

No. 615,404.

J. S. NAULDER.
DENTAL PLATE.

Patented Dec. 6, 1898.

(Application filed Nov. 6, 1894.)

(No Model.)

Fig. 1.



Fig. 3.

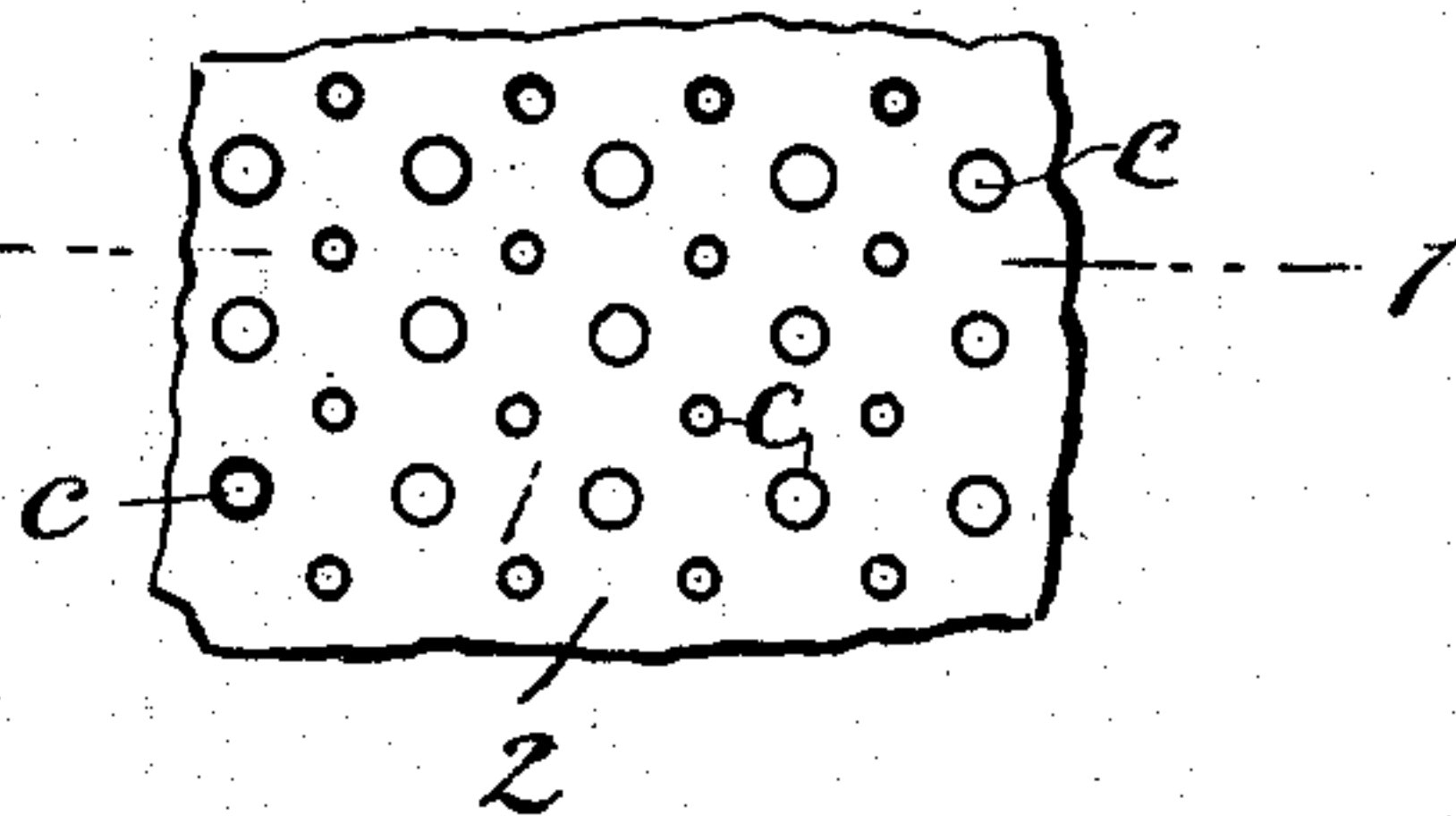


Fig. 2.

