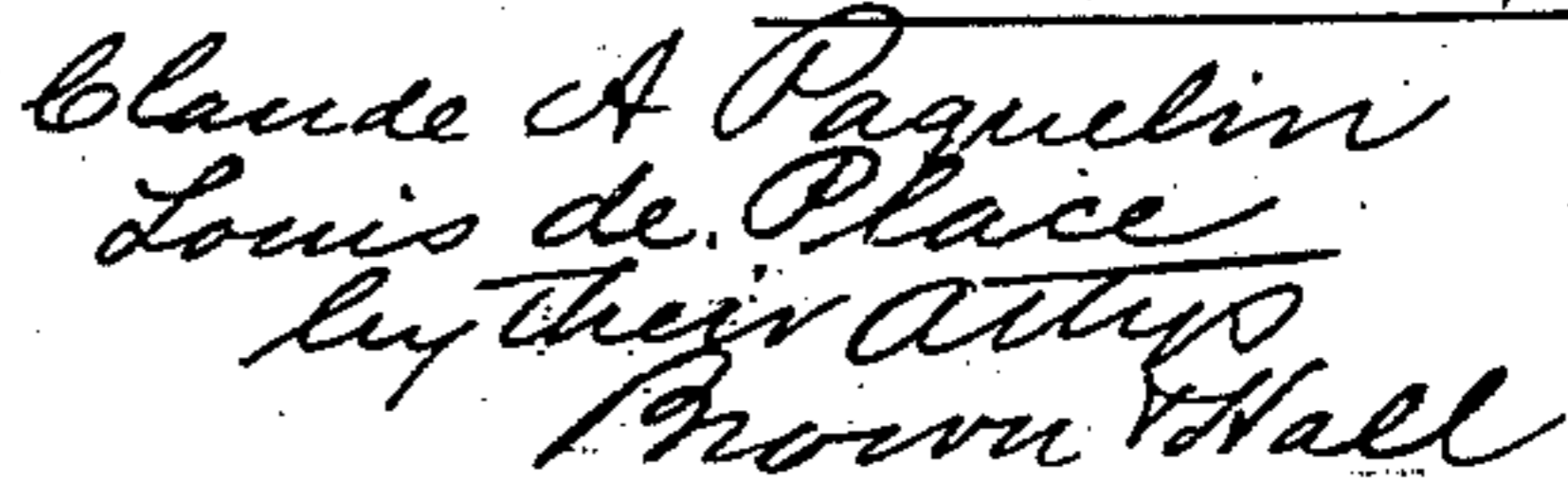


2 Sheets—Sheet 1.

VETERINARY CAUTERIZER.

Patented Dec. 2, 1884.



(No Model.)

