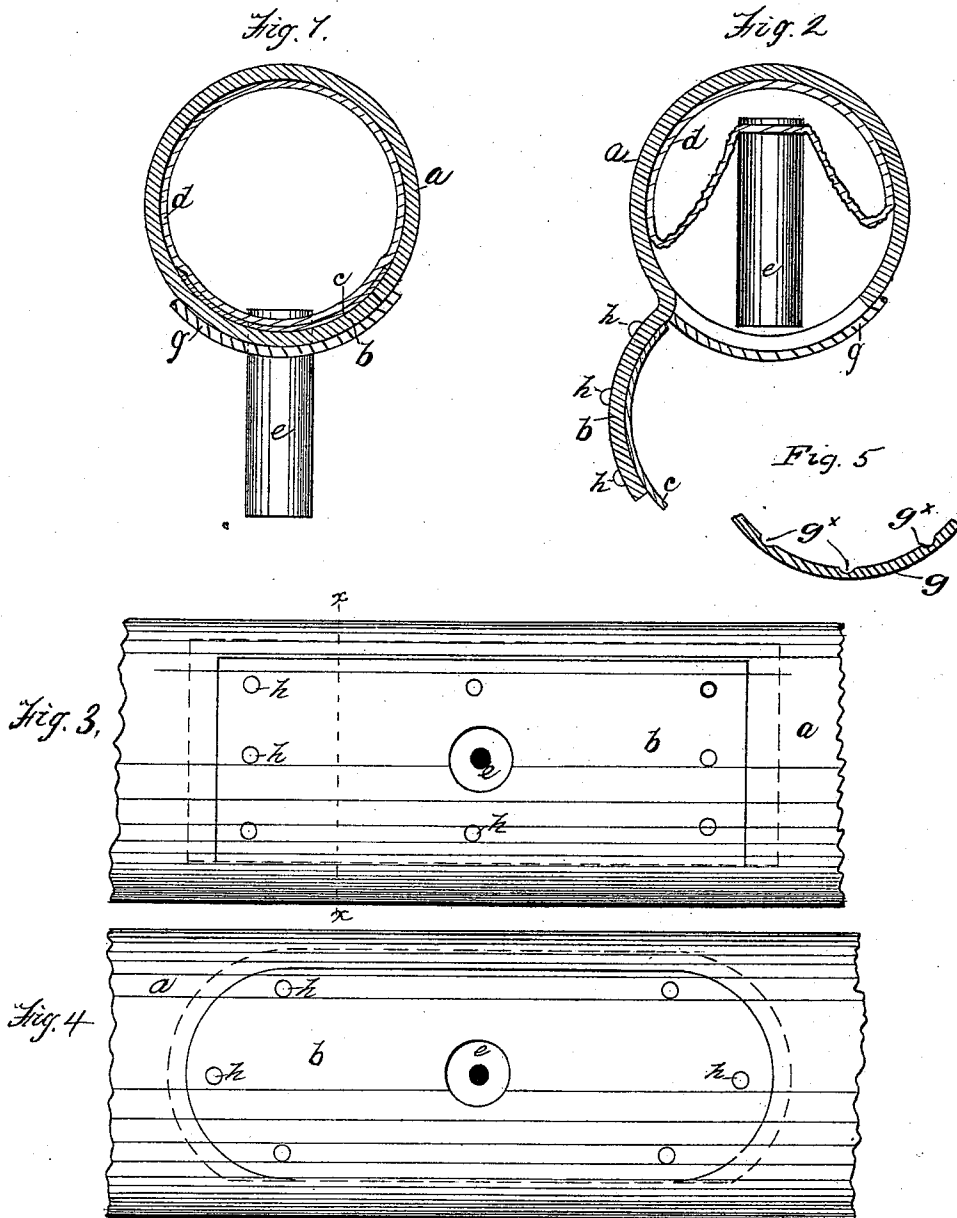


(No Model.)

J. D. KEATING.
PNEUMATIC TIRE.

No. 494,575.

Patented Apr. 4, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN D. KEATING, OF SPRINGFIELD, MASSACHUSETTS.

PNEUMATIC TIRE.

SPECIFICATION forming part of Letters Patent No. 494,575, dated April 4, 1893.

Application filed May 23, 1892. Serial No. 433,958. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. KEATING, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Pneumatic Tires, of which the following is a specification, reference being had to the accompanying drawings, and letters of reference marked thereon.

