Jan. 7, 1936. W. W. DE LANEY 2,026,933

SELF LUBRICATING INFLATING NEEDLE

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Fig. 1.

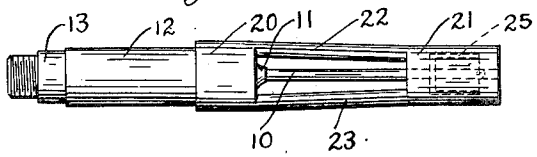


Fig. 2.

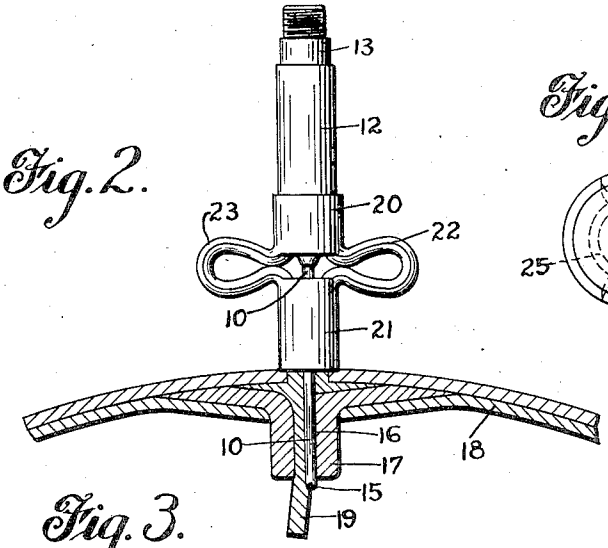


Fig. 4.

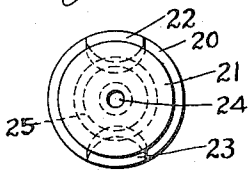


Fig. 3.

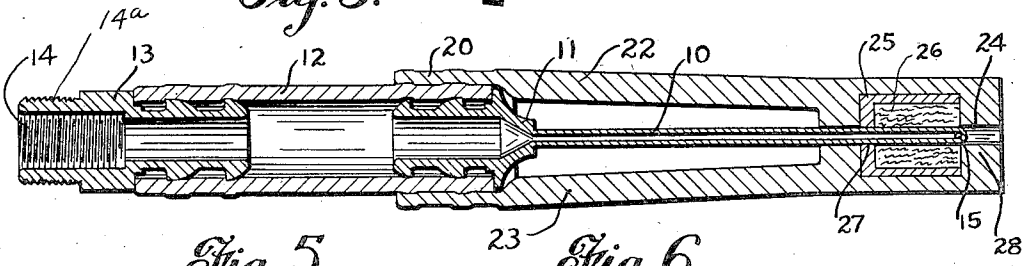


Fig. 5.

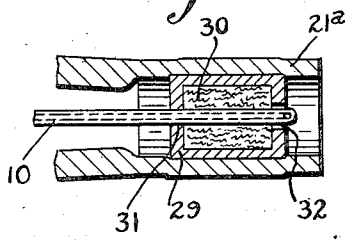
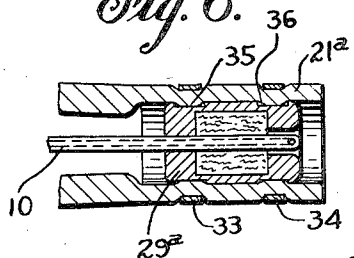


Fig. 6.



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Fig. 7.

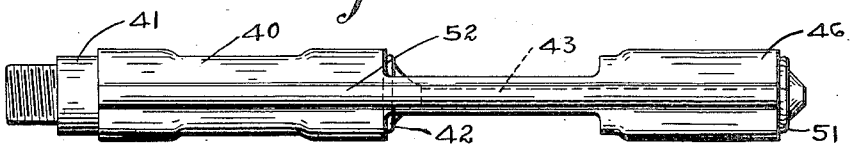


Fig. 8.

