

F. S. SAWAYA.  
 APPARATUS FOR MAKING BACKINGS FOR ARTIFICIAL TEETH.  
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Fig. 4.

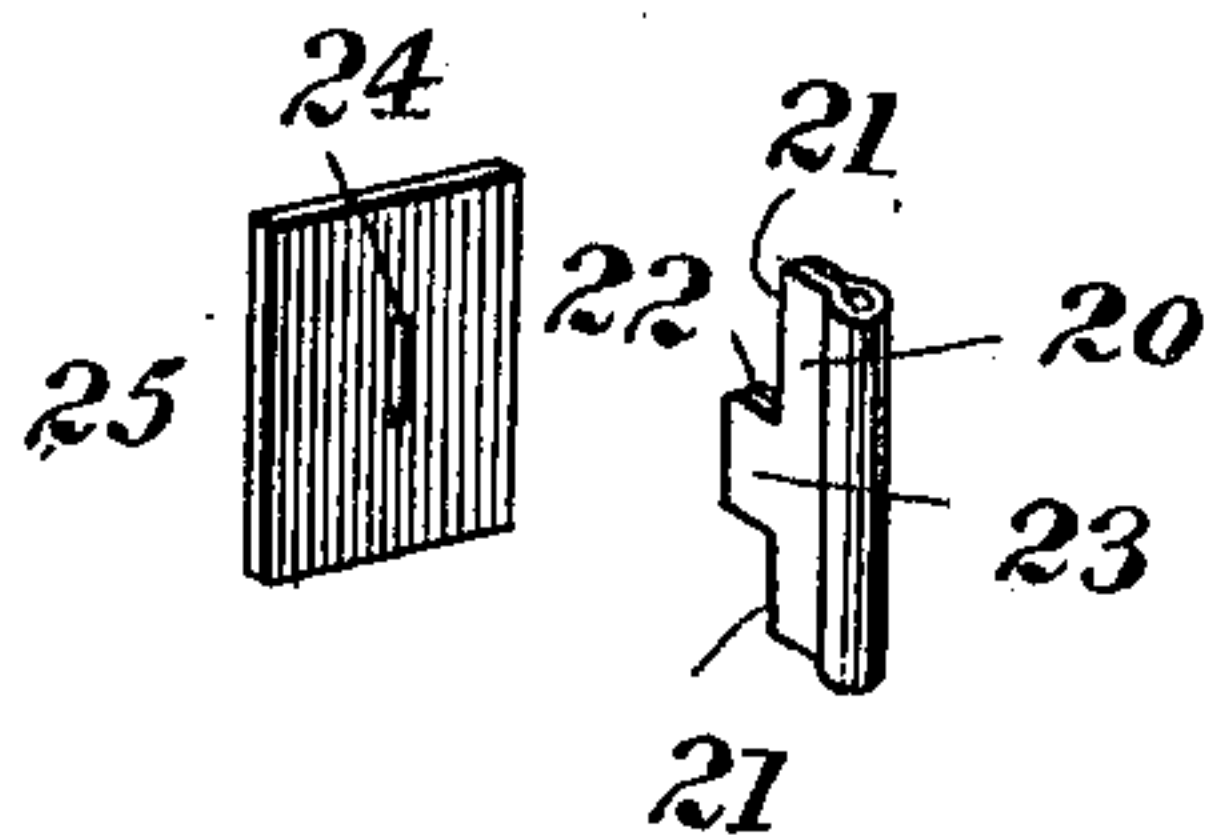


Fig. 5.

