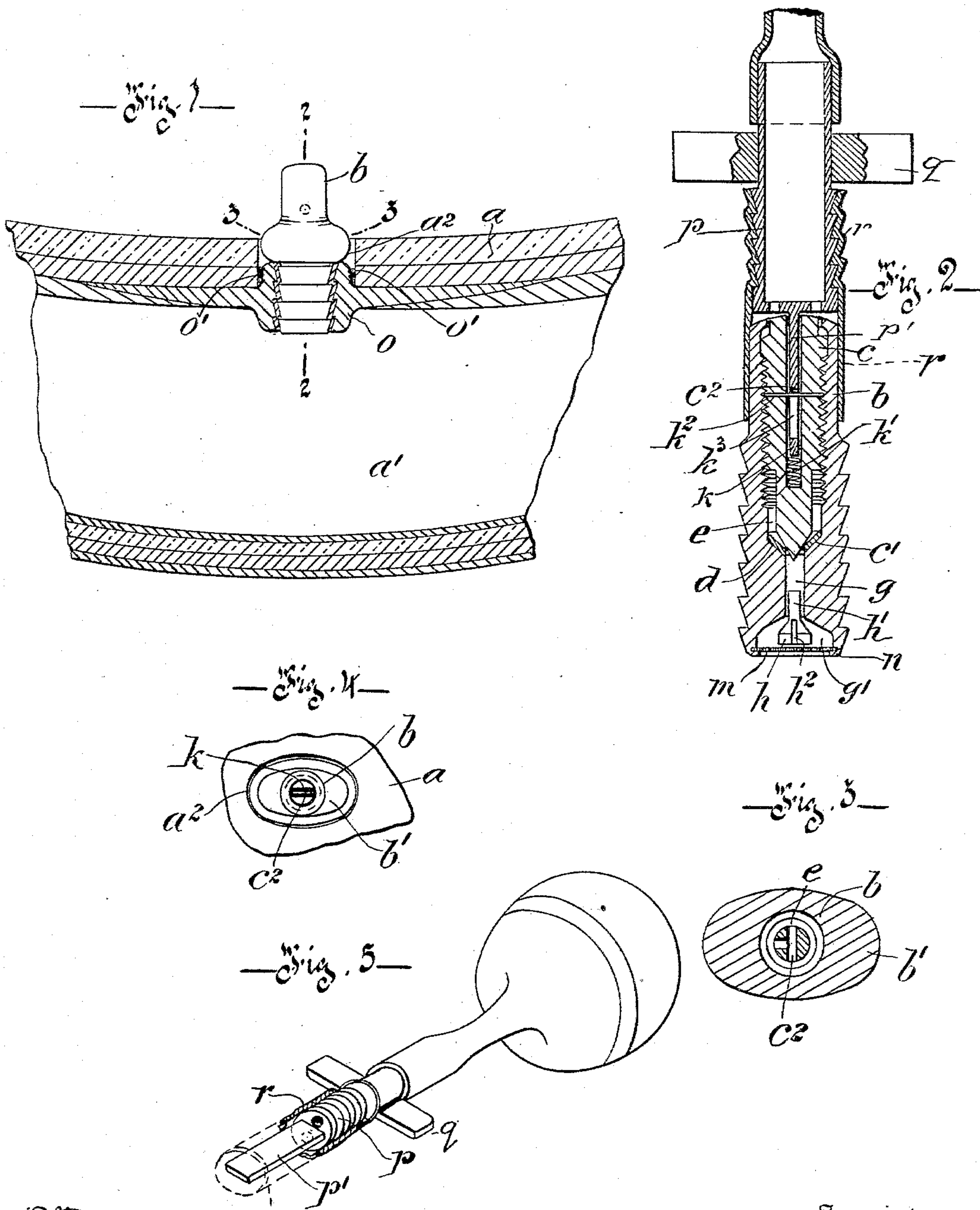


(No Model.)

H. L. GULLINE.
INFLATING DEVICE.

No. 559,848.

Patented May 12, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

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INFLATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 559,848, dated May 12, 1896.

Application filed May 25, 1895. Serial No. 550,673. (No model.)

To all whom it may concern:

Be it known that I, HENRY LAWRENCE GULLINE, of the city of Victoria, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Inflating Devices; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to the inflating devices for use in connection with bicycle-tires, air-cushions, and other inflated articles, and has for its object to improve the construction of the air-nipple thereof, which is carried by the article to be inflated, and to secure a better and more ready connection of the air-supplying parts with such nipple when required, as well as the construction of such parts, so that when in place the valve of the nipple can be opened, air pumped in, and the valve closed without disconnecting the air-supply from the nipple. Heretofore the air-nipples have been constructed of numerous detachable parts easily disconnected and liable to become lost and there has been practically no effective guards against inoperativeness caused by the clogging and sticking of the working parts through the entry of dirt, soapstone, &c.