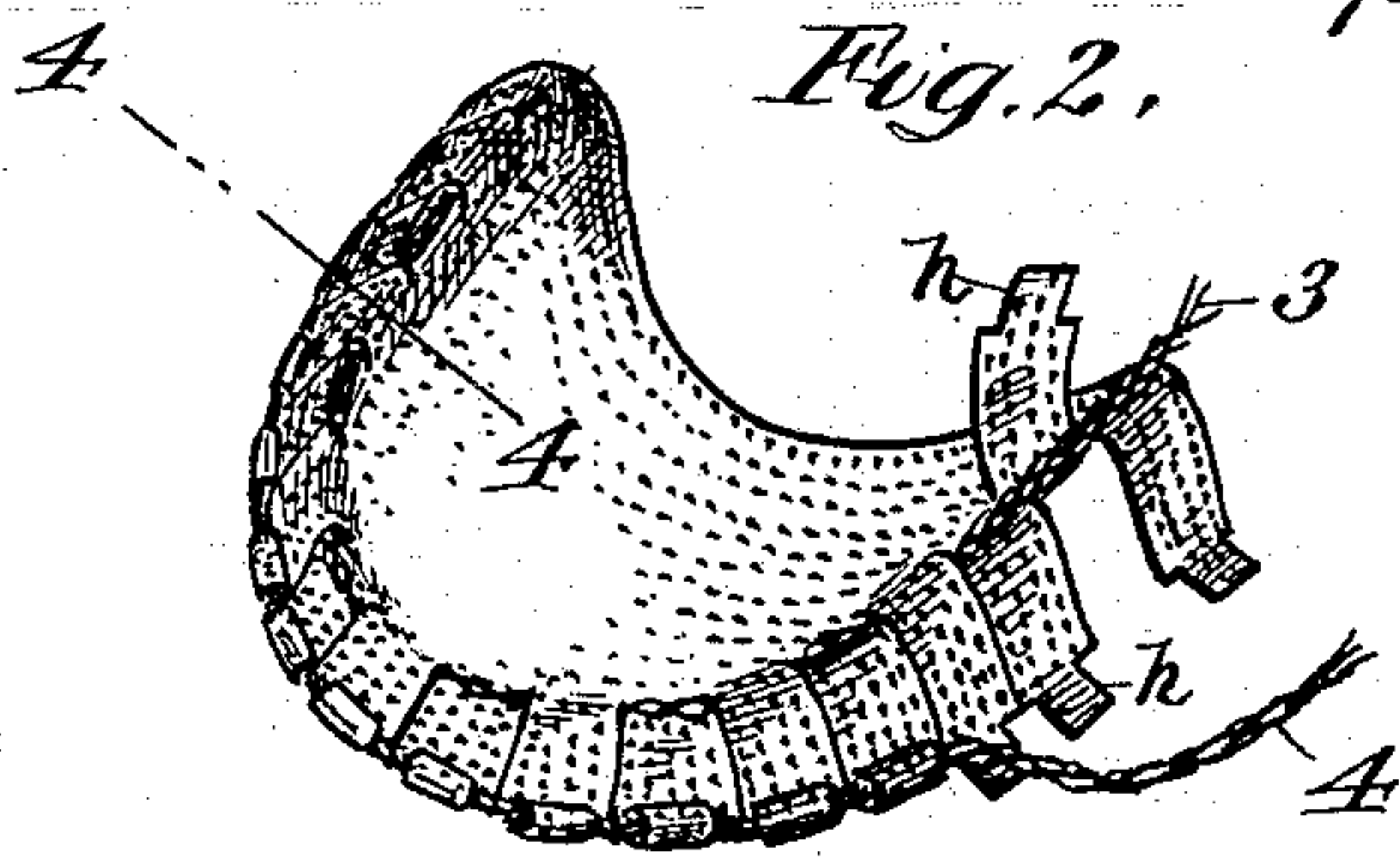


Fig. 4.

