C. & B. JAEGER.

PRIMARY CELL.

APPLICATION FILED MAR. 6, 1912.

1,039,949. Patented Oct. 1, 1912.

Fig. 1.

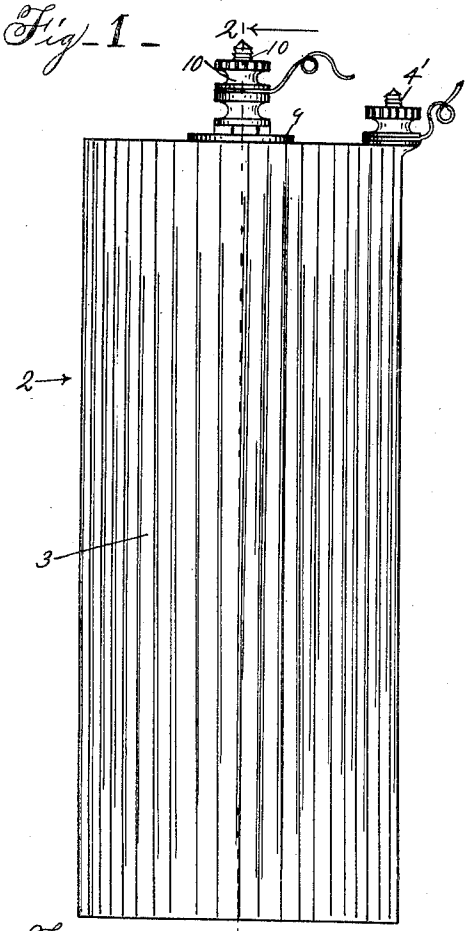


Fig. 2.

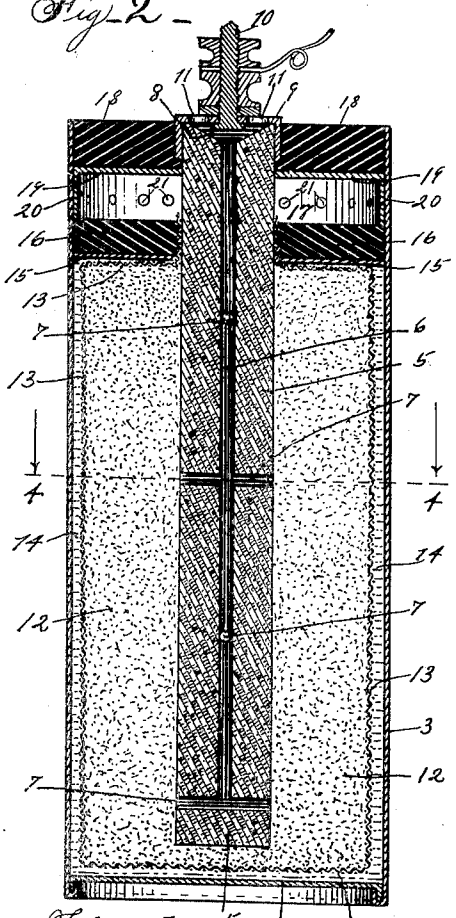


Fig. 3.

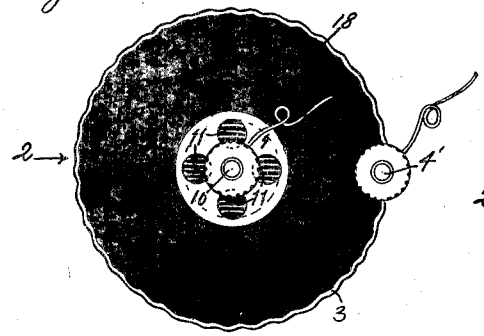
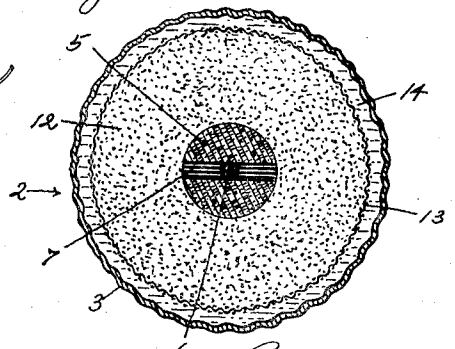


Fig. 4.



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PRIMARY CELL.

1,039,949. Specification of Letters Patent. Patented Oct. 1, 1912.

Application filed March 6, 1912. Serial No. 682,068.

To all whom it may concern:

Be it known that we, CARL JAEGER and BERTHA JAEGER, both subjects of the Emperor of Germany, residing at Los Angeles, in the county of Los Angeles, State of California, have invented a certain new and useful Primary Cell; and we 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.

This invention relates to a primary cell, which though it is designed to have the electrolyte remain continuously in a fluid state, has the advantage of and is adapted to be used in the same manner as a dry cell.

One object of the invention is to provide an improved construction and arrangement for the carbon element whereby air may pass to and gas pass from the interior of the cell.

Another object of the invention is to provide an improved depolarizer and an improved electrolyte adapted to coact with each other and with the elements of the cell to effect improved results in the working of the cell.

Further objects of the invention are to provide a cell which is long lived, simple in construction, comparatively cheap to manufacture, strong and durable, efficient and economical to use, and which is adapted to develop a comparatively full, strong and lasting voltage and amperage.

With the above and other objects and advantages in view, the invention may be said to consist in the provision of the novel features and in the novel and improved construction, composition, arrangement and combination of the parts and ingredients as will be apparent from the description and claims which follow.