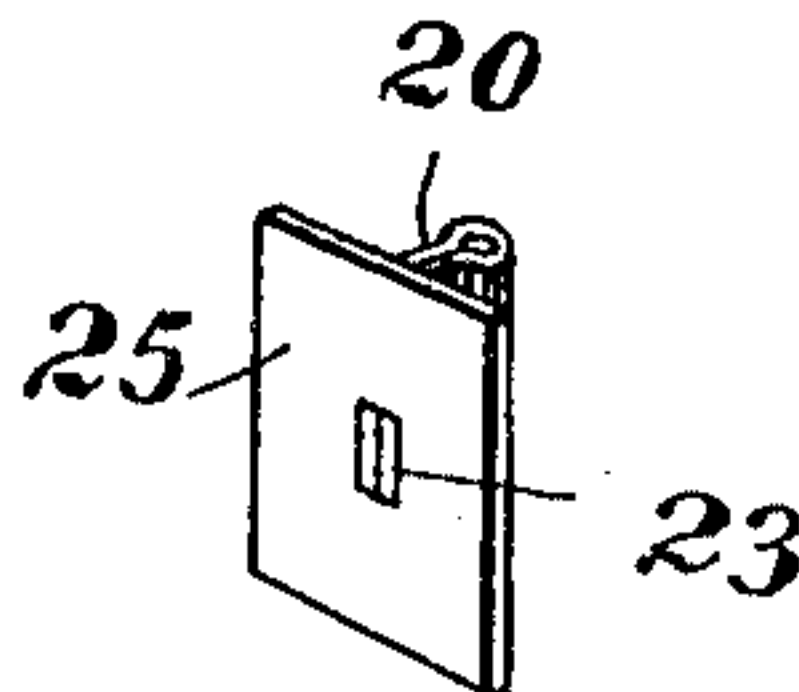


Fig. 1.

