No. 791,802. PATENTED JUNE 6, 1905.

J. DE LISLE.

HYPODERMIC SYRINGE.

APPLICATION FILED MAY 16, 1904.

Fig. 3.

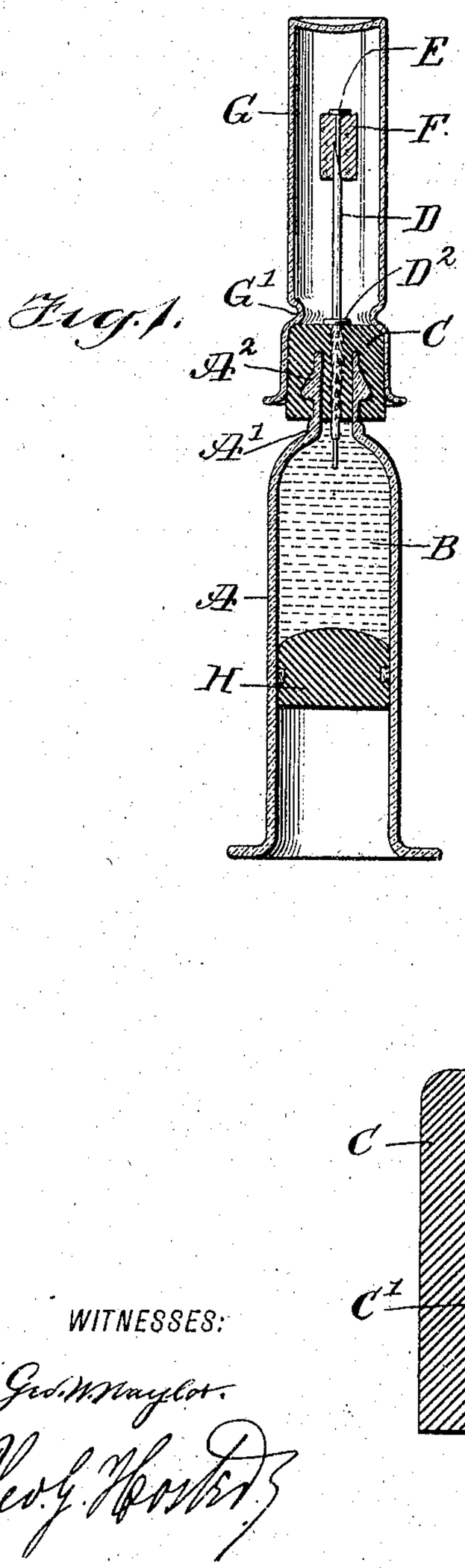
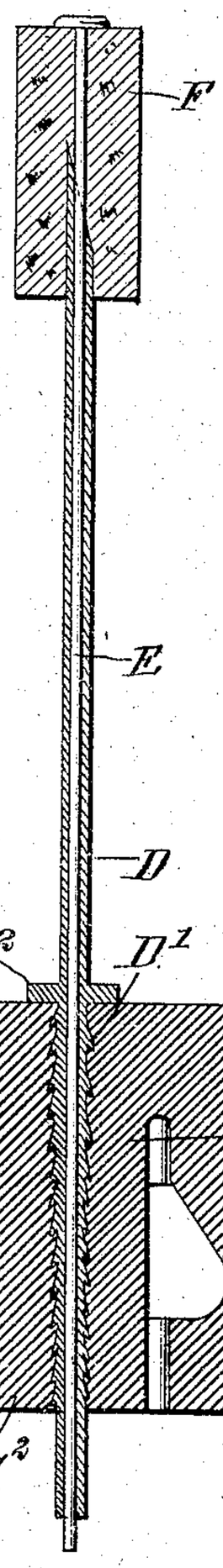


Fig. 1.



