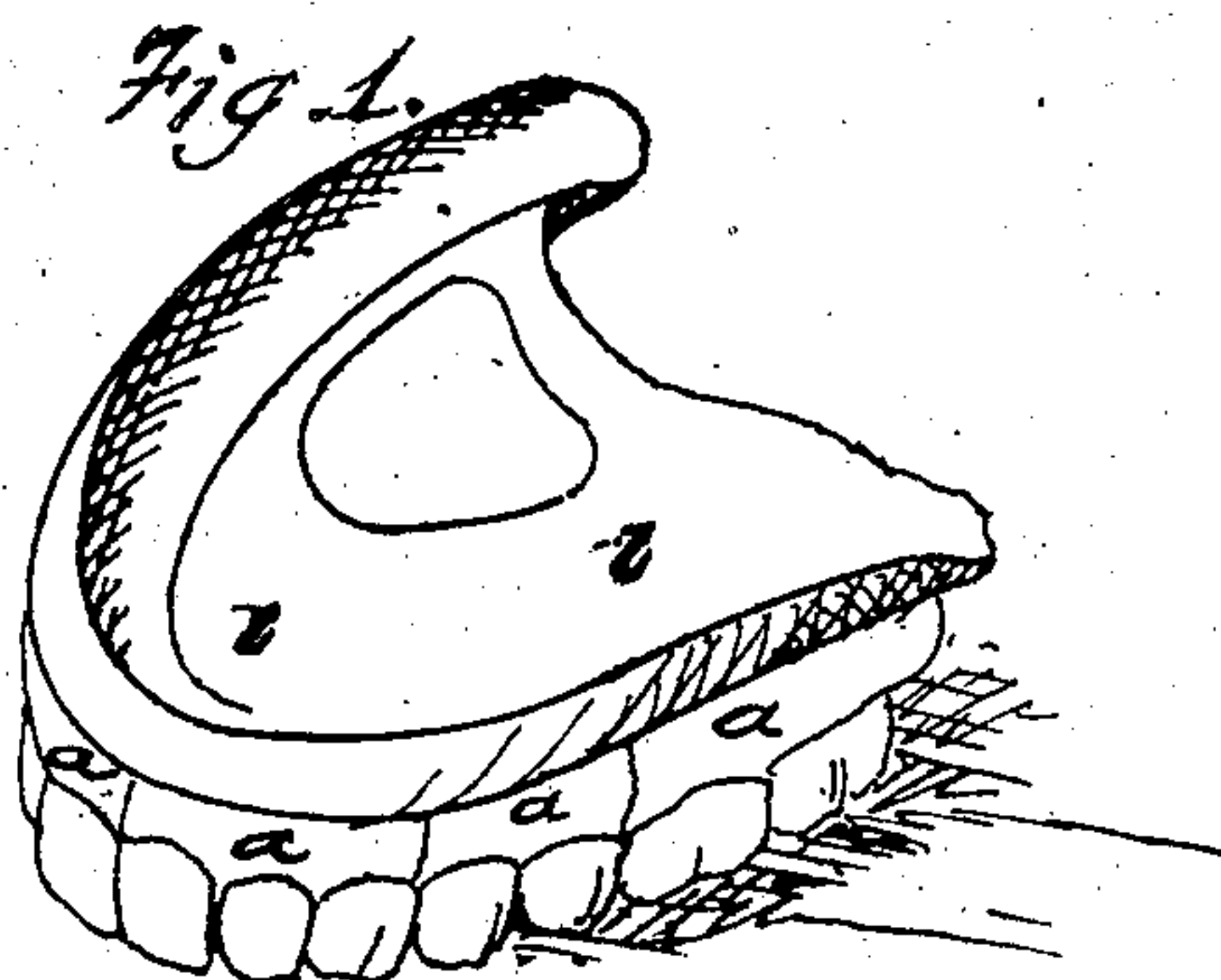


W. Allender

Aluminum Plates for Artificial Teeth

No. 75106

Patented Mar. 3. 1868



Attest;

[Signature]

R. T. James

William Allender.
By atty A. B. Stoughton.

United States Patent Office.

WILLIAM ALLENDER, OF NEW LONDON, CONNECTICUT.

Letters Patent No. 75,106, dated March 3, 1868.

IMPROVEMENT IN CASTING ALUMINUM PLATES ON ARTIFICIAL TEETH.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM ALLENDER, of New London, in the county of New London, and State of Connecticut, have invented certain new and useful Improvements in Casting Aluminum Plates on to Artificial Teeth, and uniting the two firmly without risk of fracture from the exceedingly contractile nature of that metal; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 represents in perspective a set of teeth on or in an aluminum plate, made after my general plan.

Aluminum possesses, in a high degree, many essential properties required in dentistry, and especially in plates for holding artificial teeth, as follows: It is light, very stiff, anti-corrosive, is rendered fluid at a low temperature, and susceptible of a high finish. But, owing to its very great contraction in cooling, it has heretofore been found impossible, except by accident, to cast it upon other substances without fracturing itself, or the substance on which it is cast, by its contractile force.

After much experiment in the use of aluminum for plates for holding artificial teeth, I have discovered a mode of casting this metal upon teeth which entirely avoids the risk of fracture, and enables me to introduce its use in dentistry with great advantage and economy.

