

**Improved method of and means for the vaccination of animals with virus /
[Onésime Thomas].**

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Publication/Creation

Redhill : Printed for His Majesty's Stationery Office by Malcomson & Co., Ltd,
1901.

Persistent URL

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N^o 16,999



A.D. 1900

Date of Application, 24th Sept., 1900—Accepted, 22nd June, 1901

COMPLETE SPECIFICATION

**Improved Method of and Means for the Vaccination of Animals
with Virus.**

A communication from abroad by ONÉSIME THOMAS, of 19 Rue Cambon, Paris
France,

I, REGINALD WILLIAM JAMES, of the Firm of Fell and James, of 1 Queen Victoria Street, in the City of London, Chartered Patent Agent, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement.

5 Vaccination by a virulent thread or one impregnated with virus, consists in inserting under the skin or in the muscles of an animal, a thread impregnated with a quick or slow acting virus, either natural or cultivated, for the purpose of creating an immunity and preservation from contagious diseases.

10 It is inserted by means of a needle which with the thread takes the place of the Pravaz syringe and other instruments of inoculation.

In order that immunity can be acquired without risk of death, it is absolutely necessary to give a dose of accurately measured quantity; too small a dose of virus will produce little or no effect, too great a dose will be followed by general infection and occasion death. Therefore in order to avoid these extremes, a
15 thread impregnated with virus to an extent of mathematical precision is used. It is this method of preparation and dosing or proportioning that is the subject of this application for a patent. It comprises several operations which we will now explain.

The threads can be of cotton, wool, or any other material, the essential feature
20 is that they must be very well spun, of uniform thickness, regularly twisted and all foreign substances eliminated therefrom. They must be rendered antiseptic by a prolonged treatment in boiling water, or in a heated oven. Cotton threads will previously be rendered absorbent to moisture by ordinary processes. They are then wound on bobbins and placed in a very dry place or better still in a
25 drying oven or stove of moderate temperature.

The impregnation is effected by drawing it through a virulent liquid of a suitable composition and strength. The bobbin filled with thread is placed on an axis and is unwound by a rotative movement. On leaving the bobbin the thread is immersed in the virulent liquid contained in a conical glass, reaches to the
30 bottom thereof and reascends after entering a discharge tube or device whence it is wound along a windlass to dry. The virulent liquid contained in the glass is thus traversed by the thread twice, from the top to the bottom and from the bottom to the top, a circumstance which permits of its treatment through the whole depth of liquid.

35 The discharge tube or device is a part cylindrical and part conical glass tube. The cylindrical part is of smaller diameter adjacent to the bottom of the glass from which it is removed a distance of a few millimetres. The conical part is drawn down to a small orifice of exact and determined size. This operation can be effected in the following simple manner:—

40 A steel wire of the diameter of the desired orifice is placed in the glass tube to form a matrix, and the glass tube is then drawn down as a pipe around the wire, the latter being withdrawn when the glass tube is cold.

It is in traversing this orifice that the thread gets rid of the excess of absorbed

[Price 8d.]

Improved Method of and Means for the Vaccination of Animals with Virus.

liquid. With an orifice too large or free, the thread carries with it an excess of liquid, and drops of liquid fall from the thread as it is rolled on the drying drum; with an orifice too contracted it will not absorb enough virus. The discharging device is the most important element of the apparatus that I have devised to carry out my method of rational and uniform impregnation. 5

I have found by practice that an orifice of $1\frac{1}{2}$ millimeters will allow the thread when drawn therethrough to retain 195 grammes of liquid in every 100 metres of length. Ordinary vaccine is used of the proper strength according to regulations and is diluted with sterilised water, so as to make 50 ordinary doses of vaccine contained in 195 grammes of dilute vaccinal mixture, and as this 10 amount of mixture is absorbed by 100 metres of thread, one dose of vaccine is contained in every 2 centimetres of thread.

The drawings which accompany this description represent a front view in Figure 1 and a side view in Figure 2. of the whole machine, while Figures 3, 4 and 5 are detail views of the automatic clutch mechanism. 15

The drawing shows in Figures 1 and 2 the general arrangement of a double machine for impregnating simultaneously and separately two cotton threads with virulent liquid and means for drying them. The threads of cotton are composed of several strands which pass separately into the liquid and unite at their entry into the mouth of the discharging and regulating device. The 20 collection of threads are wound in spirals equidistant from each other to permit a free circulation of air between them. The winding being finished, that is to say when the drums are completely wound, their stoppage is automatically effected. The thread is then cut and allowed to dry.

