No. 861,744. PATENTED JULY 30, 1907.

A. L. MARSH.

ELECTRIC MUFFLE FURNACE.

APPLICATION FILED FEB. 18, 1907.

Fig. 1.

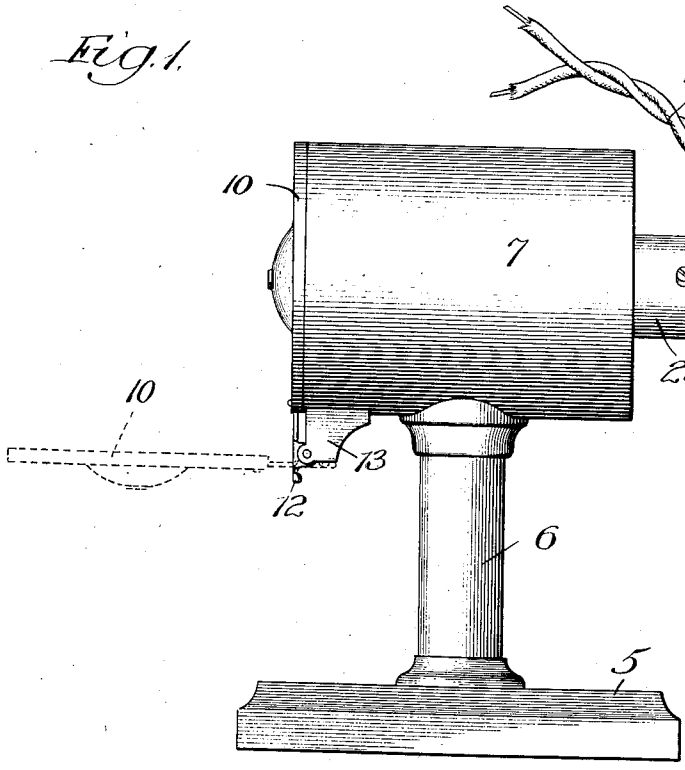


Fig. 2.

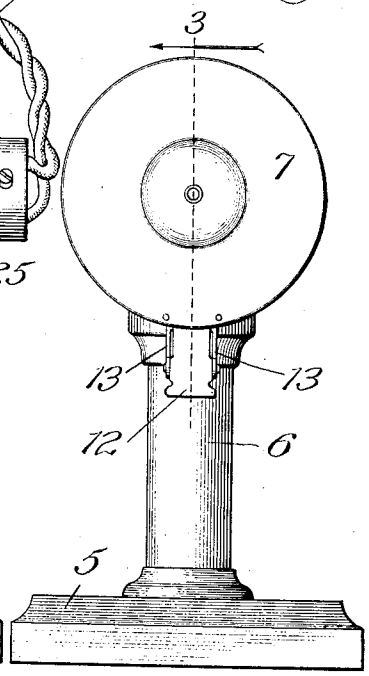
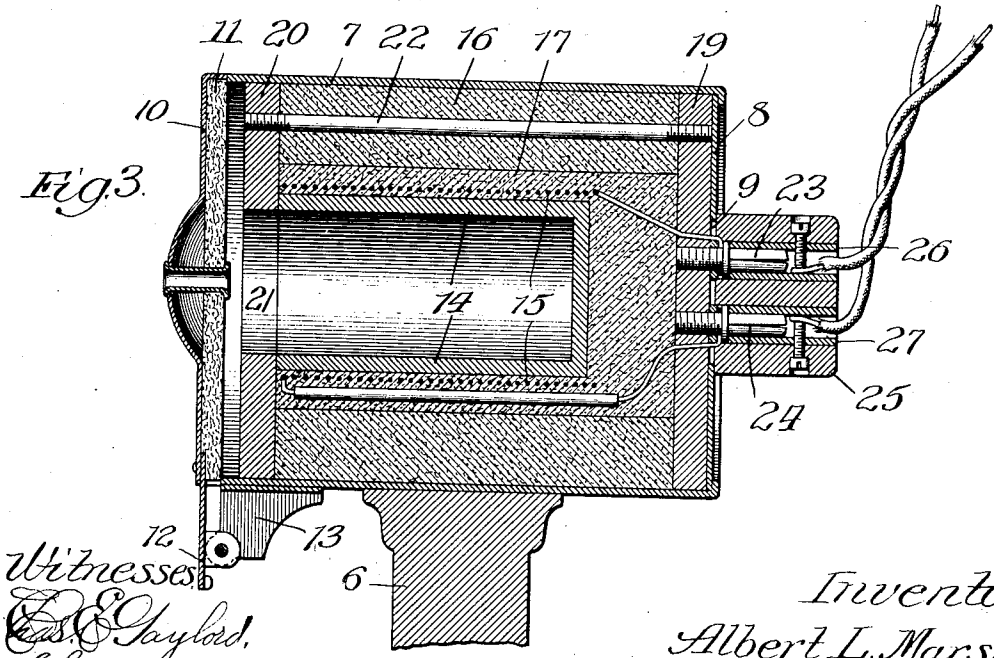


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTRIC MUFFLE-FURNACE.

No. 861,744. Specification of Letters Patent. Patented July 30, 1907.

Application filed February 18, 1907. Serial No. 358,001.

To all whom it may concern:

Be it known that I, ALBERT L. MARSH, a citizen of the United States, residing at Lake Bluff, in the county of Lake and State of Illinois, have invented a new and useful Improvement in Electric Muffle-Furnaces, of which the following is a specification.

The object of my invention is to provide a novel and simple construction of electric muffle-furnace, which shall afford to it the advantages hereinafter pointed out.