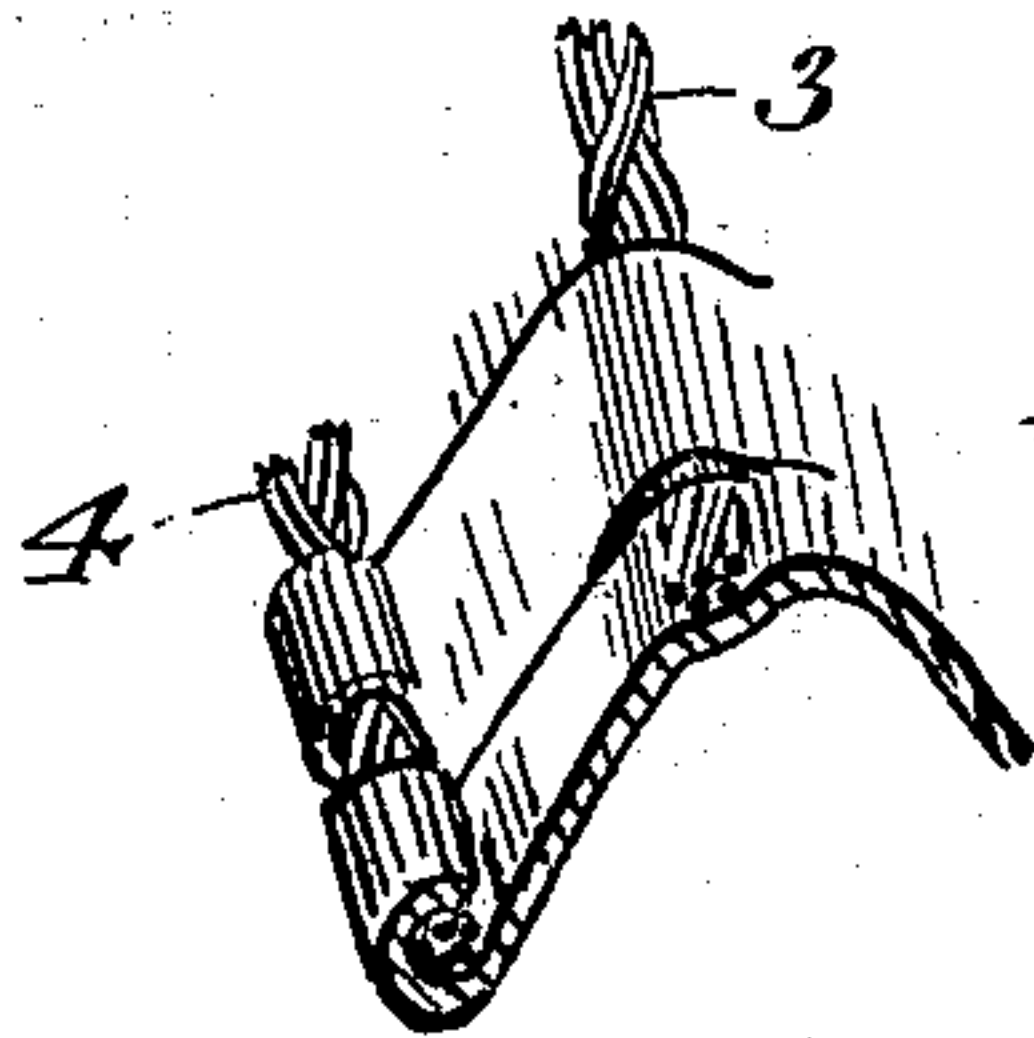


Fig. 5.

