

(No Model.)

2 Sheets—Sheet 1.

E. M. GRAHAM.
PNEUMATIC TIRE.

No. 511,771.

Patented Jan. 2, 1894.

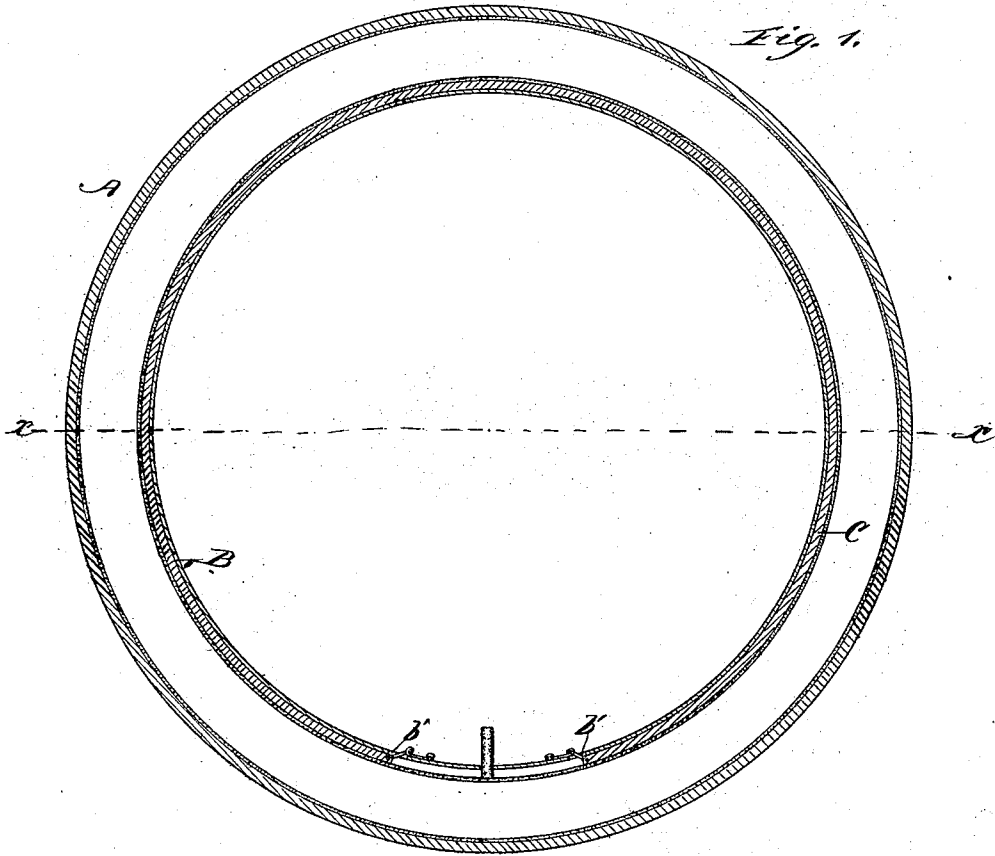


Fig. 1.

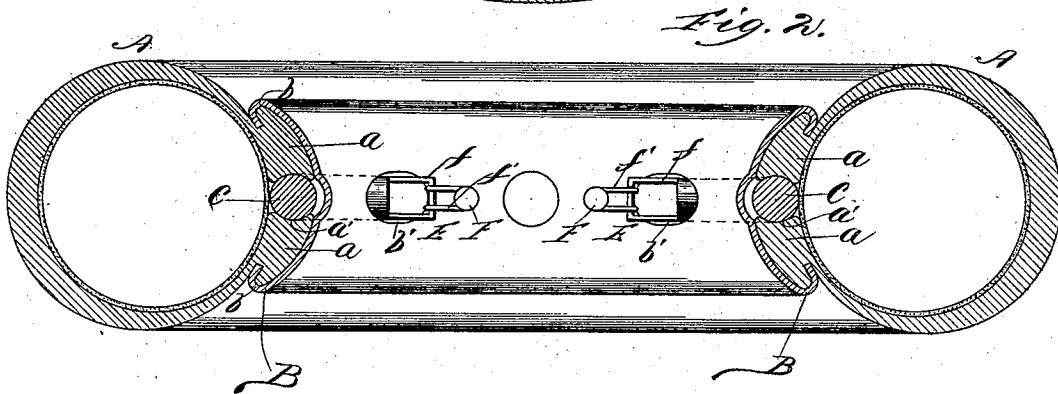


Fig. 2.

