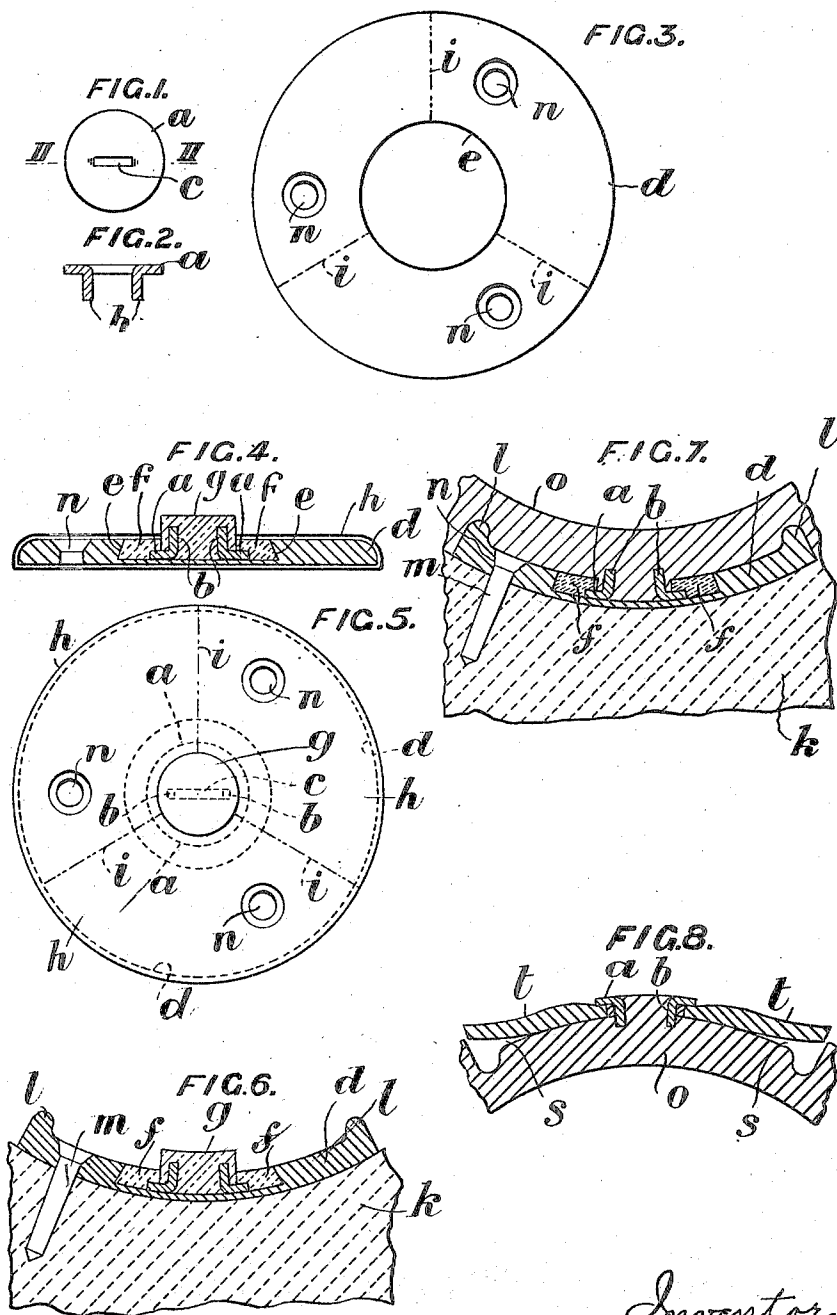


J. R. RICHARDS.
 SUCTION DEVICE FOR DENTURES.
 APPLICATION FILED OCT. 23, 1916.

1,283,905.

Patented Nov. 5, 1918.



Inventor.
 John Rogers Richards,
 By *[Signature]* Att'y.

UNITED STATES PATENT OFFICE.

JOHN ROGERS RICHARDS, OF HASTINGS, ENGLAND.

SUCTION DEVICE FOR DENTURES.

1,283,905.

Specification of Letters Patent.

Patented Nov. 5, 1918.

Application filed October 23, 1916. Serial No. 127,172.

To all whom it may concern:

Be it known that I, JOHN ROGERS RICHARDS, a subject of the King of Great Britain and Ireland, residing at 43 Wellington Square, Hastings, in the county of Sussex, England, have invented certain new and useful Improvements in and Connected with Suction Devices for Dentures, of which the following is a specification.

10 This invention relates to improvements in and connected with suction devices for dentures, such suction devices comprising a retainer, mounted in a cavity in the dental plate or artificial palate and adapted to receive a perforated india-rubber suction disk, which is forced over the retainer and serves to retain the denture in position in the mouth of the wearer by suction.

