

Patented Feb. 7, 1928.

1,658,437

UNITED STATES PATENT OFFICE.

EDMUND L. GRIFFITH, OF FREEPORT, ILLINOIS.

INVESTMENT COMPOUND.

No Drawing.

Application filed February 4, 1926. Serial No. 86,047.

This invention relates to a new dental investment material or compound.

The principal object of the invention is to provide a new material for dental molding in place of plaster of Paris or silex which are now commonly used and are objectionable because of the time consuming methods that are necessitated in their use, the present material being capable of being ignited or fired to solidify the molded mass thereof in about a half minute's time whereas about an hour's time was otherwise required in the initial setting and subsequent heating of the molds to drive out the moisture therefrom preparatory to pouring.

Another object is to provide a material for the purpose referred to which may be prepared in a large batch for several fillings instead of having to prepare a separate batch for each job, thus eliminating another material time consuming operation. Any unused portion of a batch instead of being waste, as was the case with plaster of Paris and silex, can be set aside and may be re-moistened sometime later and made plastic and capable of use.

The dental investment compounds at present in use rely upon the use of water to render the same plastic. This introduces a considerable time element in the setting and subsequent heating of the molded mass since it is absolutely necessary that all moisture be driven out before the mold is poured. The setting of the mold usually took from twenty to thirty minutes alone. The subsequent heating to drive out any residual moisture consumed another twenty to thirty minutes. In other words, it took about an hour's time to place the mold in readiness for pouring. According to the present invention, this waste of time is avoided by providing an investment material which is rendered plastic by a combustible liquid such as alcohol and can be ignited or fired due to the presence of this liquid to take a set, solidify and be relieved of its moisture content all in about half a minute's time with the further assurance after the firing that no objectionable moisture will be left in the mold. With the other investment materials, there is no certainty of this without positive tests.

In the making of a filling, or rather in the preparation of a mold for the pouring of a filling, a wax model is first produced which is fixed on a sprue in a sprue former. The

wax model is then painted with a plaster investment compound which is usually very fine grained and comparatively porous to produce sharp, clear cut margins on the filling eventually produced. The coating is allowed to harden for eight to fifteen minutes, whereupon the sprue former is placed in an investment ring into which the main mass of investment compound to form the mold is flowed surrounding the model. This practice has been commonly followed for some time. With the use of the investment compounds at present available, as previously stated, the ring had to be left standing for twenty or thirty minutes to allow the mold to take a set. After this, it was possible to drive out the moisture present by the use of a Bunsen flame which also took from twenty to thirty minutes. With the use of my investment material, the composition of which I will set forth shortly, the time for setting and the time for heating are practically eliminated as the mold may be ignited or fired at once and is ready for casting in about ten minute's time.

My investment material preferably consists of the following parts by volume, to wit:— One-third molding clay, one-third finely ground fire clay, one-third finely ground asbestos preferably of a kind containing a binder of fire clay.

This composition is rendered plastic preferably with alcohol or some other volatile liquid such as chloroform or ether. Gasoline also may be used for this purpose. The clay constituents on firing of the molded mass solidify and at the same time the wax model of the filling is fused and vaporized leaving a mold cavity for the filling to be poured or cast under pressure. The asbestos insures the cohesion of the molded clay, in an obvious manner. It is obvious that any unused portion of a batch of the compound that has been mixed will not take a set as was the case with plaster of Paris or silex. Consequently, it is not wasted but can be used for the next mold. If the alcohol or other combustible moistening has dried out, it is merely necessary to add more to make the material plastic and ready for use. Thus, another important saving in time is effected as well as a saving in material.

While I have described a particular composition which, at the present time, I have selected as a preferred embodiment of my invention, it will, of course, be understood

that some variations and departures may be made without sacrificing some of the more important advantages which are derived in the use of the material described. It is, therefore, to be understood that the invention is capable of adaptation and modification within the spirit and scope of the appended claims.

I claim:

- 10 1. A dental investment material moistened and made plastic with a combustible liquid whereby to be susceptible of ignition to dry and solidify the mass thereof in a mold.
- 15 2. A dental investment material capable of ignition to take a set and form a solid mold ready to be poured.
- 20 3. A dental investment compound comprising a clay material made plastic with a readily combustible volatile liquid having substantially the properties of alcohol.
4. A dental investment compound com-

prising a clay material admixed with an interlacing agent such as fibrous fire-proof material, and made plastic with a readily combustible volatile liquid having substantially the properties of alcohol. 25

5. A dental investment compound comprising a clay material admixed with a combustible firing material. 30

6. A dental investment material which is capable of ignition to simultaneously set solidify, and be relieved of the moisture content thereof.

7. A dental investment compound consisting of one-third molding clay, one-third finely ground fire clay, and one-third finely ground asbestos each by volume rendered elastic with a volatile liquid having substantially the properties of alcohol. 35

In witness of the foregoing I affix my signature. 40

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CERTIFICATE OF CORRECTION.

Patent No. 1,658,437.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 32, claim 6, after the word "set" insert a comma; same page, line 38, claim 7, after the word "volume" insert the words "arranged to be", and line 39, same claim, for the word "elastic" read "plastic"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of March, A. D. 1928.

M. J. Moore,
Acting Commissioner of Patents.

Seal.

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