Witnesses

N. H. Middleton
Chas. M. Wagner

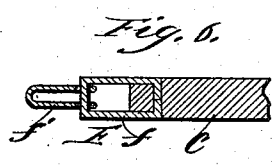
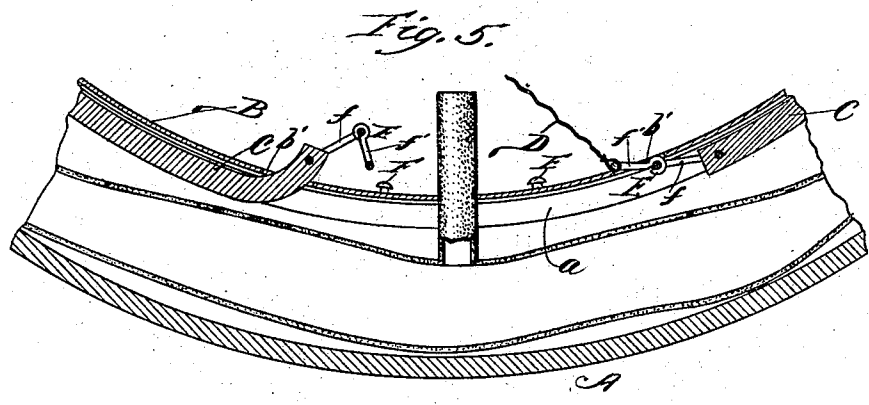
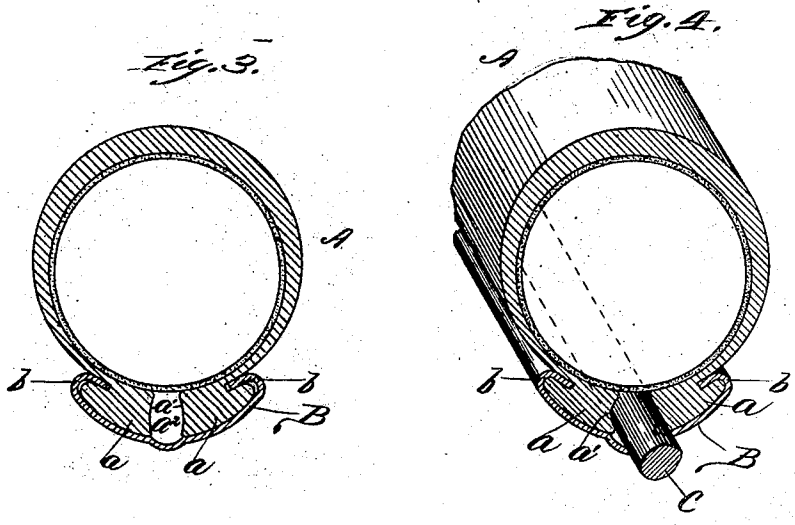
Inventor

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Att'y

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UNITED STATES PATENT OFFICE.

EDWARD M. GRAHAM, OF CHICAGO, ILLINOIS.

PNEUMATIC TIRE.

SPECIFICATION forming part of Letters Patent No. 511,771, dated January 2, 1894.

Application filed January 16, 1893. Serial No. 458,482. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. GRAHAM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Pneumatic Tires, of which the following is a specification.