In the accompanying drawing, Figure 1 shows my improved furnace by a view in side elevation; Fig. 2 is a view of the same in front-end elevation, and Fig. 3, a section taken at the line 3 on Fig. 2, viewed in the direction of the arrow and enlarged.

The permanent parts of my improved furnace comprise a base 5, of insulating material, a post 6 rising from the base, and a metal housing 7, for the muffle, preferably of the cylindrical shape represented, supported in horizontal position on the post and having one end closed by a head 8 containing a central opening 9, and provided on its opposite end with a hinged door 10 of metal having an inner facing 11 of heat-insulating material, such as asbestos fiber. The door is hinged at a tongue 12 projecting from its lower end, on a bearing 13 depending from the housing near one end, against which bearing the inner end of the tongue abuts to limit opening of the door to a horizontal position, at which the abutting of the tongue sustains it to adapt it to serve as a shelf, as shown of the door by dotted lines in Fig. 1, representing it in its lowered position.

The muffle consists of an inner tube 14, composed of talc, fused magnesia or other suitable refractory material, about which is coiled a conducting wire 15 of a high degree of electrical resistance, and being to that end a resistance element preferably of the kind covered by Letters Patent of the United States No. 811,859, granted to me February 6, 1906; a tubular shell 16 of refractory material, such as fire-clay, surrounding the tube 14, with silica 17, or other heat non-conducting material, packed between the two tubes; a head or disk 19, preferably of asbestos fiber, closing the inner end of the muffle, and a head or disk 20 covering the outer end thereof and like the disk 19 except that it contains a central opening 21 forming the mouth of the muffle. Rods passing at intervals lengthwise through the muffle-structure, and one of which is shown at 22, fasten the heads 19 and 20 in place.

The ends of the coil 15 connect with terminals 23 and 24, respectively, rigidly fastened to project from the head 20 near its center, and each being split longitudinally, as represented, for the purpose hereinafter explained.

By inserting the muffle into its housing, the terminals protrude through the opening 9 in the head 8 and are adapted to have applied to them a coupling-head 25, of insulating material, containing metallic sockets 26, 27, connected with one end of a flexible conductor 28 provided on its opposite end with a suitable plug (not shown) adapted to be connected with an incandescent-electric-lamp socket, or other source of current supply. The splitting of the terminals renders them resiliently compressible, whereby when the head 25 is applied to them to receive them into its sockets the head bears against the housing-head 8 about the opening 9 therein, and the split terminals bind the head 25 frictionally with a degree of firmness which tightens the muffle in place within the housing.

The described construction adapts the muffle, upon introducing it into its housing, to be quickly and readily put into condition for use, since all that is required to that end is to apply the head 25 to the terminals 23, 24; and the matter of releasing the terminals, by withdrawing the head 25, to free the muffle and permit its withdrawal, is effected with equal facility.

The illustrated cylindrical form of the housing and muffle is the preferred form thereof, because it enables insertion of the muffle into the housing without reference to any particular way of inserting; and the various details of constuction shown and described contribute to the desired simplicity of the structure and to facility in using it.

What I claim as new and desire to secure by Letters Patent is—

1. In an electric muffle-furnace, the combination of a housing having a head at one end provided with an aperture, a muffle removably insertible into said housing and composed of refractory material with an electrical resistance element contained therein having terminals on an end of the muffle, and an electric coupling-head adapted to engage with said terminals and housing and forming a removable fastener operating to clamp the housing-head between it and the adjacent muffle-end.

2. In an electric muffle-furnace, the combination of a housing having a head at one end provided with an aperture, a muffle removably insertible into said housing and composed of refractory material with an electrical resistance element contained therein having terminals projecting from an end of the muffle, and an electric coupling-head having sockets to receive said terminals in frictionally binding engagement and forming a removable fastener operating to clamp the housing-head between it and the adjacent muffle-end.

3. In an electric muffle-furnace, the combination of a housing having a head at one end provided with an aperture, a muffle removably insertible into said housing and composed of refractory material with an electrical resistance element contained therein having longitudinally-split terminals projecting from an end of the muffle, and an electric coupling-head having sockets to receive said terminals in frictionally binding engagement and forming a removable fastener operating to clamp the housing-head between it and the adjacent muffle-end.

4. In an electric muffle-furnace, the combination of a housing having a head at one end provided with an aperture and a hinged door on its opposite open end adapted to be opened to a horizontal position and afford a shelf, and a

muffle removably insertible into said housing, composed of refractory material with an electrical resistance element contained therein having terminals on an end of the muffle, an electric coupling head containing sockets adapted to receive said terminals in frictionally binding engagement and to bear against the housing-end to fasten the muffle in place.

5. In an electric muffle-furnace, the combination of a housing having a head at one end provided with an aperture, a muffle removably insertible into said housing and composed of an inner tube of refractory material, an electrical resistance wire coiled about said tube, an outer tube of refractory material surrounding said inner tube and heat non-conducting material between said tubes and a head of refractory material secured on the inner end of said tubes and an annular head of refractory material secured on the opposite end of said tubes, terminals of said wire on said inner head, and an electric coupling-head adapted to engage with said terminals and bind the muffle in the housing.

6. An electric muffle-furnace comprising, in combination, a base, a post rising therefrom, a housing supported in said post having a head at one end provided with an aperture and a hinged door on its opposite end, a muffle removably insertible into said housing and composed of refractory material with an electrical resistance element contained therein having terminals projecting from the inner end of the muffle through said aperture, and an electric coupling-head containing sockets adapted to receive said terminals in frictionally binding engagement and to bear against the housing-end to fasten the muffle in place.

ALBERT L. MARSH.

In presence of—
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R. A. SCHAEFER.