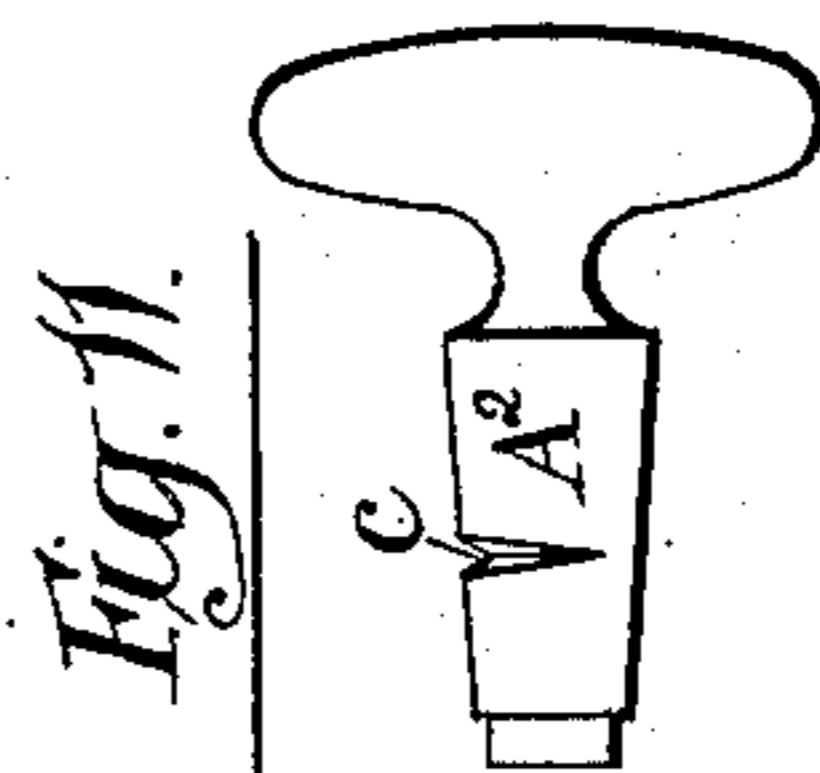