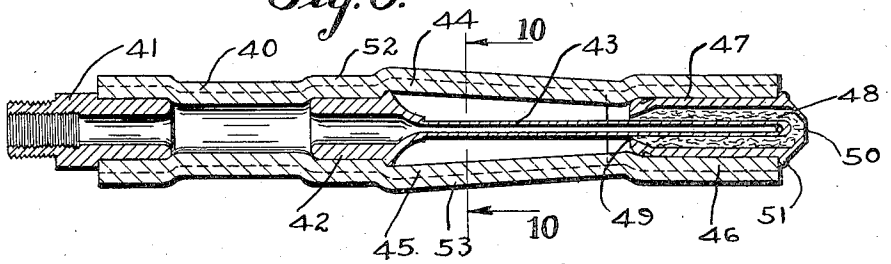


Fig. 9.

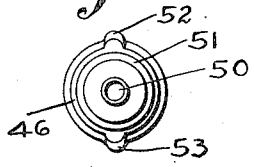
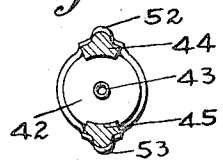


Fig. 10.



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UNITED STATES PATENT OFFICE

2,026,933

SELF-LUBRICATING INFLATING NEEDLE

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Application April 12, 1935, Serial No. 16,043

16 Claims. (Cl. 152—11)

This invention relates to inflating tools or needles for inflatable articles such as football bladders, play balls, or the like, and has particular reference to means for providing such a needle with a self-lubricating attachment whereby the needle will become lubricated in its normal manipulation without special attention or effort on the part of the operator.

It is more or less common at the present time to provide inflatable articles such as football bladders or the like with an inflating neck having an opening therein communicating with the interior of the ball, through which a needle may be inserted for purposes of inflation, which opening will be self-closing. In some structures of this character, a plug extends through the inflating opening or passage into the ball, which plug will completely close the opening against outward leakage of air when the needle is withdrawn. In structures of this character it requires more or less force to insert the needle as it is usually necessary to spread or pry apart to some extent the walls of the passage to admit the needle, and there is for this reason considerable friction between the walls of the passage and the needle.

Lubrication of the needle reduces this friction to a considerable extent and renders much easier the passage of the needle into and out of the opening. It is of course also advantageous if such lubrication may be accomplished automatically in the use of the needle and thus obviate any attention or effort on the part of the operator to effect this result.

One object of the invention, therefore, is to provide an inflating needle with lubricating means which will be self-operative during the normal use of the needle.

Another object of the invention is the provision of an inflating needle with a lubricating attachment through which the needle will be moved when being inserted into the bladder or other article to be inflated.

A still further object of the invention is the provision of an inflating needle having a container surrounding the shank of the needle adjacent the open end thereof, which container may carry a lubricant and which will be slidably retained upon the needle so that the latter may be protracted therefrom to be inserted into the article to be inflated.

Still another object of the invention is the provision of an inflating needle having a surrounding housing containing a lubricant, the housing being provided with an opening through which the needle may be protracted and retracted in the inflating operation in contact with the lubricant whereby the needle will be automatically lubricated during its use.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the drawings:

Fig. 1 is an elevational view of an inflating needle embodying my invention;

Fig. 2 is a view showing the needle in inflating position in a football bladder or the like, the latter being shown in a fragmentary manner in section;

Fig. 3 is a sectional view of the needle and associated parts shown in Fig. 1;

Fig. 4 is an end view of the structure shown in Fig. 1;

Figs. 5 and 6 are sectional views of slightly modified forms of my invention;

Fig. 7 is an elevational view of a modified form of my invention;

Fig. 8 is a sectional view of the modification shown in Fig. 7;

Fig. 9 is an end view of Fig. 7; and

Fig. 10 is a section on line 10—10 of Fig. 8.

In order to illustrate a preferred embodiment of my invention, I have shown particularly in Figs. 1 and 3 of the drawings an inflating needle 10 secured at its upper or entrance end to a nipple 11, which nipple may be secured by a short length of rubber tubing or the like 12 to a second nipple 13 provided with a threaded bore 14 and external threads 14a to adapt it to be secured to the delivery end of an air pump. The needle 10 is, in its usual form, hollow to provide for the passage of air therethrough and is provided with an opening 15 at its lower or nose end to permit the passage of air therefrom into the article to be inflated. In Fig. 2 of the drawings I show such a needle inserted into the opening 16 in the inflating neck 17 of a football bladder 18, for example. A rubber plug 19 is disposed within the opening 16 and serves to close this opening against escape of air when the needle is withdrawn.

