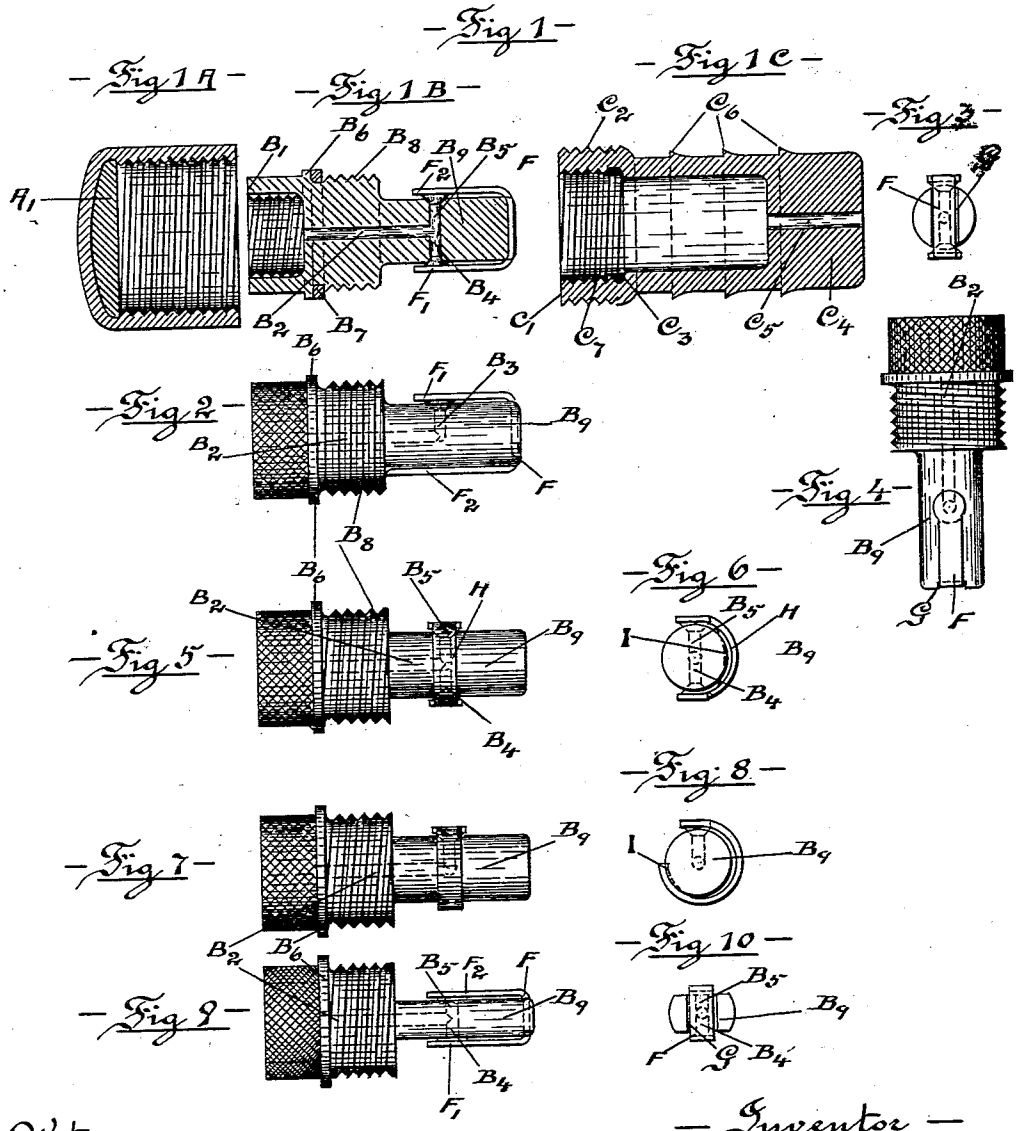
(No Model.) 2 Sheets—Sheet 1.

W. E. BRADNER.

AIR VALVE FOR PNEUMATIC TIRES.

No. 560,188. Patented May 19, 1896.



Witnesses —

August W. Treschow

Axel Beeken

Inventor —

William E. Bradner

by his Attorney —

Aug. W. Treschow.

(No Model.) 2 Sheets—Sheet 2

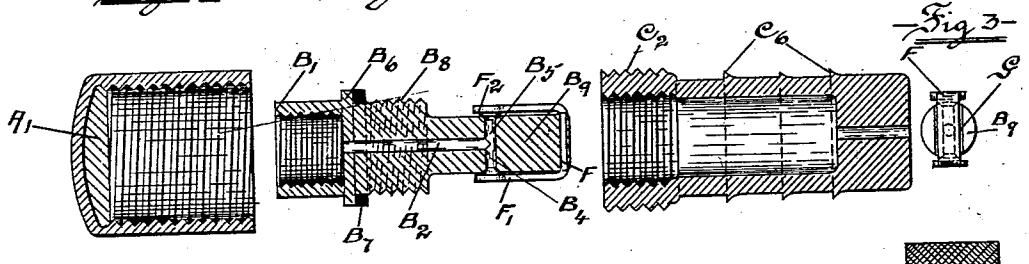
W. E. BRADNER.

