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# UNITED STATES PATENT OFFICE.

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## POROUS MASS FOR STORING EXPLOSIVE GASES AND PROCESS OF MAKING SAME.

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As a precautionary measure and for the purpose of avoiding dangerous and destructive explosions, it is now the practice to store certain explosive gases, such as acetylene, in porous masses contained and confined within tanks or cylinders, frequently referred to as receivers. Heretofore in the manufacture of porous mass bodies of the character indicated relatively small proportions of kieselguhr have been employed in connection with ceramic substances mixed with charcoal, asbestos, and the like, these latter substances constituting the main mass or portion of the porous mass bodies. The general practice has been to bond these substances together by a suitable adhesive.

The present invention has for its object to provide a porous mass body for the purpose indicated in which all or the main portion thereof shall consist of kieselguhr in a packed or compressed condition within a closed receiver. The kieselguhr as employed in the manufacture of porous masses embodying my invention is in granular or powdered form; that is, the kieselguhr consists of a mass of small or fine particles and it should be packed or compressed to such an extent within the receiver that it completely and permanently fills the same. The presence of cracks, crevices, or unfilled spaces within a receiver containing an explosive gas, such as acetylene, is objectionable and dangerous. It is necessary, therefore, that the kieselguhr shall be forcibly impacted or compressed within the receiver so as to closely associate and compact the fine particles thereof in order that the interstices between the said particles shall be extremely small as compared with the particles themselves, and also so that the kieselguhr will not settle within the receiver or crack. Tendency to settle or to crack might be due to agitation resulting from handling in shipping, in handling the same for any other purpose, or might be due to other causes.

As already indicated, kieselguhr may be used either alone or with small proportions of other material. It may be bonded or not as may be desired, and it may be formed into a single body or mass within the receiver, or a plurality of smaller bodies or masses in the form of blocks may be formed and placed in such receiver.

It has been found that the packing or compressing of the kieselguhr to the required extent within the receiver, so that the formation of a mass permanently filling the same without the necessity of repeated filling is effected, may be facilitated by mixing with the kieselguhr a small percentage, say ten to twenty per cent by weight, of a suitable fibrous material, such as asbestos or cellulose fibers. It also has been found that the packing or compressing of the kieselguhr is facilitated by moistening the same, for which purpose acetone may be used. Such moistening may be carried out before the kieselguhr is placed in the receiver, or afterwards as may be preferred; also the kieselguhr may be moistened with water, but in such case it must be dried in the receiver after the packing or compression has been completed. Thereafter the solvent, such as acetone, may be introduced into the receiver.

Kieselguhr possesses properties which render it suitable as the principal ingredient of a porous mass for storing explosive gases, such as acetylene. For instance, it has been found that when kieselguhr is in compacted or compressed condition, with the fine particles thereof in closely associated relation, it constitutes a very reliable means for preventing the propagation of a general explosion from a local explosion within a free space which might be present within the mass. In other words, it affords a reliable means against the transmission of explosion waves which may arise within the receiver. Kieselguhr also possesses in satisfactory degree the desirable property of absorbing and distributing the solvent, such as acetone, employed for absorbing and storing the gas, such as acetylene gas; and it has been found that it performs the functions which render it desirable and suitable as a porous mass for the purpose in question more efficiently and more satisfactorily than the substances heretofore employed for the main body or structure of porous mass bodies.

One method employed by me in the manufacture of a porous mass embodying my invention consists in the mixing of kieselguhr in powdered form with a small percentage of a fibrous material, such as cellulose or asbestos, and thereafter moistening the same with acetone and introducing the mixture

thus produced into a tank or receiver of any known kind employed for storing acetylene or other gas, after which the mixture is shaken, compressed and compacted in any known manner within the said tank or receiver so that the particles of the kieselguhr become very closely associated and so that the mass will not settle or crack or otherwise alter its condition in such manner that spaces are formed therein due to handling or to any other cause.

It will be seen that I have provided a porous mass having all of the characteristic qualities necessary for the satisfactory storing of explosive gases, such as acetylene.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A porous mass for storing explosive gases within a container, consisting of powdered kieselguhr mixed with a small proportion of fibrous material, the mixture being in compact form within said container, and completely filling the same.

2. A porous mass for storing explosive gases, consisting of a mixture of a relatively large proportion of powdered kieselguhr and a relatively small proportion of a fibrous material.

3. A porous mass for storing explosive gases, consisting of a mixture of a relatively large proportion of powdered kieselguhr and a relatively small proportion of asbestos fiber.

4. A porous mass for storing explosive gases, consisting of a mixture of powdered kieselguhr and asbestos fiber the latter of which constitutes from ten to twenty per cent of the mixture.

5. The method of making a porous mass for storing explosive gases, which comprises the mixing together of kieselguhr and a small proportion of a fibrous material, and thereafter packing the mixture within a receiver, so as to completely and permanently fill the receiver with the said mass.

6. The method of making a porous mass for storing explosive gases, which comprises the mixing together of kieselguhr and a small proportion of a fibrous material, moistening the mixture, and packing the same while in a moistened condition in a receiver so as to completely and permanently fill the receiver with the said mass.

In testimony whereof I have signed my name to this specification.

GUSTAF DALEN.