

(No Model.)

M. W. HOLLINGSWORTH.
ARTIFICIAL TOOTH CROWN.

No. 602,581.

Patented Apr. 19, 1898.

FIG. 11.

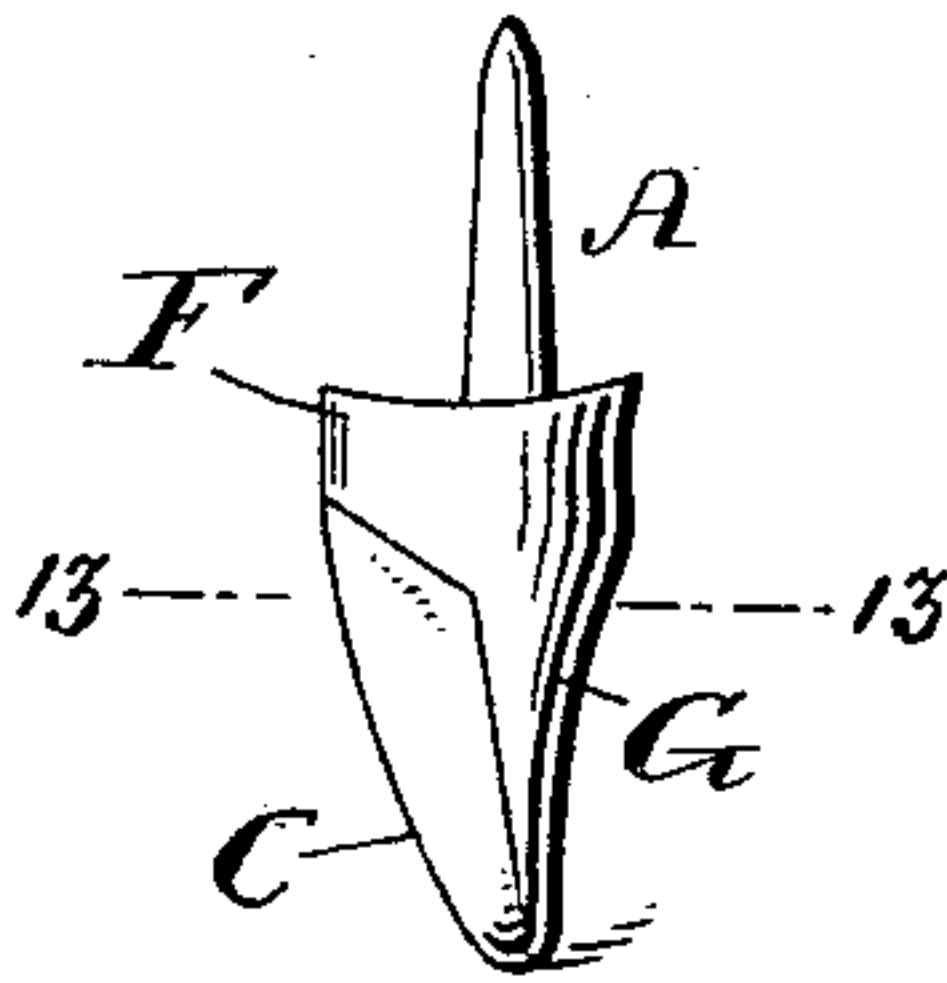


FIG. 12.

