

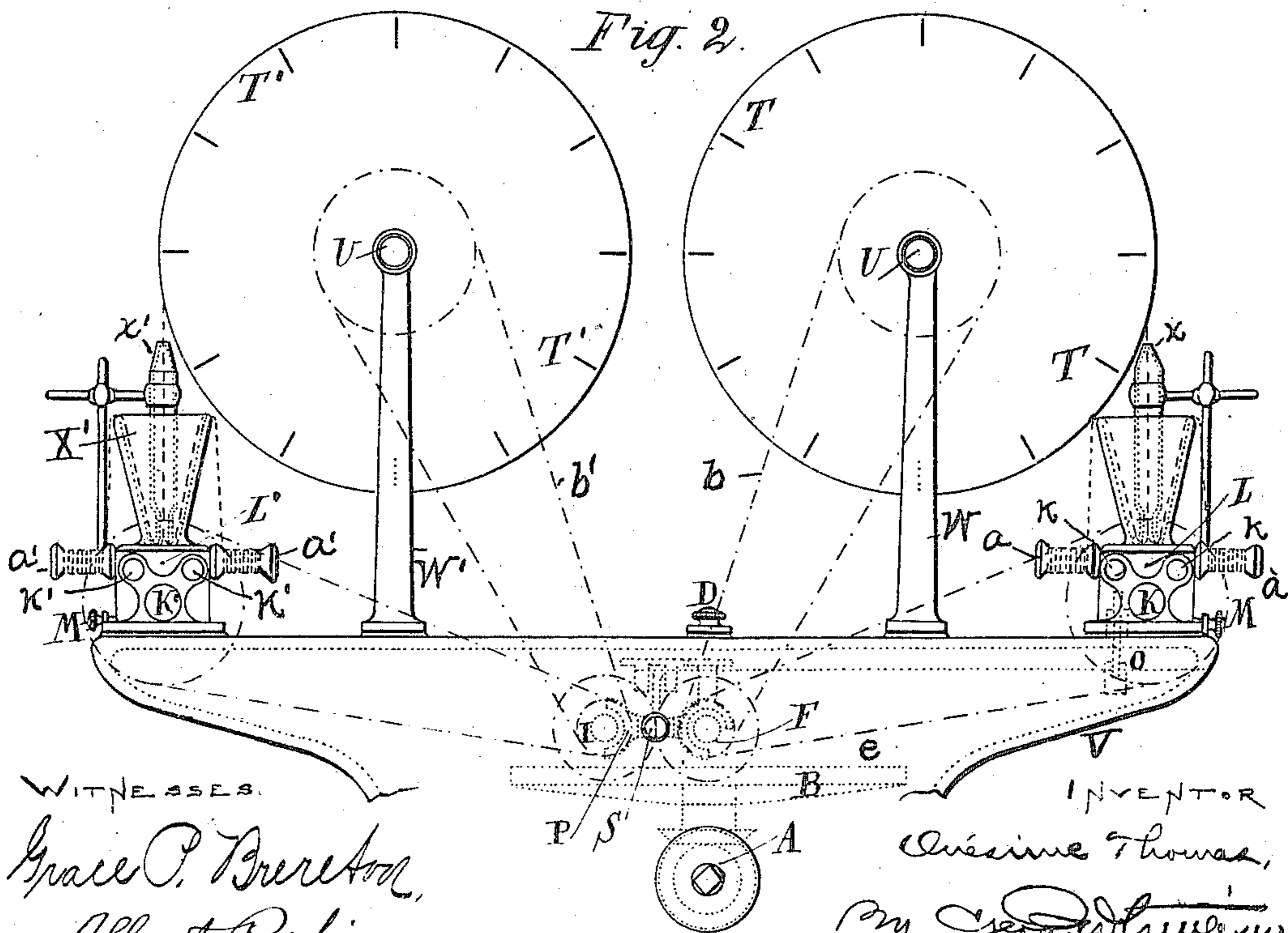
