No. 612,593. Patented Oct. 18, 1898.

J. P. MERTES.

APPARATUS FOR REDUCING METAL.

(Application filed Mar. 31, 1898.)

(No Model.)

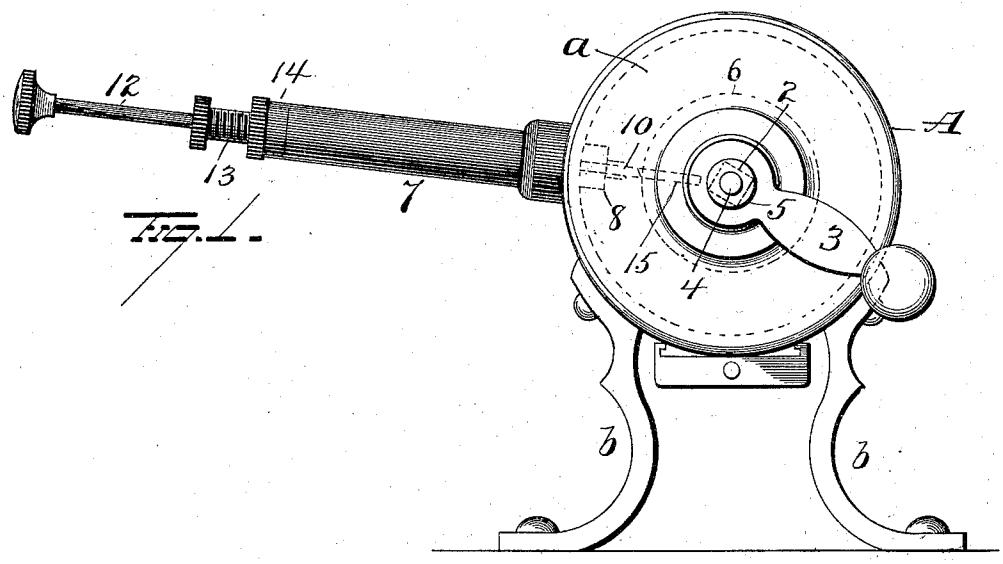


Fig. 1.

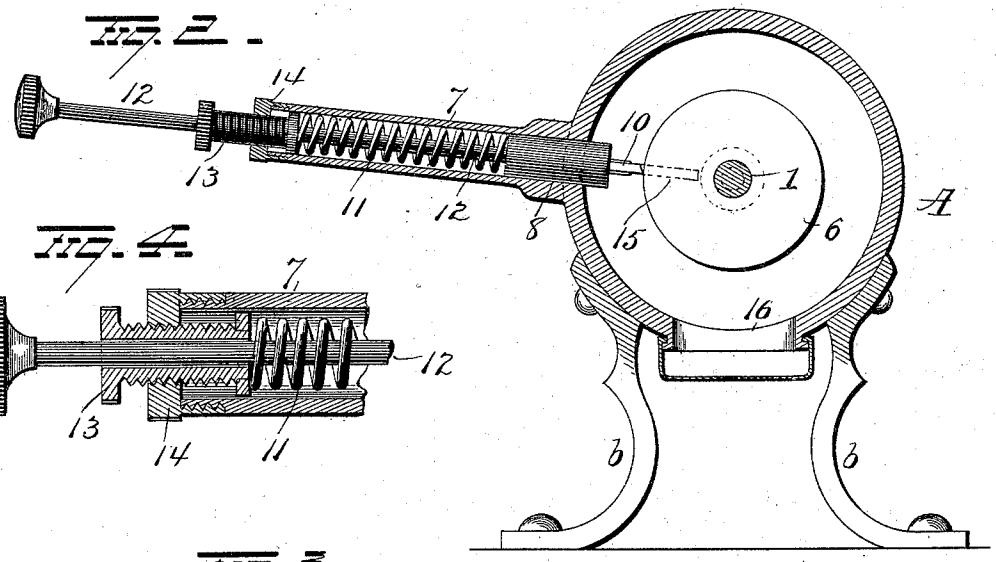


Fig. 2.

Fig. 4.