In the drawings like letters of reference indicate like parts.

Figure 1 is a transverse sectional view illustrating my invention, the door in the outer tube being shown closed. Fig. 2 is a like view showing the door in the outer tube or covering opened for the admission or removal of the inner tube. Fig. 3 is a view as seen from the side next the rim with the door closed, and Fig. 4 is a like view illustrating a modification in the shape of the door or opening part. Fig. 5 is a transverse sectional view taken along the line 5—5, and showing the form of the rim in cross-section.

In detail *a* indicates the outer tube, *b* the door arranged therein, *c* the apron overlapping the inner edge of the door, *d* the inner tube, *e* the inflating tube or valve and *g* the rim. The outer tube or covering may be made in the usual and well known manner, and I prefer to cement the same to the rim as heretofore done with the exception that it is left uncemented for a short distance adjacent to the door. In the side of the cover which lies next the rim I cut through the material upon three sides leaving the fourth side intact to act as a hinge, thus enabling me to turn back the flap or door thus formed to allow of the insertion or removal of the inner tube. The size of the opening made should, of course, be sufficient to allow of the insertion or removal of the inner tube and its shape may be either rectangular or oblong with rounded ends as shown in Fig. 4. The most simple method of inserting the inner tube is to attach a piece of twine at one end, secure a ball, marble or other similar device to the twine at its opposite end, pass the ball into the outer tube and revolve the tire until the ball has traversed the entire circumference carrying the end of the string with it, then draw upon the string until the inner tube is in position.

The door may of course be made separate and attached.

The inner tube is provided as heretofore with an inflating tube *e* which passes through and projects from an opening made in the door or flap *b* to receive it. The inner face of the door or flap is provided with an overlapping edge *c*, this being preferably made by cementing upon the inner face a sheet of thin rubber which projects beyond the door at the edge and which may be easily bent inwardly to pass through the opening and will afterward return to its normal position, thus overlapping and breaking the joints. The outer surface of the door or flap is preferably provided with bosses *h* which project a short distance therefrom and the rim is provided with indentations, openings or recesses *g*^x to register with and receive the bosses *h*, and as the expansion of the inner tube will tend also to expand the outer tube and force the door outwardly, it will result in forcing the bosses into the recesses and prevent all danger of the door being drawn outwardly at the side as the same can only be opened by lifting the covering from the rim and turning the door upon its hinges, and drawing it outwardly at one side between the rim and outer tire, and this it will be seen can only be done when the inner tube is not inflated. It will readily be seen that slight projections upon the outer surface of the rim entering recesses in the outer surface of the door would operate in the same manner as if the bosses were upon the door and recesses in the rim. The inflating tube or valve passes through an opening in the door as before described, and also through an opening in the rim made to receive it, and this tube will serve to prevent danger of the door being opened without the employment of the bosses. To open the tire or cover the air is allowed to escape, the tube *e* is then forced inwardly, collapsing the inner tube as illustrated in Fig. 2, the cover or outer tire is then lifted from the rim and stretched slightly to one side sufficiently to permit the door to be opened, when the inner tube may be removed, repaired and reinserted.

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

1. The combination with a wheel rim having a series of recesses in its periphery, of a hollow tire mounted on said rim and having an opening in its inner face and a flap hinged
5 to said tire and adapted to cover said opening therein, said flap having a series of projections adapted to register with the recesses in the rim, substantially as set forth.

2. The combination with a wheel rim having a series of recesses in its periphery of a
10 hollow tire mounted on said rim and having an opening in its inner face, a flap hinged to said tire and adapted to cover the opening therein, said flap having a series of projec-
15 tions adapted to register with the recesses in the rim, and an apron, of flexible material, secured to said flap and projecting from the edges thereof, said apron being adapted to close the interstices between said flap and the
20 edges of the opening in the tire, substantially as set forth.

3. The combination with a hollow tire hav-

ing an opening in its face, of a flap hinged to said tire and adapted to close said opening, and an apron of flexible material secured to
25 said flap and projecting beyond the edges thereof said apron being adapted to close the interstices between said flap and the edges of the opening in the tire, substantially as set forth.

4. The combination with a hollow tire having an opening in its face, of a flap hinged to said tire and adapted to close said opening, and an apron of flexible material secured to
30 the inner side of said flap and projecting beyond the edges thereof, said apron being adapted to close the interstices between said flap and the edges of the opening in the tire, substantially as set forth.

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