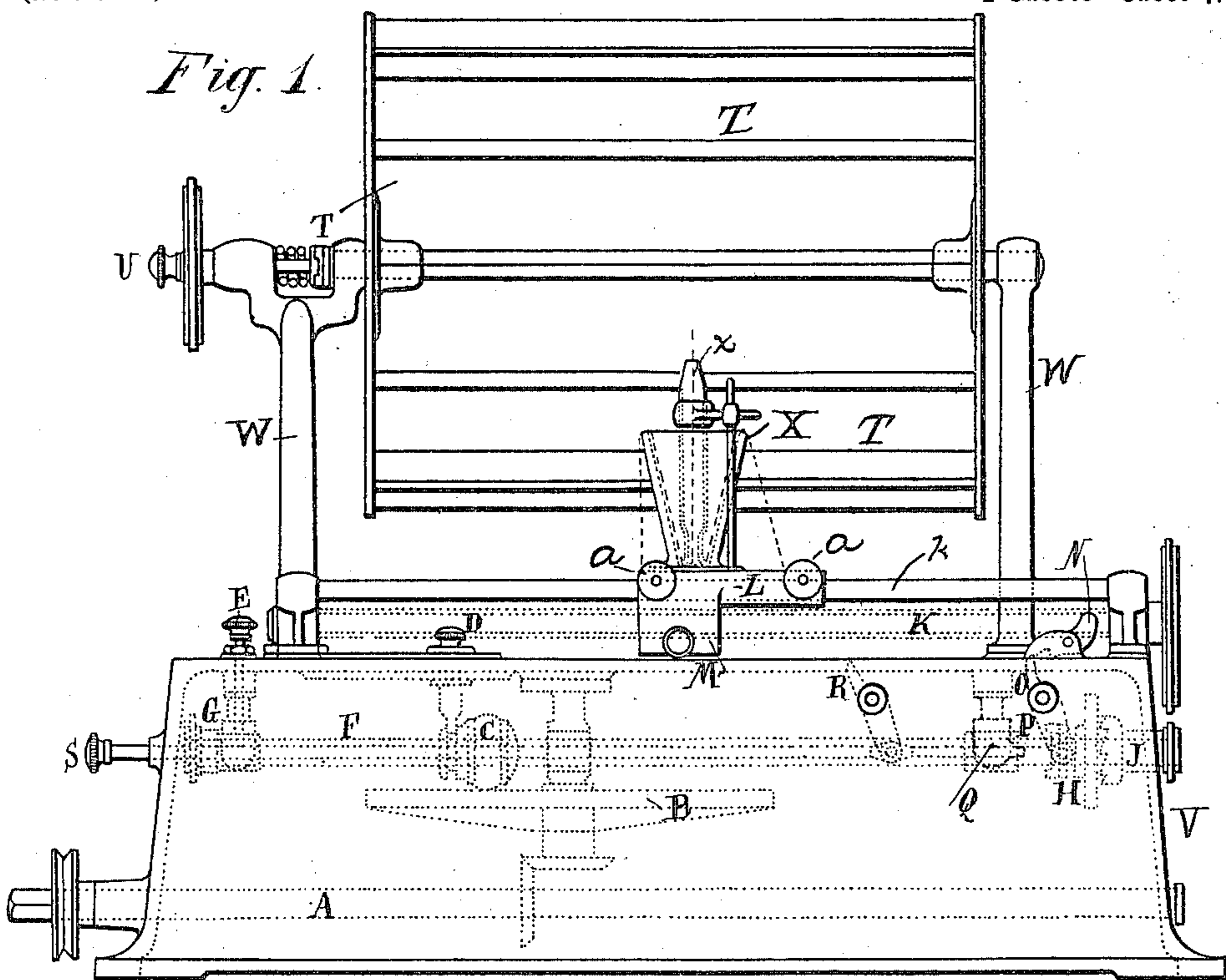
O. THOMAS.