15 According to this invention, the retainer on which the suction disk is mounted, comprises a disk made of gold or other suitable material for forming the head or button of the retainer and having a shank or shanks stamped out of it thus leaving a hole or 25 holes in addition to the shank or shanks. The material, of which the artificial denture is made, is packed or forced around the shank or shanks to form the neck of the retainer and into the hole or holes left in the stud with the result that a very efficient key is produced between the stud and the denture and the neck of the retainer, being reinforced by the shank or shanks, is extremely strong. The stud is conveniently 35 temporarily fixed by cement or plaster of Paris in a hole or recess in a disk of pliable and soft metal, such as lead or other appropriate material, the said disk being primarily intended for forming the cavity or recess, in the denture or artificial palate, for the suction disk and being temporarily connected by pins or otherwise to the plaster cast of the jaw or palate. The said hole or recess in the pliable metal disk is of a 45 diameter somewhat larger than that of the head of the stud so that the latter with the denture may easily be detached from the plaster cast by breaking the cement joint after the plaster cast has been packed with the material, such as india-rubber of which the denture is made and after vulcanizing. Or the pliable disk may be separated with the artificial denture from the plaster cast and is then removed from the artificial denture. The pliable metal disk, referred to, is

made of soft and pliable material so as to be capable of being pressed on to the plaster cast and to thus assume a corresponding contour or formation. The pliable metal disk may merely be provided with a central perforation and the stud is then cemented to the edges of the hole, but, preferably the stud is not allowed to be in direct contact with the plaster cast as, otherwise, in the finished denture, it would be liable to come into contact with the wearer's palate and would cause inconvenience. For this purpose, the bottom of the perforated pliable disk may be furnished with a coating of cement or tin foil across the hole therein or a thin and easily removable metal plate may be employed for the same purpose or the pliable disk may be merely recessed to receive the head of the stud and not perforated. Furthermore, the pliable disk, with the stud temporarily fixed therein may be covered with tin foil or the like, leaving only an opening at the top, corresponding to the diameter of the neck of the completed stud. One edge, say the upper edge, of the pliable disk may also have a bead all around to form an annular recess all around the suction cavity for improving the suction action of the suction disk on the palate or jaw. If desired, the thin plate at the bottom of the pliable disk may be merely separated by nearly cutting it through in one place or in two or more places for facilitating the removal from the denture, when vulcanized and removed from the plaster cast.

90 In order that the cement used for temporarily connecting the stud to the pliable disk may not flow into the hole in the stud, nor come too near to the shank or shanks, which is or are eventually to be embedded in and to reinforce the neck of the retainer to be formed, the hole in the stud and the shank or shanks may be surrounded by or embedded in a form of wax or other easily fusible or evanescent material or materials, such form being of a size corresponding to the neck of the retainer and adapted to be removed when the cement has set or subsequently. Or a form consisting of a small hollow or axially perforated cylinder of soft vulcanized rubber or other suitable material may be employed to surround the shank or shanks for the purpose of retaining and molding the cement surrounding the place where the neck of the stud is to be formed,

the said cylinder being removed when the cement has set or prior to the packing operation.

And in order that the invention may be more readily understood reference will be had to the accompanying drawings, of which—

Figure 1 is a plan on an enlarged scale of a small gold disk for forming the head of a retainer adapted to receive a suction disk and

Fig. 2 is a section of the gold disk on the line II—II, Fig. 1.

Fig. 3 is a plan of a soft and pliable metal disk adapted to form a suction cavity in an artificial denture.

Fig. 4 is a sectional elevation of the said pliable disk with the small gold disk temporarily attached thereto and

Fig. 5 is a plan thereof.

Fig. 6 is a sectional elevation of the pliable disk and small gold disk temporarily secured to a plaster cast or model.

Fig. 7 is a similar view showing the denture in the course of being made and

Fig. 8 is a similar view of the denture formed with the suction cavity and stud and with a suction disk applied thereto.

As shown in Figs. 1 and 2 the head or button for forming the retainer consists of a disk *a* of gold or other suitable material having two shanks or prongs *b b* stamped out and leaving an oblong hole *c* therein. This disk *a* is laid with the shanks *b* uppermost in a central recess in a disk *d*, see Figs. 3, 4 and 5. This disk *d* is made of soft and pliable metal, such as lead or pewter, and has for purpose to form the suction cavity in the denture.

The edges of the central recess *c* may, if desired, be serrated or roughened, or as shown in Fig. 4 the outer periphery or wall of the recess is undercut or inclined to improve the joint to be temporarily made between the stud and the pliable disk *d*. Obviously the pliable disk may also be constituted by a perforated disk and an unperforated disk joined together. This temporary joint between the pliable disk and the stud *a* is produced by inserting or running cement *f* into the recess *c* between the outer wall thereof and the stud *a*, but in order that the cement *f* shall not touch the shanks *b* nor penetrate the oblong hole in the stud *a* the oblong hole *c* in the stud and the prongs *b* are covered with or embedded in a small form or filling *g* of wax or other easily removable or fusible or evanescent material because the shanks *b* and oblong hole *c* are subsequently to be inclosed and filled respectively by the material of which the denture is made, for the purpose of forming the neck of the retainer and for keying the latter securely to the denture. Or instead of using a filling of wax, a small hollow or

axially perforated and cylindrical form of india-rubber may be employed. The pliable disk *d* is nearly covered with tin foil *h*, leaving only a small central opening corresponding to the filling *g* and consequently to the subsequently completed neck of the stud. The tin foil (and also, if desired, the pliable disk) is or are nearly divided into sectors or otherwise by for example a number of shallow radial cuts or grooves indicated by the dotted lines *i*, see Figs. 3 and 5.