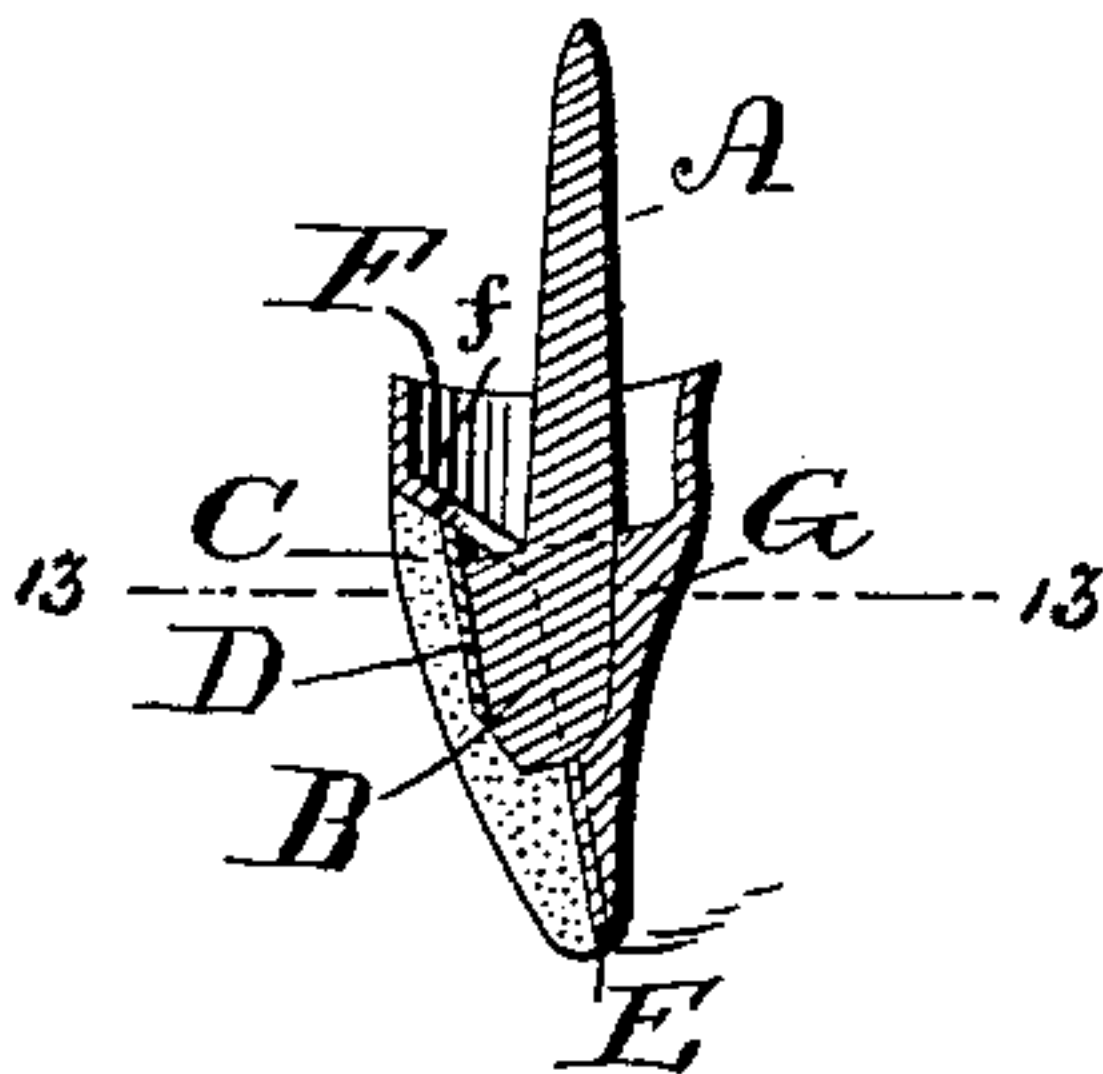


FIG. 14.