My invention consists in providing means for compensating or taking up the extraordinary contraction of aluminum in casting it upon teeth, so as to avoid fracture of the metal or of the teeth, and thus utilizing in dentistry a metal having many valuable qualities for that art, but which has heretofore, in practice, been found impracticable on account of its immense contraction in cooling, and which exceeds that of any other metal available in dentistry.

An indispensable element in the economy of dentistry is to form or cast the mouth-plate upon the teeth, so that the act of casting shall firmly unite the teeth to said plate. This makes a firm, substantial union, not attainable by other separate appliances without very great labor and expense. And my invention embraces this plan of casting, but in connection with a metal (aluminum) which from its very nature opposes such process, as above mentioned, from the difficulty in arresting or compensating for its immense contraction in cooling.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawing.

Having articulated or antagonized the teeth, I separate the blocks of teeth, *a a a*, so that the contraction of the aluminum, when cast upon them, will not, in cooling, break them. The space left between the blocks of teeth, when moulded, is covered by a strip of aluminum, or other metal or material, to prevent the encroachment or introduction of the molten metal, or any other substance used in moulding or casting, from entering said space which would prevent the blocks from coming together closely, and making a neat union. The prevention of any substance getting into the space between the blocks I prefer, but a substance may be introduced into this space, which will yield and allow the blocks to come up close together, or which may be forced into cavities in the adjacent edges of such blocks when forced together, the object being to prevent any such substance getting into the space as might in any manner prevent the blocks from coming close up, and thus closing said space.

To prevent the contractile force of the aluminum from acting on the blocks individually, the portion of the teeth covered by the metal must be so made or ground as to prevent the metal from grasping them, that is, there should be no indented or overhanging points or surfaces, but plain and tapering, or wedge-shaped, so that the metal may draw or slip over such surfaces in contracting, without seizing upon them, which latter invariably results in fracture. And as the contractile force is towards the centre of the block, the pins or rivets in the teeth or blocks should all point towards the centre of the block, the centre one straight, and the others acutely bent towards it, which allows the metal to slip from the pins or rivets in the line in which its contraction tends. It is better to so arrange the pins or rivets as that they will point towards the centre of the block, or towards the line of greatest contraction, but the contractile force may be used to bend or point them in that direction, by putting around them, in whole or in part, previous to the pouring of the molten metal into the mould, aluminum

in wire, foil, sheet, or otherwise shaped, or plaster of Paris, or other substance, near where they enter the blocks, to allow them to bend, when the contractile force comes upon them, and take the direction of that force.

Blocks of teeth may be made with a groove running parallel with or in the general direction of the cutting-edges or outer faces of the teeth, and the blocks may be set in a mould, together or slightly separated, and the molten aluminum poured into this groove, and its contraction being in the line of the groove, it would thus be prevented from obtaining a hold on the blocks and breaking them.

The moulds I prefer to use are so made as to allow the flow or casting of the metal around and beyond the outer face of the teeth, to counteract the effect of the contraction of the central portion of the plate, or that part which is within the circle described by the inner face of the teeth. The moulding of the teeth preparatory to the pouring of the aluminum around them does not differ, otherwise than heretofore mentioned, from the moulding of teeth for other cast substances, except such additional preparations as the use of this peculiar metal (aluminum) demand.

The contraction of the metal may be regulated also by means of currents of air or water carried into the moulds or any part thereof which it is most desirable to so operate upon, and may be done by laying wax in the mould, which, when melted out, will leave a channel or space, through which it may be carried or forced; and the strain, or a portion of the strain, of the contractile force of the aluminum, may be taken from the teeth by laying in proximity to or in contact with the teeth, pieces or strips of metal, which strips shall oppose the force of the contracting metal. The teeth may be fastened to these strips, which may be twisted or worked together, or, if single strips, screw-cut or otherwise.

As, from the very light specific character of this metal, (aluminum,) and the low temperature required to put it in a fluid or molten condition, its natural flow is very sluggish, I may or can use a type-founder's pump, or forcing-apparatus, to force the metal into and through the moulds.

The mould or form of teeth, when ready to receive the molten aluminum, may be heated, as is usual in other processes of casting.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. In combination with the pouring of molten aluminum to form a base for artificial teeth, the so making or grinding off the blocks of teeth, designed for the reception of molten aluminum as a base, as that the metal cannot seize or gripe, but slip upon, the teeth or blocks, in contracting, and thus prevent the fracture of the metal, or of the teeth, or blocks of teeth, substantially as described.

2. I also claim, in combination with teeth or blocks of teeth, on which aluminum is to be cast for a base, the pointing of the pins or rivets towards each other, or towards the centre of the block, or in the line of the greatest contraction, substantially as described.

3. I also claim, in combination with the moulding of teeth or blocks of teeth, or preparing them to receive molten aluminum, which is to form their base, the protected space between them, to guard against the entrance of the metal or other material, as described, so that the contractile force of the aluminum, in cooling, may draw them up together, or nearly so, substantially as described.

WILLIAM ALLENDER.

Witnesses:

A. B. STOUGHTON,
EDM. F. BROWN.