For the purpose of producing an artificial denture with a retainer and suction cavity complete, the pliable disk *d* is pressed as shown in Fig. 6 on to the proper place in the plaster cast *k*. It may here be interpolated that the pliable disk here shown is furnished with a bead *l* all around, but it is not essential. The pliable disk is then connected to the plaster cast *k* by driving some small pins *m* through a few holes *n* (see also Figs. 3, 4 and 5) situated near the periphery of the pliable disk. If a form *g* of unvulcanized rubber be employed, it is left in position or if a filling of wax be used the wax may be removed from the stud or it may be left and will disappear on the application of heat. The denture *o* (Fig. 7) is then packed or formed, the india-rubber being pressed into and filling the space reserved for the neck of the retainer around the shanks *b* and into the hole in the disk *a* forming the head of the retainer. The india-rubber is then vulcanized and the denture is then easily removed from the plaster model *k* with the pins *m* because the latter are easily withdrawn from their holes in the plaster cast or the heads of the pins may be so small that the holes *n* in the pliable disk easily expand on a slight amount of force being employed in withdrawing the denture *o* from the plaster model *k* and the pins *m* remain in the latter. It is then only necessary to divide or cut the pliable disk *d* or the tin foil *h* or both along the radial grooves or cuts *i* (Figs. 3 and 5) by means of a tool with a sharp cutting edge and to break the cement joint *f*, between the stud *a* and pliable metal disk to allow the latter to be removed. On the removal of the pliable disk, the suction cavity *s* (Fig. 8) in the denture *o* will be revealed and it is only necessary to force the soft india-rubber disk *t* over the disk *a* forming the head of the stud to render the denture complete in this respect.

I claim:—

1. A stud for attachment to an artificial denture consisting of a non-corrodible metal disk having a rectangular perforation therein and shanks extending outward from the disk at opposite ends of the perforation and constituted by the metal cut from the perforation.

2. A stud for attachment to an artificial

denture consisting of a non-corrodible metal disk having a rectangular perforation therein and integral shanks rectangular in cross-section at opposite ends of the perforation and constituted by the metal cut from the perforation.

3. For the formation of a suction device for an artificial denture, a disk of pliable material, a non-corrodible metal disk having a rectangular perforation therein and mounted in the pliable disk and having integral shanks cut from the perforation and extending outward at opposite ends of the latter and projecting beyond the surface of the pliable disk, temporary means covering the shanks and closing the perforation, and temporary means connecting the disks and covering a portion of the non-corrodible disk.

4. An artificial denture having a suction retainer consisting of a perforated non-corrodible metal disk having shanks cut therefrom to form the perforation, said shanks being embedded in and completely surrounded by a portion of the denture projecting from the face of the latter.

5. For the formation of a suction device for an artificial denture, the combination, with a perforated disk of non-corrodible metal and having shanks constituted by the metal displaced by the perforation of the said disk, of a disk made of pliable material adapted to receive the said perforated disk with its shanks projecting on one side beyond the surface of the said pliable disk, means for temporarily attaching the said perforated disk to the pliable disk, a form of the shape of the neck of the retainer to be formed and surrounding the said shanks, and means for temporarily attaching the

said pliable disk to a plaster cast of a jaw, substantially as set forth.

6. For the formation of a suction device for an artificial denture, the combination, with a perforated disk of non-corrodible metal and having shanks constituted by the metal displaced by the perforation of the said disk, of a disk made of pliable material recessed to receive the said perforated disk with its shanks projecting on one side beyond the surface of the said pliable disk, means for temporarily attaching the said perforated disk to the pliable disk, a form of the shape of the neck of the retainer to be formed and surrounding the said shanks, and means for temporarily attaching the said pliable disk to a plaster cast of a jaw, substantially as set forth.

7. For the formation of a suction device for an artificial denture, the combination with a perforated disk of non-corrodible metal and having shanks constituted by the metal displaced by the perforation of the said disk, of a disk made of pliable material recessed to receive the said perforated disk with its shanks projecting on one side beyond the surface of the said pliable disk, grooves partially severing the said pliable disk into sections to facilitate its ultimate removal, means for temporarily attaching the said perforated disk to the pliable disk, a removable form of the shape of the neck of the retainer to be formed and surrounding the said shanks, a covering of tin foil for the pliable disk and means for temporarily attaching the said pliable disk to a plaster cast of a jaw, substantially as set forth.

JOHN ROGERS RICHARDS.