MACHINE FOR IMPREGNATING THREAD WITH VIRUS.

(Application filed Mar. 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

Grace P. Brewster,
Albert Popkins

INVENTOR

Christine Thomas,
 my good friend
any

No. 680,898.

Patented Aug. 20, 1901.

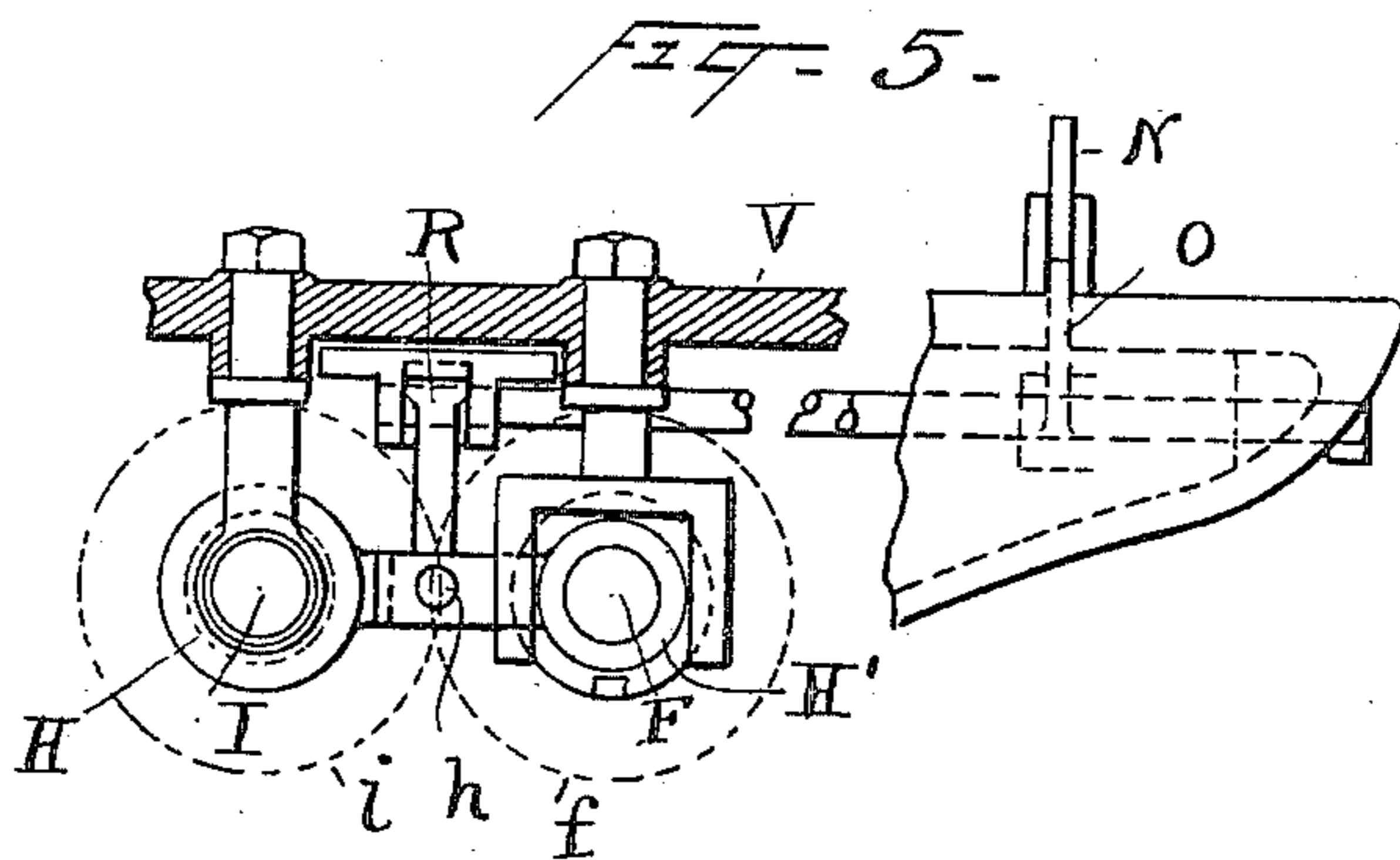
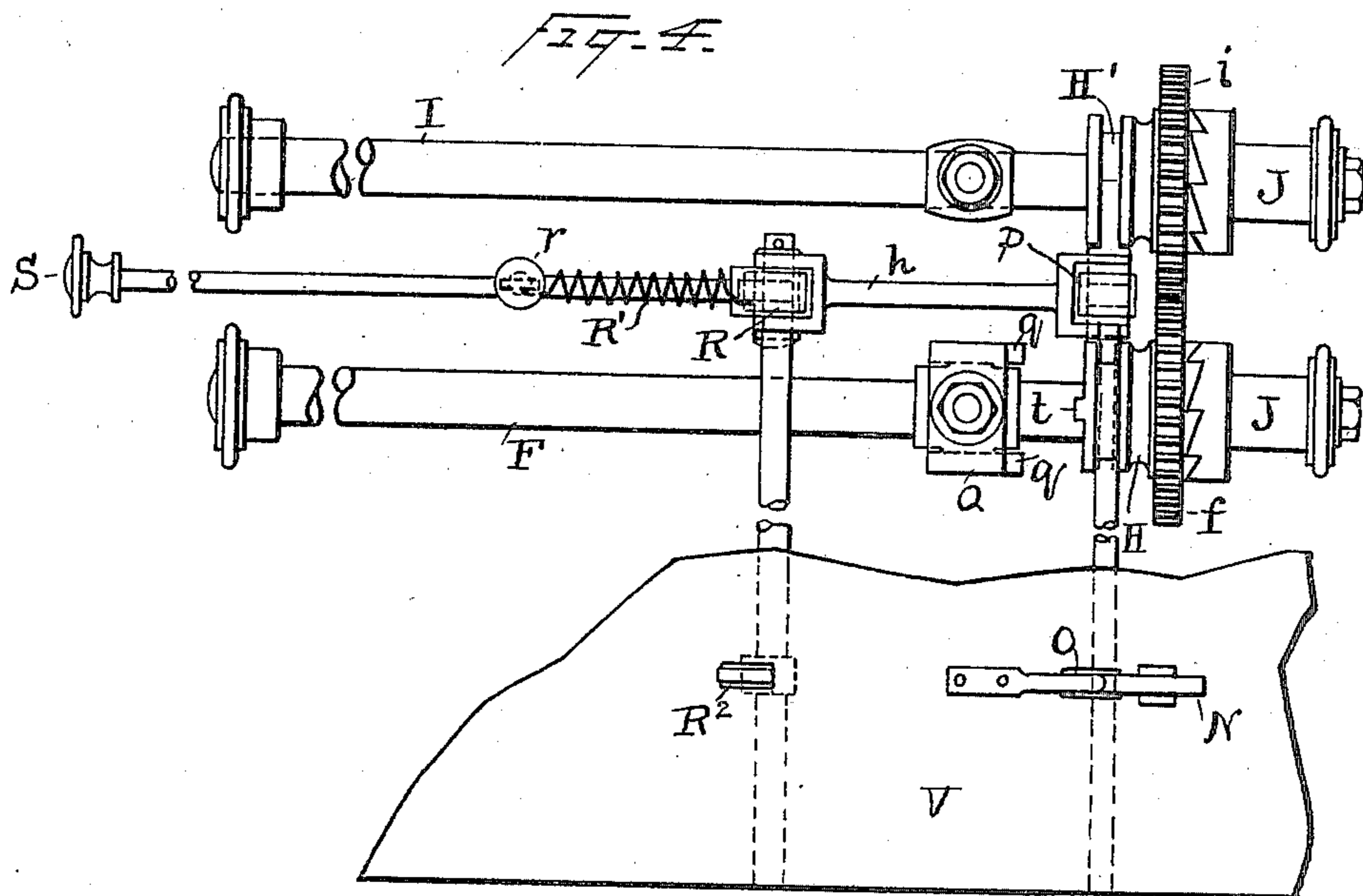
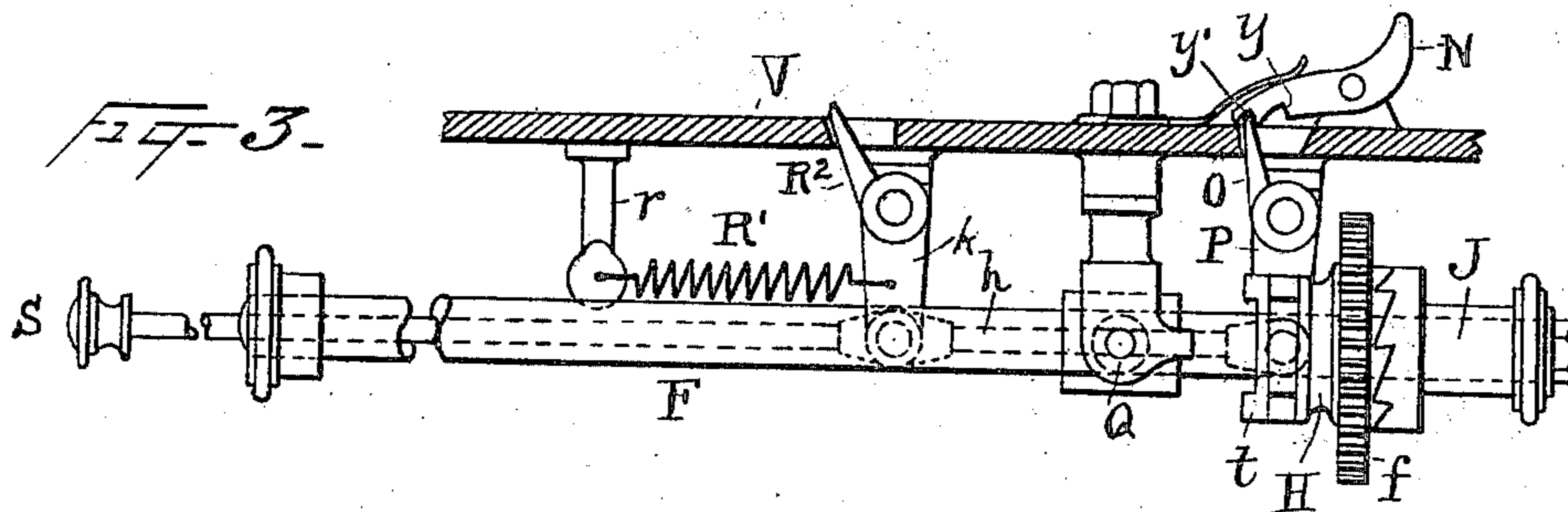
O. THOMAS.

