No. 649,401. Patented May 8, 1900.

G. H. CLARK.

VALVE FOR INFLATION.

(Application filed May 24, 1899.)

(No Model.)

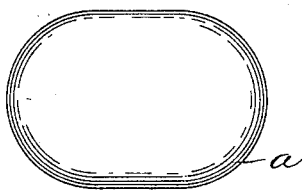


Fig. 1.

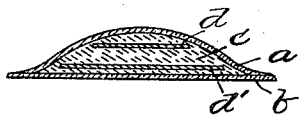


Fig. 2.

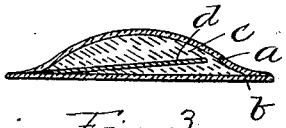


Fig. 3.

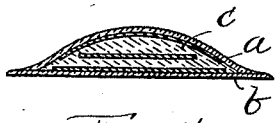


Fig. 4.

Fig. 5.

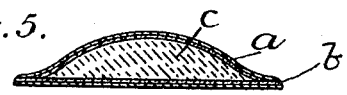
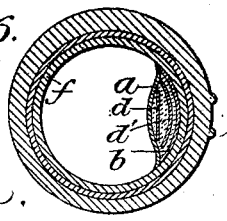


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE H. CLARK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE CLARK CYCLE TIRE COMPANY, OF PORTLAND, MAINE.

VALVE FOR INFLATION.

SPECIFICATION forming part of Letters Patent No. 649,401, dated May 8, 1900.

Application filed May 24, 1899. Serial No. 718,043. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. CLARK, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Valves for Inflation, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to valves for inflation, and has for its object to construct a flexible or pliable valve adapted to be attached or secured to or within an inflatable body and to be pierced by a tubular needle connected to an air-forcing device, by which the body may be inflated, and which when said tubular needle is withdrawn will automatically close the perforation produced by the insertion of the needle.

The invention consists in a pliable valve composed of a sealed sack, pocket, or cell, which may be made in two pieces of rubber or any equivalent material secured together all around their edges only, leaving the central portions unattached, and a quantity of self-healing material or compound contained within it, many forms of which are now well known, and also one or more pieces of fabric or any equivalent material. The piece or pieces of fabric may or may not be connected with the sealed sack, pocket, or cell, as desired. The piece or pieces of fabric may and preferably will be contained within the sealed sack, pocket, or cell, although they may be applied externally, and said piece or pieces of fabric will be perforated by the insertion of a tubular needle, and when said needle is withdrawn the perforations thus produced will be closed by the self-healing material or compound. The piece or pieces of fabric materially enhance the reliability of the valve and also reinforce or strengthen it and give to it a certain degree of firmness, which is very desirable.

Figure 1 shows in plan view a valve for inflation embodying this invention. Fig. 2 is a longitudinal section of the same, showing two pieces of fabric embedded in the self-healing material or compound. Fig. 3 is a longitudinal section of a modified form of valve, showing but a single piece of fabric embedded in the self-healing material or compound and also showing said piece attached at one end to the walls of the valve. Fig. 4 is another modification showing three pieces of fabric contained within the sealed sack, pocket, or cell. Fig. 5 is another modification showing a valve having two pieces of fabric attached to the outside of the valve, and Fig. 6 is a view showing a vertical section of a pneumatic wheel-tire having a valve for inflation constructed in accordance with this invention.

a b represent two small pieces of rubber or equivalent material, herein shown as made oval in shape, and said pieces *a b* are secured together all around their edges to thereby produce a sealed sack, pocket, or cell, yet so far as this invention is concerned said sealed sack, pocket, or cell may be constructed in any suitable manner. This sealed sack, pocket, or cell is filled with or contains a quantity of self-healing material or compound, (represented at *c*,) and as many such materials or compounds are now well known a detailed description of the same is unnecessary, for so far as my invention is concerned I may employ any suitable self-healing material or compound. As an instance of a self-healing compound that I may employ take raw or pure rubber and melt it and then cool it, and the character of the material is entirely changed and well subserves my purpose. Within the sealed sack, pocket, or cell, as shown in Fig. 2, I have placed two strips or pieces of fabric *d d'*, they being disposed one above the other and embedded in the self-healing material or compound. They may be arranged horizontally and disconnected from the valve, as shown in said figure, or they may be connected with the valve at one end, as represented in Fig. 3, wherein but a single piece of fabric is shown, or three pieces of fabric may be provided, as represented in Fig. 4, wherein it will be seen that one of said pieces is embedded in the self-healing material or compound, and the others are arranged on the inner sides or faces of the pieces *a b* composing the sealed sack, pocket, or cell, or the pieces of fabric may be applied to the outside of the walls of the sealed sack, pocket, or cell, as shown in Fig. 5. In either case it will be seen that the

piece or pieces of fabric will reinforce and strengthen the valve.

The valve thus constructed will be vulcanized as articles composed of rubber are usually vulcanized, and while I prefer to employ as the self-healing material or compound one that will stand the heat incident to vulcanization, yet it is obvious that said material or compound may be introduced after the sealed sack, pocket, or cell is vulcanized. The valve thus constructed is very pliable, yet from its general construction may be attached to any inflatable body.

A tubular needle, which is connected with an air-forcing device, may be thrust through the valve to obtain access to the air-space within the inflatable body and then withdrawn, and when such needle is withdrawn the perforations produced by inserting the needle will be immediately closed.

As herein shown, the two pieces composing the sealed sack, pocket, or cell are made of substantially the same size and shape; but so far as my invention is concerned this is immaterial.

When the pieces of fabric contained within the valve are arranged contiguous the pieces *a b* composing the sealed sack, pocket, or cell, as represented in Fig. 4, they will be made of less area than said pieces *a b*, so that the edges of said pieces *a b* may be secured together without said pieces of fabric being interposed between them.

While I prefer to employ small pieces of fabric, yet I do not desire to limit my invention to such material, as it is obvious that other material may be employed which will serve to reinforce and strengthen the valve and which will serve as suitable walls through which the needle will be thrust.

For the sake of illustrating the application of the valve I have shown the same applied to the air-tube of an ordinary pneumatic wheel-tire, (see Fig. 6,) wherein *f* represents the air-tube; but, as above stated, the said valve may be applied to any other inflatable body.

I claim—

1. A valve for inflation consisting of a sealed sack, pocket or cell, containing a quantity of self-healing material or compound and having one or more pieces of fabric reinforcing it, substantially as described.

2. A valve for inflation consisting of a sealed sack, pocket or cell containing a quantity of self-healing material or compound and also containing one or more pieces of fabric, substantially as described.

3. A valve for inflation consisting of two pieces of rubber secured together all around their edges producing a sealed sack, pocket or cell, a quantity of self-healing material or compound contained in said sealed sack, pocket or cell, and one or more pieces of fabric contained in said sealed sack, pocket or cell, substantially as described.

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

GEORGE H. CLARK.

Witnesses:
B. J. NOYES,
JENNIE L. HUTCHINSON.