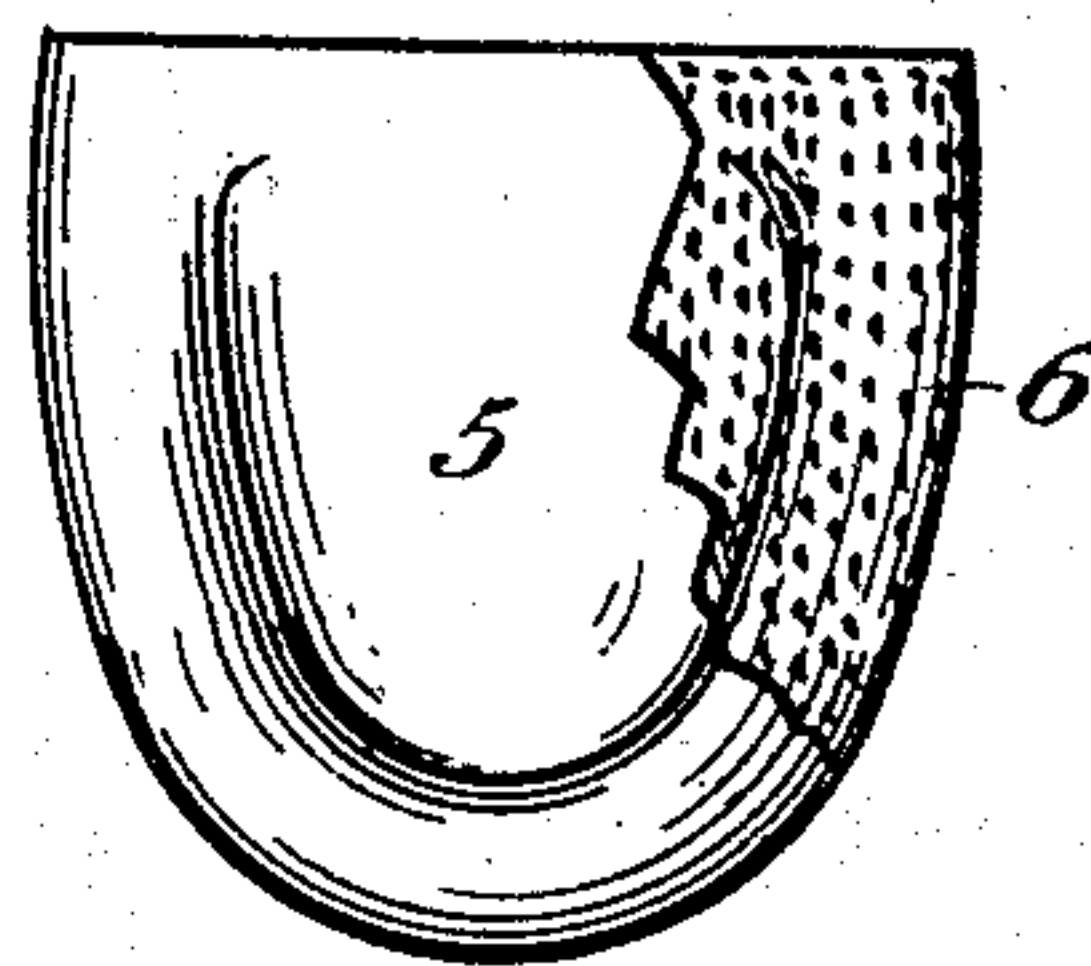


Fig. 6.