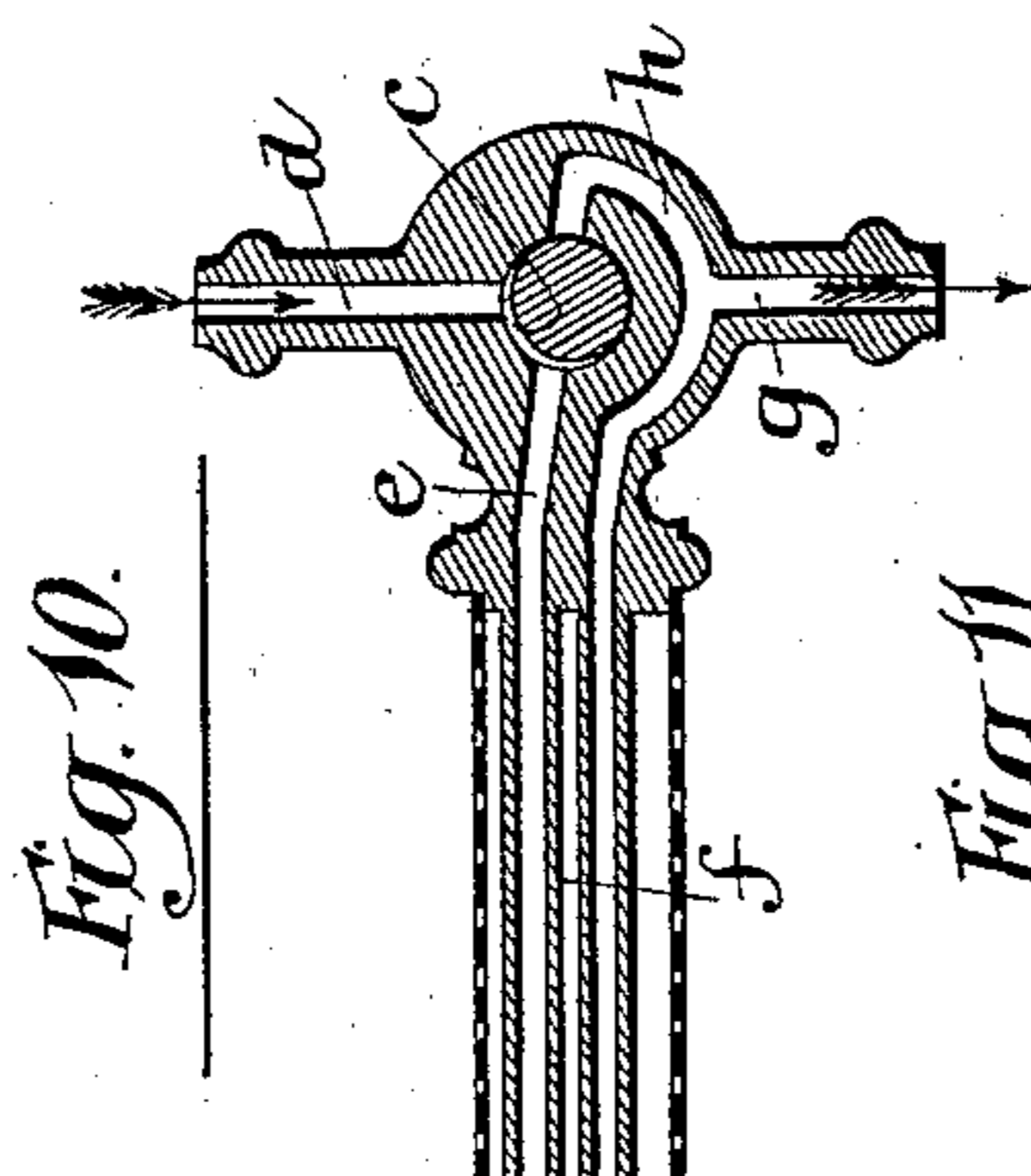
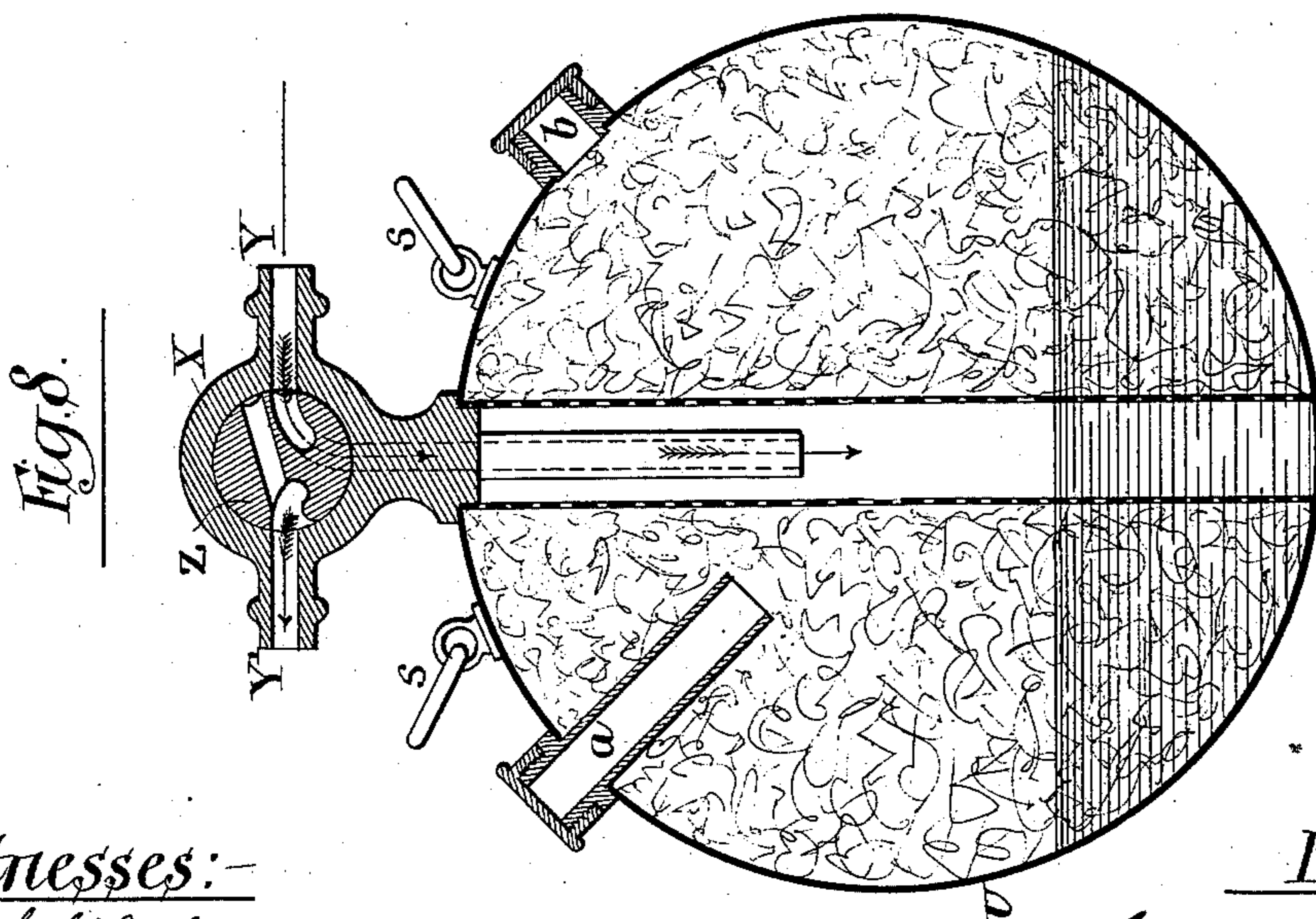
