

No. 881,863.

PATENTED MAR. 10, 1908.

H. LENTZ & W. VOIT.
DISTRIBUTING VALVE.

APPLICATION FILED DEC. 19, 1906.

Fig.1

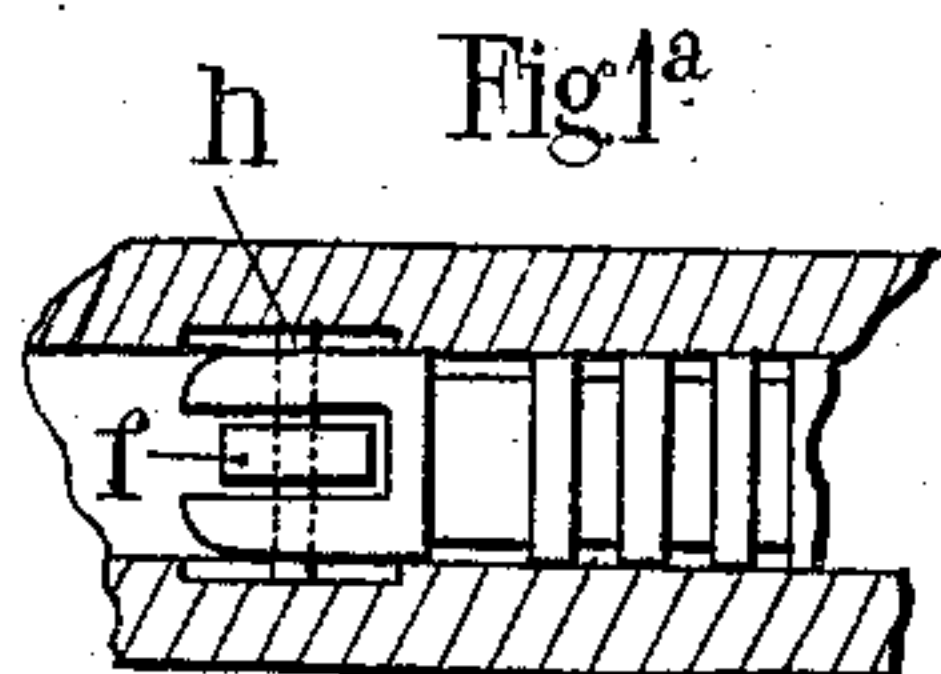
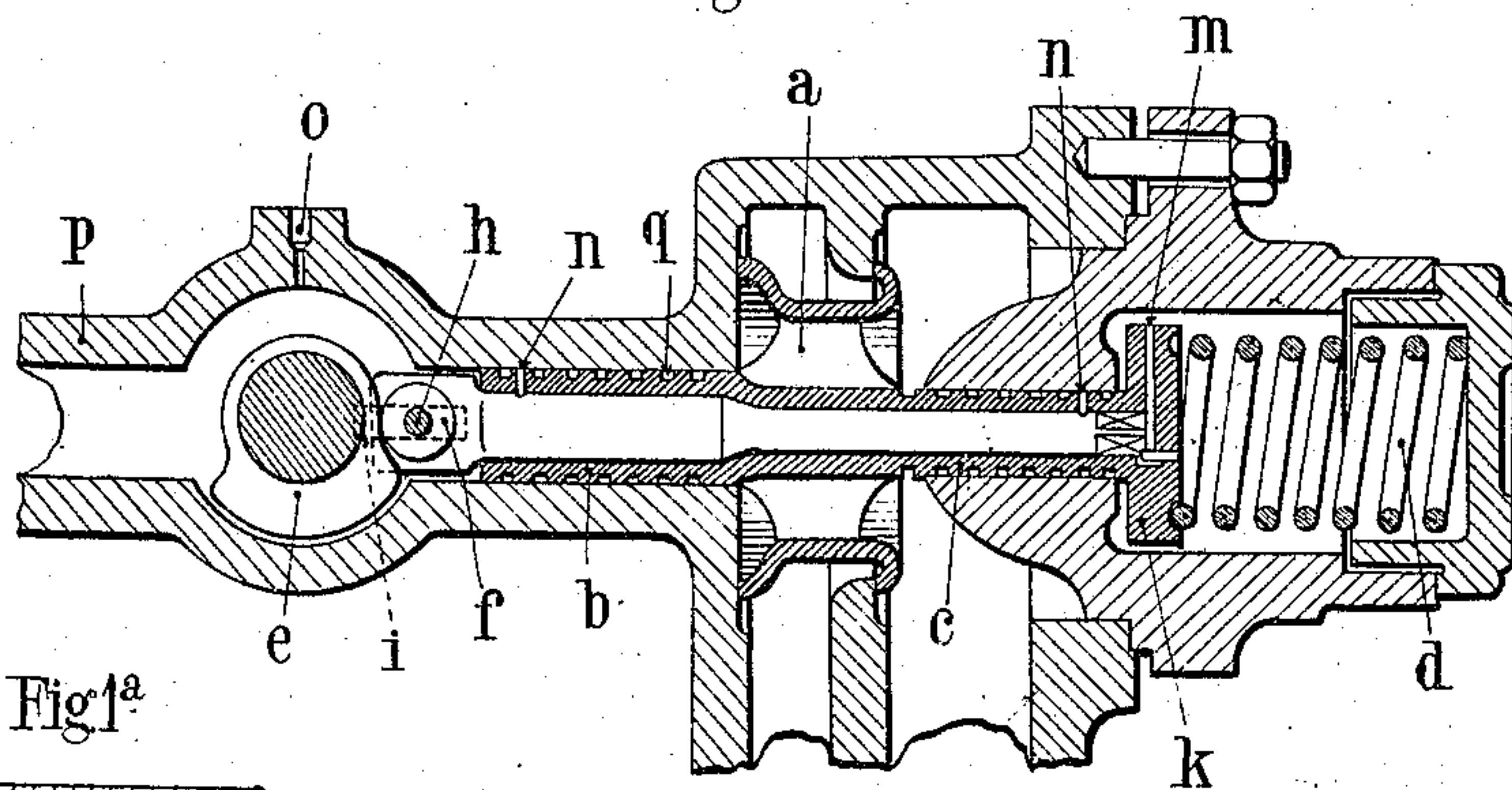