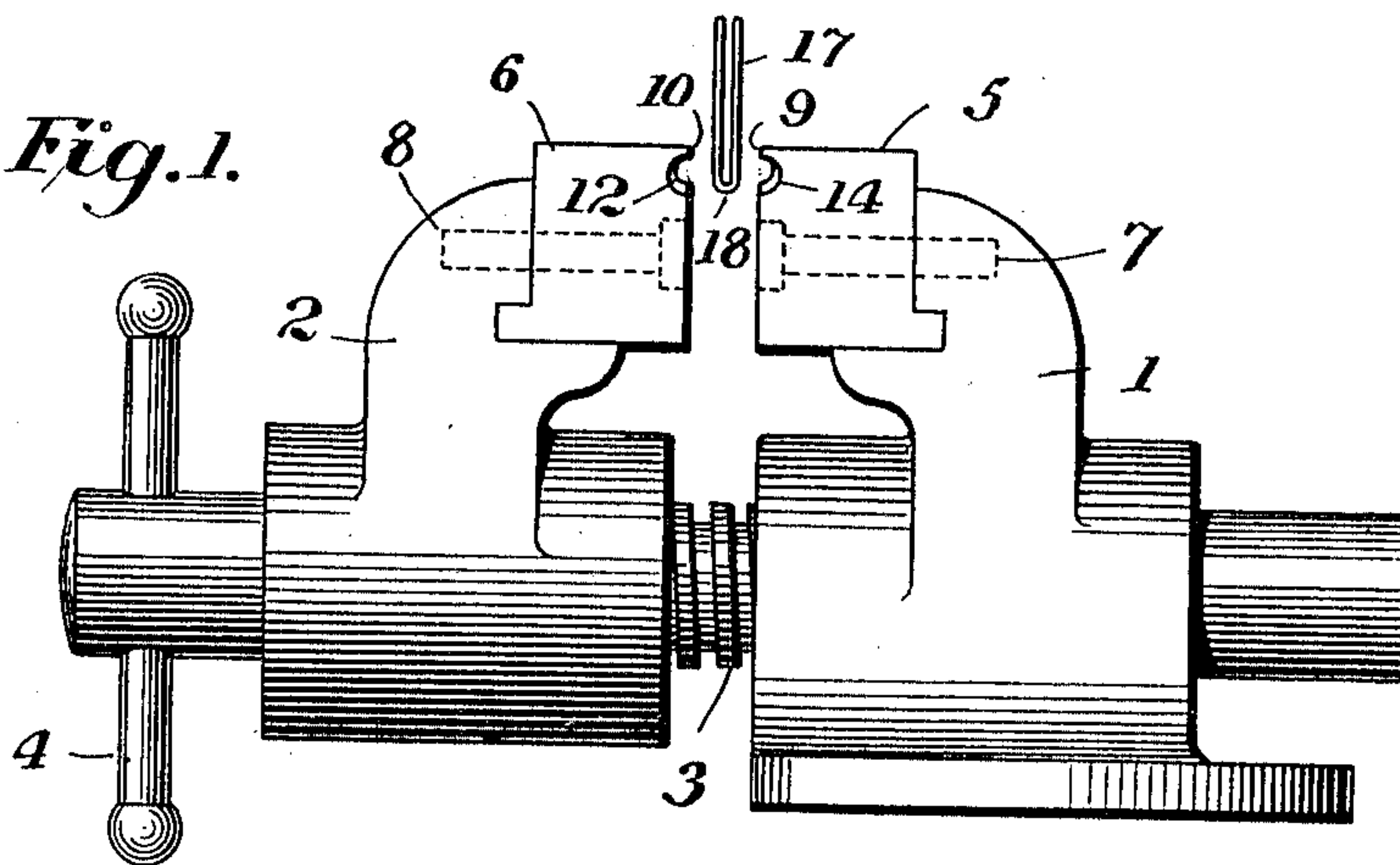


Fig. 2.