AIR VALVE FOR PNEUMATIC TIRES.

No. 560,188. Patented May 19, 1896.

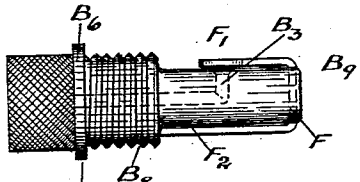
— Fig 1 —

— Fig 1 A — — Fig 1 B — — Fig 1 C —

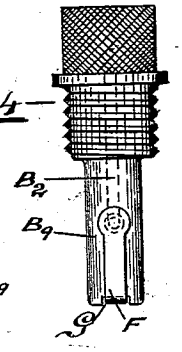


— Fig 3 —

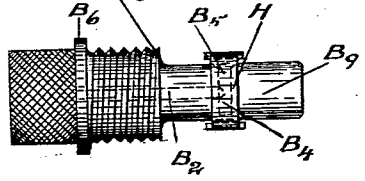
— Fig 2 —



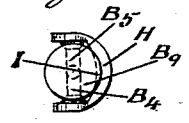
— Fig 4 —



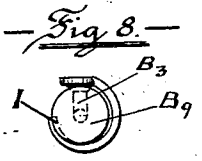
— Fig 5 —



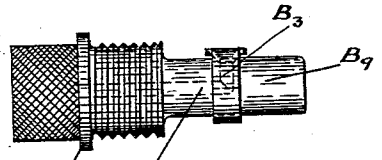
— Fig 6 —



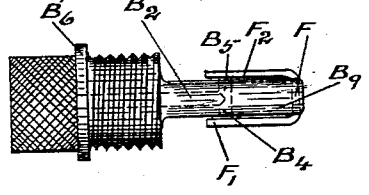
— Fig 8 —



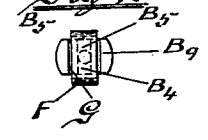
— Fig 7 —



— Fig 9 —



— Fig 10 —



— Witnesses —

Henry J. Fisq

Axel V. Beeken

— Inventor —

William E. Bradner

— by his — Attorney —

Chas M. Prescott

UNITED STATES PATENT OFFICE.

WILLIAM E. BRADNER, OF NEWARK, NEW JERSEY.

AIR-VALVE FOR PNEUMATIC TIRES.

SPECIFICATION forming part of Letters Patent No. 560,188, dated May 19, 1896.

Application filed July 27, 1895. Serial No. 557,313. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. BRADNER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Air-Valves for Pneumatic Tires; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in the air-valves for pneumatic tires, making these simpler in construction and securing a greater efficiency of the valve proper—that is, in making it more air-tight than any of the hitherto-known constructions and making the said valve less costly in its manufacture. The mechanical means utilized by me in so doing I shall now proceed to illustrate and describe, reference being had to the accompanying drawings, where like letters of reference indicate corresponding parts in the different views, and finally embodying my improvements in the hereunto added claims.

In Figure 1 is shown an enlarged sectional view of the valve, the pieces being separated from each other for the sake of showing the construction more distinctly, Fig. 1^{A} being the cap, Fig. 1^{B} the center part, and Fig. 1^{C} the bottom part. Fig. 2 is a view of the middle piece B, containing the inflating-valve proper, relative to which is my invention, showing my improved spring closing the valve on one side only. Fig. 3 is an end view of the middle piece B, showing how the spring lies in a groove cut out in the end of the part B^{9}. Fig. 4 is a top view of the middle piece in the position it is shown in Fig. 1. Fig. 5 is a view of the middle piece B with my improved curved spring closing both air-apertures. Fig. 6 is an end view of Fig. 5. Fig. 7 is a view of the middle piece B with my curved spring closing only one air-aperture. Fig. 8 is an end view of Fig. 7. Fig. 9 is a view of the middle piece B, showing it with two flat surfaces, the outlets coming through these and the springs clasping said surfaces; and Fig. 10 is an end view of Fig. 9.

In Fig. 1 A indicates the cap, screw-cut internally and having an air-tight disk A′, made of suitable material, at its base, against which the curved surface C′ will rest when the pieces A, B, and C are screwed together. The middle piece B is furnished with a hollow part B′, screw-cut internally, into which the connection of the air-pump will be adjusted when air is injected into the tire, the outside being gnarled to furnish a good catch for the fingers when screwing it into connection with part C, and is at the bottom furnished with a passage B^{2}, admitting air to the tire and terminating either, as shown in Fig. 2, with a single outlet B^{3} or, as shown in Fig. 1, in two outlets B^{4} and B^{5}.