MACHINE FOR IMPREGNATING THREAD: WITH VIRUS.

(Application filed Mar. 27, 1900.)

(No Model.)

2 Sheets—Sheet 2.



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ONÉSIME THOMAS, OF VERDUN, FRANCE, ASSIGNOR TO THE PASTEUR
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MACHINE FOR IMPREGNATING THREAD WITH VIRUS.

SPECIFICATION forming part of Letters Patent No. 680,898, dated August 20, 1901.

Application filed March 27, 1900. Serial No. 10,394. (No model.)

To all whom it may concern:

Be it known that I, ONÉSIME THOMAS, a citizen of the Republic of France, residing at Verdun, in the department of Meuse and Re-
public of France, have invented certain new
and useful Improvements in Machines for
Impregnating Thread with Virus; 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, ref-
erence being had to the accompanying draw-
ings, and to the letters of reference marked
thereon, which form a part of this specifica-
tion.

Vaccination by a virulent thread or one
impregnated with virus consists in inserting
under the skin or in the muscles of an ani-
mal a thread impregnated with a quick or
slow acting virus, either natural or culti-
vated, for the purpose of creating an immu-
nity and preservation from contagious dis-
eases. It is inserted by means of a needle
specially constructed for this purpose. The
needle and thread take the place of the Pra-
var syringe and other instruments of inocu-
lation. In order that immunity can be ac-
quired without risk of death, it is absolutely
necessary to give a dose of accurately-meas-
ured quantity. Too small a dose of virus will
produce little or no effect. Too great a dose
will be followed by general infection and oc-
casion death. Therefore in order to avoid
these extremes a thread impregnated with
virus to an extent of mathematical precision
is used. This method of preparation and
dosing or proportioning comprises several
operations which I will now explain.