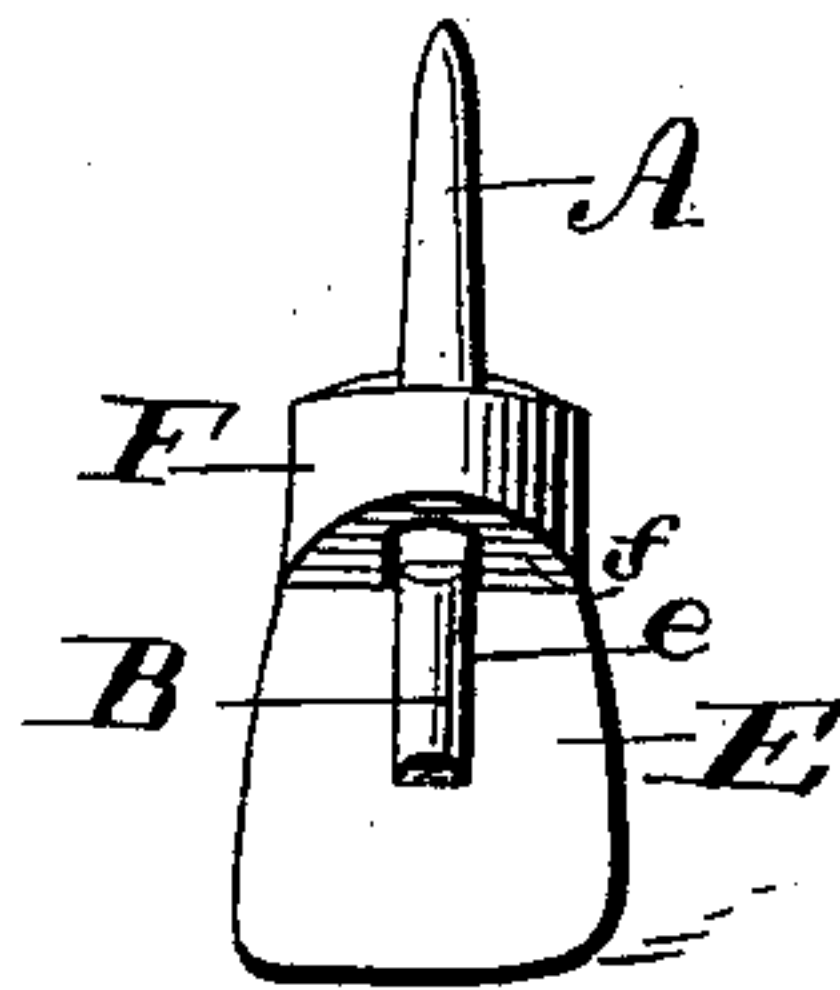


FIG. 13.

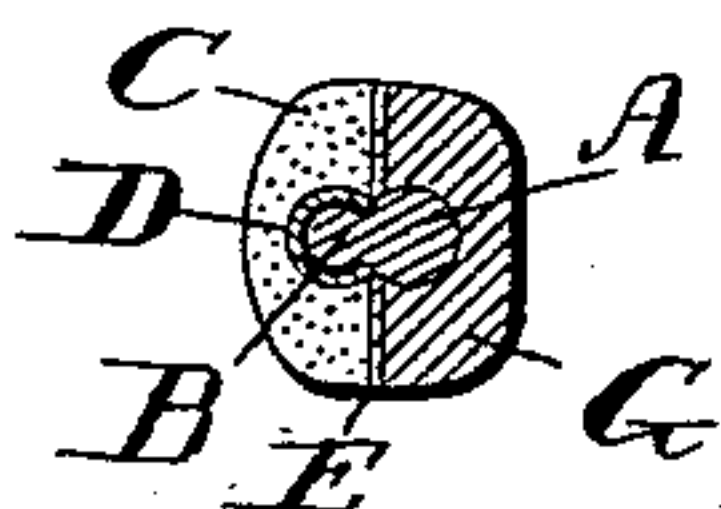


FIG. 1.