This machine is composed of a base plate on which are fixed four columns 25 supporting the two drums or windlasses T and mounted on slides are the two carriages L L which carry the bobbins wound with cotton and the glasses (with the regulating or measuring devices) containing the liquid with which the threads are to be impregnated.

The axle A operated by hand or a motor communicates its motion by a pair 30 of bevel wheels to a friction table or disc B which actuates the axle F by means of a friction roller C adapted to be moved along its axle by hand. The shaft F gives motion to the shaft I by a pair of cog wheels, each of which has a movable claw clutch upon its shaft.

The two drums are driven respectively by the shafts I and F through sprocket 35 wheels and chains.

The screws K K which impart to the carriages their translating motion are also driven by the shafts I and F in the same manner. The wheels which give the movement form part of the claw clutches mounted on the shafts I and F. Their set of claws engaging the claws on the clutches H gear them together to 40 give simultaneous movement.

A spring R¹ constantly tends to pull the claws H out of engagement with the claws J, and engagement is only retained by the lever P, of which the lower part is furnished with two bridles engaging in grooves arranged around the clutches; the upper part of the lever is furnished with a finger O which engages 45 against a tripping lever N. A lever R having a tappet at its upper part is connected to the lever P by a crank. A stem terminating in a button S. allows the movement of these two levers by hand.

When the machine is ready for operation, the carriages are at the front. In operation the shaft A at the same time as it turns the drums T on the axles U 50 which wind the threads after they have traversed the liquid also moves the carriages along so as to coil the thread in a spiral from one end of the drum to the other.

When the drums are completely filled with the thread one of the carriages arriving at the end of its travel engages the lever N rocks the trip lever and 55 disengages the retaining pawl from the lever P. The clutches H being no longer retained are drawn back by the spring R¹. The clutches are pulled back

Improved Method of and Means for the Vaccination of Animals with Virus.

against the support Q on which two small pegs *p* are situated, engaging two other similar devices *h* on the clutches H. At the moment of this engagement the mechanism stops. Another notch *y* on the tripping lever N permits the engagement of the finger O to maintain the clutches H in an intermediate position to permit the drum being turned freely by hand when necessary.

The thread is then cut and the free extremities are fastened on the drums.

The carriages are thrown out of gear with their screws by pressing the buttons M shown on their outside and they can be removed to their initial position.

During this movement the carriage encounters the tappet R which brings the clutches H into the middle position without engaging them with the clutches J. The screws of the carriages then escape the movement of the axles L F and the drums only are turned to effect the drying.

For the furtherance of this operation and to accelerate the same, the speed of the drums is increased by the friction roller C being moved towards the circumference of the plate or disc.

The drying being finished and the threads removed, in order to wind a fresh length of thread, it is necessary to draw the friction roller to the centre of the plate and to engage the carriages, that is to say, to engage the clutches H with the clutches J by pressing the button S.

The arrangement placed on the columns in front consisting of a spring pressed crown clutch *t* with an external handle *u* is designed to facilitate the raising and placing of the drums without removing any other part.

The circular development or proportions of the drums and the screws K are devised to follow the requirements of unrolling of the bobbins of thread.

The rotary movement of the drums only ceases after the threads have been completely dried.

When dry, the threads are cut mechanically by preference to avoid handling into a certain number of pieces of equal length which are put on a card, and these are the pieces which serve for inoculation by their introduction under the skins of animals.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is:—

1st. The method of vaccinating animals against contagious diseases consisting of the insertion beneath the skin of a thread or wick of any textile material impregnated with virus, substantially as described.

2nd. The method of treatment of the threads with virus by the passage of the impregnated thread through a discharging device having an orifice of a definite size for giving the proper dose of virus, substantially as described.

3rd. The arrangement and construction of an apparatus for mechanically impregnating a thread with virus, substantially as described and illustrated in the accompanying drawings.

Dated this 24th day of September 1900

FELL & JAMES,
Agents for the Applicant.



AMERICAN MEDICAL ASSOCIATION

PUBLISHED WEEKLY

CHICAGO, ILL., U.S.A.