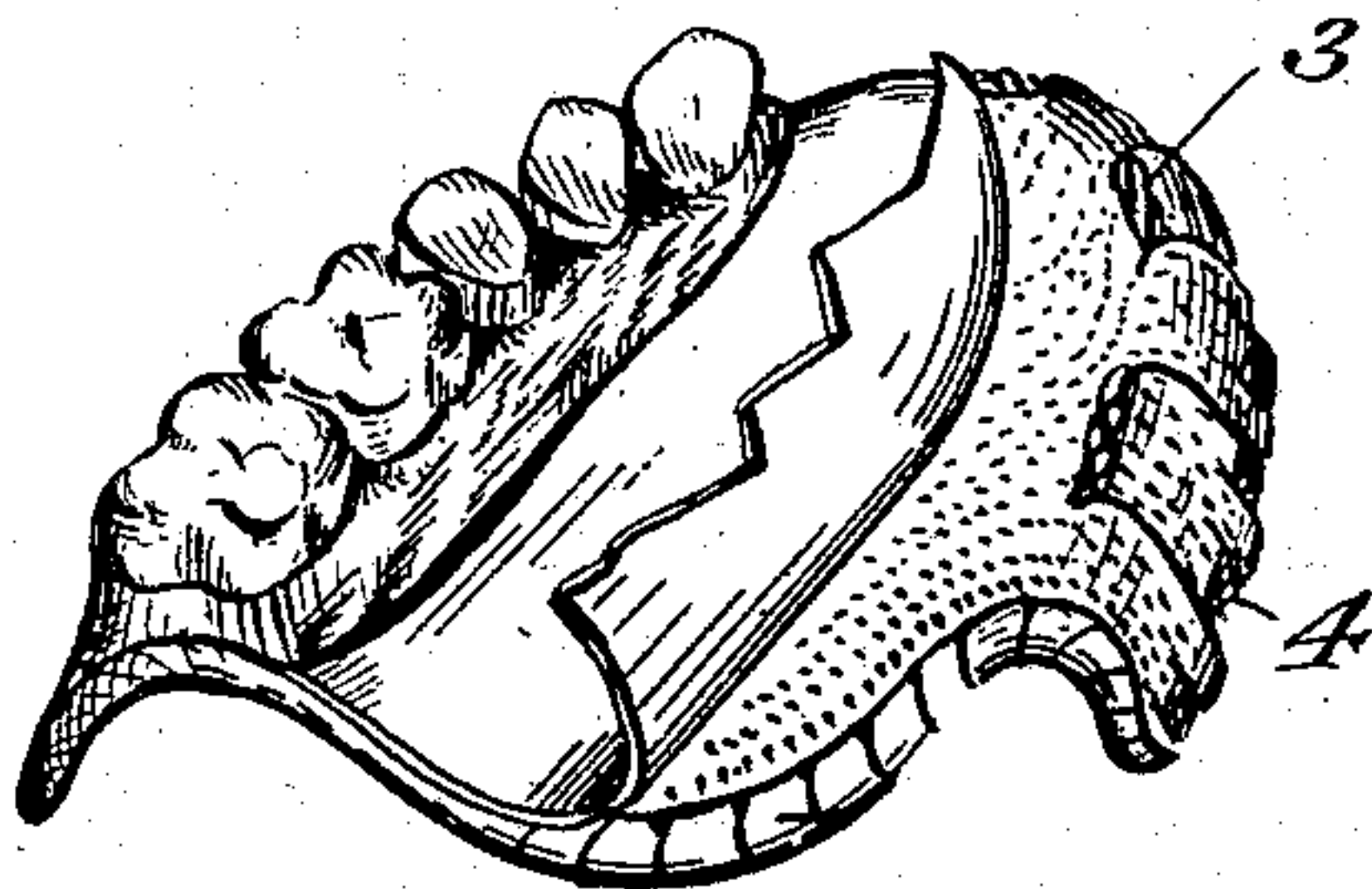


Fig. 8.