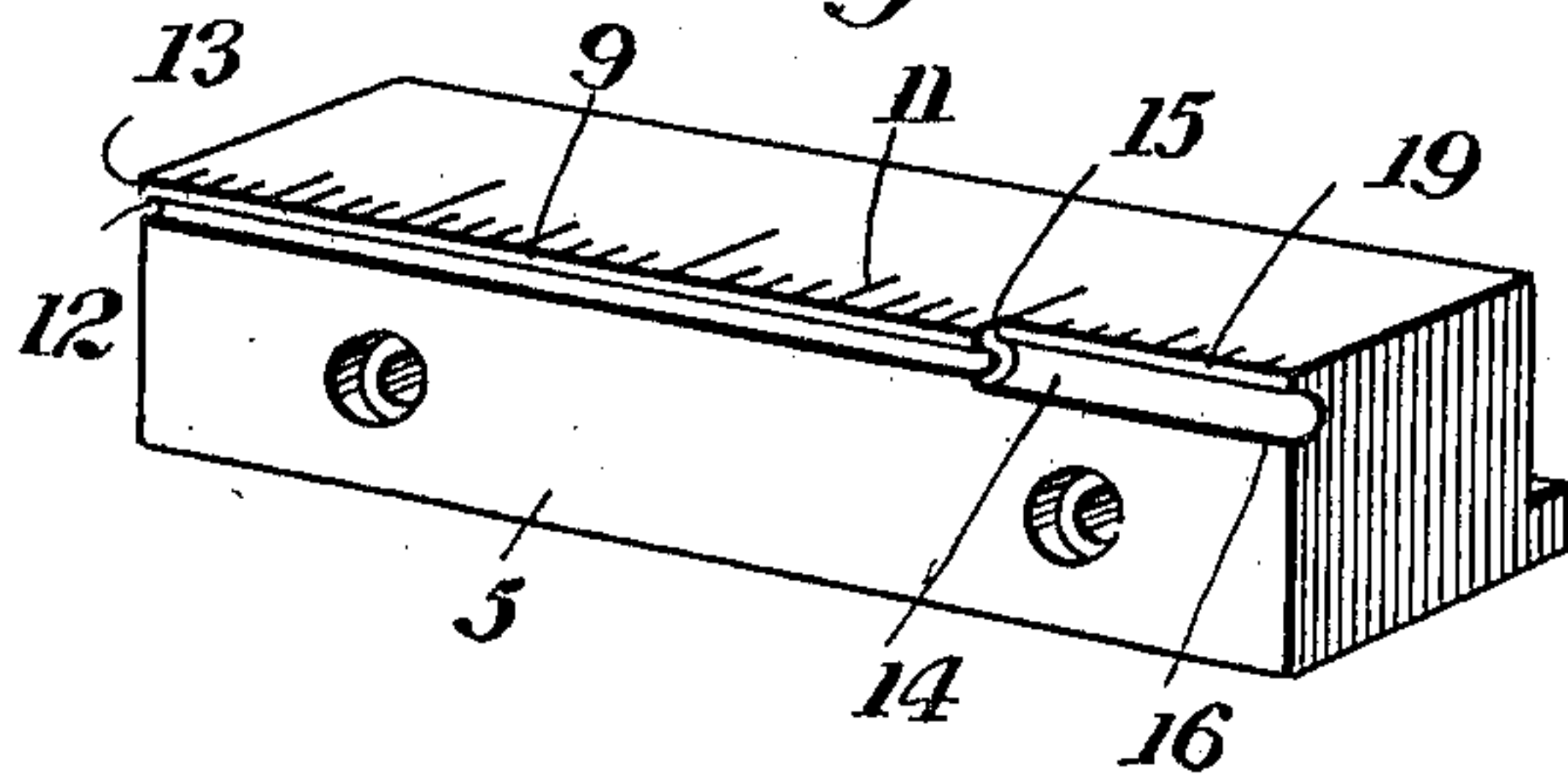


Fig. 3.