VOLUME 10, NUMBER 1, JANUARY 1917

Subscription price, \$5.00 per annum in advance

Single copies, 15 cents

Entered as second-class matter, July 16, 1891

Postpaid

Acceptance for mailing at special rate of postage provided for in Act of October 3, 1917

Authorizes sale at special rate of postage provided for in Act of October 3, 1917

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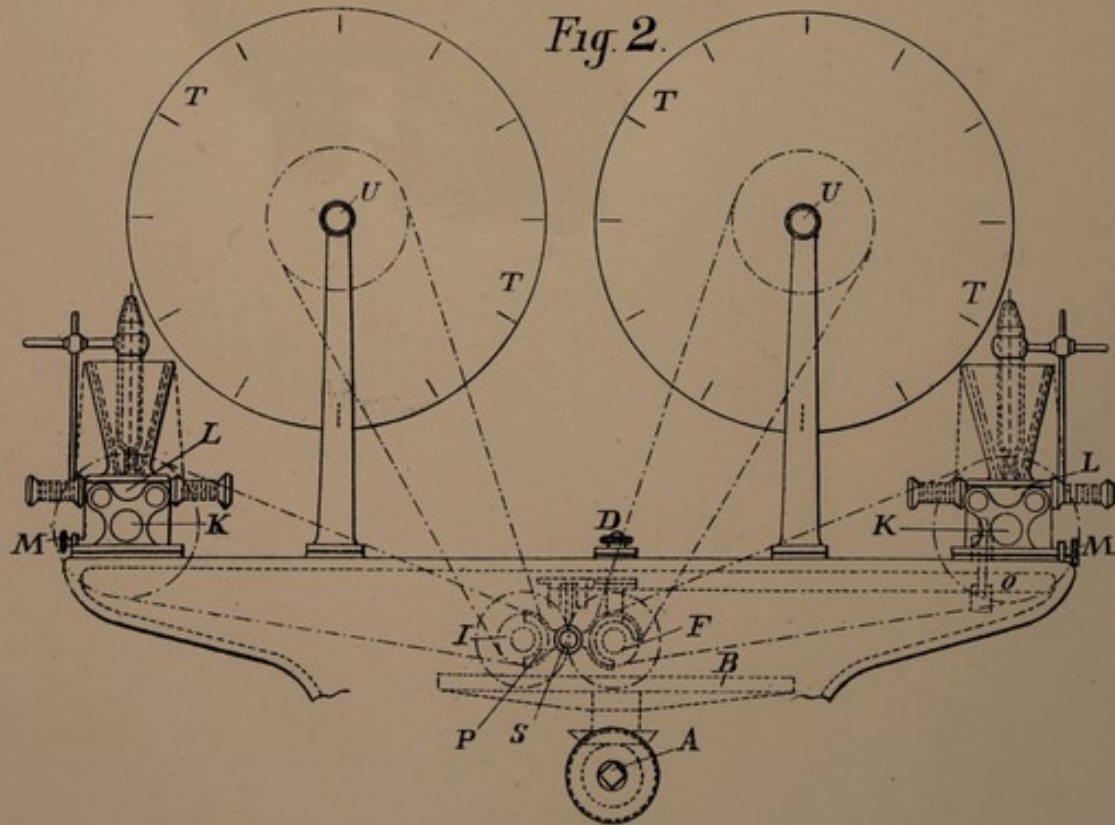
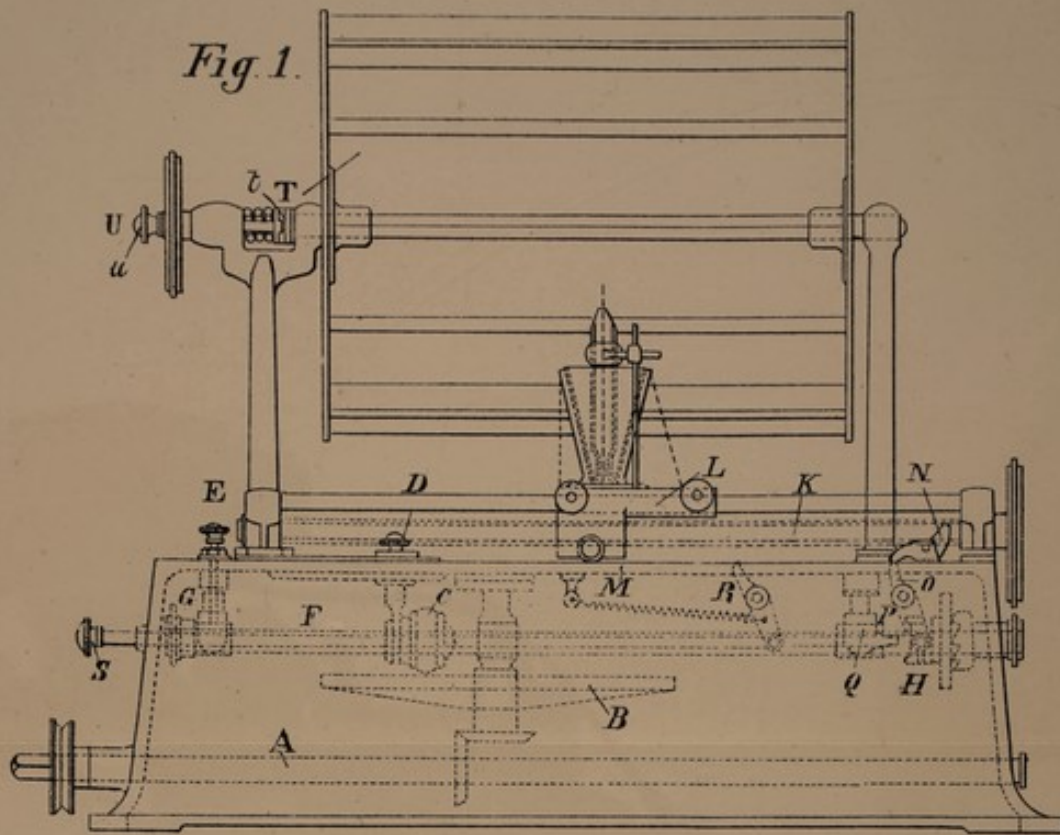
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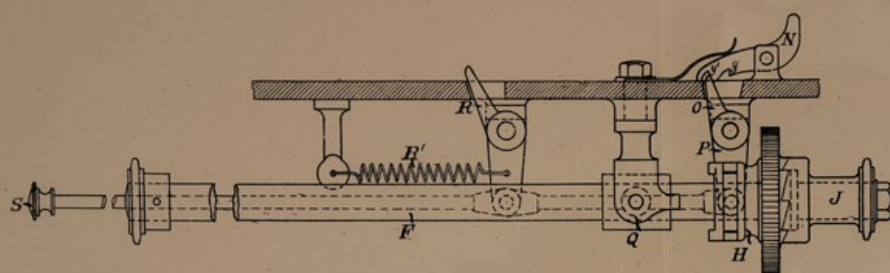


