D. E. PARKER.

METHOD OF TREATING SODIUM PEROXID.

APPLICATION FILED AUG. 27, 1906.

935,542. Patented Sept. 28, 1909.

FIG. 1

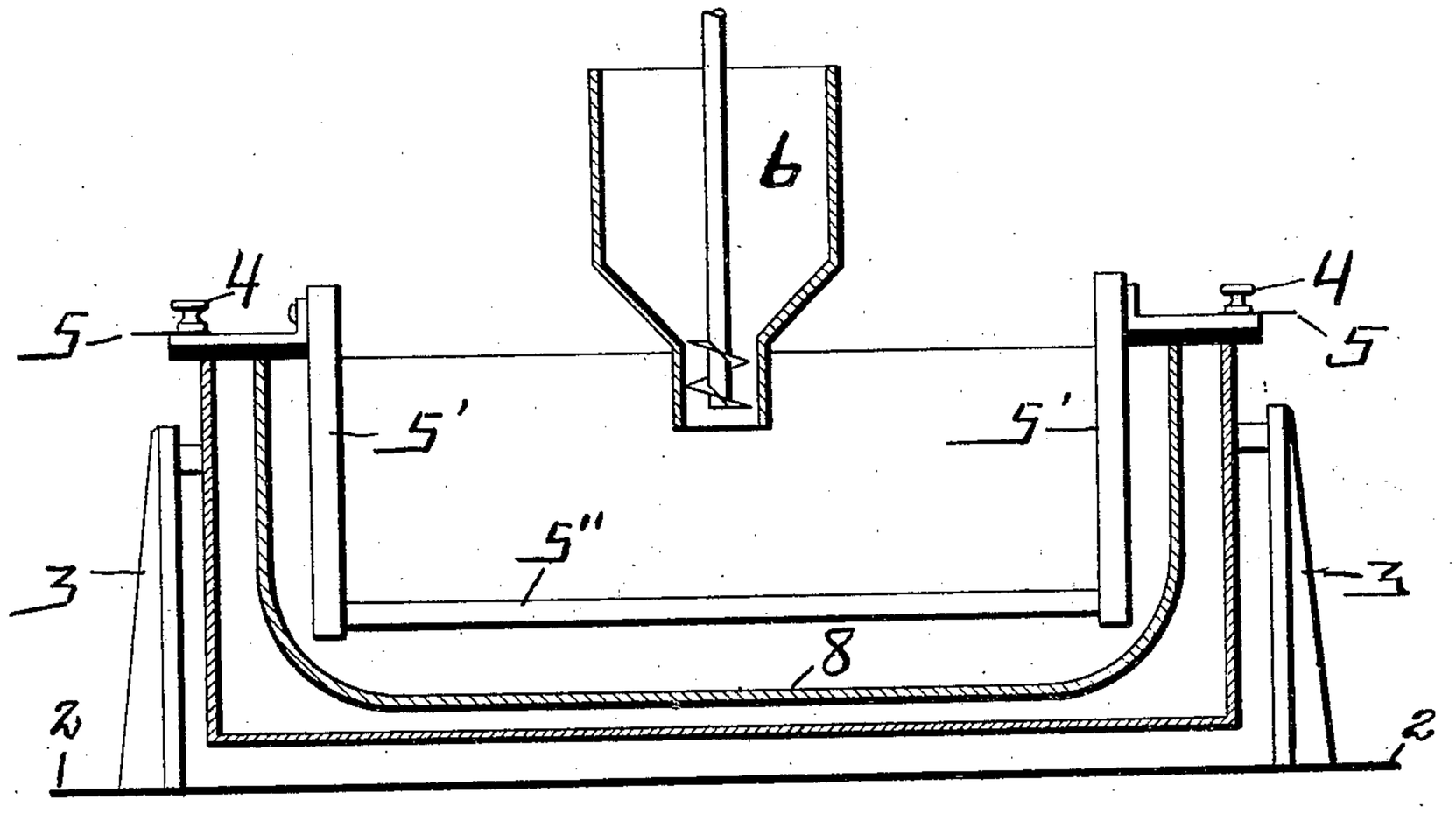
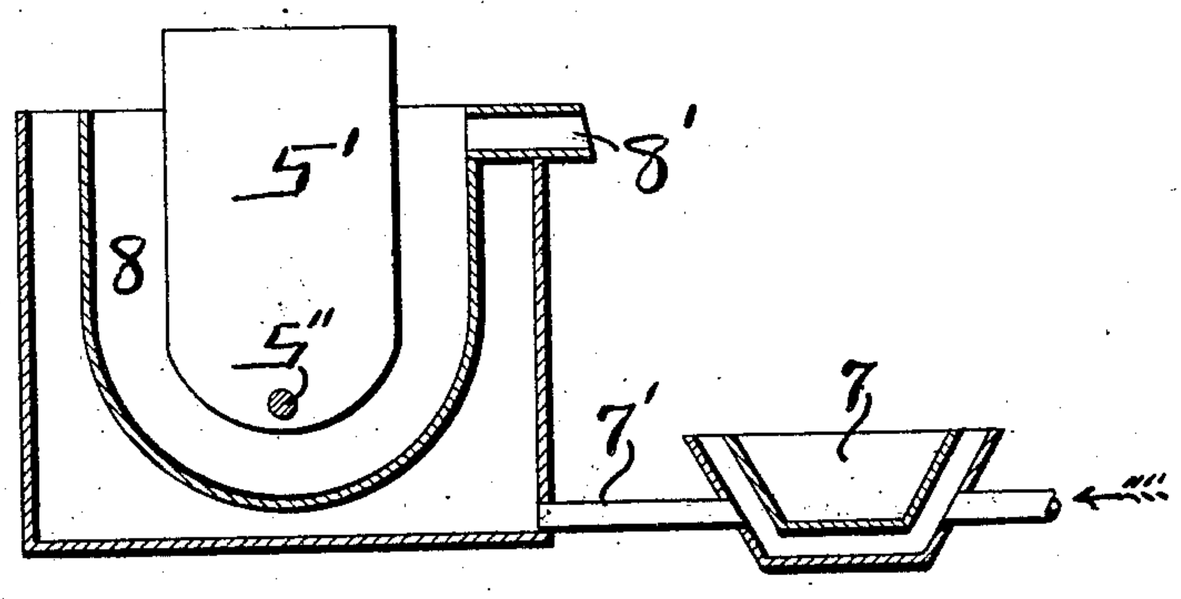