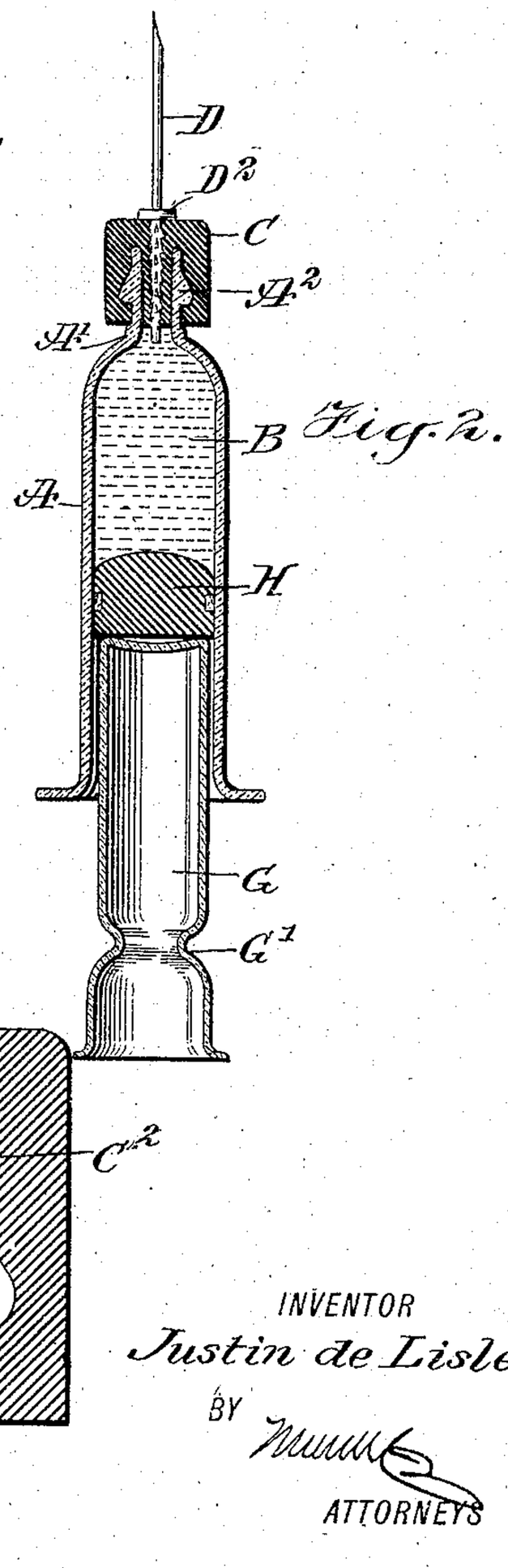


Fig. 2.

WITNESSES:

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No. 791,802. Patented June 6, 1905.

UNITED STATES PATENT OFFICE.

JUSTIN DE LISLE, OF NEW YORK, N. Y.

HYPODERMIC SYRINGE.

SPECIFICATION forming part of Letters Patent No. 791,802, dated June 6, 1905.

Application filed May 16, 1904. Serial No. 208,141.

To all whom it may concern:

Be it known that I, JUSTIN DE LISLE, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Hypodermic Syringe, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved hypodermic syringe, more especially designed for making hypodermic injections of antitoxic serum and arranged to maintain its parts during the time the syringe is stored or in transit in an absolutely aseptic condition, to prevent contamination of the serum, and to insure a free unobstructed flow of the serum through the needle when the syringe is used.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter, and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement, showing the parts assembled and the serum sealed against deleterious or contaminating influences. Fig. 2 is a sectional side elevation of the improvement, showing the parts in position for making a hypodermic injection; and Fig. 3 is an enlarged sectional side elevation of the needle, its supporting-stopper, its closing-wire, and the block.

The container A for the serum or like charge B is in the form of a barrel open at both ends, one of the ends being, however, contracted to form a neck A′, onto which fits exteriorly a stopper C, of rubber or other suitable material, and through this stopper C extends a needle D, projecting at its inner end into the serum B, and through the bore of the said needle passes a wire E for keeping the bore closed to the serum during the time the syringe is stored or in transit. The wire E projects beyond both ends of the needle D to prevent the serum from passing into the inner end of the needle, and on the outer end of the said wire E is held a block F, of cork or similar suitable material, adapted to be pushed onto the point of the needle D, so as to firmly inclose the said point to keep the latter free of contaminating influences, and at the same time preventing leakage through the needle.

The needle D is provided with external barbs D′, engaging the material of the stopper C, so as to firmly support and hold the needle in position in the said stopper C, and the needle is also provided with a shoulder or flange D^2, resting on the top face of the stopper to hold the needle firmly in position in the stopper, especially when the needle-point is forced into the skin.

The stopper C is provided in its bottom with a seat C′, into which fits the exterior surface of the neck A′, provided with an annular projection or bead A^2, so as to securely hold the stopper against ordinary removal from the neck A′ of the container A. The stopper C is also provided within the seat C′ with a projection C^2, fitting into the neck A′, as plainly shown in Figs. 1 and 2, to prevent possible leakage of the serum by way of the stopper C.

A cap G, closed at one end, is fitted with its other or open end onto the stopper C, so that the cap G incloses the outer end of the needle D, the block F, and the corresponding portion of the wire E. The cap G is provided with a contracted portion G′, forming a stop to prevent the cap from passing too far down onto the stopper C. The cap G is of such a diameter that it can readily enter the open end of the container A for the cap to serve as a piston-rod to push the piston H, contained in the outer open end of the container, in an inward direction whenever it is desired to use the syringe for making a hypodermic injection, as indicated in Fig. 2.