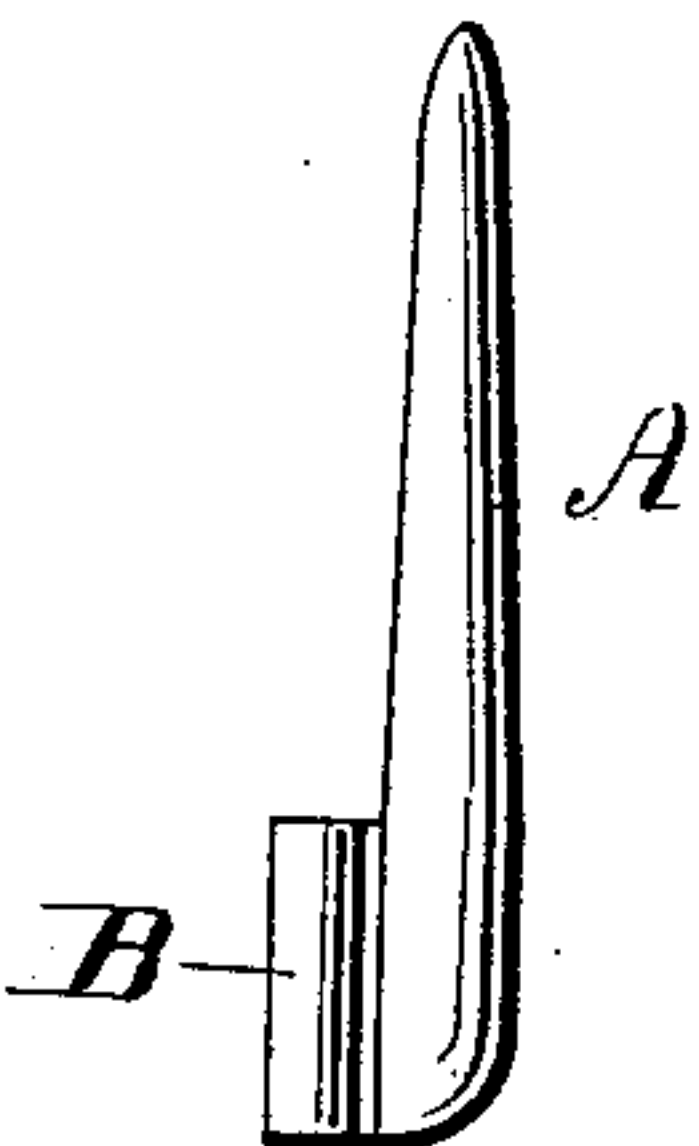


FIG. 7.

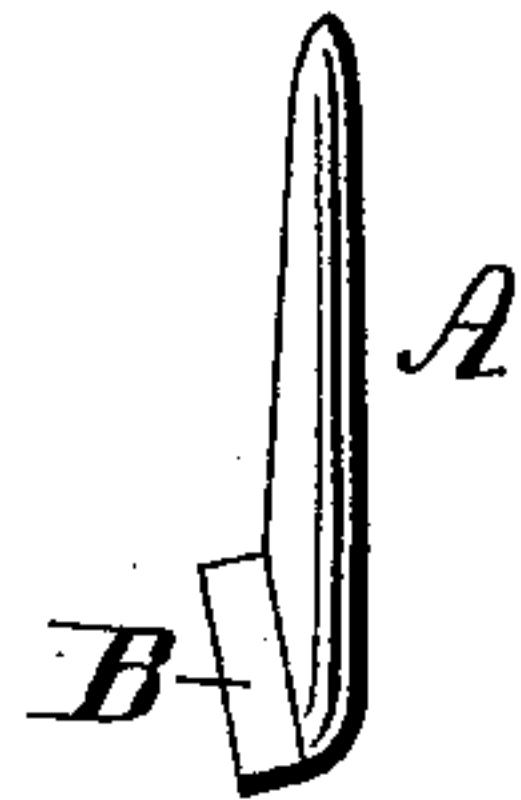


FIG. 3.

