Jan. 2, 1923.

E. KIMMIG ET AL.
DENTAL CASTING MACHINE.
FILED FEB. 15, 1921.

1,441,001

Fig. 1.

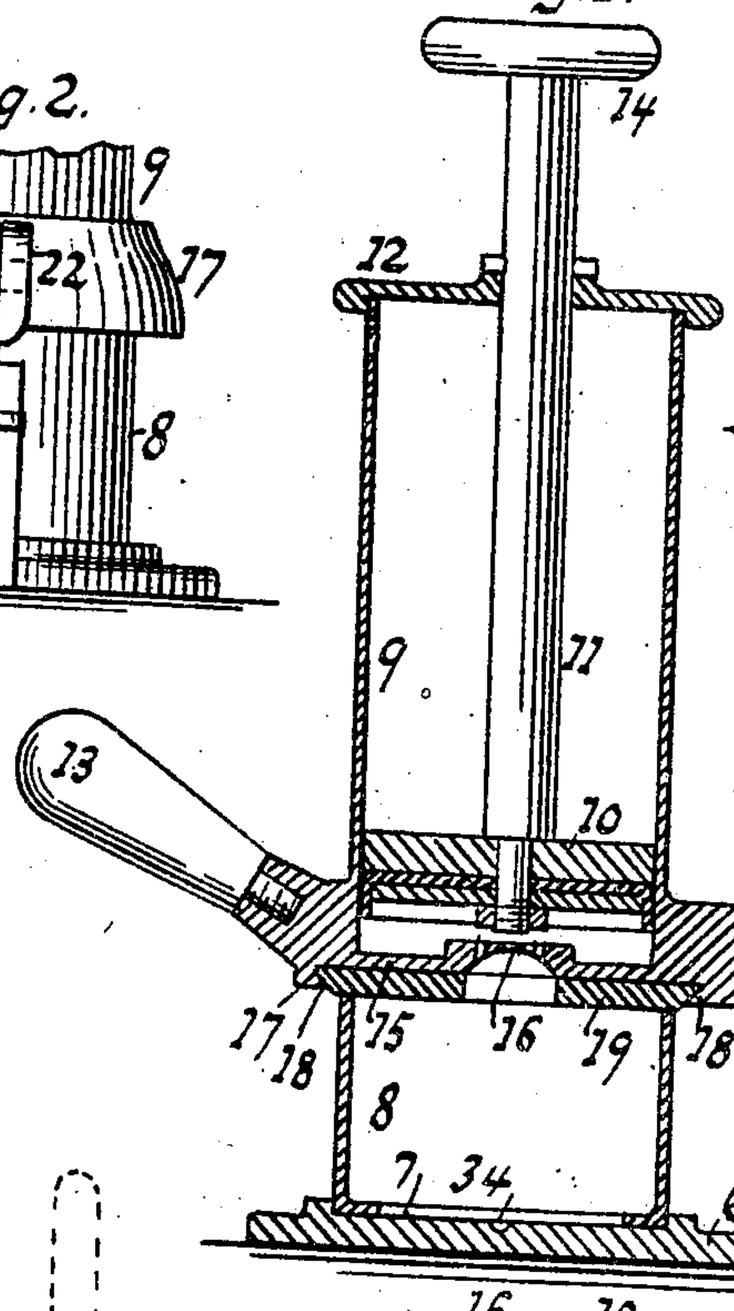


Fig. 2.

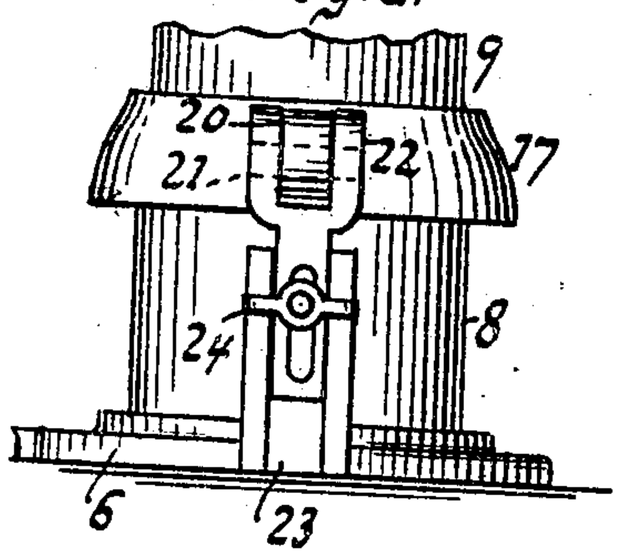


Fig. 5.