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

Impregnation of the thread.—The impreg-
nation is effected by drawing it through a
virulent liquid previously titrated. The bob-
bin filled with thread is placed on an axis
and is unwound by a rotative movement.
On leaving the bobbin the thread is im-
mersed in a conical glass, reaches the bottom,
and reascends after entering a discharge
tube or device, whence it is wound along a
windlass to dry. The virulent liquid con-
tained 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. The discharge tube
or device is a cylindrical 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 mil-
limeters. The conical part is drawn down
to a small orifice of exact and determined
size. It is in traversing this orifice that the
thread discharges itself and gets rid of the
excess of absorbed 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 discharg-
ing device is the most important element of
the apparatus that I have invented.

In the drawings, Figure 1 represents a side
elevation. Fig. 2 is an end elevation. Fig. 3 is
a sectional elevation of a portion of the mech-
anism on an enlarged scale. Fig. 4 is a plan
of the same, and Fig. 5 an end view of the
same. Figs. 1 and 2 show the complete ap-
paratus, and Figs. 3, 4, and 5 details.

An apparatus for simultaneously impreg-
nating two pairs of threads is illustrated; but
it will be understood that the construction
may be modified, so that any other conven-
ient number of threads may be saturated at
the same time.

The apparatus comprises a base V, above
which are mounted the two parallel reels T
T' in suitable bearings on the two pairs of
standards W W'. In the base V, parallel
with the axes of the reels, there are two trav-
ersing screws K K', on which are two carriages
L L'. These carriages are supported and

guided by the parallel rods $k k' k'$, and each is fitted with a nut or device capable of engaging with and of being disengaged from its traversing screw by a movement of the handle M. Upon each carriage, as shown, there are four bobbins $a a'$ of the thread to be impregnated carried on horizontal spindles and the impregnating vessel X or X'. This vessel has an inverted conoidal form, and there is held coaxially with it the central tube x or x' , the lower part of which approaches but does not touch the bottom of the vessel. The upper end of this tube is drawn out, so as to leave a small opening for the exit of the thread or threads, as hereinafter described. The dimensions of this opening have to be very accurately determined and made good, as the precise degree of impregnation depends absolutely thereon.

Assuming the carriages to be at the commencement of their traverse, the threads from the two bobbins on each carriage are led to the bottom of the impregnating vessel up through the central tube, and their free ends are attached to the reel. Virus is then placed in the vessel and the apparatus is put into motion. The longitudinal motion of the carriages simultaneously with the rotary motion of the reels insures that the impregnated threads shall be wound on the latter without fear that the convolutions can touch each other while the threads are being wound and drying. The fact that the thread passes twice through the whole depth of the liquid virus and that all the superfluous liquid is accurately and equally removed by the gaged exit from the tube insures an absolute uniformity of impregnation throughout the threads. When the carriage has reached the end of the reel, the threads may be cut and the carriage be returned to its starting-point. The reels may then be removed and be substituted by other reels, with which the operation is repeated. The fact that the spirals of thread on the reels are not close together and that the reels, like the ordinary winding-reels used in textile manufactures, have not solid barrels, but peripheral staves, permits free circulation of air between the threads, thus promoting the drying operation.

The two reels are respectively rotated from the shafts I and F by the pitch-chains $b b'$, passing around chain-wheels on the shafts and the reel-spindles. The traversing screws $K K'$ are also driven from the shafts I F by the pitch-chains $e e'$ and chain-wheels on the ends of the screws and the shafts, respectively.

Referring to Figs. 3 to 5, inclusive, it will be seen that the shafts I and F are geared together by the spur-wheels $i f'$, so that motion imparted to one is partaken by the other. These two wheels are integral with the two clutches H H', which are engaged by projections from the rod h , having the handle S, by means of which it can be moved back or forth in the direction of its axis, but the rod can be