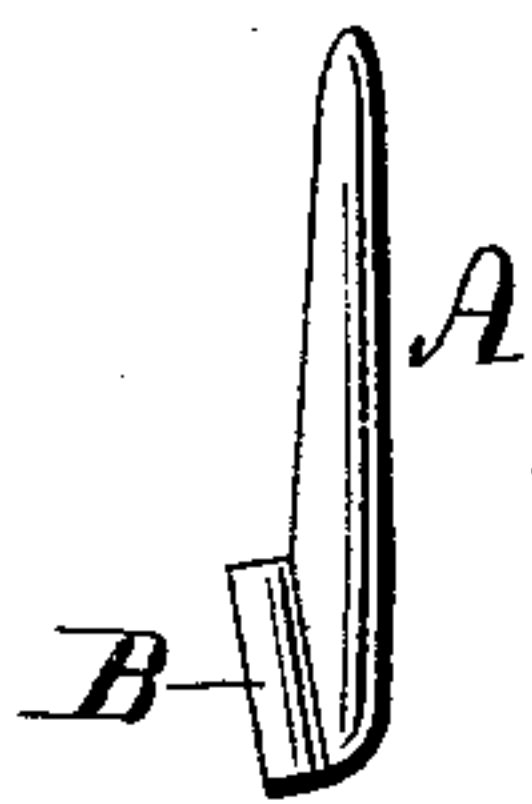


FIG. 4.

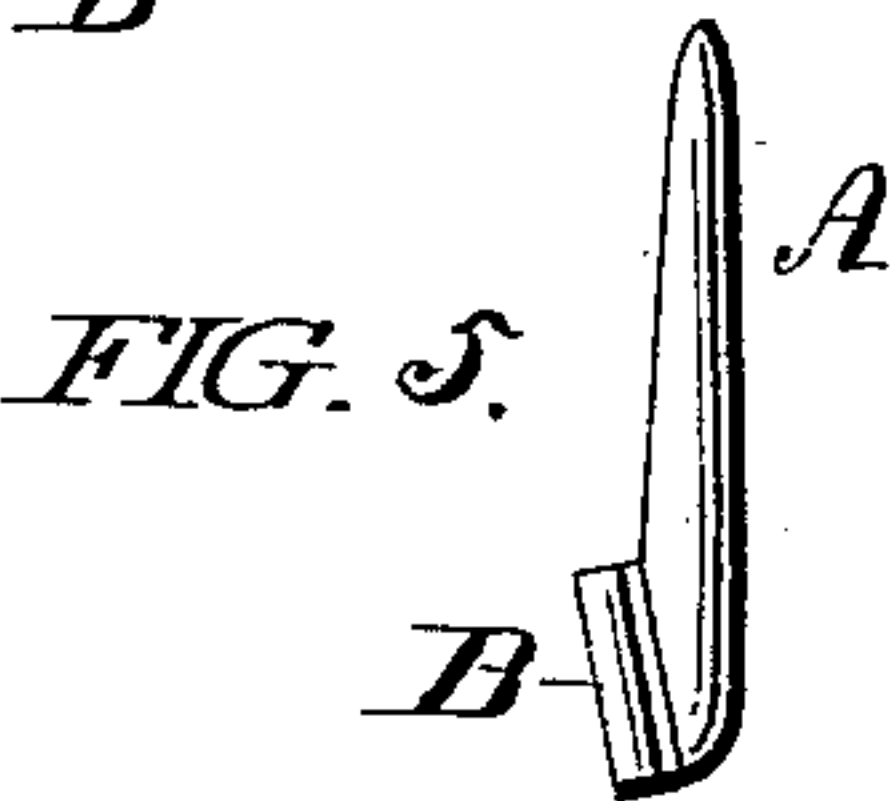


FIG. 5.

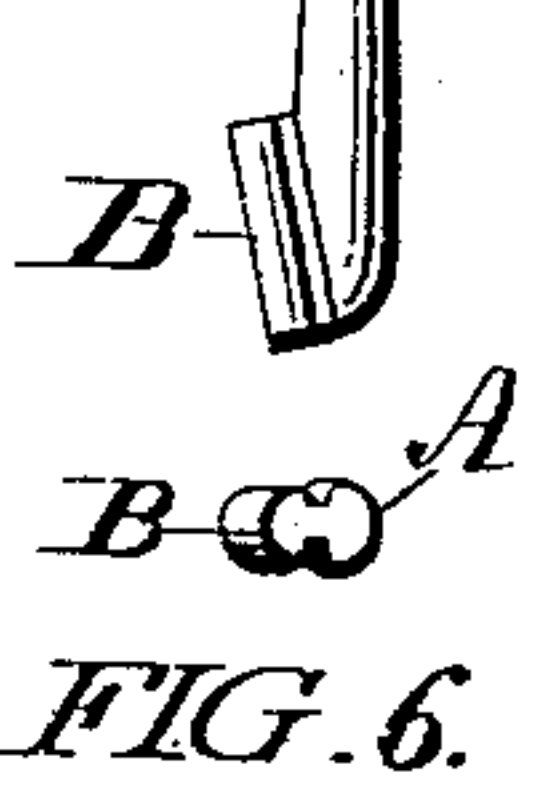


FIG. 2.