The lubricating device shown in Figs. 1 to 4 of the drawings comprises a pair of spaced collars 20 and 21 which are connected by oppositely disposed arms 22 and 23. These parts may and will preferably be made of rubber, so that the collar 20 may be slipped over the rubber tube 12 as shown in Fig. 3, the collar being of such a size that it will be slightly expanded in this operation and so will grip the tube 12 so as to be securely held thereon.

The lower collar 21 is provided with a bore or

opening 24 through which the needle extends, the bore extending entirely through the collar so that the needle may be protracted therefrom by moving the collar toward the nipple 11 and doubling or folding the arms 22 and 23, as shown in Fig. 2. This permits the protraction of the needle so that it may enter the inflating opening 16 to a sufficient extent to effect communication between the opening 15 and the interior of the bladder.

Within the collar 21 is a cup-shaped container 25 containing a lubricant 26, the container being provided with an opening 27 in its closed end which is provided for the passage of the needle. As shown in Fig. 3 at 28, the end of the collar covers the end of the container so as to retain the lubricant therein, except, of course, for the opening 24 through which the needle is permitted to pass.

It will be apparent that the outer wall of the needle at the delivery end thereof is in direct contact with the lubricant 26, and when the needle is protracted, as shown in Fig. 2, the wall of the needle will be lubricated so as to permit its easy entrance into the opening 16 of the bladder. When the needle is removed from the bladder, the arms 22 and 23 will straighten out and cause the collar 21 to move outwardly over the surface of the needle until it reaches the position shown in Figs. 1 and 3. When inserting the needle in the bladder, it is only necessary to restrain movement of the collar 21, as by contact with the article to be inflated, and slight pressure upon the needle will cause it to project from this collar and the end can then be inserted in the opening in the bladder, the flexible arms 22 and 23 folding upon themselves to permit this operation. It will also be apparent that I have provided by this means a lubricating attachment which may be supplied and used with inflating needles already in use as it may be attached to any needle by merely slipping the collar 20 over the inflating tube 12 to which the needle is attached.

In Fig. 5 I have shown a slightly modified form of my invention wherein the collar 21a which corresponds to the collar 21 previously described is hollow, whereby a lubricant container 29 may be inserted within the hollow collar and held therein merely by being gripped by the rubber wall of the collar. In this instance, the container 29 may be completely closed, as shown, to house the lubricant 30, except that registering openings 31 and 32 are provided for the passage of the needle. The lubricant container in this case as well as in the form of my invention previously described will preferably be made of metal.

In Fig. 6 of the drawings I have shown a further modification similar to that shown in Fig. 5 except that the container 29a may be held in position by metal bands or wires 33 and 34 which surround the collar 21a. These bands may be used when it is not desirable to depend upon the gripping action between the rubber and the container. Also, if desired, the container may be provided with annular recesses 35 and 36 to receive portions of the collar forced inwardly by the bands 33 and 34. The container will then be positively and securely held in place.

In all forms of my invention, it will be necessary for the needle, in order to be inserted into the article to be inflated, to be moved through the lubricating means so that the wall of the needle will be lubricated to provide for its easy passage through the inflating nipple and thus make it impossible for anyone to use the needle without lubricating it.

In Figs. 7 to 10 of the drawings I have shown a further modified form of inflating needle in which the collar 40 is of extended length so as to receive in one end the nipple 41 adapted to be attached to the inflating pump, and to receive in the other end the base end or nipple 42 attached to the hollow inflating needle 43. It will be understood that a section of the collar 40, which is made of rubber or similar flexible material, remains between the nipples 41 and 42 so as to provide a flexible connection between the needle and the nipple 41 attached to the pump, in the same manner as is provided by the tube 12, shown in Figs. 1 to 3. The extended collar 40 in this instance takes the place of both the tube 12 and the collar 20 of the modification of my invention previously described.

To the collar 40 are attached flexible arms 44 and 45 which connect it with a second collar 46, to which the ends of these arms are attached, this collar being in spaced relation to the collar 40.

Within the collar 46 is a container 47 for a lubricant or the like 48. The container may conveniently be made of metal and is provided with end openings 49 and 50 for the passage of the needle 43. It will be understood that the collar 46 will preferably be of rubber or some elastic material, and by its elasticity grips the container 47 and holds it in place. The container may be provided with a flange 51 projecting laterally from a point adjacent its lower end, which will limit its entrance into the collar.