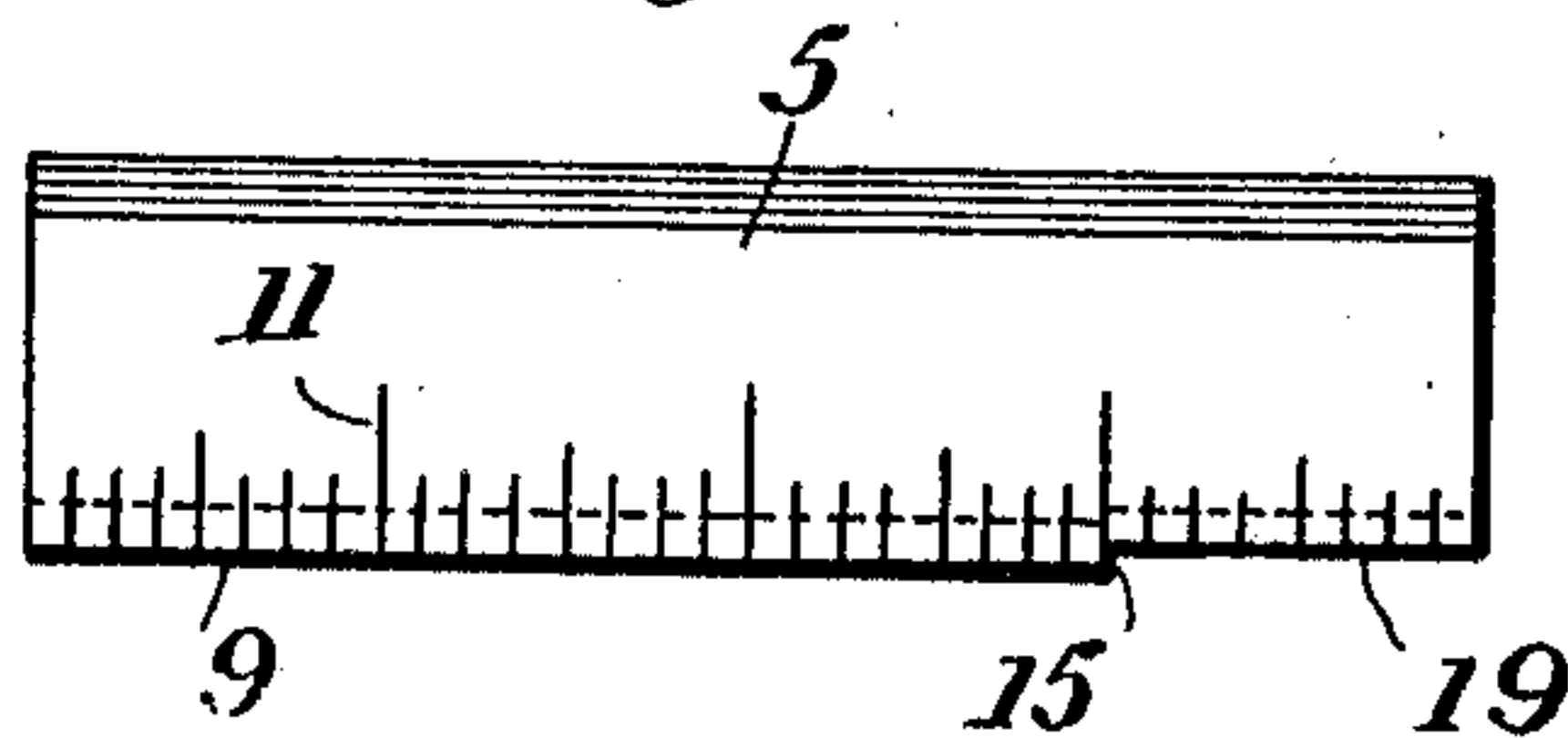


Fig. 6



Witnesses

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# UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING BACKINGS FOR ARTIFICIAL TEETH.

969,986.

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*To all whom it may concern:*

Be it known that I, FARRIS S. SAWAYA, a citizen of the United States, and resident of Baltimore, in the State of Maryland, have  
5 invented certain new and useful Improvements in Apparatus for Making Backings for Artificial Teeth, of which the following is a specification.

This invention relates to an apparatus for  
10 making backings for artificial teeth. It is customary to fasten the front of artificial teeth made of porcelain or other suitable material to a flat metal plate or backing. Such an arrangement is shown for instance  
15 in the patent to Steel 705,546, granted July 22, 1902. As shown in this patent the face of porcelain has a flat back and is provided with a cylindrical bore parallel to the back and a narrow slot extends from the back  
20 into the bore. The plate used with such teeth fits against the flat back and is provided with a hollow cylindrical projection fitting the bore and with a thin flat connecting shank extending through the slot. It  
25 has been customary to make these backings in large quantities in a factory where special machinery for the purpose is employed. I have devised means by which each dentist can make his own backings easily, quickly  
30 and cheaply by the use of a few small tools which can be easily carried about. The backing so made has peculiar advantages due to its construction which makes it strong and light, and which also makes it  
35 fit the teeth accurately.

The novel features of my invention will be apparent from the following description taken in connection with the accompanying drawings.

40 In the drawings,—Figure 1 is an end elevation of my apparatus; Fig. 2 is a perspective view of one of the clamping jaws or dies; Fig. 3 is a plan view of one of the dies; Fig. 4 is an enlarged detail perspective view  
45 of two parts of the backing before they are riveted together; and Fig. 5 is an enlarged perspective view of the completed backing. Fig. 6 is a detail view of the rod constituting a portion of one element of the backing.

50 In Fig. 1 I have shown a portable vise which may be made sufficiently light to be easily carried around and which includes the clamping jaws 1 and 2 which are

brought together by any ordinary means such as the screw 3 having on its end the  
55 handle 4. I prefer to use with these clamping jaws the removable dies or blocks 5, 6 which are held in place by the bolts 7, 8. These blocks have a straight upper edge 9, 10, and graduations 11 are placed on the up-  
60 per surface along the edge so that the operator may accurately measure the plate while he is working on it. In each die below the upper edge and parallel therewith there is a groove 12 which is preferably made semi-  
65 cylindrical in form and which is of exactly the size of the cylindrical openings in the face plate of the artificial teeth, so that a bead formed by this groove will exactly fit the teeth. A face of the die between this  
70 groove and the top edge 9, marked 13 on Fig. 2, is of just the width which it is desired to leave between the cylindrical bead and the plate to which the tooth is to be secured. While the groove 12 extends along  
75 the face of the block from one end there is a larger groove 14 preferably made in line with the groove 12 at the other end, and it is of the same shape in cross section as the groove 12. The face of the die above this  
80 groove 14 is however partially cut away from the point 15 to the end as indicated in Figs. 2 and 3. It will be understood that the grooves in the two blocks are exactly  
85 alike and that these blocks are so mounted that they will be brought together with the parts exactly opposite each other. The entire face of the block below the groove is preferably made flat as shown, but it will  
90 be understood that its shape and the means for bringing the two blocks together may be changed without departing from the spirit of my invention.