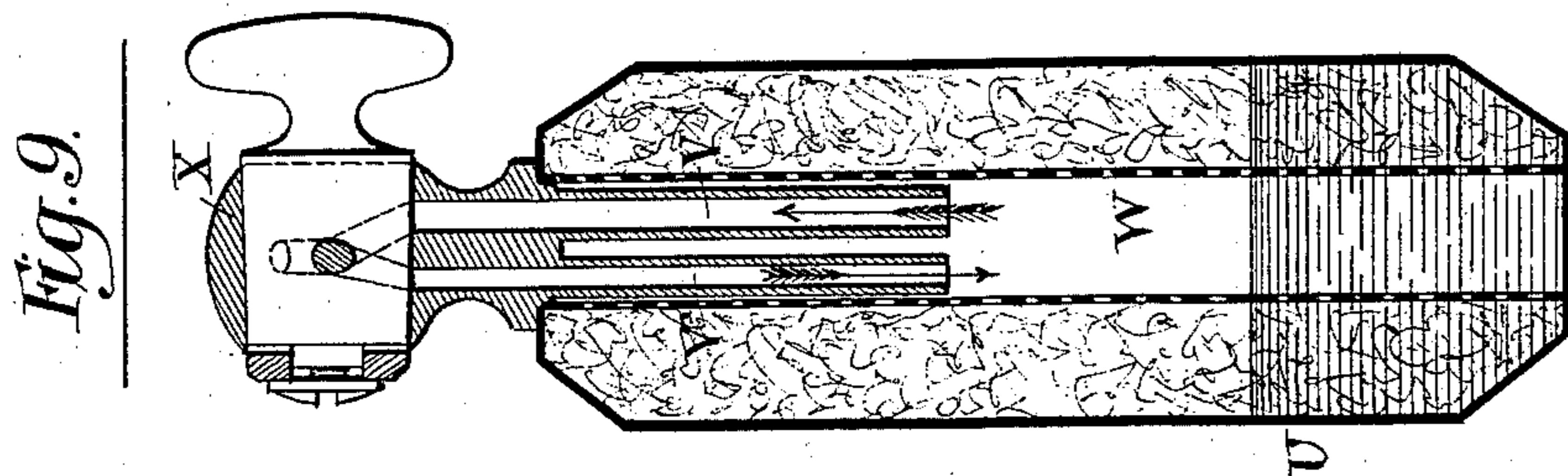
2 Sheets—Sheet 2.