The arms 44 and 45 may be provided with the longitudinal ribs 52 and 53, which also may extend over the collars 40 and 46. These ribs impart greater rigidity to the arms and provide for a more positive return to their straight position after they have been folded, as shown in Fig. 2.

While I have shown and described some preferred embodiments of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. An inflating needle having a lubricant-carrying means supported to adjacent the outlet end thereof to deliver a lubricant to the surface of the needle.

2. An inflating needle, and means attached to the needle and normally disposed adjacent the outlet end thereof to support a lubricant, and a lubricant supported by said means in contact with the outer surface of the needle.

3. An inflating needle having a lubricant-carrying means supported thereon adjacent the outlet end thereof to deliver a lubricant to the surface of the needle, said means being supported for sliding reciprocatory movement over the surface of the needle.

4. An inflating needle having a lubricant-carrying means supported thereon adjacent the surface thereof, said means being supported for sliding reciprocatory movement over the surface of the needle and being normally urged to a position adjacent the outlet end of the needle.

5. An inflating needle, and a lubricant-carrying member slidably mounted upon the surface of the needle, said member surrounding the needle

and having provision for the passage of the needle therethrough.

6. A lubricating attachment for an inflating needle, said attachment comprising an attaching sleeve, a lubricant container normally spaced from and connected with said sleeve, said lubricant container having a passage therethrough to accommodate the needle, and the connection between said container and said sleeve permitting the container to move toward and from the sleeve.

7. A lubricating attachment for an inflating needle comprising an attaching sleeve, flexible arms extending from said sleeve in an axial direction, a lubricant container secured to said arms in a position spaced from the sleeve, and said lubricant container having a passage therethrough to accommodate the needle.

8. A lubricating attachment for an inflating needle comprising a lubricant container, flexible members detachably secured to said container, and means for detachably securing said flexible members to the needle, and said container having a passage therethrough to accommodate the needle.

9. A lubricating attachment for an inflating needle comprising a pair of spaced sleeves, flexible arms connecting said sleeves, one of said sleeves providing means for detachably connecting the attachment to the needle, and a lubricant carried within the other of said sleeves in contact with the surface of the needle.

10. A lubricating attachment for an inflating needle comprising a pair of spaced sleeves, flexible arms connecting said sleeves, one of said sleeves providing means for detachably connecting the attachment to the needle, a lubricant container detachably mounted within the other of said sleeves, a lubricant in the container, and said container being provided with a passage to accommodate the needle.

11. An inflating needle, means for lubricating the same, said means comprising a lubricant-carrying member slidably supported adjacent the outlet end of the needle and covering said end, and flexible elements connecting said member to the needle adjacent the base thereof, said elements permitting the protraction of the needle from the lubricant-carrying member to inflating position.

12. An inflating needle, means for lubricating the same, said means comprising a lubricant-carrying member slidably supported adjacent the outlet end of the needle and covering said end, and flexible elements connecting said member to the needle adjacent the base thereof, said elements permitting the protraction of the needle from the lubricant-carrying member to inflating position but normally urging said member to a position covering the end of the needle.

13. An inflating needle for inflatable balls and the like, means for attaching said needle to the outlet of a pump, and a lubricant container supported by said means to supply lubricant to the surface of the needle.

14. An inflating needle for inflatable balls and the like, flexible means for attaching said needle to the outlet of a pump, and a lubricant container supported by said means to supply lubricant to the surface of the needle.

15. An inflating needle for an inflatable ball or the like having a lubricant-carrying means supported adjacent the outlet end thereof to deliver a lubricant to the surface of the needle, said means being supported for sliding reciprocatory movement over the surface of the needle and adapted to be moved away from the end of the needle by pressure upon the article to be inflated.

16. In an inflating device for pneumatic articles, the combination with a hollow inflating needle and means connecting it with a source of compressed air, of a lubricant container having registering openings by which it engages the needle for sliding movement with respect thereto, a body of lubricant in said container for lubricating the needle surface, and means for holding said container yieldingly in position over the discharge end portion of the needle, said container being displaceable inwardly from the needle end when the needle is forced into the inflating opening of the article to be inflated.

WALLACE W. DE LANEY.

CERTIFICATE OF CORRECTION.

Patent No. 2,026,933. January 7, 1936.

WALLACE W. De LANEY.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 52, claim 1, after "supported" strike out the word "to"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of February, A. D. 1936.

Leslie Frazer

(Seal) Acting Commissioner of Patents.