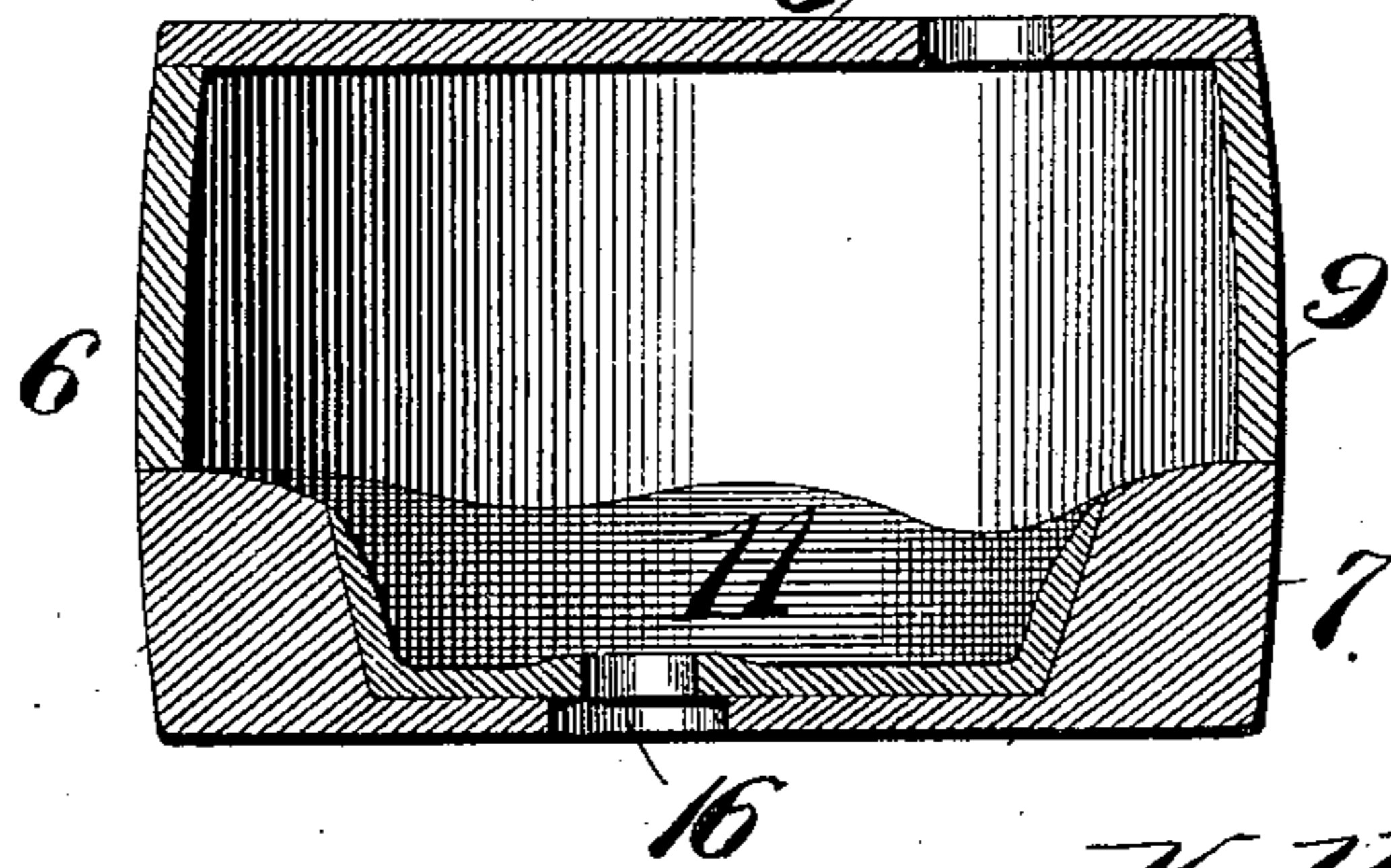


Fig. XV.



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UNITED STATES PATENT OFFICE.

KELLY R. BRAGG, OF SHELBYNA, MISSOURI.

COMBINED ARTICULATOR AND FLASK AND DENTAL PROCESS.

SPECIFICATION forming part of Letters Patent No. 565,326, dated August 4, 1896.

Application filed January 25, 1896. Serial No. 576,796. (No model.)

To all whom it may concern:

Be it known that I, KELLY R. BRAGG, of Shelbyna, Shelby county, Missouri, have invented a certain new and useful Improvement in a Combination Articulator and Flask and Art of Making Artificial Dentures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My present invention relates to certain improvements on what is shown and described in my Patent No. 537,812, issued April 23, 1895.

My present improvements have for their object to simplify the device which may be used in carrying out the process set forth in my former patent, whereby said process may be carried out more conveniently.

