(No Model.)

S. P. BLACKBURN.

VALVE FOR STEAM ENGINES.

No. 347,914. Patented Aug. 24, 1886.

Fig. 1.

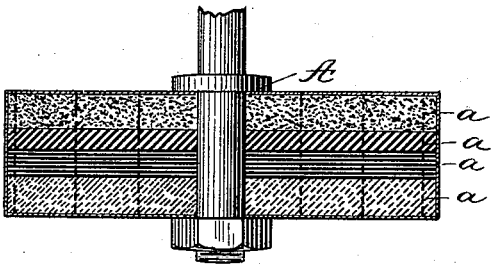
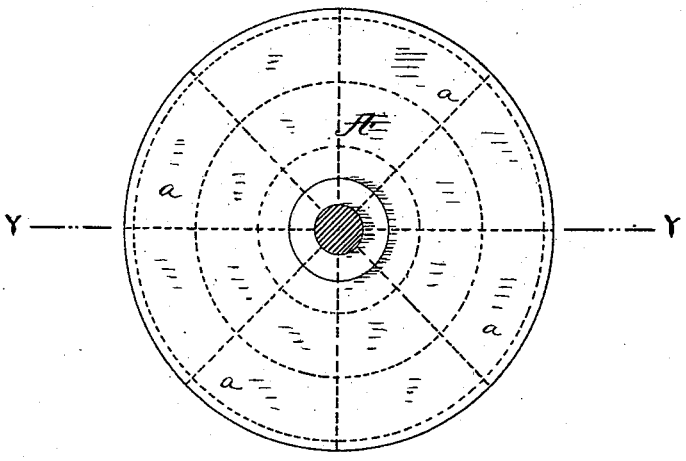


Fig. 2.



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UNITED STATES PATENT OFFICE.

SAMUEL PERCY BLACKBURN, OF BOSTON, MASSACHUSETTS.

VALVE FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 347,914, dated August 24, 1886.

Application filed November 5, 1885. Serial No. 181,878. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL PERCY BLACKBURN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Valves for Steam-Engines, Pumps, &c.; and I hereby declare the following to be a full and clear description thereof.

This invention relates to a valve for steam-engines, pumps, and other like machinery; and it consists in forming such valve of a plaited, laid, felted, woven, or similar fabric formed in whole or in part of a mineral fiber—such as asbestus, mineral wool, or similar material—which is capable of being formed into a yielding and easily-seated valve of equal adaptability to a rubber valve and of much greater durability.

The invention will be readily understood by reference to the accompanying drawings, of which Figure 1 is a sectional elevation of one of the improved valves. Fig. 2 is a plan of it.

The valve A is made of one or more layers or sheets, *a*, of any felted, plaited, woven, laid, or similar fabricated goods formed either in whole or in part of a mineral fabric or material—such, for instance, as asbestus, mineral wool, or any similar fiber—and is fabricated either entirely of such fiber, or a mixture of such fibers combined with any suitable vegetable or animal fiber—such, for instance, as hair, wool, cotton, hemp, jute, ramie, &c. These fabrics, after having been first formed in large sheets or pieces, are cut into such sized pieces *a* as are desired for the size of any particular valve, and the pieces *a* so formed are placed and laid together, so as to form the complete valve A of the size and shape required, and in this position the said pieces or layers *a* are sewed, stitched, riveted, or otherwise fastened together, and they are apertured or cut out either before or after they are fastened together for the reception of the valve-rod B.

The valve A may be formed of one single piece or sheet, *a*, by felting or laying it up of sufficient thickness to form the completed valve. If smaller layers or sheets, *a*, be used, the said smaller layers or sheets, *a*, may all be formed of a homogeneous mineral fiber, or a mixture of such fibers, or a mixture of mineral fibers and either animal or vegetable fibers, or with both animal and vegetable fibers.

Another modification of the construction of the valve is to make alternate layers or sheets *a* of mineral fibers, and the other layers or sheets *a* of animal or vegetable fibers, as the case may be.

The mineral fibers herein described are unaffected by heat or wet, and consequently much more durable and desirable for this purpose than any india-rubber or other soft valve which has ever heretofore been used.

I am aware that asbestus has heretofore been used for valves in the form of balls or in a single sheet. Valves so constructed become quickly frayed out, broken, or otherwise destroyed, while valves formed according to my invention, being securely sewed or otherwise fastened together, are strong and durable.

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

1. A valve for steam-engines, pumps, and similar devices, formed of felted, plaited, laid, or woven goods consisting of any suitable mineral fiber—such as abestus, mineral wool, &c.—and a suitable inclosing-case, the whole being sewed or stitched together substantially as shown and described.

2. A valve for steam-engines, pumps, and similar devices, formed of layers of any suitable mineral fiber, and an inclosing-case, the whole being securely fastened together by sewing, substantially as shown and described.

3. A valve for steam-engines, pumps, and similar devices, formed of layers of fibrous material, said layers being partly of mineral fiber and partly of animal or vegetable fiber, the whole being securely fastened together by sewing, substantially as set forth.

In witness whereof I hereunto set my hand in presence of two witnesses.

SAMUEL PERCY BLACKBURN.

Witnesses:

WM. A. KNOWLTON,

ALFRED R. BAXTER.