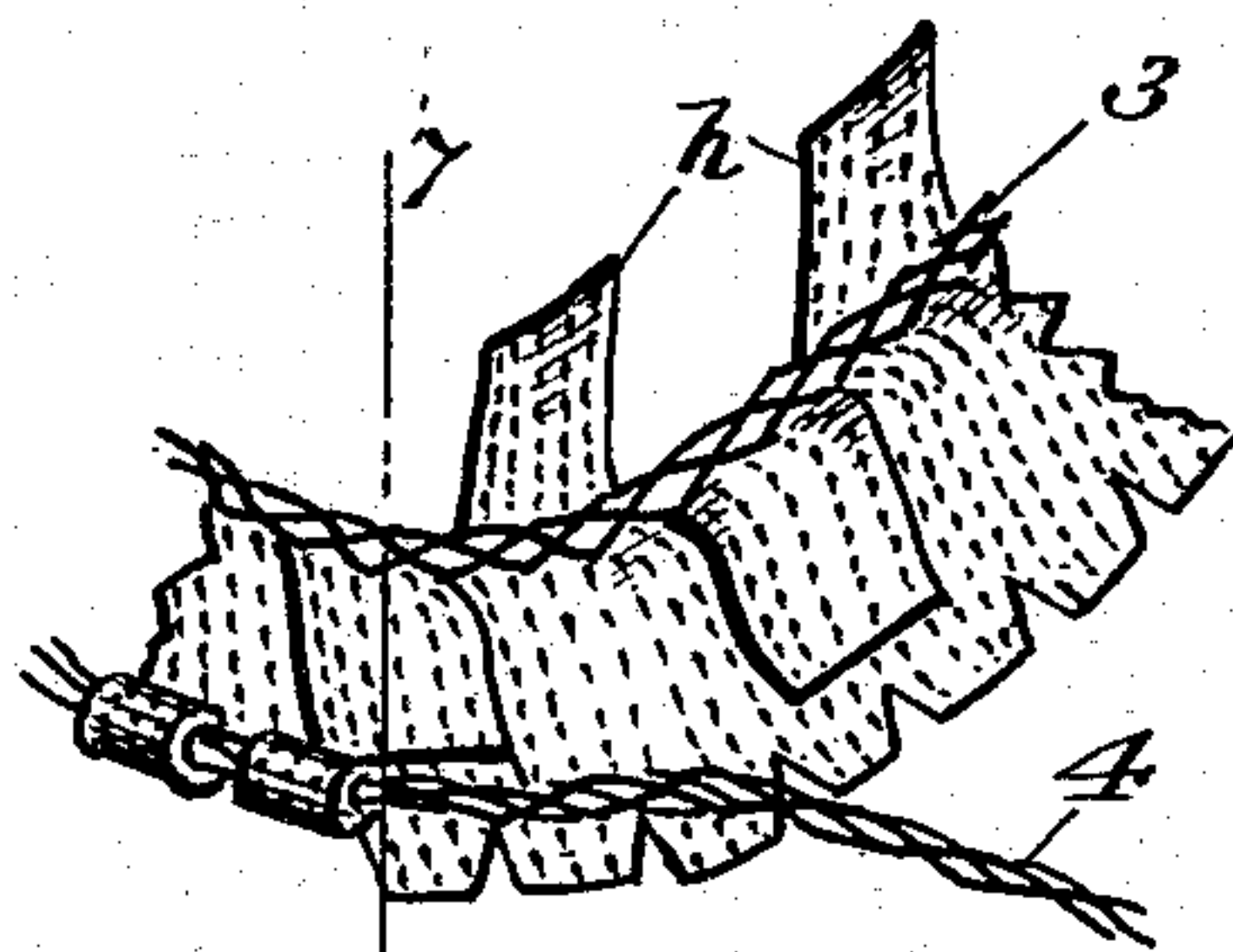
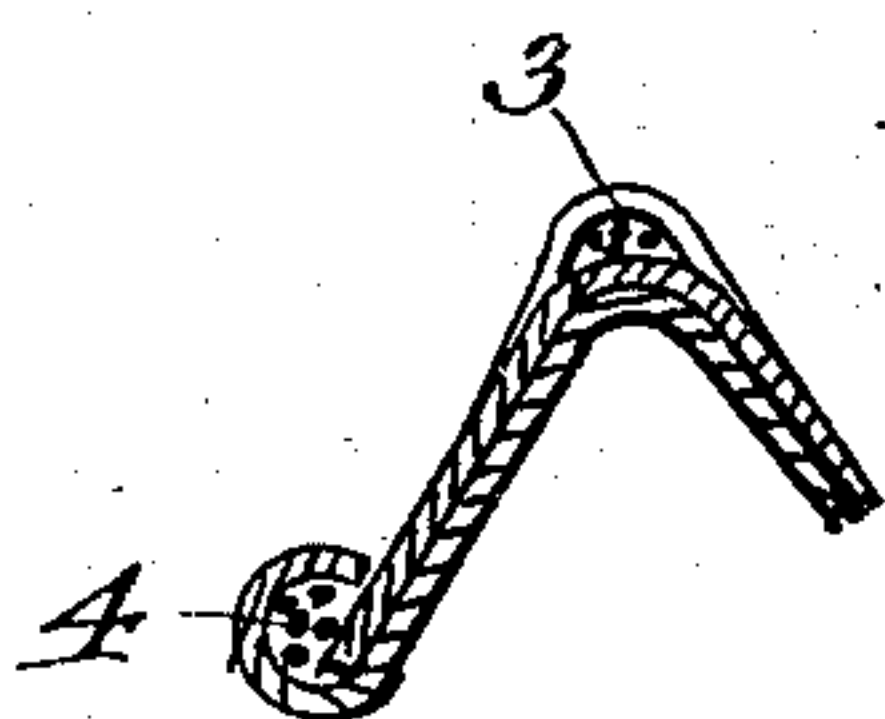