In a pneumatic tire characterized by my invention, the sheath or casing for the air-tube is divided along its base, and adapted along its edge portions thus formed, for engaging in seats or holders with which the wheel-rim is provided along its opposite annular edge portions. The adaptation of the sheath with reference to this engagement with the wheel rim is such, that when the sheath is closed or proximately closed along its annular line of split, it can be removed from the rim, and also replaced thereon as a preliminary to locking it in place. When thus placed upon the rim, the sheath can be brought into locking engagement with the same by suitably spreading or separating the sheath along its divisional line so as to project its catch or engaging edge portions within the seats or holders along the edge-portions of the wheel-rim. This last stated condition of the sheath is maintained by an abutment or key-strip, which is temporarily interposed between the opposing edge-portions of the sheath so as to fill or substantially fill the annular space between the same and thereby effectively resist any contraction on the part of the sheath tending to withdraw its edge portions from their engagement with the wheel-rim. This arrangement therefore provides a positive lock, and prevents accidental displacement of the sheath under any and all circumstances. The abutment thus provided is independent of an air-tube confined within the sheath and can be readily removed so as to permit the removal of the sheath either in whole or in part from the rim, without disturbing the air-tube, and likewise said abutment can be readily replaced when it is again desired to secure the sheath in place, and as a simple, light and desirable construction I prefer to provide as an abutment for the foregoing described purpose, a flexible belt or band which can be withdrawn from between the edge-portions of the sheath preparatory to removing the latter from the

rim, and which can be threaded in place when it is desired to again secure the sheath in place.

In the accompanying drawings,—Figure 1 is a section taken centrally through the tire. Fig. 2 is a section through Fig. 1 on line $x-x$, on a larger scale, the length of tire portion shown being somewhat disproportionate for convenience of illustration. Fig. 3 is a section taken transversely through the tire and rim with the key-strip removed. Fig. 4 shows a portion of the tire-sheath rim and key-strip in perspective. Fig. 5 is a section taken through a portion of the tire and illustrates a mode of threading the key-strip in place. Fig. 6 is a longitudinal central section through one end of the key-strip.

The sheath A is divided along its base or seating portion, and adapted to provide outwardly projecting lips or hook-portions a along the edge portions which are formed as a result of such division. The edge portions of the wheel-rim B, are bent over and back toward its annular middle line so as to provide hook-shaped seats or holders b adapted to receive the correspondingly formed portions of the sheath.

The flexible abutment or key-strip C can be formed of any suitable material, either elastic or inelastic, but as an extremely simple, serviceable and efficient construction, I contemplate the use of a round leather cord or belt, it being however expressly understood that while I prefer the round construction, I may employ other forms, and that for the broader purposes of my invention I do not limit myself to any particular form and material.

Preliminary to the introduction of the key-strip, the sheath, containing a deflated air-tube can be placed upon the wheel-rim with its lips or annular engaging portions a opposite their respectively allotted seats or holders b , it being observed that any tendency on the part of the sheath to normally spring apart along its line of split can be restricted by simply pinching or compressing the sheath while thus bringing it in place upon the rim. The flexible key-strip can then be threaded within the annular space between the opposing edge-portions a' (Fig. 3) of the sheath so as to fill such space a^2 as will be left between

such edges when the sheath interlocks with the rim, and should the normal tendency of the sheath to spring apart fail to effect the required ultimate extent of separation between its edges a' , the act of drawing the key-strip between such edges will enforce such separation.

In order to permit the key-strip to be readily threaded in place, and also readily removed when so desired, the wheel rim is at any desired point provided with a couple of openings b' , and the key-strip is of such length that when in place so as to encircle the rim as in Fig. 1, it shall respectively lie adjacent to one and the other of said openings. When therefore it is desired to remove the key-strip, it can be withdrawn through one of these openings.