FIG. 2



WITNESSES

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METHOD OF TREATING SODIUM PEROXID.

935,542. Specification of Letters Patent. Patented Sept. 28, 1909.

Original application filed May 18, 1906, Serial No. 317,516. Divided and this application filed August 27, 1906. Serial No. 332,121.

To all whom it may concern:

Be it known that I, DAVID E. PARKER, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Methods of Treating Sodium Peroxid, of which the following is a specification, the same being a division of my application filed May 18, 1906, Serial No. 317,516.

This invention relates to the process of treating sodium peroxid for the purpose of eliminating deleterious gases therefrom such as carbonic acid gas, and for converting the peroxid from powder to solid form so that when the same is subjected to the action of water, oxygen will be generated for use medicinally or otherwise.

Sodium of peroxid, as now manufactured, contains certain deleterious gases which impair the value of the peroxid as an oxygen-producing agent because of the impurities contained in the oxygen.

One of the objects of the present invention is to free the peroxid to a great degree from carbonic acid gas by subjecting the peroxid to the effects of an electric current of such value as to melt the peroxid and raise the same to a temperature sufficient to drive off the carbonic acid gas without, however, freeing the oxygen. It has been demonstrated by practice, that the carbonic acid gas will pass off at a lower temperature than the oxygen and that the molten peroxid forms a conductor for the current, and that the passage of the current creates a gentle agitation of the molten material which facilitates the liberation of the carbonic acid gas. After the gas is thus allowed to escape, the molten material is removed from the influence of the current and placed in suitable molds for forming the material into briquets so as to be conveniently handled. The resulting product is known in the trade as oxone and is intended primarily as an oxygen-producing agent for medicinal and other purposes, it being merely necessary to subject the briquets to the action of water for freeing the oxygen from the material composing the briquets.

In the accompanying drawing, which illustrates the apparatus for carrying out the process, Figure 1 is a central longitudinal section of the apparatus. Fig. 2 is a transverse section thereof showing the peroxid feeding hopper removed.

Referring to the drawing, 2 designates the base of the machine from which rises spaced standards 3 that support a horizontally-disposed melting pot 8 which is open to the atmosphere at its top and is adapted to tilt on trunnions journaled in the standards 3. The pot 8, which is preferably constructed of copper, is surrounded by a water jacket for the purpose of maintaining the pot sufficiently cool to prevent the sodium peroxid immediately adjacent the pot from becoming melted. On opposite ends of the pot are binding posts 4 for connection with a direct or alternating current circuit and these binding posts are connected, respectively, with electrodes 5′ that extend into the pot adjacent the ends thereof so that current will pass from one to the other through the peroxid during the treatment thereof. The initial path for the current between the electrodes is provided by a resistance 5″ which becomes highly heated and causes the peroxid in its vicinity to become melted, which, in turn, serves as a conductor for the current passing from one electrode to the other. Supported over the melting pot in any suitable manner is a hopper for feeding the sodium peroxid by means of a screw located in the spout at the bottom of the hopper. Extending from one side of the melting pot or ladle 8 is the spout 8′ through which the melten peroxid is finally discharged into a briquet mold 7 which is water-jacketed for cooling the briquets, the water jacket of the melting pot and mold being connected together by a pipe 7′ through which water is forced.