C. A. PAQUELIN & L. DE PLACE.

VETERINARY CAUTERIZER.

No. 308,693.

Patented Dec. 2, 1884.



Witnesses:—

Louis M. Whitehead.

C. E. McDonald

Inventors:—

Claude A. Paquelin  
Louis de Place  
by their Attys  
Brown & Hall

# UNITED STATES PATENT OFFICE.

CLAUDE ANDRÉ PAQUELIN AND LOUIS DE PLACE, OF PARIS, FRANCE.

## VETERINARY CAUTERIZER.

SPECIFICATION forming part of Letters Patent No. 308,693, dated December 2, 1884.

Application filed August 7, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, CLAUDE ANDRÉ PAQUELIN and LOUIS DE PLACE, citizens of the Republic of France, and residents of Paris, in the said Republic, have invented a new and useful Improvement in Cauterizing-Instruments for Veterinary Purposes, of which the following is a specification, reference being had to the accompanying drawings.

The object of our invention is to provide various improvements in veterinary cauterizing-instruments, whereby cauterization can be effected in a more easy, handy, expeditious, and satisfactory manner than by the instruments heretofore in use.

The invention will be hereinafter more fully described, and pointed out in the claims.

Figure 1 is a side view in elevation of a veterinary needle-cautery or firing-iron constructed according to our invention. Fig. 2 is a sectional view of the gas-distributor in the combustion-chamber of the cautery. Fig. 3 is a side view of a modification of the cautery having a conical chamber. Fig. 4 is a side view of another modification of the cautery having a flat chamber. Figs. 5, 6, and 7 illustrate in section and in plan a cautery of large surface, called a "tail-burner." Figs. 8 and 9 illustrate in longitudinal and transverse section the carburetor we use with our cautery. Figs. 10 and 11 illustrate an improved stop-cock for regulating the proportions of the gaseous mixture.

Similar letters of reference denote corresponding parts in all the figures.

The improvement illustrated in Figs. 1 and 2, to which we have given the characteristic name of "needle-cautery," is composed of a metal pipe, A, provided at the part forming its handle with a wooden casing, B. This part is terminated by a nipple, C, adapted to receive a rubber tube to connect it with a carburetor. Upon the opposite end of the pipe A the head of the apparatus is adapted to slide, which for this purpose is furnished with a tube, E, which is held on the pipe by a binding-screw, D.

F designates the combustion-chamber, supported by the tube E. It is in the form of a cone, open at its lower end to allow of the passage of the needle. It is pierced at its upper part, at G, for the passage of air, and sup-

ports at this point a metallic block, H, forming the distributor. This block is pierced at its center with an opening, I, at right angles to the axis of the conical combustion-chamber, for the passage of the gaseous mixture supplied by the pipe E. It is supplied at its circumference with oblique grooves J, corresponding to the orifices G, referred to above, which are arranged to cause the air entering by these orifices to come into contact with the gaseous jet entering the combustion-chamber by the opening I. The block H is also perforated with a central hole, which allows the passage of the needle K. This needle, which forms the burning part, is formed at one end with a single or double button, L, adapted to be operated by means of the articulated lever M. This lever M is attached, as illustrated in the drawings, by a curved part or claw, N, pivoted upon a transverse axis fixed to the handle of the apparatus at r, in such a manner as to form a hinge-joint. A spring, O, serves to maintain the lever M in the position indicated in the drawings.

At the front end of the lever M is a double or single fork, P, in which is engaged, in the manner illustrated in the drawings, the double or single button of the needle K, above referred to. It will be seen that by this arrangement the apparatus can be rapidly disconnected into four principal parts—the handle, the head or heating-chamber, the needle, and the lever—which greatly facilitates the manufacture and the keeping in repair of these different parts. When it is not necessary to employ a needle with the apparatus, the lever M, as well as the needle K, is dispensed with, and the cautery takes, according to circumstances, various forms adapted to the nature of the operation to be effected, as is illustrated by Figs. 3 and 4. It is always constructed with a combustion-chamber, which in this case is formed at its lower end, and which, as in the preceding arrangement, is provided with orifices G for the admission of air, and with a distributor similar to that above described.

Figs. 5, 6, and 7 illustrate the peculiar construction and arrangement which is given to the head of the cautery when from the nature of the surgical operation it is necessary to employ an apparatus presenting a large cauter-

izing-surface. In this case the tube E, carrying the combustion-chamber, is applied in the same manner as above described to the handle of the apparatus and opens into an annular space or crown, R, into which is conducted the gaseous mixture, which passes away by the small orifices S, formed for this purpose in the lower face of this crown. The crown R is held by friction, or by any other convenient means, to the upper part of the casing T, forming the annular combustion-chamber, which is fixed to the tube E, above described. This chamber is provided, as aforesaid, at the upper part of its circumference, with orifices G for the entrance of air, in relation to which the crown is hollowed out or narrowed in such a manner as to form the passage J, which directs the air upon the gas-outlet orifices S, formed in the base of the crown R.

It will be understood, among other things, that we reserve to ourselves the right to vary, according to the different conditions to be complied with, the forms and special arrangements of the cautery.

