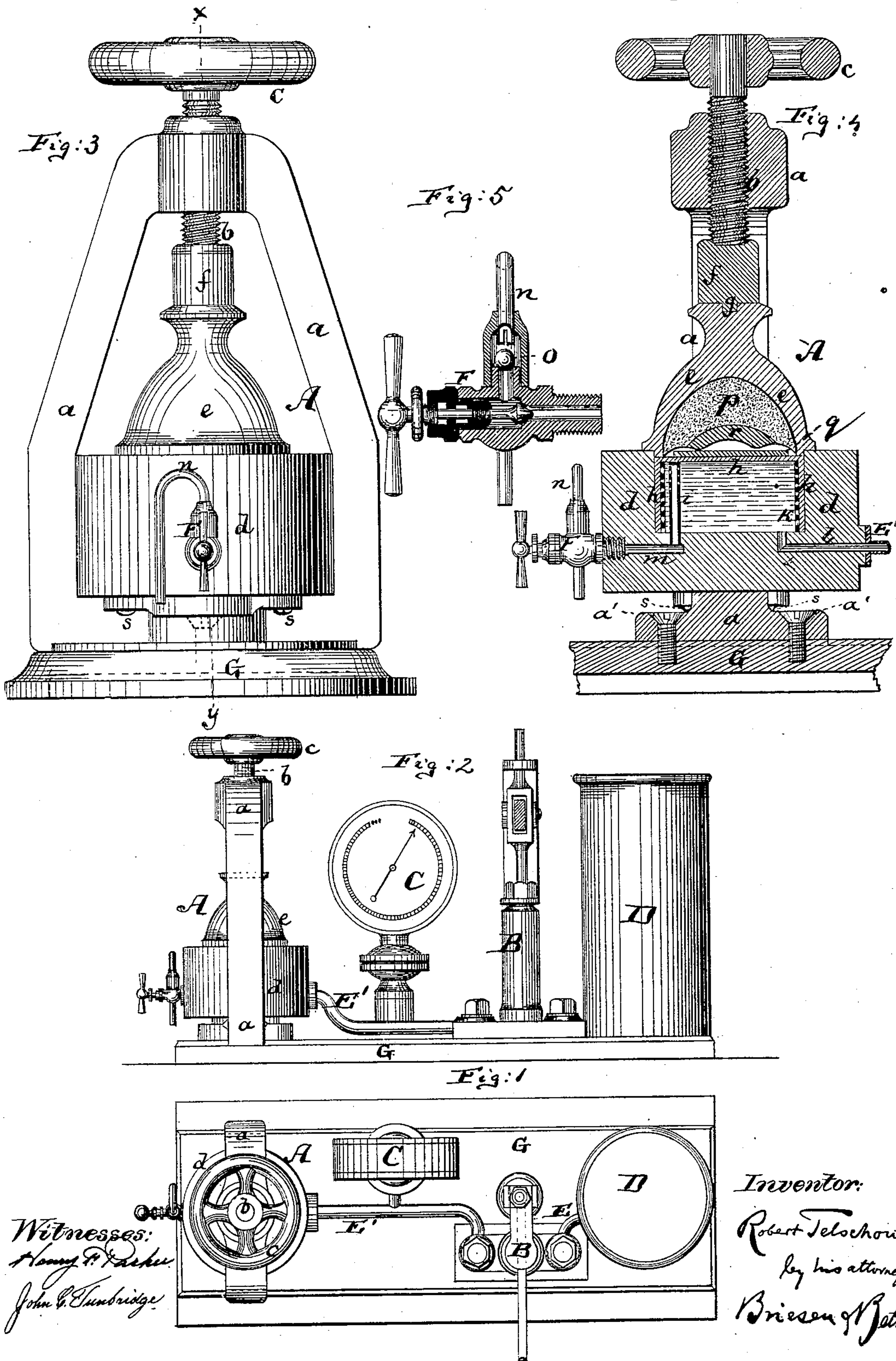


(No Model.)

R. TELSCHOW.  
APPARATUS FOR MANUFACTURING METALLIC PALATES FOR ARTIFICIAL  
TEETH.

No. 246,986.

Patented Sept. 13, 1881.





# UNITED STATES PATENT OFFICE.

ROBERT TELSCHOW, OF BERLIN, GERMANY.

APPARATUS FOR MANUFACTURING METALLIC PALATES FOR ARTIFICIAL TEETH.

SPECIFICATION forming part of Letters Patent No. 246,986, dated September 13, 1881.

Application filed June 3, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT TELSCHOW, of Berlin, Prussia, in the Empire of Germany, have invented an Improved Apparatus for Manufacturing Metallic Palates for Artificial Teeth, of which the following is a specification.

Figure 1 is a top view of my improved apparatus. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged end elevation thereof; Fig. 4, a vertical section on the line *xy*, Fig. 3. Fig. 5 is a detail vertical section through the water-escape pipe.