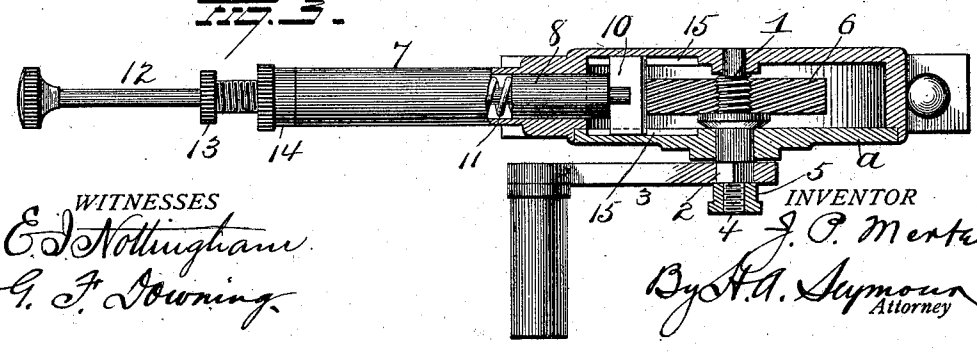


Fig. 3.

WITNESSES

E. J. Nottingham.

G. F. Downing.

INVENTOR

J. P. Mertes

By A. A. Seymour

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH PERRY MERTES, OF JANESVILLE, WISCONSIN.

APPARATUS FOR REDUCING METAL.

SPECIFICATION forming part of Letters Patent No. 612,593, dated October 18, 1898.

Application filed March 31, 1898. Serial No. 675,968. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH PERRY MERTES, a resident of Janesville, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Apparatus for Reducing Metal; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to apparatus for reducing metal, and more particularly to means for reducing alloys for use in the manufacture of amalgam fillings for teeth.

Heretofore it has been the usual custom to furnish dentists with alloy in a finely-divided or semipulverized state, in which condition it is ready to be amalgamated with mercury for use. It is well known that the alloy used in the manufacture of amalgam fillings readily oxidizes when exposed to the air and that it is agreed by the authorities that such oxidation of the alloy unfits it for use.

It is the object of my invention to provide simple means whereby a dentist can reduce, cut, or finely divide the alloy at the instant he is ready to use it in the making of a filling, and thus permit him to retain his supply of alloy in the form of an ingot incased within the apparatus by means of which the reduction of the ingot takes place.

A further object is to produce an apparatus for the purpose stated by means of which the reduction of the allow can be rapidly accomplished at a low speed, and thus avoid oxidation during the operation of reducing the alloy.

A further object is to so construct a device for reducing dental alloy as to avoid the admixture of iron or steel with the alloy, and thus avoid the detrimental effect (heretofore produced by the use of files) of such admixture in an amalgam filling.

A further object is to provide a machine for the purpose stated which shall be of convenient size, which shall be simple in construction and cheap to manufacture, which shall be easy and accurate in operation, and which shall be effectual in all respects in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of my improved apparatus. Figs. 2 and 3 are sectional views. Fig. 4 is a detail view.

A represents a casing made, preferably, of metal and having one side *a* removable. The casing is provided with legs *b*, by means of which the apparatus can be secured to a dentist's table or other support. A spindle 1 passes through the casing and is adapted to be mounted at one end in a suitable bearing in the fixed side of the casing. The other end of the spindle is mounted to revolve in the removable side *a* of the casing and to project outwardly beyond the same. The outwardly-projecting portion of the spindle is made angular, as at 2, for the reception of a crank 3, and beyond said angular portion the spindle is provided with a screw-threaded shank 4 for the reception of a nut 5 for retaining the crank in position. A portion 5 of the spindle is screw-threaded for the reception of an ingot 6, of alloy, which ingot is made in the form of a flat disk or wheel. The spindle is also preferably provided with an annular flange to gear against one face of the ingot when the latter is in proper position on the spindle.

From the above construction and arrangement of parts it will be seen that by means of a nail or other suitable tool the spindle can be forced from its bearing in the fixed side of the casing, so as to remove said spindle, ingot, and the removable side *a* of the casing without the necessity of detaching the crank from the spindle. Thus it will be seen that when an ingot shall have become consumed it can be readily replaced by a new one.