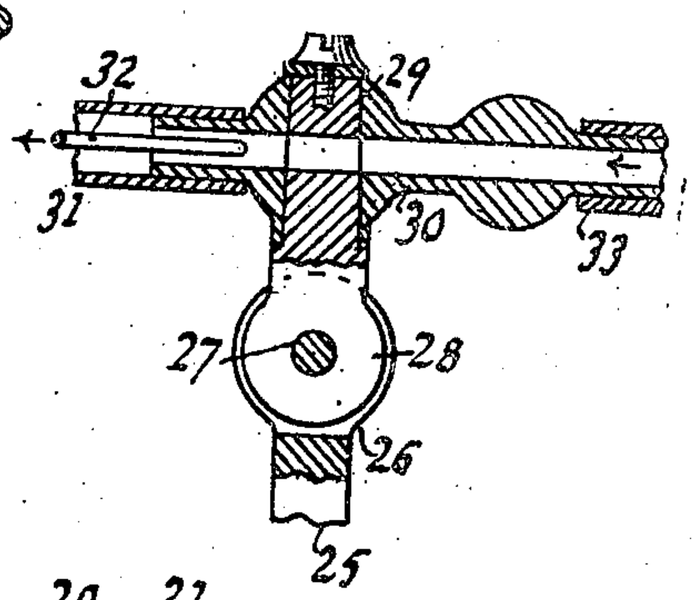


Fig. 4.

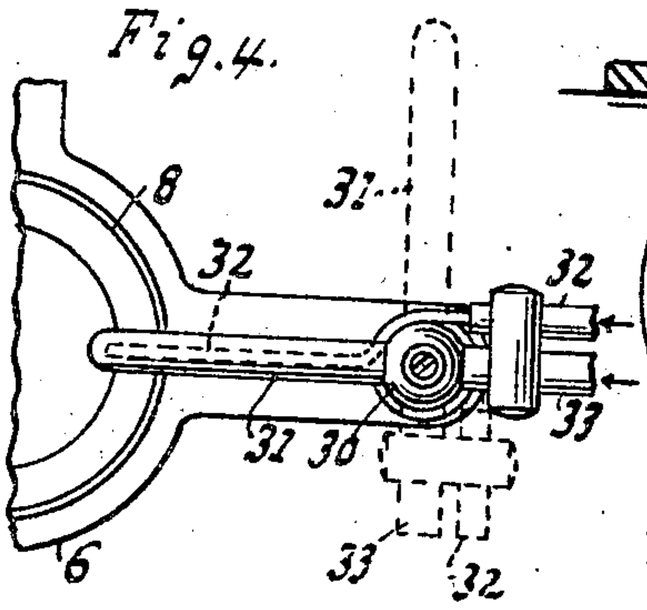
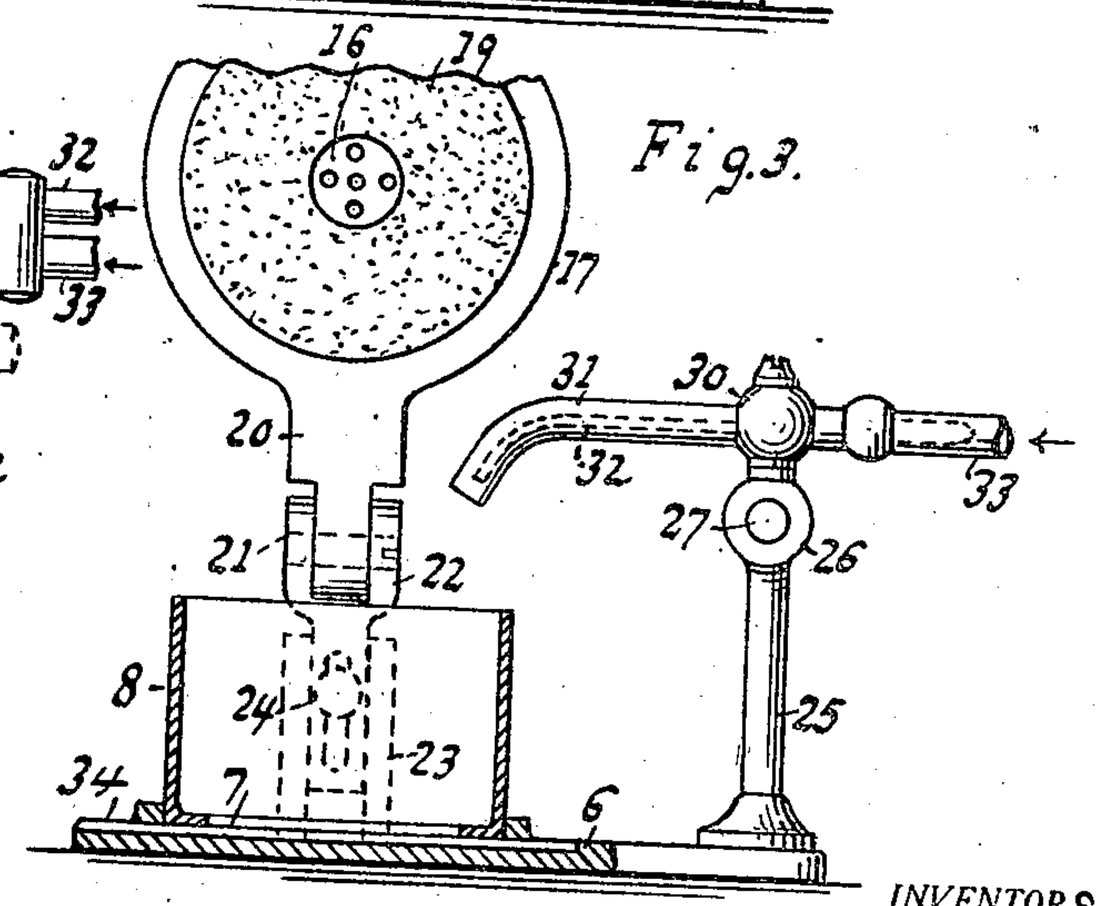