FIG. 8.



FIG. 9.

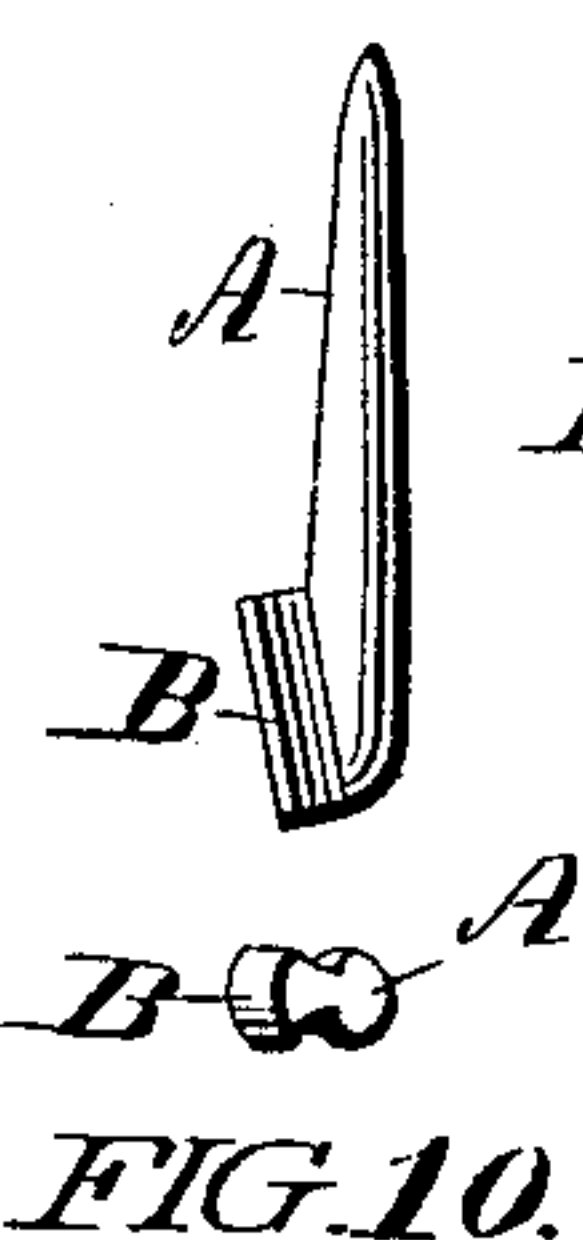


FIG. 10.

WITNESSES:

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UNITED STATES PATENT OFFICE.

MERRILL W. HOLLINGSWORTH, OF PHILADELPHIA, PENNSYLVANIA,
ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COM-
PANY, OF SAME PLACE.

ARTIFICIAL TOOTH-CROWN.

SPECIFICATION forming part of Letters Patent No. 602,581, dated April 19, 1898.

Application filed November 24, 1897. Serial No. 659,665. (No model.)

To all whom it may concern:

Be it known that I, MERRILL W. HOLLINGSWORTH, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Artificial Tooth-Crowns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as
10 will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to artificial tooth-crowns; and my objects are to provide an improved post for mounting artificial tooth-
15 crowns upon natural tooth-roots and also to provide an improved connection between said post and crown.

My improvements, which will be hereinafter more fully described, and then pointed out in the claim at the end of this specification, are applicable to that class of artificial crowns which consist of metallic supports and porcelain facings and are particularly applicable to that type of this class of artificial crowns
25 in which the porcelain facings are detachably connected to the metallic supports.