One of my present improvements consists in making the articulator with a ball-bearing pin, to which the receptacle for the model is directly attached, all the lateral and angular adjustments being obtained by this ball-bearing in connection with the extension-joint, which connects the upper jaw of the articulator with the hinged portion of the same.

A further feature consists in forming the lower jaw with two fixed pins or studs at the back and a single set-screw at the front, by means of which the portion of the lower flask may be fixed in place by the adjustment of a single screw instead of three, as in the former patent.

A further feature consists in making the base of each flask with a removable model-cup of comparatively light construction and adapting these cups to be attached to the jaws of the articulator and to be afterward detached and readily dropped into their appropriate flasks and fit accurately therein. This feature embodies special advantages, namely, first, the increased facility and convenience with which the articulator may be handled in setting the teeth, owing to its greatly-reduced weight and size and its simplified construction, which latter feature adapts it to be more readily grasped and opened and closed while held in one hand. Second, when they are dropped in the flasks in which they fit the thickness of the latter parts leaves a thick

edge surrounding the edge of the model-cup, which additional edge has heretofore been necessarily provided by filling in with plaster around the model in order to provide the necessary enlarged space within the central ring for reception of the plaster which surrounds the teeth, and also to give overflow room between the plaster in said central ring and said enlarged edge for the surplus material used to form the base of the denture, which flows out around the edge of the model-cup. It further offers superior advantage for trimming off said surplus material when the flask is inverted and the base of the flask is removed. Third, an advantage arises from the use of the removable model-cup from the fact that when the base of the flask is removed the thin model-cup containing model remains undisturbed and the surplus material is readily trimmed from around the edge of said cup, if a surplus of such material has been used, or it is very easy to add material in the spaces where insufficient amount of the material occurs. This adding to or taking from the material without disturbing the model is impossible without disturbing the model in flasks as heretofore constructed.

Figure I is a view in perspective of my improved articulator. Fig. II illustrates a vertical longitudinal section taken through the articulator in the position shown in Fig. I. Fig. III illustrates a detail vertical section taken through one corner of the lower model-cup and through one side of the lower jaw. Fig. IV is a detail top view illustrating a modified form of connection between the upper jaw and the upper model-cup, the ball-head pin being removed. Fig. V illustrates a section taken on line V V, Fig. IV, with the ball-head pin inserted. Fig. VI illustrates a section taken on line VI VI, Fig. V. Fig. VII is an end or side view of the exterior of one of the vulcanizing-flasks. Fig. VIII is a top view of the flask that receives the lower model-cup. Figs. IX and X illustrate, respectively, cross-sections taken on lines IX IX and X X, Fig. VIII. Fig. XI illustrates a view of the flask inverted and from which the bottom plate has been removed and showing a model-cup, in this instance the upper one, in position in the plastic substance in

the flask. Fig. XII is a top view of the bottom plate of the flask. Fig. XIII is a side elevation of the parts shown in Fig. XI. Fig. XIV is a side or edge view of the bottom plate. Fig. XV illustrates a vertical section taken through the entire flask and the upper model-cup therein.

In the drawings, 1 designates the lower jaw of the articulator, and 2 the upper jaw. These jaws are hinged together at 3. The lower jaw carries the spacing-screw 4, and the upper jaw is provided with the extension-joint 5, as usual.

6 designates the vulcanizing-flasks which receive the model-cups, which cups form part of the flask in which the denture is produced. These flasks for the upper and lower cups are essentially duplicates. Hence I will refer to them by similar reference-numerals. They are each composed of a recessed bottom plate 7, a top plate 8, and an intermediate ring 9. The interior of each flask conforms to the shape of one or other of the lower or upper model-cups, of which 10 is the lower cup, and 11 is the upper cup. The employment of the cups 10 and 11 in which to produce the denture instead of producing it in the flask alone, as provided in my patent referred to, enables me to provide cups of much lighter weight for handling in the articulator, and which assist in making the complete articulator much more wieldy than where the flasks are employed to receive the models directly. The utility of the flasks and the removable model-cups with reference to molding the rubber in the flask will be hereinafter set forth.

The model-cups are connected to the articulator-jaws in the following manner: Cup 10 is arranged to be seated between a lug 12 at the forward end of the jaw 1 and two lugs 14 at the sides of the jaw. The lug 12 carries a set-screw 13, and each of the lugs 14 has set into it a pin 15, (see Fig. III,) the projecting points of which pins extend in a forwardly direction and against which the cup 10 is pressed by the set-screw 13, and thereby held to the jaw. Cup 11 has a screw-threaded depression 16 in its outer surface, in which the threaded end of a pin 17 is inserted, and on the opposite end the pin 17 is provided with a ball-head 18, that fits in a socket in the jaw 2, and is held in said socket by means of a clamp-plate 19 and a screw 20 and a thumb-nut 21. On loosening the thumb-nut 21 the upper cup 11 may be shifted to the desired angle in the same manner as proposed with the upper flask in my patent herein referred to.

