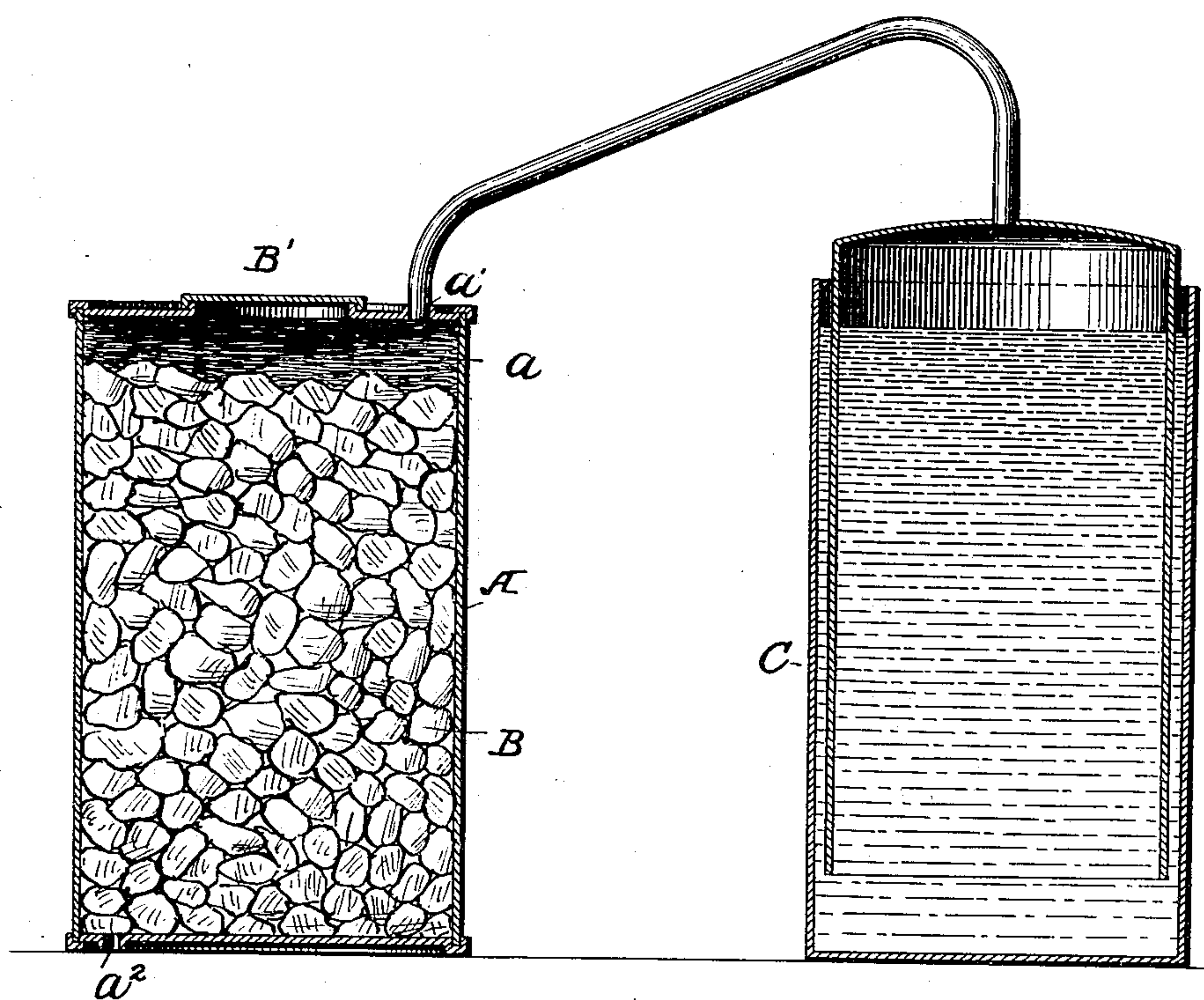


(No Model.)

I. L. ROBERTS.
PROCESS OF PRESERVING CARBIDS.

No. 601,064.

Patented Mar. 22, 1898.



Witnesses

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ISAIAH L. ROBERTS, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO HIMSELF,
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PROCESS OF PRESERVING CARBIDS.

SPECIFICATION forming part of Letters Patent No. 601,064, dated March 22, 1898.

Application filed November 24, 1897 Serial No. 659,670. (No specimens.)

To all whom it may concern:

Be it known that I, ISAIAH L. ROBERTS, of Niagara Falls, in the county of Niagara and State of New York, have invented a new and useful Improvement in Processes for Preserving Carbids in Shipment, of which the following is a full, true, and exact description, reference being had to the accompanying drawing, forming a part of the same.

My invention relates to a process of preserving carbids in vessels during shipment.

