

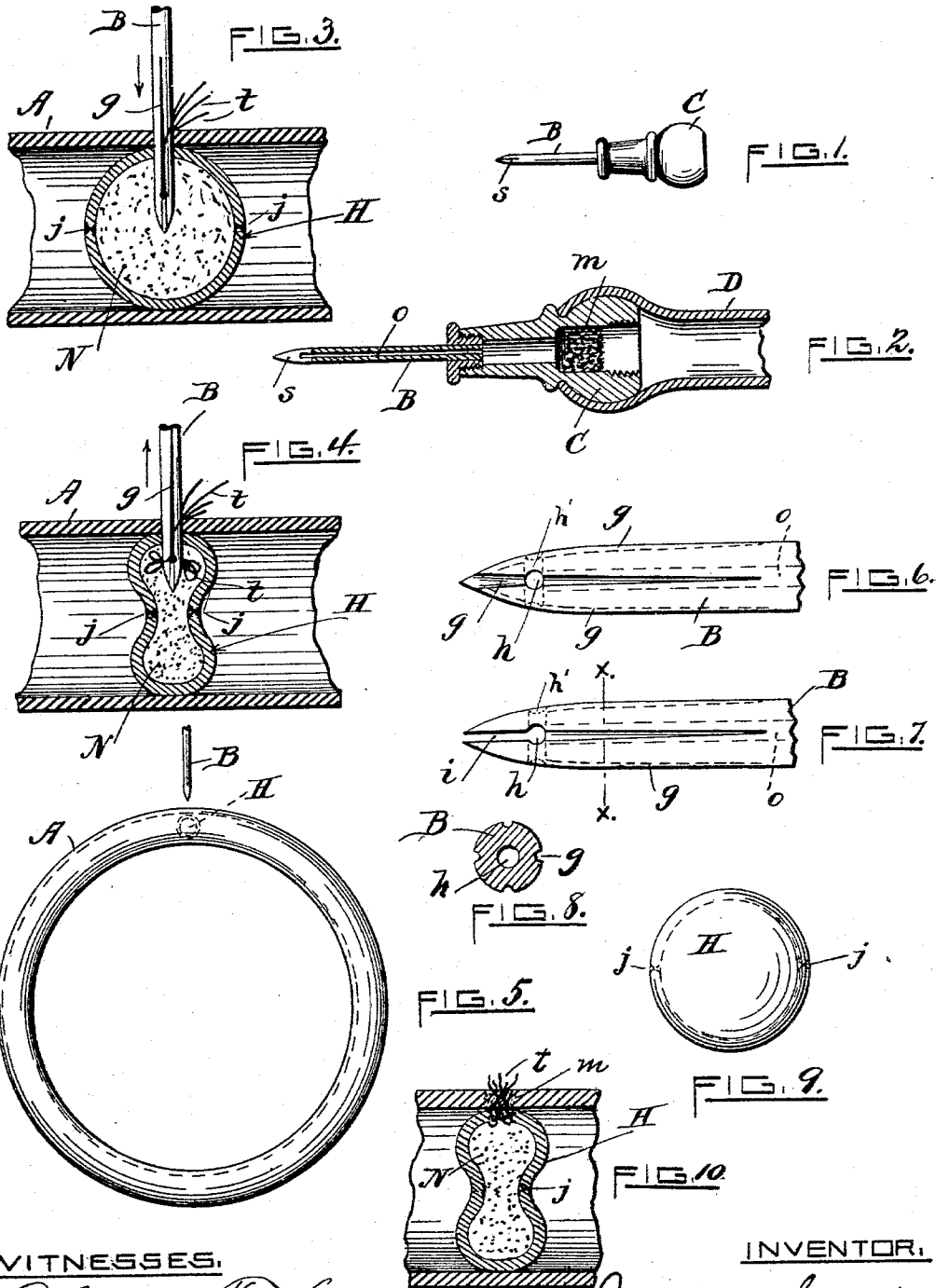
(No Model.)

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INFLATER FOR PNEUMATIC TIRES.

No. 556,777.

Patented Mar. 24, 1896.



WITNESSES.

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INFLATER FOR PNEUMATIC TIRES.

SPECIFICATION forming part of Letters Patent No. 556,777, dated March 24, 1896.

Application filed January 18, 1896. Serial No. 576,021. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SAVOIE, a citizen of the United States, residing at Central Falls, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pneumatic-Tire Inflaters; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in pneumatic-tire inflaters in which a hollow needle is used both to make an opening in the tire and also to serve as the conduit of air from a suitable pump; and the object of my invention is to provide a device by which an opening can be made in the tire, air introduced through the same, and the opening closed in an air-tight manner after the inflating is concluded. I accomplish this object by the device shown in the accompanying drawings, in which—

Figure 1 is the needle viewed exteriorly; Fig. 2, the same in section somewhat enlarged; Figs. 3, 4, and 10, a section of a pneumatic tire, showing the use of the inflating and closing device. Fig. 5 is an exterior view of a tire, showing the ball H within and the needle B just before the tire is pierced for inflation; Figs. 6, 7, and 8, different details of the needle B; and Fig. 9, the hollow ball that is used within the tire, as hereinafter explained.