Referring to the accompanying drawings of the preferred form of construction in which the invention is embodied, Figure 1 is an elevation of the cell; Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 1; Fig. 3 is a top plan view of the cell, and Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 2.

The can 2, of zinc, may consist of the cylindrical and preferably corrugated shell 3, having secured thereto a bottom 4 and having affixed thereon a binding post 4'. The carbon element 5 may be cylindrical in form and is preferably provided with a longitudinal passageway 6—substantially centrally therein—leading from its top end to a point near its lower end, and with a plurality of lateral passageways 7 leading from the passageway 6 to the surface of said carbon element.

As seen in Fig. 2, the upper end portion of the carbon element 5 is preferably provided with a recess 8 which is in communication with the passageway 6 and is made diverging from said passageway to the top edge of the carbon element. Over the top end portion of the carbon element 5 is fitted a metallic cap 9 which has suitably affixed on the top thereof the binding post 10 and is provided with apertures 11 opening into the recess 8. A depolarizer 12 may surround all excepting the top end portion of the carbon element 5 and it may be held in place by cheesecloth or other open weave fabric 13 suitably affixed thereon. The depolarizer 12 may consist of a composition of peroxid of manganese, graphite, peroxid of lead, hydrate of aluminum, chlorid of ammonia, chlorid of zinc, and water.

The peroxid of manganese, graphite, and peroxid of lead, preferably in the proportion of 80%, 10% and 10% respectively, may be first mixed together and the hydrate of aluminum, chlorid of ammonia, and chlorid of zinc, preferably in the proportion of 10%, 70% and 20%, respectively, may be mixed together with one pint of water per pound of the material and then mixed with the first mixture.

The electrolyte 14 consists of a mixture of chlorid of ammonia, chlorid of zinc, chlorid of soda, chlorid of lime, and bichlorid of mercury, preferably in the proportion of 80%, 10%, 5%, 4% and 1%, respectively, to which may be added a mixture of water, china clay, flour, glue and glycerin, sufficient in quantity to give the electrolyte a soft jelly consistency. The last mixture not only gives body to the electrolyte but also preserves it from evaporation and deterioration.

As seen in Fig. 2, the carbon element 5 with the depolarizer 12 thereon may be immersed in the electrolyte 14 in the zinc can 2 to have the top surface of the electrolyte even with the top surface of the depolarizer, and a layer 15, of paper, fiber or the like, may be disposed on the top surface of the depolarizer and electrolyte and have thereon a layer 16 of asphaltum, wax, or other suitable insulating and sealing mate-

rial. Above and spaced from the layer 16, to provide a chamber 17, is a layer 18 of suitable insulating and sealing material which may be disposed on an annulus 19 of paper, fiber or the like provided adjacent to the interior wall of the can 2 with a depending flange 20 which latter rests on the layer 16 and preferably has openings 21 therein.

In practice the layer of insulating material 16 does not prevent leakage of gases from therebelow and past its surface adjacent to the carbon and zinc; more or less of the electrolyte is likely to be trapped between the surface of the material 16 adjacent to the carbon and zinc. From the chamber 17 the gases pass through the porous carbon element.

From the foregoing it will be understood by those skilled in the art that the chemical action and re-action of the ingredients of the electrolyte 14 and depolarizer 12 on the zinc and carbon and on each other are such as to produce a high efficiency in the working of the cell; also this efficiency is augmented because oxygen from the air is permitted to reach the surface of the carbon and gases including those that leak into the chamber 17 may readily pass through the carbon to the atmosphere.

We claim:

1. In a primary cell, a carbon element provided with a longitudinal passageway therein and lateral passageways leading from the first passageway to the surface of said carbon element, said carbon element provided with a recess in communication with the first passageway and flaring upwardly, a cap on the top end portion of said carbon element, said cap provided with apertures opening into said recess, and a binding post affixed to said cap.

2. In a primary cell, an electrolyte consisting of chlorid of ammonia, chlorid of zinc, chlorid of soda, chlorid of lime, bichlorid of mercury, water, china clay, flour, glue and glycerin, substantially as described.

3. A primary cell comprising a zinc can, an electrolyte in said can, said electrolyte consisting of chlorid of ammonia, chlorid of zinc, chlorid of soda, chlorid of lime, bichlorid of mercury, water and ingredients to prevent evaporation of the electrolyte, a carbon element having passageways therein, a depolarizer surrounding the carbon element, said depolarizer consisting of peroxid of manganese, graphite, peroxid of lead, hydrate of aluminum, chlorid of ammonia, chlorid of zinc and water, and layers of insulating and sealing material disposed above the top surface of said electrolyte and depolarizer on the interior of the can, said layers spaced apart to provide a chamber, substantially as set forth.

4. A primary cell comprising a zinc can, an electrolyte in said can, said electrolyte consisting of chlorid of ammonia, chlorid of zinc, chlorid of soda, chlorid of lime, bichlorid of mercury, water and ingredients to prevent evaporation of the electrolyte, a carbon element having passageways therein, a depolarizer surrounding said carbon element, said depolarizer consisting of peroxid of manganese, graphite, peroxid of lead, hydrate of aluminum, chlorid of ammonia, chlorid of zinc, and water, substantially as set forth.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses at Los Angeles, county of Los Angeles, State of California, this 16th day of February A. D. 1912.

CARL JAEGER.
BERTHA JAEGER.

Witnesses:
ALEX. H. LIDDERS,
ANNA B. DESSAU.