Fig. 3.

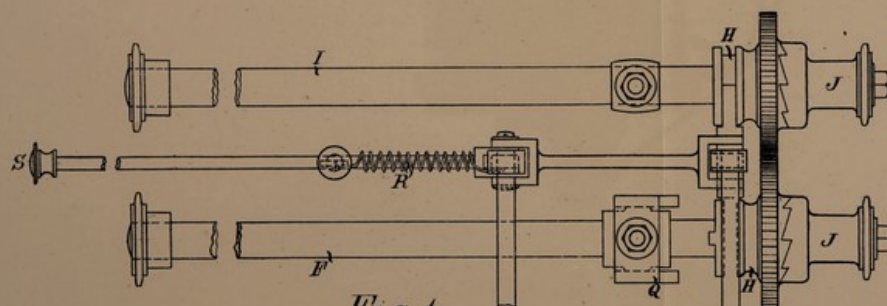


Fig. 4.

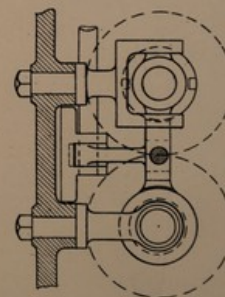
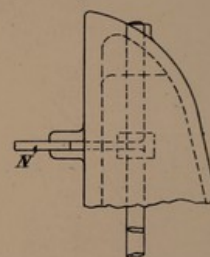


Fig. 5.

[This Drawing is a reproduction of the Original on a reduced scale]