Fig. 3.



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Patented Jan. 2, 1923. 1,441,001

UNITED STATES PATENT OFFICE.

EMIL KIMMIG, OF JERSEY CITY HEIGHTS, NEW JERSEY, AND SAMUEL SILVER, OF BROOKLYN, NEW YORK.

DENTAL CASTING MACHINE.

Application filed February 15, 1921. Serial No. 445,087.

To all whom it may concern:

Be it known that we, EMIL KIMMIG and SAMUEL SILVER, respectively citizens of the United States and Great Britain, and residents of Jersey City Heights and Brooklyn, in the counties of Hudson and Kings and States of New Jersey and New York, have invented certain new and useful Improvements in Dental Casting Machines, of which the following is a specification.

This invention relates essentially to a portable machine for casting dental metal members such as teeth fillings, crowns, plates and similar small articles of different designs depending on the mold used for the purpose.

An object of the invention is to provide a pump controlled by the operator for compressing the atmospheric air in the pump cylinder so that it will flow into a flask after it is sealed by the cylinder and adapted to contain the molden casting.

Another object of the invention is to provide means for swinging the pump cylinder out of the way when it is desired to bring a blow pipe into action to melt the metal.

Another object of the invention is to provide the blow pipe with means for horizontally oscillating it in order to turn on or shut off the combustible and at the same time place the pipe in or out of action.

Another object of the invention is to provide means for vertically adjusting the pump cylinder to or from the top of the flask to set it in alignment with different dimensional flasks.

The novel combinations of the invention are more fully described in the following specification and claims and illustrated in the accompanying drawing in which:

Fig. 1 represents a sectional side elevation of a machine embodying this invention.

Fig. 2 is a rear view of the lower part of the machine.

Fig. 3 is a vertical section taken at right angles to Fig. 1 showing the pump cylinder swung over and the blow pipe in action.

Fig. 4 is a plan view of Fig. 3, some of the parts being broken away.

Fig. 5 is a vertical section on a larger scale of the valve connection.

In the drawing the numeral 6 designates a base having an annular recess 7 made to fit a flask 8 suitable for holding a mold carrying the metal to be cast. As shown the flask is cylindrical and it has an open top to give access to the interior of the flask when uncovered.

