

(No Model.)

P. BARBE.

WATER PROOF CARTRIDGE.

No. 273,934.

Patented Mar. 13, 1883.

Fig. 2.

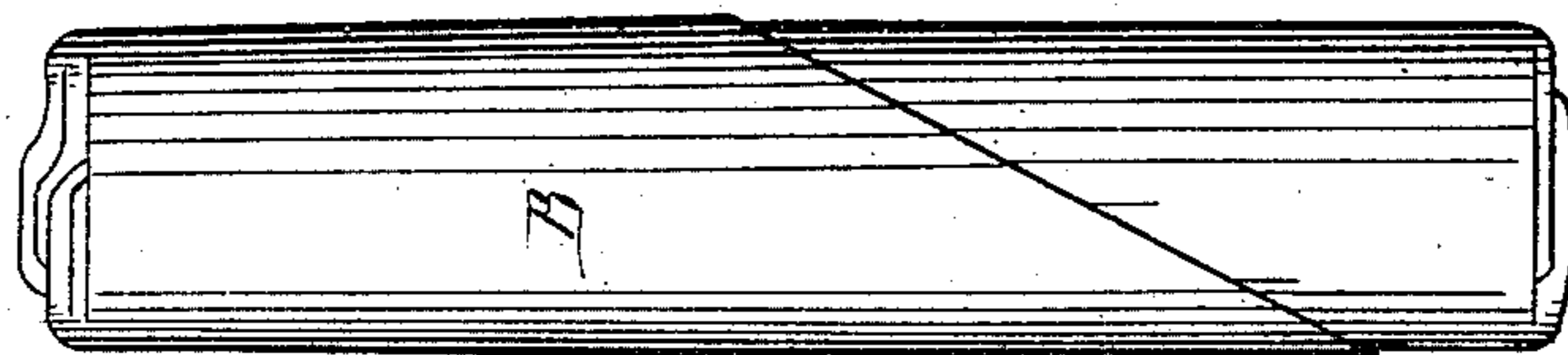
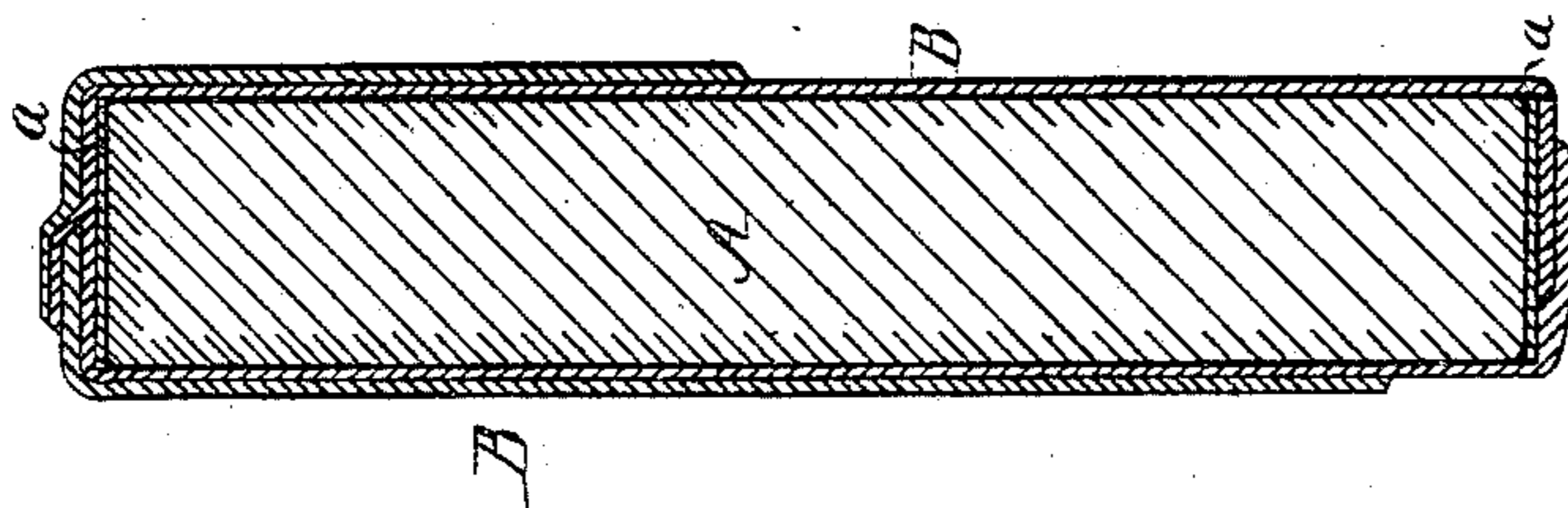


Fig. 1



WITNESSES:

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PAUL BARBE, OF PARIS, FRANCE, ASSIGNOR TO DYNAMITE NOBEL SOCIÉTÉ ANONYME, OF ISLETEN, URI, SWITZERLAND.