In assembling the parts to prepare the syringe for the market it is necessary to proceed as follows: The piston H is pushed into the container a desired distance to leave room between the top of the piston and the bottom of the neck A′ for the desired dose of serum to be used as a charge. A piece of cotton is

now temporarily placed in the neck A′, and the container is then sterilized. The wire E is passed through the needle D, and the block F is engaged with the point of the needle, and then the needle D is secured to the stopper C, after which the latter is placed in position on the cap G, and the latter and the parts attached thereto are now also sterilized. Both the sterilized container and the sterilized cap are now taken to a sterilized or aseptic chamber or room, and then the cotton is removed from the neck A′, and the serum is then filled into the container, after which the stopper C is immediately connected with the neck A′, so that the several parts are assembled ready for shipment and use.

By the arrangement described the serum B is perfectly sealed and protected against any contaminating deleterious influences, and at the same time the point of the needle is protected, and the bore of the needle is not liable to be clogged up by the serum, as the wire E fills the said bore. When the wire is withdrawn, it clears the bore of the needle of any matter that may adhere to the walls of the bore.

When the several parts are assembled as described, the syringe can be readily stored or shipped, and when it is desired to use the syringe to make a hypodermic injection then it is only necessary for the operator to remove the cap G from the stopper C, then to pull on the block F, so as to disengage the block from the point of the needle, and to draw out the wire E from the bore of the needle to render the bore unobstructed and clear the same of any matter that may possibly adhere to the walls of the bore, and then the operator uses the cap G as a piston-rod for pushing the piston H after the point of the needle is inserted under the skin in the usual manner. When the piston H is pushed by the cap G, the serum B is forced through the needle D under the skin of the patient. After the syringe has been used for the purpose described it can be thrown away, as its cost is comparatively small.

From the foregoing it will be seen that the needle and the serum are fully protected against contaminating and deleterious influences, and the operator in order to use the syringe for making a hypodermic injection has but a few simple acts to perform, which acts do not require the operator to touch or handle the needle or break any part of the syringe, as is now required with the syringes generally in use.

The serum and all parts of the syringe are aseptic from the time of the sterilization to the time the serum is injected under the skin.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A hypodermic syringe comprising a barrel, a stopper for closing one end thereof, a piston in the barrel for confining serum in the barrel and for forcing the serum out of it, a needle held by the stopper, and a cap seated on the stopper, inclosing the outer portion of the needle and forming a means for pushing the piston in the barrel for the discharge of the serum from the barrel through the said needle.

2. A hypodermic syringe comprising a barrel for containing serum, open at one end and having its other end contracted to form a neck, a stopper fitted exteriorly on the said neck, a piston in the barrel for confining the serum in the barrel between the piston and the stopper, a needle carried by the stopper and extending at its inner end into the serum and projecting at its outer end beyond the stopper, and a cap closed at one end and having its other open end fitted exteriorly onto the said stopper.

3. A hypodermic syringe comprising a barrel for containing serum, open at one end and having its other end contracted to form a neck, a stopper fitted exteriorly on the said neck, a piston in the barrel for confining the serum in the barrel between the piston and the stopper, a needle carried by the stopper and extending at its inner end into the serum and projecting at its outer end beyond the stopper, and a cap closed at one end and having its other open end fitted exteriorly upon the said stopper, the cap when removed from the stopper forming a means for pushing the said piston in the barrel, to force the serum through the needle.

4. A hypodermic syringe provided with a serum-container having a neck, a stopper on the said neck, carrying the needle, and a cap fitting on the said stopper and having a contracted portion forming a stop.

5. A hypodermic syringe provided with a serum-container having a neck, a stopper held on the said neck, and a hollow needle extending through and supported by the stopper, the portion of the needle in the stopper having external barbs engaging the stopper material and the needle having means to prevent lengthwise displacement of the needle in the stopper on forcing the needle into the skin.

6. A hypodermic syringe provided with a container for serum and having a neck, a stopper provided with a seat fitting the exterior surface of the said neck, the said stopper having a projection within the said seat and fitting into the said neck, and a hollow needle extending through the said stopper and its projection, the needle having means to prevent lengthwise displacement of the needle in the stopper on forcing the needle into the skin.

7. A hypodermic syringe comprising a barrel for containing serum, open at one end and having its other open end contracted to form a neck, a piston in the barrel, a stopper fitted exteriorly on the said neck, a hollow needle extending through and supported by the said stopper, a wire passing through the bore of

the needle and projecting beyond the ends thereof, a block on the outer portion of the wire, adapted to engage the point of the needle, and a cap closed at one end and having its open end seated on the said stopper, to inclose the outer end of the needle and the block.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JUSTIN DE LISLE.

Witnesses:
THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.