The means for at times sealing or covering the top consists in general of a pump for compressing air, and it includes a cylinder 9 having a piston 10 slidingly mounted therein. A stem 11 extends up through a hole in a screw cover 12 closing the top of the cylinder, and the stem has a handle 14 surmounting the top whereby the piston is manipulated. The bottom of the cylinder is equipped with a diaphragm 15 provided with a series of small holes 16 to permit the flow of the compressed air in the cylinder into the flask. An annular member 17 forming an integral part of or brazed to the cylinder has a countersunk bottom 18 to seat a packing 19 of heat resisting substance such as asbestos, for engagement with the top of the flask. When the cylinder covers the top of the flask as indicated in Fig. 1, the packing prevents any leakage of air from the flask.

Projecting rearwardly from the annular member is a lug 20 pivoted at 21 to a bifurcated slotted member 22 extending downwardly. A grooved standard 23 best seen in Fig. 2 forming a contiguous extension at the rear of the base coacts with the flat stem of the slotted member to guide it up or down and a thumb bolt 24 holds the parts in locked position. When the thumb bolt is loosened the slotted member 22 can be slid in the groove to move the cylinder up or down within the limits of the slot so as to bring it in line with the top of the flask thus accommodating flasks of different heights and dimensions. A handle 13 fixed to the front of the cylinder opposite the lug serves as a grip to actuate the cylinder.

A blow pipe for melting the metal in the mold comprehends a post 25 secured to an extension located at the right hand side of the base as indicated in Fig. 3. The post has a bifurcated top 26 with tapped holes for the insertion of a pivot or bolt 27 made to pass through an eye formed in the stem 28 of a valve 29 so as to fix it to the post. A casing 30 having a nozzle 31 is supported on the valve. Inlet pipes 32 and 33 carried by the casing respectively supply air and a fuel such as illuminating gas to flame at the nozzle and be projected into the flask to heat the metal placed in a mold as is well known.

As shown the nozzle is pointed towards the flask while in action, but when it is desired to shut off the fuel the nozzle is given a one-quarter turn about the valve as indicated in dotted lines in Fig. 4. When the nozzle is in action the cylinder is swung over with its axis at right angles to the flask.

The machine is portable consequently it can be conveniently carried and by having the pump arranged on the base in close relation with the flask, the use of a separate compressed air tank is eliminated. The operation of the machine is as follows: The mold with the metal is placed in the flask after the cylinder is swung over to open the flask as indicated in Fig. 3, the flame from the blow pipe then melts the metal and the pipe is turned out of the way. The cylinder is then swung back to engage the upper portion of the flask, the piston in the mean time has been pulled upward expelling the air above it and admitting air through the apertures in the bottom to fill the space below the piston. The piston is then pushed downward compressing the air below the piston which flows through the apertures into the flask. The molden metal will be forced into all the cavities prepared for it in the mold by the air pressure thus preventing any flaws forming in the metal after it cools.

It will be readily understood that the machine can be used to cast any small metal article, and the air in the flask is driven out by the force of the compresed air above it through channels 34 in the base so that the actuation of the pump creates a continuous circulation to insure rapid cooling and a casting free from pores. Modifications of the invention can be made within the law of equivalents and scope of the claims for example, the extension carrying the post 25 could be removable and fixed to the opposite side of the base in order to accommodate a left handed operator.

We claim:

1. A casting machine comprising a base having a standard, an open flask removably mounted on the base, a pump cylinder provided with a lug, the lower end of the cylinder being normally in engagement with the upper open portion of the flask, a device for swingingly and movably connecting the lug to the standard to raise or lower the cylinder, and means for locking the movable device to the standard.

2. A casting machine comprising a base having a standard, an open flask removably mounted on the base, a pump cylinder provided with a lug, the lower part of the cylinder being normally adapted to engage the upper open portion of the flask, a depending member hinged to the lug, means for slidingly connecting the member to the standard to raise or lower the cylinder, and means for locking the member to the standard.

3. A casting machine comprising a base having a grooved standard, an open flask removably mounted on the base, a pump cylinder provided with a rearwardly projecting lug, the lower end of the cylinder being normally adapted to engage the upper open portion of the flask, a slotted depending member hinged to the lug and vertically slidable in the groove to raise or lower the cylinder, and a bolt coacting with the slot for locking the member to the standard.

Signed at New York in the county of New York and State of New York this 5th day of February A. D. 1921.

EMIL KIMMIG.
SAMUEL SILVER.