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DRY CELL.

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1,403,409.

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Fig. 1

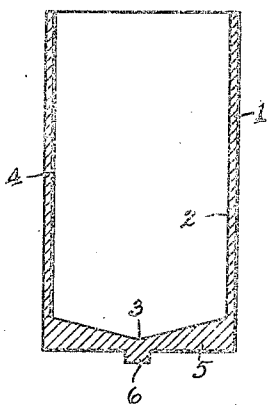


Fig. 2

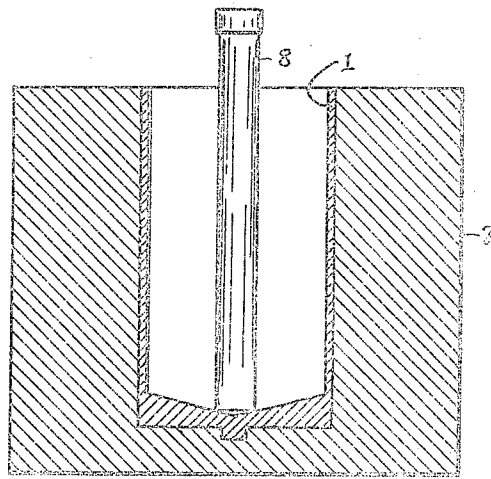


Fig. 3

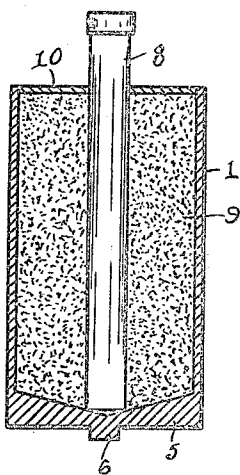
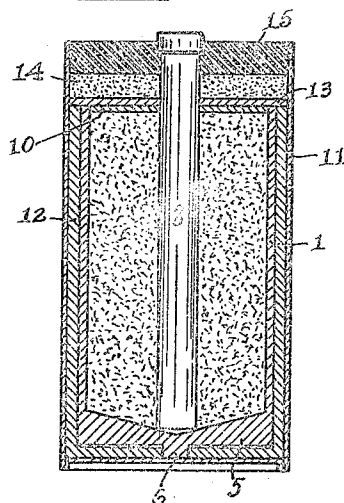


Fig. 4



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DRY CELL.

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To all whom it may concern:

Be it known that I, CLARENCE W. HAZELLETT, a citizen of the United States, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful improvement in Dry Cells, of which the following is a full, clear, and exact description.

This invention relates to dry cells of the type commonly known as "midget" cells, and to a process of manufacturing the same.

The usual method pursued in making these small cells consists in forming or molding a mix consisting of manganese peroxide and carbon or graphite, moistened with electrolyte around a carbon rod. The molded "bobbin", as it is usually called, is then removed from the mold. Considerable care must be exercised in doing this and in subsequent handling of the bobbin, as the mix is easily loosened and knocked off. The bobbin is then wrapped in thin cheesecloth which is bound thereto by means of string or thread wrapped around the cartridge, or by means of rubber bands. The wrapped bobbin is then inserted in a zinc can having a small amount of flour paste in the bottom. As the electrode is pushed into the can the paste is forced up around the bobbin to fill the space between the can and bobbin. The cell is then sealed at the upper end by applying successively a pulpboard collar, a layer of sand and a pitch or other seal.

The cheesecloth is used for the purpose of retaining the mix to prevent it from reaching the zinc can, which would cause local action and poor shelf life. With this construction a relatively thick paste layer is necessary in order to secure satisfactory distribution, and the size of the cartridge must be correspondingly smaller.

The object of the present invention is to eliminate the cheesecloth wrapping and the disadvantages incident to its use.

Other objects will appear in the following description.

In the drawings:—

Fig. 1 is a cross sectional view of the wood cylinder which replaces the cheesecloth wrapping.

Fig. 2 is a cross section of a mold for holding the cylinder.

Fig. 3 is a front view of a bobbin comprising the wood cylinder.

Fig. 4 is a cross sectional view of a completed battery.

According to the invention I use a wood cylinder 1 as a retainer for the mix of the cell. The cylinder is made from any suitably shaped rod of a porous grained wood such as lynn wood, cypress, cedar or yucca, which has been treated in acid or alkali to remove the resinous constituents and render the wood porous. Such cylinders are readily and cheaply made on an automatic screw machine which first bores out a hollow space 2, leaving a conical depression 3 due to the point of the drill. A supporting arbor is then inserted in the cylinder, and the outside turned down to the proper size, the method permitting a wall 4 to be made as thin as desired. The cylinder is then cut off beyond the depression 3 to provide a bottom member 5 and a small projecting tip 6. On account of the cylindrical shape and the presence of the bottom member, the cylinders are quite strong and will withstand considerable handling. It will also be understood that the acid or alkali treatment may be carried on when the cylinders are completed if desired, instead of treating the original wood rods.

I have found that wooden cylinders made in this manner may be turned out with walls as thin as two one-hundredths of an inch, and that this thickness of wood is impervious to the mix and sufficiently porous to contain considerable electrolyte for conducting the current.

In order to fill the cylinder with mix it will be fitted in a suitable hollow cylindrical mold 7. The electrode 8 will be held or spaced in the cylinder by any suitable means, and the mix 9 will then be tamped around the carbon rod in the usual manner. The depression 3 in the bottom of the cylinder serves as a means for properly centering the lower end of the electrode. A paper disk 10 is then fitted over the mix and the bobbin is removed from the mold. On account of the mix being enclosed in the wooden cylinder, it is not necessary to handle the bobbin so carefully as the mix cannot be accidentally knocked off of the cartridge. The bobbin formed in this manner is then inserted in a zinc can 11 having a quantity of paste in the bottom. The paste is forced up around the cylinder, providing a layer

12 filling the space therebetween. The cell is then completed by fitting a pulpboard collar 13 in the can over the bobbin and applying a layer of sand 14 and a pitch seal 15 over the pulpboard collar in the usual manner.

The tamping of the mix in a wooden cylinder eliminates the tedious and troublesome operation of wrapping the bobbins in cheesecloth and at all times holds the mix so that it will not be knocked off. I have also found that the corrosion of the zinc can is more uniform than with cheesecloth wrapped bobbins.

15 Having described my invention, what I claim is:

1. The steps in the process of manufacturing dry cells which consist in fitting a thin walled porous tube in a mold, locating the carbon electrode in the tube, compressing a mix in the tube around the carbon electrode

and then removing the article thus formed from the mold.

2. The steps in the process of manufacturing dry cells, which consist in fitting a wooden cylinder having a bottom in a mold, centrally locating a carbon rod in the cylinder, tamping a mix in the cylinder around the carbon rod and removing the article thus formed from the mold.

3. The steps in the process of manufacturing dry cells, which consist in fitting a porous wooden cylinder closed at one end in a mold, locating a carbon rod centrally in the cylinder, tamping a mix around the carbon rod to fill the cylinder, removing the article thus formed from the mold and inserting it in a zinc container electrode.

In testimony whereof, I hereunto affix my signature.

C. W. HAZELETT.