In the accompanying drawings, Figure 1 is an enlarged view in side elevation, and Fig. 2 an end view, of a crown-post made in accordance with the principles of my invention. Figs. 3 to 10, inclusive, are similar views, on a somewhat smaller scale, of modified forms of my improved crown-post. Fig. 11 is a view in side elevation of a complete artificial crown
35 made in accordance with my invention. Fig. 12 is a view in vertical central section of the same, and Fig. 13 is a horizontal section on the lines 13 13 of Figs. 11 and 12. Fig. 14 is a view in front elevation of the complete
40 crown with the porcelain facing detached, showing the entire metallic support.

My improved crown-post consists of a metallic post or pin A of suitable size, shape, and taper to enter and approximately fit a
45 prepared socket or canal in a natural tooth-root. It may be of any desired metal possessing sufficient rigidity, as platinum, and is provided upon one side at and near its larger end, which is adapted to project outside of the

root, with an offset portion which constitutes
50 one member of an interlocking connection between said post and a porcelain facing, as C. This offset portion is in the shape of a spline or feather B, which is adapted to engage a recess or groove in the back of the porcelain
55 facing C. The spline or feather B extends, say, one-third the length of the post, is arranged approximately parallel with the longitudinal axis of the body of said post, and is more readily made by being formed integral
60 therewith, although, if preferred, it may be made separate and then soldered to the post. The shape of the body of the post in cross-section is preferably oval or flattened, as shown in Figs. 1 and 2; but obviously it may
65 be made of any other desired shape in cross-section. For instance, it may be round, as shown in the remaining figures of the drawings. The spline or feather may be of any
70 desired shape in cross-section that will serve to engage the groove in the porcelain facing and permit the same to be slid thereon and at the same time prevent it from becoming detached from the post, except by the same sliding movement. I, however, prefer to make
75 the said spline round or of such shape that the porcelain facing may be slightly turned laterally in adjusting it, as will hereinafter be more fully explained. In Figs. 1, 2, 3, 4, and
80 In Figs. 5 and 6 it is shown somewhat flattened. In Figs. 7 and 8 it is shown of dovetail or wedge shape with straight sides, and in Figs. 9 and 10 it is of dovetail or wedge shape with curved sides. The post need not necessarily
85 be tapered, although that is the preferred form.

The recess or groove in the back of the porcelain facing C must be of a shape and size to correspond with the spline or feather of the
90 crown-post, with which it is adapted to have a loosely-sliding interlocking connection. Said groove should commence at the neck end of the facing, on the rear side thereof, and extend longitudinally of the facing a suitable
95 distance toward the cusp or cutting end thereof. For the purpose of making a better connection, and also for strengthening the facing,

the recess or groove should be lined with platinum D, which is baked in the facing. The back of the facing should be ground off flat to make a proper sliding connection between the facing and its metallic backing, as will be hereinafter explained.

In the process of substituting an artificial crown for a lost natural crown in accordance with my invention my improved crown-post is temporarily fitted in the canal of the root, which has previously been prepared to receive it. A porcelain facing may then be immediately fitted upon that part of the post which projects outside of the root by means of the interlocking connection formed by the spline of the post and the groove in the facing. Should the longitudinal axis of the facing not agree with the alinement of the tooth-root, as represented by the crown-post, the proper position of the facing relatively to the adjoining teeth and to the post-body may be secured by bending the post in the desired direction at a point just beyond the spline or feather. This, it will be seen, may be done without disturbing the free sliding and interlocking connection between the facing and spline. In order to facilitate the securing of this proper position of the facing with the least amount of bending of the post-body, the spline may be originally formed at a slight angle relatively to the post-body, as shown in several figures of the drawings. It will of course be understood that the spline arranged obliquely to the body of the post is within the before-employed designation "approximately parallel with the longitudinal axis of the post," and that when such designation is used herein it means that the spline is formed either parallel with the longitudinal axis of the post or at a slight angle relatively thereto. Having secured the proper position of the porcelain facing by means of bending the post, if necessary, as just described, and by laterally turning the facing on its interlocking connection with the post, a metallic backing E, such as is commonly employed in the construction of a crown of this character, is next fitted upon the post, close to the back of the porcelain facing, between said facing and the body of the post, the backing being slotted at *e* to loosely straddle the post at the junction between the post-body and the spline. Since the purpose of a metallic backing is to lend support to the facing, it is obvious that accurate fitting or joining is essential. Moreover, since it is necessary in order to effect such accuracy of adjustment between the facing and its backing to first grind the back of the facing flat and parallel with its groove, it will be apparent that the backing must be similarly flattened and surfaced and must admit of a certain adjustment relatively to the spline of the post, the back of the facing, and the body of the post in order to easily obtain the proper juxtaposition of the several crown parts relatively to the tooth-root and the adjoining teeth. The porcelain facing and me-