My improvements avoid all the above-noted objections, securing a compact nipple, all the parts of which are safely held against any possibility of accidental detachment, and further provide effective safeguards to prevent the entry of any substance detrimental to the working of the nipple.

The improvements consist, first, in placing the valve or valves and other parts within the casing or body of the nipple and then brazing or turning in the ends of such body, so as to prevent any accidental displacement or loss of such parts; secondly, in the introduction of dust-guards at each end of the nipple; thirdly, in the special construction of the auxiliary or check valve located at the inner end of the nipple, and, fourthly, in the special form of a portion of the body of the nipple to prevent any turning or twisting thereof in the material in which it is set, another feature being the combination, with the air-supply tube, of a key for opening and closing the valve of the nipple, the combination allowing the valve to be operated while the supply-pipe is connected with the nipple.

Having thus referred to the object and principle of my invention, I will now describe what I consider to be the most practical embodiment thereof in an inflating device to be used for the inflation of bicycle-tires, reference being had to the annexed drawings, forming a part of such description, in which like symbols indicate corresponding parts and wherein—

Figure 1 is a longitudinal vertical section of a portion of a bicycle-tire with my invention applied thereto; Fig. 2, an enlarged transverse vertical section of the nipple, taken on line 2 2, Fig. 1; Fig. 3, a transverse horizontal section of same on line 3 3, Fig. 1; Fig. 4, an end view of nipple; and Fig. 5, a perspective view of an air-supplying device with my improved key attached to the supply-tube thereof, such tube being partly broken away.

a is a portion of the usual metal or wooden rim of a bicycle-wheel, and *a'* the hollow rubber tire thereof.

The body *b* of the air-nipple is of cylindrical form from the top to a point about midway of its length, below which its entire exterior surface is enlarged somewhat, as at *b'*, and of a form other than circular—elliptical, for instance—the upper portion of such enlarged and differently-shaped portion fitting a corresponding opening *a²* in the rim *a*, so as to prevent any turning or twisting of the nipple in the material in which it is set when the valve of the nipple is being operated. In some cases it might be found desirable to form lugs with eyes through them, instead of the enlargement or elliptical form, to allow of the nipple being tied in place by a wire fastening. The upper portion of the nipple is bored and screw-threaded to receive the valve proper, *c*, screw-threaded to work therein, the inner end or head portion of such valve being of conical form and adapted to work upon a corresponding seat *c'*, preferably faced with soft metal *d*. The stem portion of the valve is slotted longitudinally, as at *c²*, from its outer end inward to the head, which is of slightly less diameter than the stem, in order to provide an air-space *e* between it and the body. A central air-passage *g* leads from the air-space *e* to the inner end of the nipple, where it preferably terminates in an enlargement or chamber *g'*, in which I prefer to lo-

cate an auxiliary or check valve made of metal and having a conical head h , a stem h' , and a slit h^2 in one side of such head, the stem projecting into the passage g and the valve-head bearing upon the lower edge thereof when lifted by back pressure of the air in the tire. The slit h^2 , while interfering to a limited extent with the checking function of the valve, yet prevents any serious difficulty that might be caused by the sticking of the valve in its closed position, and so preventing entry of air, when desired, and this is much more likely to occur when such valve is in the form of a rubber disk. Furthermore, such rubber disks are always more or less liable to harden, and thus become defective in operation.

As safeguards for the prevention of the entry of dirt, dust, soapstone, or any other substance detrimental to the working of the parts in the nipple I prefer to arrange in the slit c^2 of the valve proper a movable dust-guard in the form of a plate k about half the length of the slit and of such a thickness as to freely slide in same and not interfere with the passage of air therethrough and insertion of the operating-key, as hereinafter described, such plate being supported or pressed normally outward with its end flush with the end of the nipple by means of coiled spring k' beneath it and retained in place by a pin k^3 , passing transversely through the valve-stem, and a longitudinal slot k^3 in such plate. At the opposite end of the nipple the second guard, in the form of a disk m , of woven wire of very fine mesh, is placed across the mouth of the chamber g' , in which the check-valve is located and held in place by the brazing or turning inward, as at n , of the thinned end of the body, the movement of the valve proper being limited in the same manner by the brazing or turning inward of the opposite thinned end of the body.

From the foregoing it will be seen that a compact and reliable form of nipple is secured without any chance of detachment and loss of parts or of such parts becoming inoperative in any way.