WATER-PROOF CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 273,934, dated March 13, 1883.

Application filed August 18, 1882. (No model.) Patented in France June 14, 1882; in Belgium June 16, 1882; in England June 23, 1882; in Austria July 3, 1882, and in Germany July 10, 1882.

To all whom it may concern:

Be it known that I, PAUL BARBE, civil engineer, a citizen of the Republic of France, and residing in Paris, France, have invented Improvements in the Manufacture of Cartridges, (for which I have obtained a French patent, June 14, 1882; Belgium patent, June 16; English patent, June 28; Austrian patent, July 3; German patent, July 10,) of which the following is a specification.

Time and experience have clearly demonstrated that humidity alters, weakens, and ultimately destroys the power of explosives having a nitro-glycerine base, and, in fact, of explosives in general. Solid or semi-solid explosives are usually sold in the form of cylinders of varying dimensions, and are protected against humidity by an envelope of some kind, which attains more or less, but always incompletely, the desired end. Among others may be cited paper parchment prepared by means of sulphuric acid—a preparation which renders it easily penetrable by the humidity of the atmosphere, and consequently unsuitable to protect the explosive which it incloses. Next comes the numerous series of papers prepared with paraffine, oil, resin, and similar substances. In this case it is true a better result in protecting the cylindrical portion of the surface of the cartridge is obtained; but then the two ends of the cylinder remain practically unprotected because of the folds of the paper, no matter how much care is taken in folding and no matter what varnish or fatty body the folds of the paper are covered with. To avoid these inconveniences, it has been proposed to apply to the bases of the cylinder, or that part of the explosive which is first attacked by the humidity of the atmosphere, disks or wads of paper prepared with a composition analogous to those hereinafter indicated, and the paper of the envelope is folded down onto the disks; but the result sought for has even then only been partially attained. Now, a complete solution of the difficulty is arrived at in the following manner, namely: Paraffine and ozocerite are mixed together, and to the mixture is added (according to the temperature and other circumstances) wax, linseed-

oil, resin-colophony, pitch-tar, essence of turpentine, and fatty bodies in general, together or separately. The paper intended to be used as the envelope, and also the explosive in the form of a cylinder, are coated with this mixture when melted. The immersion of the explosive in the bath may be effected by hand or by any suitable mechanical means. The explosive thus coated may, if desired, be simply inclosed in varnished or unvarnished paper, with or without a disk or wad at the extremities; but the mode of making up the cartridge which is preferred is the following: The explosive in the cylindrical form is plunged into the varnishing-bath, which is sufficiently hot to raise the temperature of the surface of the explosives high enough to melt the varnish of the paper envelope, in which the explosive is now to be wrapped, and which paper has been previously prepared in a like bath. On cooling, the fatty portion of the preparation will form a solid body between the paper and explosive, unite the two, and seal up the explosive perfectly, thereby hermetically inclosing the explosive, and the use of disks or wads above mentioned may thus, if desired, be dispensed with. By this means the explosive is not only completely protected from the humidity of the atmosphere by the surrounding fatty body, but the danger of the cartridge breaking from shocks or otherwise is obviated by the use of the paper and disks, which may be as thick or strong as desired.

In the accompanying drawings, Figure 1 is a section of a cartridge prepared in accordance with my invention, and Fig. 2 is an outside view of the same.

A represents the explosive, and B the envelope, wads or disks *a* being preferably applied to the extremities of the explosive. The double section-lines in Fig. 1 indicate the depth to which the waterproofing composition penetrates the explosive.

The proportions of paraffine and ozocerite ordinarily employed are two-thirds paraffine to one-third ozocerite. These are mixed at from 50° to 60° centigrade. In summer, when the temperature is high, or in the case of explosives destined for use in hot countries, it

is necessary, in order to avoid the softening of the varnish, which will cause the adhering of the cartridges to one another, to raise the degree of fusion of the varnish. For this purpose from five to twenty per cent. (according to requirements) of a body less easily fused than paraffine—such as resin, wax, and certain fatty bodies, such as stearine—is added to the bath, and in order more completely to prevent the cartridges sticking together, from five to ten per cent. of linseed-oil may be added to the bath.

To prepare the bath for varnishing the explosive and the paper, a copper boiler is used and the materials are treated in succession, commencing with those of which the point of fusion is the highest. It is, however, desirable that the temperature of the bath should never exceed 70° centigrade.

I claim as my invention—

1. The mode herein described of preparing water-proof cartridges, said mode consisting in first immersing the explosive in a melted waterproofing composition and then wrapping this, while hot, in an envelope which has previously been immersed in a waterproofing composition, all substantially as set forth.

2. A cartridge having both the explosive and its paper envelope coated with a composition of paraffine and ozocerite, substantially as set forth.

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

PAUL BARBE.

Witnesses:

ROBT. M. HOOPER,
ALFRED CAIN.