The same parts are designated by the same letters throughout.

This invention is substantially an improvement over the device described in my previous improvement in tire-inflaters, for which I made application for Letters Patent October 28, 1895, Serial No. 567,215, which application is now pending before the Patent Office of the United States.

Fig. 1 shows the normal size of the needle, B being the needle proper, split at the point S and having at the other extremity the hollow bulb C.

Fig. 2 shows the needle in section, the bulb C having the hollow cement-chamber *m*, con-

nected with a suitable pump by the rubber or other suitable tube D.

The point of the needle is shown in detail upon an enlarged scale in Fig. 6, in which *o* is the internal hollow or bore; B, the body of the needle; *h*, an eye piercing the needle and communicating with the hollow interior, and *g g g* channels leading from the point through the outer opening of the eye and running some distance down the shank of the needle. A second eye *h'* pierces the needle at right angles to *h*, thus leaving four exterior orifices or eyes near the point, as shown.

A modification of Fig. 6 is seen in Fig. 7, in which, in addition to the two eyes *h h'*, the point of the needle is split by two clefts from the point to the eye, the plane of the two clefts being at right angles to each other, the clefts being seen at *i*.

Fig. 8 is a cross-section of the needle, enlarged, showing the channels *g* and the bore *h*.

In Fig. 9, H is a hollow rubber ball having at opposite extremities of the same diameter small openings *j j*. This ball is introduced into the tire in the process of manufacturing the latter and secured in one place within the tire by cement at the line of contact. It is filled with some elastic and porous filling N, preferably shredded sponge, so that it may be kept from entire collapse when the tire is fully inflated. The ball H is so fixed in the interior of the tire that the two openings *j j* are in a line parallel to the length of the tire, thus permitting free passage of air in the process of inflation.

The operation of my invention is shown in Figs. 3, 4, and 10, which I will now proceed to explain. Let us suppose the tire is ready for inflation. Locating by the fingers the interior ball H and selecting a point preferably on the side of the tire, as shown in Fig. 5, the needle is prepared for operation by first filling the chamber in the bulb C with rubber cement *m*, Fig. 2. The needle is then threaded with two threads through the eyes *h h'*, using for this purpose a loosely-twisted or fibrous thread, although any ordinary thread will do the work. These threads are shown by the letter *t* in Figs. 3, 4, and 10. The threaded needle is then thrust through the side of the tire into the ball H, as shown in Fig. 3, and

nearly through to the opposite side, the threads filling the channels *g* as the needle enters. The needle is then partly withdrawn, as shown in Fig. 4, thus leaving a mass of loops of the fibrous thread *t* within the interior of the ball and tire. Any ordinary form of air-pump is then connected with the needle by a rubber or other suitable tube *D*, Fig. 2, and air is forced through the needle into the ball *H* and thence into the tire through the holes *j j*. The first operation of the entering air is to force the cement *m* through the needle into *H*, where it gathers into a viscous mass about and among the threads *t*. The inflation continues until the required degree is reached which causes a partial collapse of *H*, as seen in Fig. 4. The needle is then carefully withdrawn, leaving behind it the saturated mass of threads, which, with the cement attached, completely fills the opening made by the needle, as shown in Fig. 10. The threads are then severed from the needle at the surface of the tire and the operation is completed, leaving the tire practically the same as new. The function of the ball *H* is to prevent failure in the case of tires composed largely of pure rubber, and in the ordinary tires this ball may be dispensed with, the chief elements of my invention being the hollow needle threaded and channeled, as described. When, however, a very elastic tire is used the pressure of the interior air when inflation is nearly completed is sufficient, if the interior ball were not used, to distend the hole through which the needle entered, so that the air will escape around the needle, making further inflation impossible. The ball *H* being joined by cement to the interior of the tire effectually prevents the enlargement of the hole during inflation and insures success with pure-rubber tires.

By the use of my invention no valves are needed for inflation, the rim of the wheel is not weakened by the hole for the valve-stem as when valves are used, and the loss of air is reduced to a minimum.

It is evident also that the same operation which has been above described furnishes a most effectual means for repairing and closing leaks or punctures in pneumatic tires.

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

1. A tire-inflater consisting of a hollow needle with a cement-chamber at its base, eyes *h h'* at its point, and channels *g g* running through said eyes, and capable of being threaded by means of said eyes, substantially as described.

2. The combination in a tire-inflater of a hollow, cement-bearing needle having at its point eyes connected with the interior of said needle and upon its surface longitudinal channels through said eyes, with a thread or threads passing through the needle by means of said eyes, substantially as set forth.

3. The combination in a tire-inflater of a hollow, cement-bearing needle having the eyes *h h'*, the channels *g g*, and the threads *t* passing through said eyes, with an auxiliary ball *H* placed within the tire, and itself filled with a porous and elastic material, and having the openings *j j*, all for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

his
JOSEPH X SAVOIE.
mark

Witnesses:

DAVID L. FALES,
LELLAN J. TUCK.