The nipple is connected with the rubber tire in any usual way, although I prefer to first cement the lower portion of the body, insert it in the customary rubber collar o , and then bind it tightly by any suitable wire or other binding, (indicated at o'), after which the collar o is cemented to the tire.

To inflate the tire, it is customary to force air through the nipple by means of an atomizer or air-pumping appliance of some kind, and in order to allow of the valve c being opened and closed while the conducting-tube leading from the atomizer to the nipple is connected with the latter I insert in the end of such tube a metal key-piece having a hollow cylindrical body p , with a projecting tongue p' adapted to enter the slit c^2 of the valve and turn same, suitable ears or wings q being formed on the body to afford a con-

venient finger-hold. An additional length of flexible tubing r has one end secured to the outer end of the body p and extends freely for the length of the tongue p' , so that when the latter is inserted in the slit of the valve the tubing r is fitted over the body, as shown in dotted lines in Fig. 2, and its flexibility allows the rotation of the key-piece a half-turn in either direction, which is sufficient to secure the opening and closing of the valve.

What I claim is as follows:

1. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, the opening therethrough being contracted at its inner end to form a valve-seat, a valve contained in such hollow cylindrical body portion, movable into and out of contact with such valve-seat, and formed with its inner end diminished, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple, and has located therein a cylindrical section with one end closed and perforated and provided with a projecting tongue portion, the latter to take into the outer end of the opening in the valve for the purpose set forth.

2. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, the opening therethrough being partially screw-threaded and contracted at its inner end to form a valve-seat, a valve contained in such cylindrical body portion, movable into and out of contact with such valve-seat and formed with its inner end diminished, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, the undiminished portion of such valve being screw-threaded to take into the screw-threaded interior of the cylinder and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple and has located therein a cylindrical section with one end closed and perforated and provided with a projecting tongue portion, the latter to take into the outer end of the opening in the valve for the purpose set forth.

3. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, the opening therethrough being contracted at its inner end to form a valve-seat, a valve contained in such cylindrical body portion, movable into and out of contact with such valve-seat and formed with its inner end diminished, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple and has

located therein a cylindrical section with one end closed and perforated and provided with lateral wing projections and a projecting tongue portion, the latter to take into the outer end of the opening in the valve for the purpose set forth.

4. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, the opening therethrough being contracted at its inner end to form a valve-seat, a valve contained in such cylindrical body portion, movable into and out of contact with such valve-seat and formed with its inner end diminished, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, a slotted check-valve located in the inner end of such nipple and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple and has located therein a cylindrical section with one end closed and perforated and provided with a projecting tongue portion, the latter to take into the outer end of the opening in the valve, for the purpose set forth.

5. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, the opening therethrough being contracted at its inner end to form a valve-seat, a valve contained in such cylindrical body portion, the outer end of which is diminished to form a shoulder and movable into and out of contact with such valve-seat and formed with its inner end diminished and tapered, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, the ends of such hollow cylindrical body portion brazed or turned, and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple and has located therein a cylindrical section with one end closed and perforated and provided with a projecting tongue portion, the latter to take into the outer end of the opening in the valve, for the purpose set forth.

6. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, the opening therethrough being contracted

at its inner end to form a valve-seat, a valve contained in such hollow cylindrical body portion, the outer end of which is diminished to form a shoulder and the inner end diminished and tapered, such valve being movable into and out of contact with such valve-seat, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, a slotted check-valve located in the inner end of such nipple and the ends of such cylindrical body portion brazed or turned to hold such valve and check-valve in place, and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple and has located therein a cylindrical section with one end closed and perforated and provided with a projecting tongue portion, the latter to take into the outer end of the opening in the valve, for the purpose set forth.

7. An inflating device consisting of a nipple secured to the article to be inflated and formed of a hollow cylindrical body portion, provided with a dust-guard across its inner end and the opening therethrough being contracted at its inner end to form a valve-seat, a valve contained in such hollow cylindrical body portion, the outer end of which is diminished to form a shoulder and the inner end diminished and tapered, such valve being movable into and out of contact with such valve-seat, an opening extending from the outer end of such valve to a point in the surface of the diminished portion thereof, and a movable dust-guard located in the outer end of such opening, a slotted check-valve located in the inner end of such nipple and the ends of such cylindrical body portion brazed or turned to hold such valve and check-valve in place, and an inflating device consisting of an air-supplying device, the discharge-tube of which is detachably connected to such nipple and has located therein a cylindrical section with one end closed and perforated and provided with a projecting tongue portion, the latter to take into the outer end of the opening in the valve, for the purpose set forth.

HENRY LAWRENCE GULLINE.

Witnesses:

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