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN S. NAULDER, OF McKEESPORT, PENNSYLVANIA.

DENTAL PLATE.

SPECIFICATION forming part of Letters Patent No. 615,404, dated December 6, 1898.

Application filed November 6, 1894. Serial No. 528,111. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. NAULDER, a citizen of the United States, residing at McKeesport, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in the Manufacture of Dental Plates, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is an enlarged section on line 1 1 of Fig. 3. Fig. 2 is a perspective of the plate, showing several ears not yet bent around the facial band 4. Fig. 3 is a plan of the sheet of metal employed. Fig. 4 is an enlarged section on line 4 4 of Fig. 2. Fig. 5 is a plan broken away to show a plate with a plain palatal surface. Fig. 6 is a perspective of the plate with the lead sheet turned up. Fig. 7 is an enlarged section on line 7 7 of Fig. 8. Fig. 8 is a broken perspective of a plate partly completed.

The purposes of my invention, generally stated, are an improved dental plate of perforindented metal, whether the plate be single, double, or plain on the palatal surface and perforindented on the lingual surface. This plate is made from a novel sheet or blank. I have also provided special reinforcements for the plate in the use of woven or plaited facial and lingual bands.

The condition of the patient's mouth determines whether I should swage a double or a single metal plate. In a normal and healthy mouth I use twenty-eight (28) or thirty (30) standard-gage metal, preferably of aluminum. This sheet 2 is provided with conical perforindented punchings alternately from either side. These are seen at *c c* in Figs. 1 and 3. I cut the metal as near the desired size as possible, anneal, if necessary, to make it more pliable, place it on the die, and force it down on the die as much as possible by using a rubber mallet, so as to preserve the perforindented punchings of the metal. I trim the metal somewhat near the shape of the die. I make a number of incisions from the marginal edge of the plate, cutting them so that they can be turned up on the inside of the alveolar ridge as ears *h h*, the incisions being from one-fourth to three-eighths of an inch in width. The remaining part of the marginal edge of

the plate is then turned down over the die, the small incisions still turned backward toward the inside of the metal plate. I then take twenty-five-gage aluminum wire or the wire of any other suitable material, taking from six to nine wires, owing to the strength needed. I divide these wires into three equal parts—two wires in each strand if six are used and three in each if nine wires are used. I then plait them in an ordinary strand plaiting. I bend the now plaited wires to the shape of the plate. I put the band of the plaited wires in position and force the incisions down over the band with my fingers. I call this the “lingual band” 3. After placing the lingual band in position I proceed to swage the plate. I now plait my facial band 4 in the same manner as the lingual band. I bend this facial band around the facial and buccal portions of the plate, turning the metal of the plate over on the band to hold the band in position. The plate is now swaged for the final time. The plate when now taken from the flask will fit the first or original model taken from the impression of the patient's mouth. The plate is now ready for grinding and placing the teeth upon it.

The process described for the single metal plate is all that is necessary in making any of the double metal plates. The double perforindented plate may be swaged either singly or together, because I use a much lighter metal—*e. g.*, thirty-eight or forty—the lighter gage for the palatal part of the plate and the heavier gage for the lingual part of the plate. In a double metal plate I make my incisions on the lingual plate for the lingual band. The lingual part of the plate is trimmed around its marginal edge, so that it fits neatly down to where the metal of the palatal part of the plate flares out. The metal which flares out from the palatal part of the plate I use to turn up upon and hold the facial band and lingual part of the plate together, as if the double plate were but a single metal.