In order to thread the key-strip in place, a thread or cord can be attached to one end and carried about the rim preparatory to placing the sheath thereon, in which way, the thread or cord can enter one of the openings b' , then pass around the rim, and then pass out through the remaining opening so as to render its free end accessible, and thereupon, the operator can by drawing upon the free end of the thread or cord, draw the key-strip within the tire and bring it into proper place, such act being illustrated by Fig. 5 wherein the operation of thus threading the key-strip is shown nearly completed, it being seen that a slight further pull upon the thread or cord D will bring the end of the key-strip to which it is attached, opposite the opening allotted to such end of the key-strip, and that by so doing, the opposite end of the key-strip will be drawn within the tire and left opposite its allotted opening in the wheel-rim.

For the broader purposes of my invention I can provide any suitable or desired construction of fastening devices for temporarily securing the ends of the key-strip. As a special fastening, I have herein shown each end of the key-strip provided with a fastening device E which is hinged to the key-strip so that while the ends of the key-strip may lie concealed within the tire, the fastening devices can be deflected through the opening b' for engagement with studs or catches F upon the inner or under side of the wheel-rim. Conveniently each hinged fastening device comprises a loop f hinged to the key-strip, and an eye f' hinged to the loop and adapted for engagement with its allotted catch or stud, in which way the loops f can extend through the openings b' and the eyes f' can when in engagement with the catches, lie flat against the inner or under side of the wheel-rim and thus have a neat and unobjectionable appearance. The adaptation of the sheath for locking with the rim, as aforesaid, does not necessitate a special form of rim, other than that the rim must have curled or analogously formed edge portions adapted to provide annular seats or holders for the edge portions of the sheath. So long as the abutment or

key-strip is thus confined between the opposing edge portions of the sheath, the latter cannot separate from the rim at any point whatsoever; and since the key-strip acts as a wedge or abutment, it is not subject to strain and liability of breakage or displacement. The seating and catch or locking portions a of the sheath can be molded with the same or made separately therefrom and secured to the same in any suitable way, and since they are separated from one another by a comparatively small space which is filled or substantially filled with the key-strip, they will obviously provide a substantial construction of base or seating portion. The opposing edges a' of the sheath can be straight or curved, and can be at any desired angle relatively to one another or to the rim, although I prefer to make them conform somewhat to the shape of the key-strip, and hence where the latter is rounded so as to facilitate its introduction and removal, the said edges can be correspondingly concaved.

What I claim as my invention is—

1. The combination of a tire-sheath having a divided base, a wheel rim having marginal portions with which the base portions of the sheath engage so as to hold the sheath upon the rim, and a flexible key strip for removable confinement between the divisions of the base portion of the sheath so as to maintain such divisions in engagement with the marginal portions of the wheel-rim, the latter being suitably open to provide passage way for the removal and introduction of the flexible key strip, substantially as described.

2. The combination of the tire-sheath having its base divided and provided with catch portions, a key-strip for removable confinement between the divisions of the base portion of the sheath, and the wheel rim having seats or holders for receiving the catch portions of the sheath and suitably open to provide passage-way for the removal and introduction of the key-strip, substantially as described.

3. The sheath provided with catch portions along its divided base, a key-strip adapted for removable confinement between the divisions of the base of the sheath and consisting of a round leather band, and the wheel-rim adapted to provide seats or holders for the catch-portions of the sheath and suitably open to provide passage-way for the withdrawal of said band from between the divisions of the sheath substantially as described.

4. The sheath provided with catch portions along its base the wheel rim adapted to provide seats or holders for the catch portions of the sheath, and a key-strip removably interposed between the divisions of the base of the sheath and having fastening devices adapted for projection through openings in the wheel-rim so as to engage with catches on the inner or under side of the same, substantially as described.

5. The sheath provided with catch portions

along its divided base, the wheel rim adapted to provide seats or holders for said catch portions, the key-strip interposed between the divisions of the base of the sheath, the hinged catch devices attached to the key-strip and arranged to extend through openings in the rim, and catch devices on the wheel rim for the hinged catches on the key-strip, substantially as described.

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Witnesses:

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