For the purpose of reducing the alloy to a proper condition for use in making a filling the devices now to be described will be employed.

The casing A is provided with a tubular arm 7, in which a plunger 8 is disposed. In the lower end of the plunger 8 the shank of a cutter or scraper 10 is screwed. For the purpose of pressing the knife or scraper 10 a spring 11, located within the tubular arm, is employed. The spring 11 encircles the rod

12 of the plunger 8 and bears at one end against the plunger. The upper end of the spring bears against the lower end of a thumb-screw 13. The thumb-screw 13 is made tubular in form to permit the free passage of the plunger-rod through it, and it is screw-threaded externally to pass through a screw-threaded hole in the removable cap 14 of the tubular arm. It is apparent that by means of the thumb-screw 13 the tension of the spring can be regulated and the pressure of the knife or scraper against the periphery of the ingot adjusted to cause the shavings from the ingot to be of greater or less thickness, as desired, and in accordance with the amount of alloy to be removed from the ingot for immediate use.

The knife or scraper will be maintained in proper relation to the circular ingot by means of slots or grooves 15 in the sides of the casing, in which slots or grooves the ends of the knife or scraper enter. The slots or grooves 15 will not extend entirely through the sides of the casing, and the outlet 16, through which the scrapings or shavings escape, will preferably be normally closed, so as to exclude air from the ingot, and thus avoid undue oxidation.

My improvements are very simple in construction, comprise but few parts, can be cheaply manufactured, enables a dentist to reduce his alloy from the ingot as he uses it, and my improvements are effectual in all respects in the performance of their functions. It will also be seen that the ingot does not come into contact with any iron or steel except the scraper, *per se*, and that consequently there is no danger of particles of iron or steel becoming mixed with the alloy, as is frequently the case where the ingot is reduced by means of a file or similar appliance.

Slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

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

1. The combination with a movable support, of an ingot composed of an oxidizable alloy carried by said support, a casing inclosing said ingot so as to avoid the oxidation thereof, and a cutter within said casing for reducing said ingot to a subdivided condition, substantially as set forth.

2. The combination with a casing, of a revoluble ingot-holder mounted therein, and a spring-pressed blade or scraper adapted to engage the ingot and cause it to be reduced to a subdivided condition, substantially as set forth.

3. The combination with a casing, of a revoluble ingot-holder mounted therein, a tubular arm projecting from said casing, a plunger in said tubular arm, a blade or scraper secured to said plunger, a spring for pressing the blade or scraper against the ingot and means for adjusting the tension of said spring, substantially as set forth.

4. The combination with a casing and a movable ingot-holder mounted therein, of a tubular arm projecting from said casing, a plunger mounted in said tubular arm, a blade or scraper secured to said plunger, a rod secured to the plunger, a thumb-screw through which said rod passes, a cap on the tubular arm, through which cap the thumb-screw passes, and a spring disposed within the tubular arm and bearing, respectively, against the plunger and said thumb-screw, substantially as set forth.

5. The combination with a casing having a removable side, of an ingot-holder mounted in said removable side and removably mounted in the fixed side of the casing, means for turning said ingot-holder, and a blade or scraper to reduce the ingot, substantially as set forth.

6. The combination with a casing having one side fixed and the other side removable, of an ingot-holder mounted in the removable side of the casing and removably mounted in the fixed side of the casing, and a crank secured to the ingot-holder adjacent to the removable side of the casing, whereby said ingot-holder and its crank can be removed with the removable side of the casing, substantially as and for the purpose set forth.

7. The combination with a casing, of an ingot-holder mounted therein, said ingot-holder consisting of a spindle having a screw-threaded portion between its ends to pass through the center of an ingot, said spindle having journals at each side of said screw-threaded portion, and having an angular portion for the reception of a crank, and a blade or scraper to reduce the ingot as it is revolved, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH PERRY MERTES.

Witnesses:
W. T. SHERER,
H. A. MOESER.