tallic backing having been secured in proper position and the backing temporarily held in this position upon the post by means of sticky wax, the incomplete crown thus formed is removed from the mouth, the facing detached, and the post and applied backing properly invested, and the two soldered together. It will be clear, therefore, that such facility of adjustment during the construction of crowns of this class could not follow were the backing and spline made originally integral and separate from the post or were the post and the backing made integral and the spline separate, or, lastly, were the post, spline, and backing originally integral or fixed in their relations one to the other.

The proper relative positions of the backing, post, and facing having been determined, as described, a metal collar or band F is next suitably formed to properly fit as a ferrule upon the tooth-root and beveled to correspond to the adjoining related parts. The proper relative positions of the post, facing, backing, and collar having been determined, the metal parts are joined by means of sticky wax, then invested, and the collar soldered to the backing, and a cap or floor *f* soldered to the collar. The rear of the backing may be made continuous with the collar by soldered attachments, as those familiar with the art will readily understand. The complete metallic support thus formed consists of a post A, a backing E, a collar F, and a spline or feather B, projecting through the slotted backing, so as to occupy a position on the front or face thereof. The entire crown may be completed by sliding the porcelain facing upon the metallic support, where it may be securely held by means of cement, and the crown may then be permanently mounted upon the natural root in any well-known manner. If the porcelain facing should be cracked or broken in use, it can readily be removed and a new facing substituted without disturbing the metallic support.

It should be observed that the previously-described play of the facing upon the spline when the backing is being suitably fitted thereto and waxed to the post compensates for the grinding required to similarly join or fit a substitute facing to the original backing.

From the above description it will be seen that my improved crown-post particularly provides a means for both temporarily and permanently connecting the porcelain facing directly to the post, at the same time admitting of both a certain necessary lateral as well as a longitudinal adjustment of the facing upon the spline during the process of forming and fitting the metallic portions of the crown, usually designated as the "post," "backing," "band," and "cap." It will also be observed that the body of the post may be bent in any required direction without disturbing the spline, or provision supplied for attachment of the porcelain facing. It is to be understood that the purpose of the afore-

said lateral and longitudinal play of the facing upon the spline of the post is not only intended to make the adjustment of all related parts easy of accomplishment, but also to facilitate the attainment of accuracy during the process of fitting and uniting of those related parts in their proper juxtaposition.

While I have shown and described my invention as applied only to single artificial crowns, it is obvious that the principles embodied may be employed in the construction and mounting of artificial bridges composed of two or more connected artificial crowns.

I claim as my invention—

15 An article of manufacture consisting of a crown-post adapted to be fitted in the canal of a natural tooth-root and provided at and near its end which projects outside the said

root with an offset spline or feather arranged approximately parallel with the longitudinal 20 axis of the post, for the purpose of making a direct sliding interlocking connection between said post and a porcelain tooth-facing provided with a groove corresponding in cross-section to said spline or feather, and 25 also affording means for attachment of a slotted metallic backing which may be fitted between the said post and the said porcelain facing, substantially as and for the purpose described. 30

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

MERRILL W. HOLLINGSWORTH.

Witnesses:

G. HERBERT JENKINS,
THEODORE B. VAILL.