At present carbids, as carbid of calcium, are shipped in vessels or iron cylinders in lumps or masses, the interstices between the irregularly-shaped pieces being filled with air. This air contains more or less moisture and generates acetylene gas from the carbid and produces an explosive mixture, more or less explosive as the air contains more or less moisture. In the handling of the vessels containing the carbids this explosive mixture of gases becomes a source of danger by reason of the fact that a concussion of the pieces of carbid caused by the vessel falling or by rough handling will generate a spark or heat of friction sufficient to ignite the mixture and cause an explosion. I have discovered that if the air be expelled from the vessel containing the carbids this danger is obviated, and if the further precaution be taken, which constitutes a part of this invention, of substituting some matter to take up the space occupied by the air the danger of explosion is placed beyond possibility. Therefore I propose to expel the air from a vessel containing carbids and have the spaces between and round about the pieces of carbid filled with some light packing or cushioning material, such as wheat chaff or bran. Additionally to this I may charge the vessel containing the carbids and packing material with a gas—such as acetylene at non-explosive pressures, such as atmospheric pressure, hydrogen, nitrogen, carbonic oxid, or mixtures of these gases. Wheat-chaff or wheat-bran is especially desirable for use as a packing material, as it is light and cheap and of considerable bulk, sixty pounds of wheat-chaff being sufficient to pack one thousand pounds of carbid. Besides this it has an additional advantage of acting somewhat similarly to the

gauze of the safety-lamp by providing passages of connection between different parts of the vessel too small for the passage of flame. Again, it does not contain and does not readily absorb moisture.

In the drawing I have shown in sectional elevation an apparatus for carrying out my invention.

Referring to the drawing in detail, A represents a vessel containing carbid in broken masses; B, the spaces not occupied by the carbid, being filled in with wheat-chaff *a*. After filling the vessel with carbid and wheat-chaff the head B' is sealed on and acetylene or other gas is passed in from a holder C or by other means through an orifice *a'* at the top end or side of the vessel containing the carbid, which has at the bottom, end, or side an opening *a*². The gas, acetylene in the present instance, being lighter than the air, expels the air at the bottom and thus fills the vessel, when both orifices are sealed tightly.

I do not in this application claim the preservation, broadly, of bodies by surrounding them with a gas which does not combine with these bodies, nor do I claim, broadly, the prevention of the movement of bodies in transport by surrounding them with soft packing.

My invention is based upon the discovery, first, of the fact that calcium carbid in process of handling in shipment will generate a spark between lumps of such carbid, which is a physical fact not to have been anticipated, and, secondly, in a means of avoiding the explosion which would be caused by such spark due to the impact of the pieces of calcium carbid; and it further consists in the simultaneous operation of preventing the initial spark by packing the carbid in such material as chaff and of preventing a subsequent explosion, even if a spark should be generated, by two means of prevention, the first due to the fact that an explosion will not be carried through a mass of wheat-chaff even if explosive gas be mixed with it, the principle being in some respects analogous to that of Davy's safety-lamp, but I claim to have been the first to discover that such explosion would not pass through a compact body of wheat-chaff, and, secondly, as an additional safeguard I fill the interstices be-

tween the particles of wheat-chaff with a non-explosive gas. I thus simultaneously in this last method afford three safeguards against explosion—the first by preventing the initial spark; secondly, preventing the spread of the explosion due to such spark, if one should occur, and, thirdly, preventing any explosion by removing the explosive mixture.

When in this specification I refer to "wheat-chaff," I refer also and consider as equivalents therefor such bodies as wheat-bran and other dry and finely-divided vegetable bodies, not containing free water to any material extent. If these bodies are not dehydrated, they should be dried before use as a dividing or packing agent. It is obvious, of course, that such dividing or packing agent can be used without the addition of the explosion-preventing gas.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The process of preventing explosions in vessels containing materials capable of generating gas explosive when mingled with air, and of generating a spark for firing such gas by friction among themselves, which consists in filling the interspace between the fragments of such material with a dehydrated dividing agent, which performs the double function of preventing the formation of the gas and of holding the fragments firmly so as to prevent the formation of an exploding-spark, substantially as described.

2. The process of preventing explosions in vessels containing carbids in shipment, which consists in filling the interstices between the fragments of carbid with a dehydrated dividing agent, and in charging the vessel with a gas which when combined with the acetylene generated from the carbid by any moisture in the vessel forms a non-explosive mixture, substantially as described.

3. The process of preventing explosions in vessels containing materials capable of gen-

erating gas, explosive when mingled with air, and of generating a spark for firing such gas by friction among themselves, which consists in filling the interspace between the fragments of such material with dehydrated wheat-chaff, serving as a dividing agent, which performs the double function of preventing the formation of the gas and of holding the fragments firmly so as to prevent the formation of an exploding-spark, substantially as described.

4. The process of preventing explosions in vessels containing materials capable of generating gas, explosive when mingled with air, and of generating a spark for firing such gas by friction among themselves, which consists in filling the interspace between the fragments of such material with dehydrated wheat-chaff serving as a dividing agent, which performs the double function of preventing the formation of the gas and of holding the fragments firmly so as to prevent the formation of an exploding-spark, and then hermetically sealing the vessel, substantially as described.

5. The process of preventing explosions in vessels containing carbids in shipment, which consists in surrounding the carbid in the vessel with dehydrated wheat-chaff which serves as a dividing agent and prevents the spread of an explosion through the vessel, in then filling the interstices of the wheat-chaff with a gas which does not form an explosive mixture when mingled with the acetylene in the vessel, and in finally hermetically sealing the vessel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISAIAH L. ROBERTS.

Witnesses:

AUGUSTUS HIBANDEAU,
E. F. PRICE.