In Figs. IV, V, and VI, I have shown a modified form of connection between the ball-head pin 17^a and the model-cup 11^a. In this form of connection the pin 17^a is rigidly secured to a plate 22, that is removably fitted in a dovetailed groove in the cup 11. This plate 22 is provided with a flange 23, that limits its inward movement, and the plate carries a set-screw 24, by which it is secured from movement when set in the desired position.

Referring now to the utility of the flasks and removable model-cups with reference to their use in molding the rubber in the flask in forming the plate for the teeth, by the employment of the sectional flasks 6 and removable cups I am enabled to much more readily prosecute the molding in the process of forming the rubber plates for the reason that the cups are free to be removed from the bottom plate of the flask, thereby permitting of the flask being inverted and the bottom plate being removed, as illustrated in Fig. XI, when access to the interior of the cup may be had.

It is a frequent occurrence for an operator in molding the rubber plate to either employ an excess of rubber in the mold, and when this occurs in the ordinary flask it is necessary to entirely open the flask to remove the excess of rubber. This not infrequently results in the breakage of the model, thereby entailing the production of a new model with the consequent annoyance and loss of time. It also frequently happens that a deficient amount of rubber has been employed, and the flask must be opened for the purpose of adding an additional quantity of rubber, with annoying results, as in the instance of the excess. By my invention I overcome these difficulties, as I will now set forth.

When the model has been formed and the teeth set in wax in the usual way, the model-cup is placed in the recessed lower plate of the vulcanizing-flask, the flask containing the usual filling of plastic substance, which is illustrated in Fig. XI, and designated by 25. The wax is then melted out and the rubber or other denture plate substance is introduced in its place, and the flask again closed and placed in a press which is inserted into a vulcanizer, as usual. It is at this time that it is necessary to ascertain and correct any excess or deficiency of rubber or equivalent substance in the mold, and to the end of so ascertaining and correcting the existing errors my flasks and model-cups are especially adapted, inasmuch as such construction permits of the flask being inverted and the bottom plate being lifted from the remainder of the flask when the cup is left in the position illustrated in Figs. XI and XIII. As will appear on reference to Fig. XIII, the model-cup at this time stands above the central ring of the flask and thus gives opportunity of access to the interior of the cup.

In the plastic substance 25 I cut a groove 26 and gateways 27, leading from the interior of the model-cup to said groove, so that should an excess of rubber or equivalent substance be employed it will, when melted, run out into the gateways 27 one-half inch beyond margin of model-cup to the groove 26, from which it may be removed on inverting flask and removing recessed bottom plate 7 without interfering with the model or model-cup in the least.

Should there be a deficiency of the rubber or equivalent substance on inverting flask

and removing recessed bottom plate 7 an additional quantity may be added by cutting it into narrow strips and pressing it with a suitable tool into the model-cup beneath the cup as it stands in the position shown in Figs. XI and XIII.

I claim as my invention—

1. In a dental vulcanizing-flask, a base or bottom portion having a removable lining or model-cup fitting in it, substantially in the manner and for the purpose herein set forth.

2. In a dental vulcanizing-flask, the base or bottom portion of said flask having a removable lining or model-cup and formed with an edge of increased thickness around the edge of the lining or model-cup substantially as and for the purpose herein set forth.

3. In a dental vulcanizing-flask, a base or bottom portion formed with a removable lining or model-cup, said lining or model-cup having means for attaching it to the articulator when separated from said base or bottom, substantially as herein explained.

4. In a dental vulcanizing-flask, the combination of the base or bottom portion formed with the removable lining or model-cup and formed with a thick edge surrounding the edge of the lining or cup, the central ring surmounting the base or bottom portion and of thickness reduced to leave a space within it above the thick edge of the base or bottom

portion of the flask, and a cap-plate for the flask, all substantially as herein set forth.

5. In an apparatus for making artificial dentures, the combination of an articulator, a model-cup, and a pin having connection at its respective ends, at single points with the articulator, and the model-cup; and one of said connections being ball-and-socket joint, substantially as shown and for the purposes set forth.

6. The art of forming artificial dentures which consists in taking the impression of the mouth in the impression-cup, then forming from said impression, a model in a model-cup constructed for attachment to the articulator, then setting up the teeth in a suitable manner with the aid of the articulator and inserting it in the base or bottom portion of a flask, then applying the middle ring and filling same with plaster, then supplying the material for forming the base of the denture, and then closing the flask and while closing adding to or taking from the material forming the base of the denture, by removing the base or bottom of the flask while leaving intact the model-cup and model contained therein, all substantially as herein set forth.

KELLY R. BRAGG.

In presence of—

J. WM. TOWSON,
JOHN J. BRAGG.