moved otherwise, as will now be described. On the rod h are pivoted the lower ends of the vertical levers R P, which have fingers R^2 O, extending through the base V. These two levers being connected by the rod h move together. One of the levers R has attached to it a spring R', the other end of which is connected to a fixed part r . The tendency of this spring is to pull the clutches H H' out of gear. The tip of the finger O is held while the apparatus is in action by the trigger N, which has the two teeth $y y'$. As soon as the carriage L reaches the end of the reel it comes into contact with and releases the trigger N, whereupon the spring B' pulls the clutches H H' out of gear and the apparatus comes to rest. The second tooth y' in the trigger N is to hold the clutches in an intermediate position, so that the reels may then be freely rotated by hand. When the trigger is released, the spring draws back the clutch H into contact with the stop Q, which has two projections $q q'$. The clutch H having a corresponding projection or projections t , which come between the projections q , it follows that the clutch is then practically locked. It is then that the finger O is moved into the second tooth y of the trigger N, if it be desired to rotate the reels. After the reels have been wound and during the return motion of the carriage L it encounters the finger R^2 , the clutches being then out of gear, and moves the finger, and consequently also the rod h and clutches, into the mid-position, where they are held by the tooth y , so that the reels may be rotatable.

The apparatus is put into action through the shaft A, which can be turned by a motor or by hand. On this shaft there is a miter-wheel, Figs. 1 and 2, which gears with another miter-wheel on the shaft of the friction-disk B. This disk is parallel with the shaft F, on which there is the sliding contact-roller C, the position of which on the disk can be altered by moving the guide D by hand. If the frictional contact-roller C be moved nearer to the periphery of the disk, the rotation of the shaft F will be at an increased rate and the contrary.

The reels are mounted upon spindles which can be slid in, and thus be removed from their bearings. They are normally held in place by a rod having the handle or head U and a spring coiled around the rod and pressing it against the end of the reel-spindle. If the rod be pulled outward, the spindle can be released, and with it the reel.

The chain-wheels which drive the reels and the traversing screws are fitted upon the parts J J of the shafts F and I.

It is sometimes necessary to adjust the pressure between the friction contact-roller C and the disk B. For this purpose the shaft F, which carries the roller and is fulcrumed in its bearings Q, may be raised and lowered, so as to produce the desired effect, by means of an adjusting-screw E, attached by its lower

end to a sleeve near the end of the shaft farther from Q. Consequently this sleeve acts as a second bearing for the shaft F.

I claim—

- 5 1. The combination with a vessel, of a drum adjacent thereto, means for moving the vessel parallel with the drum, and means for removing surplus liquid from a thread drawn through the vessel and wound upon the drum.
- 10 2. The combination with a drum, of a carriage movable parallel therewith, a vessel on said carriage, a screw for imparting movement to the carriage, a constantly-driven shaft, and gearing connecting said shaft with
- 15 the screw and also with the drum.
3. The combination with a drum, of a carriage movable parallel therewith, a vessel on said carriage, a screw for imparting movement to the carriage, a constantly-driven
- 20 shaft, gearing connecting said shaft with the screw and also with the drum, and means for automatically disconnecting the screw and stopping the shaft when the carriage reaches the end of its travel.
- 25 4. The combination with a drum, of a carriage movable parallel therewith, a vessel on said carriage, a screw for imparting movement to the carriage, a constantly-driven shaft, an intermediate shaft geared to the
- 30 screw and also to the drum, means for auto-

matically disconnecting the screw and stopping the intermediate shaft when the carriage reaches the end of its travel, and means for permitting the intermediate shaft to rotate the drum without actuating the screw.

5. The combination with a shaft A, of a friction-disk B geared thereto, a shaft F having a friction-wheel C longitudinally movable thereon over said disk, a clutch H splined on said shaft F, a sleeve I loose on the same shaft and adapted to be engaged by the clutch, a bearing Q having lugs to engage with the clutch, a spring for opening the clutch and engaging it with said lugs, a lever P connected with said clutch, a detent N for locking said lever, a screw K geared to the sleeve I, a carriage L engaged by said screw and adapted to trip the detent N, a rock-shaft carrying an arm R lying in the path of the carriage, said rock-shaft being connected by an arm with the lever P, a drum T parallel with said screw and geared to the shaft F, and a vessel mounted on said carriage.

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

ONÉSIME THOMAS.

Witnesses:

HENRY HASPER,

EDWARD P. MACLEAN.