In practice, the peroxid is supplied to the melting pot in powdered form and when in this condition, is does not serve as a con-

ductor for the electric current. It is, therefore, necessary to provide the resistance 5'' between the electrodes for the double purpose of providing an initial path for the current and a heating element for starting the melting of the peroxid. After the current has passed through the apparatus for a short interval, the peroxid in contact with the resistance is melted and is thereby converted into a conductor for the current. The resistance 5'' is then preferably removed so that the entire current passes through the peroxid from one electrode to the other, with the result that the melting process continues and a bath is formed between the electrodes and extending close to the walls of the copper melting pot which is kept relatively cool by the water jacket. By thus cooling the water jacket, the peroxid in contact with the melting pot is prevented from fusing so that, in effect, there will be a lining of resistance material formed between the molten peroxid and the kettle, thus preventing the formation of a ground through the machine whereby current will pass from the molten material. The strength of the current is carefully adjusted so that the temperature of the molten peroxid will be maintained between 710° and 718° F., because of the fact that within this range, the deleterious gases are eliminated from the peroxid without danger of the oxygen being thrown off. As long as the temperature is maintained at this point, the molten material is kept by the current in a gentle state of agitation which accompanies the liberation of the carbonic acid gases. In case, however, the temperature should be raised to a point between 720° and 730° F., ebullition takes place and oxygen is driven off. As this would produce an inferior product, it is extremely important that the temperature should be kept below these points. In practice, it has been found that with a furnace having electrodes about twenty-three inches apart and in which about thirty pounds of sodium peroxid is treated, the current should be maintained for thirty minutes, more or less, to effectively drive off the deleterious gases, and after this time the molten material is poured out into the briquet molds 7 by tilting the melting pot while the current continues to pass through the machine. After part of the molten material is thus removed, a second charge of powdered peroxid is supplied to the melting pot and is readily melted by the current which continues to flow through the molten peroxid which is allowed to remain from the first charge. After the second charge is treated, the required length of time, the molten material is poured out and formed into briquets in the same manner. It will thus be seen that the process can be carried on continuously after the machine is once started with the assistance of the resistance.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. The herein described process of treating sodium peroxid which consists in subjecting the peroxid to an electric current for melting the same, maintaining the temperature of the melted peroxid by the electric current at such a point as to liberate any carbonic acid gas contained therein without freeing the oxygen from the molten material, and finally solidifying the electrically-treated material.

2. The herein described process of treating sodium peroxid which consists in passing an electric current through a resistance in contact with the peroxid for melting the same, continuing the passage of the current through the molten peroxid to produce a temperature sufficient to liberate any carbonic acid gas contained therein without freeing the oxygen, and finally removing the molten material from the influence of the current and solidifying the material.

3. The herein described process of treating sodium peroxid which consists in placing the peroxid between and in contact with spaced electrodes and a resistance connecting the electrodes, passing a current through the electrodes and resistance for melting the peroxid immediately adjacent thereto, continuing the flow of the current through the molten material for simultaneously heating and agitating the same to liberate any carbonic acid gas contained therein, and finally removing the molten material from the influence of the current.

4. The herein described process of treating sodium peroxid which consists in placing the peroxid in an open receptacle and in contact with spaced electrodes and a resistance connected therewith, passing a current through the resistance and electrodes for melting the peroxid, maintaining the flow of current through the melted peroxid for heating and agitating the same by the current to liberate deleterious gases contained therein, and solidifying the molten material.

5. The herein described process of treating alkali peroxid which consists in placing the peroxid in an open receptacle, passing a current of electric energy through the peroxid for melting a portion thereof while maintaining the remainder of the peroxid adjacent the walls of the receptacle in its original condition, maintaining the current at such a value as to heat the molten peroxid to a temperature for liberating deleterious gases contained therein without freeing the oxygen, and finally solidifying the molten material.

6. The herein described process of treating

alkali peroxid which consists in subjecting a mass of peroxid to the passage of an electric current between two electrodes to melt that portion of the mass between the latter while the remainder of the mass retains its original form, producing a temperature in the melted peroxid by the current sufficient to liberate deleterious gases contained therein without freeing the oxygen, and finally removing the melted peroxid from the influence of the current and allowing the material to solidify.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 11″ day of August 1906.

DAVID E. PARKER.

Witnesses:

GEORGE S. WARDER,

T. J. VAN AMBURGH.