The purpose of the enlarged groove 14 is to give to the metal blank used in making  
95 the backing a preliminary bend into approximately the shape desired, and the groove 12 is to receive this partially formed backing and bend it into final accurate shape. The thin plate of suitable metal is first  
100 given a central bend over the sharp edge of the die or in any other convenient way, and the bent edge of this plate is then placed down in the groove 14 through the cutaway portion above that groove, while the two  
105 blocks or dies 5 and 6 are close to each other,



although not in contact. The bottom edges 16 of the two grooves 14 being close together constitute a stop for the bent edge of the plate so as to properly position it for the purpose of giving the preliminary bend. The plate 17 shown in Fig. 1 is not only bent before being inserted in the groove 14, but a small cylindrical rod or needle is placed within the bend 18, and therefore when the dies are brought together the upper edges 19 of the enlarged groove 14 bend the plate around the needle or rod giving the parts a preliminary formation approximately like that desired with a partially formed bead at the bent edge. The plate in this condition is transferred to the other end of the die and the partially formed bead is placed in the groove 12 its bent sides serving to bring it into proper position. The two dies are then forced together and the bead is completely formed around the rod or needle, and the shank 20 of two thicknesses of metal is formed. While the article is so held by the clamping device the metal of the shank is cut away by means of shears or otherwise approximately on the lines 21, 22 leaving a projecting portion 23. This projecting portion 23 is adapted to enter a slot 24 in the main backing plate 25 which fits on the back of the tooth. After cutting the blank into approximately the shape desired, it may be brought into final shape by filing the surface, and the exact dimensions of the projection 23 can be determined by the graduations on top of the dies. The slot or opening in the plate 25 is formed by any suitable punch, and I prefer to use a punch having several thin punching blades in a row of different widths so as to permit punching a hole of any desired size. If the shank has been brought into proper shape while still held by the clamping device the plate 25 is brought into position with the projection 23 extending through the slot 24. The end of the projection 23 is then upset or riveted by a few slight blows and the article as a whole is completed.

It will be observed that when the blocks or dies 5 and 6 are made to conform to any standard of tooth the blade formed by it will necessarily accurately fit those teeth without any measuring or experimenting on the part of the dentist making the plate and all that he has to do is to go through the various operations as indicated above. This makes it very easy to make the backings and at the same time makes it sure that they will be satisfactory.

It will be understood that the graduations on the dies need not of course extend for the entire length.

Having thus described the invention, what is claimed is:

1. In a device of the class described, a block having a flat face with a straight upper edge and being provided with a groove in said face parallel with said edge and the face of the block being cut away above said groove at one end.

2. In a device of the class described, a block having a flat face with a straight upper edge and being provided with a groove in said face parallel with said edge and enlarged at one end and the face of the block being cut away above said groove at the enlarged end.

3. In a device of the class described a block having a flat face with a straight upper edge and being provided with a semi-cylindrical groove in said face parallel with said edge and enlarged at one end and the face of the block being cut away above said groove at the enlarged end.

4. In a device of the class described, a block having a flat face with a straight graduated upper edge and being provided with a semi-cylindrical groove in said face parallel with said edge and the face of the block being cut away above said groove at one end.

5. In a device of the class described, the combination with two blocks having graduated meeting edges, of means for forcing said blocks together the said blocks having complementary grooves below the top of said meeting edges and a portion of said blocks being cut away at one end above said groove.

6. In a device of the class described, the combination with two blocks having flat meeting faces and straight upper edges, of means for forcing said blocks together, the said blocks having small semi-circular oppositely disposed grooves in the meeting faces near the upper edges throughout a portion of the length of the blocks and a similar larger groove in line with said small groove extending to the end of the block, the face of the block above said larger groove being partially cut away.

7. A device for forming backings to be used in artificial teeth comprising two clamping jaws having grooves of two diameters, the face of the jaws being partially cut away from the larger groove to the edge.

8. A device for forming backings to be used in artificial teeth comprising two clamping jaws having complementary grooves therein, the meeting faces of the jaws being cut away at one end from the groove to the edge.

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

FARRIS S. SAWAYA.

Witnesses:

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