

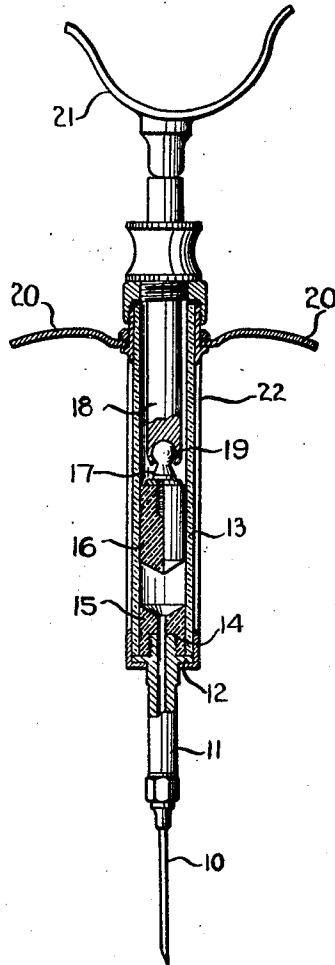
Nov. 8, 1927.

1,648,135

R. E. KLETT

SYRINGE

Filed Aug. 16, 1923



INVENTOR

Robert E. Klett

BY

J. M. Foster
ATTORNEY

Patented Nov. 8, 1927.

1,648,135

UNITED STATES PATENT OFFICE.

ROBERT E. KLETT, OF RIDGEFIELD PARK, NEW JERSEY, ASSIGNOR TO KLETT MANUFACTURING COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SYRINGE.

Application filed August 16, 1923. Serial No. 657,674.

This invention relates to syringes such as are used for hypodermic injections, and other similar devices which require sterilization. Difficulty has been experienced in obtaining a suitable piston and end plug for such syringes. Metal is subject to excessive wear under prolonged use, and if combined with a glass cylinder is liable to stick, or break the glass if the syringe be sterilized without taking it apart. Glass and porcelain are not convenient because these substances are not capable of receiving screw threads by means of which the piston rod or other member may be connected, and are also too brittle.

An object of this invention is to provide a hard, substantially heat-resisting, and non-expansible material which may be used within a glass or other syringe barrel and possess a long life adapted to withstand hard wear, being not brittle and capable of having the syringe sterilized without the necessity of taking it apart.

The drawing shows a longitudinal section of this invention embodied in a syringe.

The hypodermic needle 10 is supported by the metal end member 11 in the customary manner. The barrel 13 of the syringe is preferably of ground glass and has the plug 15 of lava in one end thereof which plug is provided with screw threads 14 to engage the member 11 and as shown a flange 12 may engage the ends of the barrel. Within the barrel is the piston 16 also of lava and having threaded engagement with the metal member 17 which is connected to the piston rod 18 through the ball and socket joint 19. Customary finger grips 20 are provided on the barrel of the syringe and likewise the usual support 21 for the actuating thumb or finger. Surrounding the glass barrel is the metal casing 22 which is provided to safeguard the barrel and prevent breakage. The metal casing is preferably open on opposite sides to permit transmission of light through the syringe and to enable graduations to be provided on the glass barrel.

The lava of which end member 15 and piston 16 are constructed is not of volcanic origin but is the magnesia and talc compound met with in the electric arts as an insulating and heat resisting material which is mined as a soft material enabling it to be machined or threaded as desired. A subsequent baking operation wherein the material

is subjected to a temperature of about 2,000° F. changes it into a very hard substance which though hard is not as brittle as glass or porcelain. A more detailed description of this material and its characteristics may be found on pages 81-84 of a book entitled "Common Materials" published for "Electrical Record" by The Gage Publishing Co., Inc., 114 Liberty Street, New York city, or from literature published by the American Lava Company.

There are a number of advantages accruing from making a piston or other member inside a syringe of lava. This material is heat resistant and because substantially non-expansible, it is possible to sterilize the syringe without taking it apart. The lava being less brittle, yet hard, and in its soft state before baking adapted to be machined, makes this material better adapted for such use than glass or porcelain because these materials cannot be satisfactorily threaded. The lava does not cut or scratch the walls of the glass barrel but instead, after prolonged use, becomes polished. If metal pistons were used they would be subject to the disadvantage of undue wear and expansion when heated during sterilization, requiring the demounting of the syringe when a metal piston is used.

The lava material is adapted for other locations than pistons and for use in other devices requiring sterilization than the syringe illustrated.

I claim:

1. The combination with a barrel, of a hard, substantially heat-resistant, and non-expansible piston therein less brittle than the barrel and adapted to take a polish with use, and a piston rod secured to said piston.
2. The combination with a barrel, of a lava piston movable therein, and a piston rod secured to the piston.
3. In a syringe, the combination with a glass barrel of a hard, substantially heat-resistant and non-expansible piston therein capable of taking a polish on its periphery under prolonged use, and a piston rod connected to said piston.
4. A piston for a hypodermic syringe composed of heat treated magnesia and talc compound rendered hard and non-expansible and capable of taking a high polish.
5. The combination with a glass barrel, of a piston therein, composed of lava con-

tacting with the inner walls of said barrel.

6. The combination with a glass barrel, of a piston therein composed of lava having a polished surface contacting with the barrel, a piston rod, and a threaded connection between said piston and rod.

7. The combination with a glass barrel, of a lava piston therein, a member threaded to the piston, a piston rod, and a universal

joint between said piston rod and member. 10
8. The combination with a barrel, of a lava piston therein, a piston rod, and a lava plug closing an end of the barrel and having a hole therethrough.

Signed at New York city, in the county of New York and State of New York, this 15
14th day of August, A. D. 1923.

ROBERT E. KLETT.