The part B′ has a flange B^{6}, against which lies an air-tight disk B^{7}, that has, when piece C is screwed onto piece B′, the inverted flange C^{3} bearing against it. B is screw-cut, furthermore, on the part marked B^{8} to match the corresponding internal screw-cut part of piece C, (marked C^{7}.) The third piece C is screw-cut on the part marked C^{2} to match the internal thread in the cap A, and is hollowed out to inclose the middle part B, so that the flexible air-tight disk B^{7} is pressed against the offset or inverted flange marked C^{3} in C′ and in the solid part marked C^{4}, furnished with a passage C^{5}, admitting air into the tire. On the outside C has protrusions C^{6}, furnished to retain the stem of the tire, and is secured there by having wire wound around it. There remains now to be described the projection B^{9} on the middle piece B. This can be either cylindrical or have two flat surfaces, as shown in Figs. 9 and 10. As before stated, this projection contains the termination of the passage B^{2}, either with a single outlet or a double one, and my improved springs have been constructed so as to cover both cases.

The spring F (shown in Fig. 1) is furnished with a piece of flexible air-tight material on each of its prongs F′ and F^{2}, conically shaped so as to fit into the equally conically-shaped hole or air-outlet, thus forming a regular valve and valve-seat. The spring in passing around the end of projection B^{9} is held there by fitting closely against the edges of the groove, and can be secured there, furthermore, if necessary, by a slight overlapping of the edges of the groove, soldering, or like

means. Where the projection B^9 only has one outlet, as in Fig. 2, the spring has only one piece of flexible air-tight material attached to the prong F′ covering this outlet, while the prong F^2 is extended at will either the whole length of projection B^9 or cut off. This construction yields the strongest closing action as regards the valve, and the spring can in this case be secured either by above-mentioned means in the groove G or it can be secured in a side groove on the side of projection B^9 opposite to where the outlet and valve are. My second spring device for closing these outlets is (as shown in Figs. 5 and 6, where there are two outlets) by a curved spring H, lying around the cylindrical-shaped body of projection B^9. As in the case of spring F, this curved spring H is furnished with a conical-shaped piece of air-tight material, fitting into the conical-shaped holes terminating the outlet B^2 in projection B^9, and the spring is secured, preferably, by a groove I, lying across the projection B^9 between the two outlets, and can be secured there in the same manner as spring F is secured in groove G, by the overlapping of the edges of groove or other suitable means.

In Figs. 7 and 8 I have shown the curved spring as applied to a single outlet, the spring lying coiled around the body of projection B^9 as far as is deemed necessary, and the same quality is noticeable in the curved spring for one outlet as in the straight spring for one outlet—that of greater strength and consequent tighter closing action.

I do not in either case limit myself to the conical-shaped outlet and corresponding valve, as the piece of flexible air-tight material may be flat and cover the outlet, as it ordinarily is, even more so, as the flexible piece will in time conform itself to the aperture, and thus as a matter of fact insert itself gradually into the hole.

What I then claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a tire-valve, the combination with a valve-shell, of a stem fitting therein, provided with a longitudinal passage closed at one end, and a lateral passage communicating with said longitudinal passage and terminating at each end in the periphery of the stem, and a spring fitted in a slot in the stem and having two arms parallel to the axis of the stem, and a valve secured to each of said arms in position to cover the ends of the lateral passage, substantially as described.

2. In a tire-valve, the combination with a valve-shell, of a stem fitting therein, provided with a longitudinal passage closed at one end, and a lateral passage communicating with said longitudinal passage and terminating at one end in the periphery of the stem, and a spring fitted in a slot in the stem and having two arms parallel to the axis of the stem, and a valve secured to one of said arms in position to cover the end of the lateral passage, substantially as described.

3. In a tire-valve, the combination with a valve-shell, of a stem fitting therein provided with a longitudinal passage closed at one end and a lateral passage communicating with said longitudinal passage and terminating at each end in the periphery of the stem, and a spring fitted in a slot situated at a right angle with the stem, and a valve secured to each end of said spring in position to cover the ends of the lateral passage, substantially as described.

4. In a tire-valve, the combination with a valve-shell, of a stem fitting therein, provided with a longitudinal passage closed at one end and a lateral passage communicating with said longitudinal passage and terminating at one end in the periphery of the stem, and a spring fitted in a slot situated at a right angle to the axis of the stem, and a valve secured to said spring in position to cover the end of the lateral passage, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of July, 1895.

WILLIAM E. BRADNER.

Witnesses:
AUG. M. TRESCHOW,
AXEL BEEKEN.