The carburetor illustrated by Figs. 8 and 9 of the drawings is constructed as follows: first, a kind of box, U, of a circular flat form, for greater convenience, filled with pieces of sponge or other porous substances and provided with lateral handles s, which allow of the suspension of the apparatus in front of the operator by means of a strap, so that it can be manipulated during the operation; second, of a stop-cock, X, adapted to regulate the composition of the gaseous mixture. This stop-cock supports two tubes, V and V', dipping very nearly to the center of the carburetor, and arranged in the interior of a perforated metal tube, adapted to keep the porous material from coming into contact with these tubes. The seat of this stop-cock carries on the other sides two channels, Y and Y', opposite to each other, and arranged, one for the entrance of the external air, proceeding from any kind of a blower, the other for discharge of the gaseous compound, which is conducted to the combustion-chamber of the cautery by means of a rubber pipe. Finally, the plug Z is pierced with an orifice in such a manner that we can at will conduct all the air from the blower into the carburetor, or only a part of such air, the surplus being conducted directly to the tube Y' by means of a transverse perforation arranged for this purpose in the plug Z. This carburetor is provided with an inlet-pipe, a, and an outlet, b, which may be closed with screw-caps or in any other convenient way.

We have further illustrated in Figs. 10 and 11 of the annexed drawings a modification of cock which we employ when it is necessary to vary the composition of the gaseous compound. In this new arrangement the plug A<sup>2</sup> is furnished with a circular groove, c, extending over more than half the circumference thereof, and of an increasing section from its extremities to its middle. The head of the

stop-cock is pierced with divers passages. The one d serves as an air-inlet, corresponding with the channel c of the plug, which puts it in communication with the passage E to conduct the air into the carburetor. Another passage, f, brings back the combustible gas into the head of the stop-cock, and from thence into the passage g, which is connected with the combustion-chamber of the cautery. A curved passage, h, communicating with the outlet-pipe g, opens at the upper part of the stop-cock, as shown in the drawings, in such a manner that by slightly turning the plug of the stop-cock we can bring the groove c into such a position that part of the air from the blower shall enter into the carburetor, the other part being conducted directly to the cautery. Thus the peculiar form of the groove c allows the variations at will of the proportions of the gaseous mixture.

What we claim, and desire to secure by Letters Patent, is—

1. In a cauterizing-instrument, the combination, with a combustion-chamber heated by gas or vapor, and a hollow handle for holding the said chamber, of a lever pivoted to said handle, a spring operating on said lever, and a needle passing through said chamber and operated by said lever, substantially as herein described.

2. The combination, in a cauterizing-instrument, of a head or combustion-chamber, a hollow handle capable of transmitting gas or vapor to said chamber, a lever pivoted to said handle, and a needle passing through said chamber and operated upon by said lever, substantially as herein described.

3. In a cauterizing-instrument, the combination, with a combustion-chamber and a handle capable of transmitting gas or vapor to said chamber, of a metallic distributor placed within said chamber and constructed with passages for admitting simultaneously to said chamber gas or vapor from said handle and air from without, substantially as herein described.

4. In a cauterizing-instrument, the combination, with a tubular handle having at one end a nipple for the attachment of a gas-pipe, of a number of heads of different sizes, each adapted to be detachably secured to the opposite end of said hollow handle to serve as a combustion-chamber, and metallic distributors in the several heads, each distributor being constructed with passages to admit to its head, when attached to the handle, both gas from said handle and air from without, substantially as herein described.

5. The combination, with the combustion-chamber of a cauterizing-instrument capable of burning gas and vapor, and the hollow handle thereof, of a carburetor having communication to and through said handle with said combustion-chamber, and constructed with a receiving-chamber capable of being packed with porous material, and having attaching ears or handles, suitable stop-cock,

inlet-pipe, and discharge-pipe, substantially as herein described.

6. The combination, with the combustion-chamber of a cauterizing-instrument and a carburetor having communication with said combustion-chamber, of a stop-cock, the key or plug whereof is cut with a transverse groove of varying depth, and so arranged that it is capable of being made to connect with a current of air, the external air, and the interior of said carburetor, and to vary the proportion of air and vapor or gas in the combustible

compound to pass from said carburetor to said combustion-chamber, substantially as and for the purpose herein described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

CLAUDE ANDRE PAQUELIN.  
LOUIS DE PLACE.

Witnesses:

EUG. DUBOIS,  
C. CRÉMER.