In Fig. 5 is shown a third style of plate. This style of plate is made with a plain palatal surface 5 and a perforindented lingual surface 6. The other details of the plate are not shown. The process of making this plate is the same as that described for making plate

No. 2, except that in making No. 3 it is sometimes necessary to turn up the palatal part of the plate over the lingual part of the plate at the rear of the plate or its posterior portion. This plate is made of double sheets, one plain and one perfoindentated.

The different features and the different pathological conditions of various mouths make it necessary to make the different styles of plates. For a healthy mouth of normal features I usually make the single metal plate, because it can be made at less cost and time; but when there is in my opinion the slightest predisposition to tenderness or irritation of the mouth, which might be caused by the coloring-matter in the rubber, I make the double perfoindentated plate No. 2. This acts as a preventive to rubber-poisoning, because every second indentation of the plate is thrown bare by the thinness of the metal to the palatal portion of the mouth. For mouths already in that condition or rubber-poisoned from wearing a rubber plate I make the palatal part of the plate plain and the lingual part I make with the perfoindentated metal. This is described as "Plate 3." If gold should be preferred by the patient, I use gold instead of aluminium for the palatal part of the plate.

My method makes an entire metal palatal surface to the plate and makes a much better fitting plate than can be made by the old method, since in the old method a heavy single metal plate usually swaged by the old method with zinc dies and lead counter-dies was used. After the swaging, &c., of my plate, either single or double, is completed the plate is put on the articulated model. The plate is then covered on its lingual side by a thin sheet of lead such as is used by florists. This sheet-lead keeps the plate clear of wax, dirt, &c., and also regulates the thickness of the rubber on the plate, making almost a finished plate, except the polishing. The teeth are now set on the model with sufficient wax to hold the teeth in position. This being finished the teeth and plate are flaked in the usual way. When ready, the flask is opened and the wax, &c., is scalded out. The metal plate is left on the model side of the flask and the teeth in the tooth side. The rubber is packed on the lingual side only, which is the reverse of the old way. The rubber will percolate through the perforations of the plate to the palatal side in plates 1 and 2. The

flask is then closed and vulcanized in the usual manner.

The facial and lingual bands as used in these plates possess these advantages:

First. They are adaptable to the facial and lingual portions of the plate, possessing, as they do, two flat sides—*i. e.*, the bands—which take up but little space, the lingual being easily bent on its edge and the facial on its side.

Second. Since they are intact and not weakened, as is the plate, by indentations, they thus give strength to the facial and lingual portions of the plate where strength is most required, and yet the plaited wire bands permit the filtration or percolation of the rubber as readily as the perfoindentated portions of the plate. Thus I am enabled to make my plates, if aluminium, as thin as a gold plate and much lighter in weight than a gold plate. In partial upper plates I omit the facial band and increase the strength of the lingual band. In partial lower plates I use the lingual band and sufficient rubber to weld it together. Such a partial plate might be called a "wire" plate.

Having described my invention, I claim—

1. A dental plate of perfoindentated metal provided with a strengthening wire band around the alveolar ridge and secured to said plate.

2. A dental plate of perfoindentated metal provided with independent facial and lingual bands of wire, secured to the plate by making incisions in the margin of the plate and turning the ears thus formed around the facial and lingual band.

3. A dental plate made of double sheets of metal provided with facial and lingual bands of wire, said bands being secured to the plate by making incisions in the margin of the plate and turning the ears thus formed around the facial and lingual band.

4. A dental plate formed of a smooth sheet of metal for the palatal side and a sheet of perfoindentated metal for the lingual side, with a strengthening-band of wire around the alveolar ridge and secured to said plate.

In testimony whereof I have hereunto set my hand this 27th day of October, A. D., 1894.

JOHN S. NAULDER.

Witnesses:

WM. L. PIERCE,
WILLIAM BEAL.