Metallic palates are now made as follows: An impression is first made of the human palate, and from this a plaster-of-paris model is made, from which a sand mold is formed. In this sand mold a metallic matrix and likewise a punch or "patrix" are produced by pouring molten metal—usually zinc—into it. The sheet metal to be made into a palate is pressed into form between the said cast matrix and punch or patrix, being frequently heated and pressed before it is completely shaped. Palates thus made fit very poorly, as the zinc after casting contracts and changes its form. Frequently it happened that the sheet metal was ruptured during the frequent pressures to which it was subjected.

To obviate these difficulties I employ the process hereinafter described, which, briefly stated, is as follows: I first make an impression of the human palate in wax, plaster-of-paris, or analogous plastic material. From this counterpart I then make a model by pouring upon it a liquid sulphurous compound, which on cooling hardens sufficiently to withstand the necessary pressure. Into this model, which is absolutely identical in form with the human palate, is pressed by hydraulic pressure and fitted the gold, platinum, or other sheet metal, which previous to its introduction into the press has been shaped to approximate the final form into which it is to be made.

In carrying my process into effect I use the machine which is illustrated in the accompanying drawings, in which the letter A represents the hydraulic press; B, the pressure-pump; C, a manometer; D, the water-reservoir; E, the suction-pipe, and E' the delivery or pressure pipe.

The hydraulic press A consists of the frame

*a*, that terminates in a yoke on top. Through this yoke is fitted the pressure-screw *b*, having hand-wheel *c*. In the frame *a* is secured, by screws *s*, Fig. 3, or otherwise, the press-bed *d*, 55 above which is the press-bell *e*. Between the bell *e* and the screw *b* is interposed a cylindrical block, *f*, having a downwardly-projecting tenon, *g*, that enters a socket in top of bell. Fastening-screws *a'* pass through horizontal flanges 60 or ears that project sidewise from the lower part of the frame *a* into a supporting-plate, G. Within the cylindrical cavity of the bed *d* is contained a cylindrical vessel, *h*, made of flexible india-rubber, and placed into said cavity 65 bottom upward, so as to completely fill and exactly fit said cavity. Into the inverted vessel *h* is placed a perforated spring-ring, K, which crowds the rim of the rubber vessel *h* tightly against the walls of the cavity. Before 70 inserting the inverted cylinder *h* it is covered with an adhesive solution of caoutchouc to insure adhesion to the walls of the cavity in the bed *d*.

Through the lower part of the press-bed *d* 75 are drilled two holes, *l* and *m*. The hole *l* is for the supply, and the hole *m* for the discharge, of water. *i* is a stand-pipe placed into *d* as an inner communication with passage *m*. The upper end of pipe *i* is closed, and serves as a 80 support for the top plate of vessel *h*, to prevent the said plate being drawn down.

Holes are drilled into the upper part of the pipe *i*, for the discharge of water and air. The discharge-passage *m* can be closed by cock F. 85 In the discharge-pipe *n* of this cock is a ball-valve, *o*, which prevents the drawing of air into the vessel *h* through passage *m*.

The bell *e* contains a mass, *p*, of hardened material of suitable composition, which was 90 poured into it, and which serves also as a support and attachment for the matrix *r*. This matrix *r*, which has been formed from the original model, as hereinabove described, is first secured in the bell *e*, as shown. 95

The sheet-metal plate to be formed into the palate is first, by hammering or otherwise, fashioned to its approximate final form, and is then placed against the matrix *r* and held there by a flexible rubber plate, *q*, that is interposed 100 between it and the flexible top of vessel *h*. The bell *e* is now pressed down firmly upon

the press-bed *d*, the cock *F* is closed, the pump *B* set in motion, and pressure created to about eight hundred atmospheres or more. This pressure, which serves to hold the rim of the vessel *h* tight against the walls of the cavity in *d*, raises the flexible top of *h*, and with it the superposed sheet-metal plate, crowding the latter gently, but with irresistible pressure, against the matrix. The valve *F* is then opened, the bell *e* raised, and the finished palate-plate taken out.

Instead of using water in the reservoir *D*, glycerine, oil, or the like may be used.

I claim—

1. The combination of the hollow press-bed *d* of a hydraulic press with the elastic inverted vessel *h* and bell *e*, all arranged so that the hydraulic pressure within the vessel *h* will be

transmitted to the object to be shaped through the flexible top of the vessel *h*, substantially as herein shown and described. 20

2. The combination of the hollow press-bed *d* with the inverted flexible vessel *h*, and with the perforated spring-ring *K*, placed therein, substantially as herein shown and described. 25

3. The combination of the press-bed *d*, having inlet-passage *l* and outlet-passage *m*, with the cock *F*, having ball-valve *o*, substantially as herein shown and described.

This specification signed by me this 16th day of April, 1881. 30

DR. ROBERT TELSCHOW.

Witnesses:

MARKUS M. ROTTEN,  
KARL KNAUTH.