Fig.2

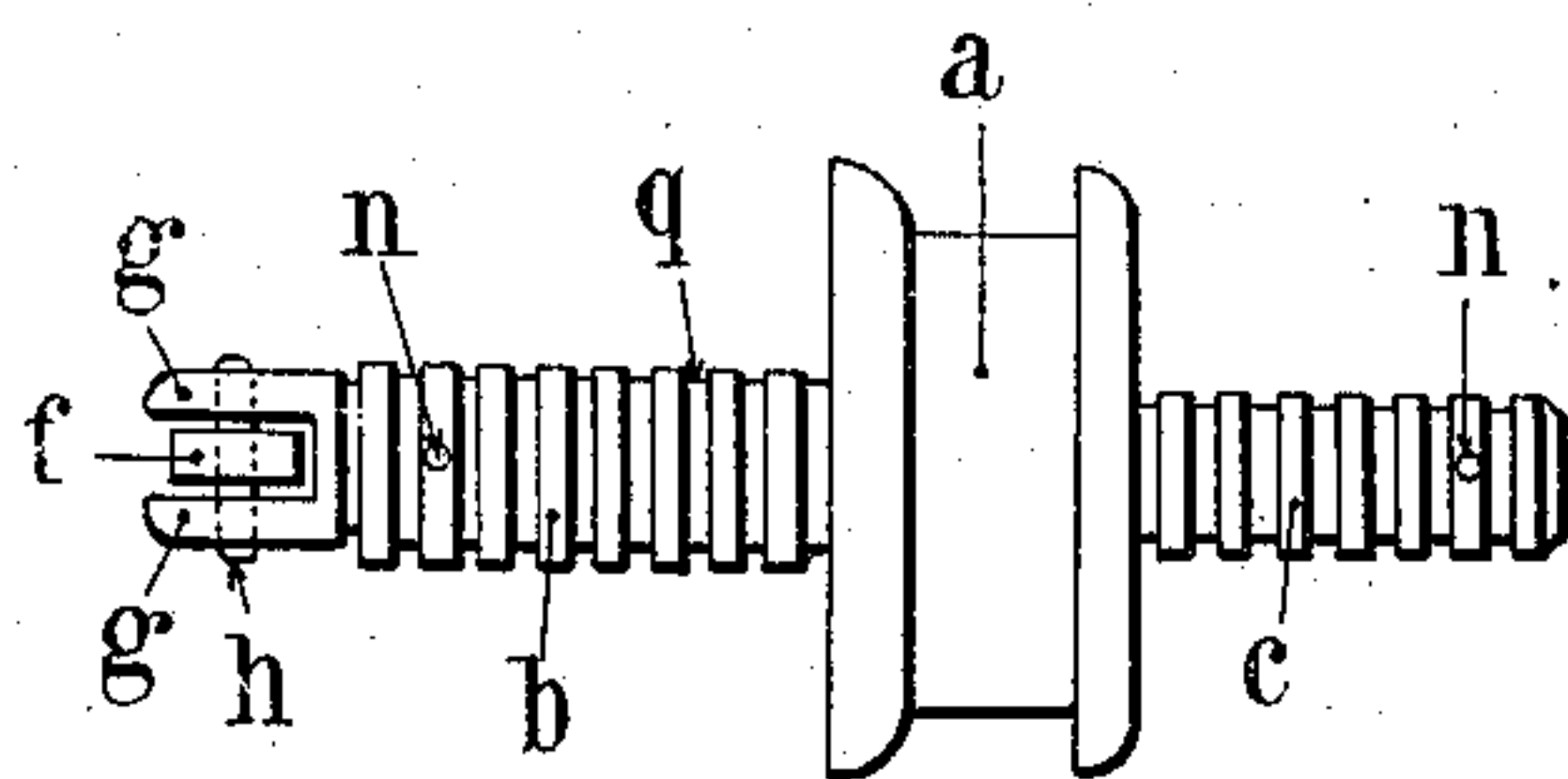
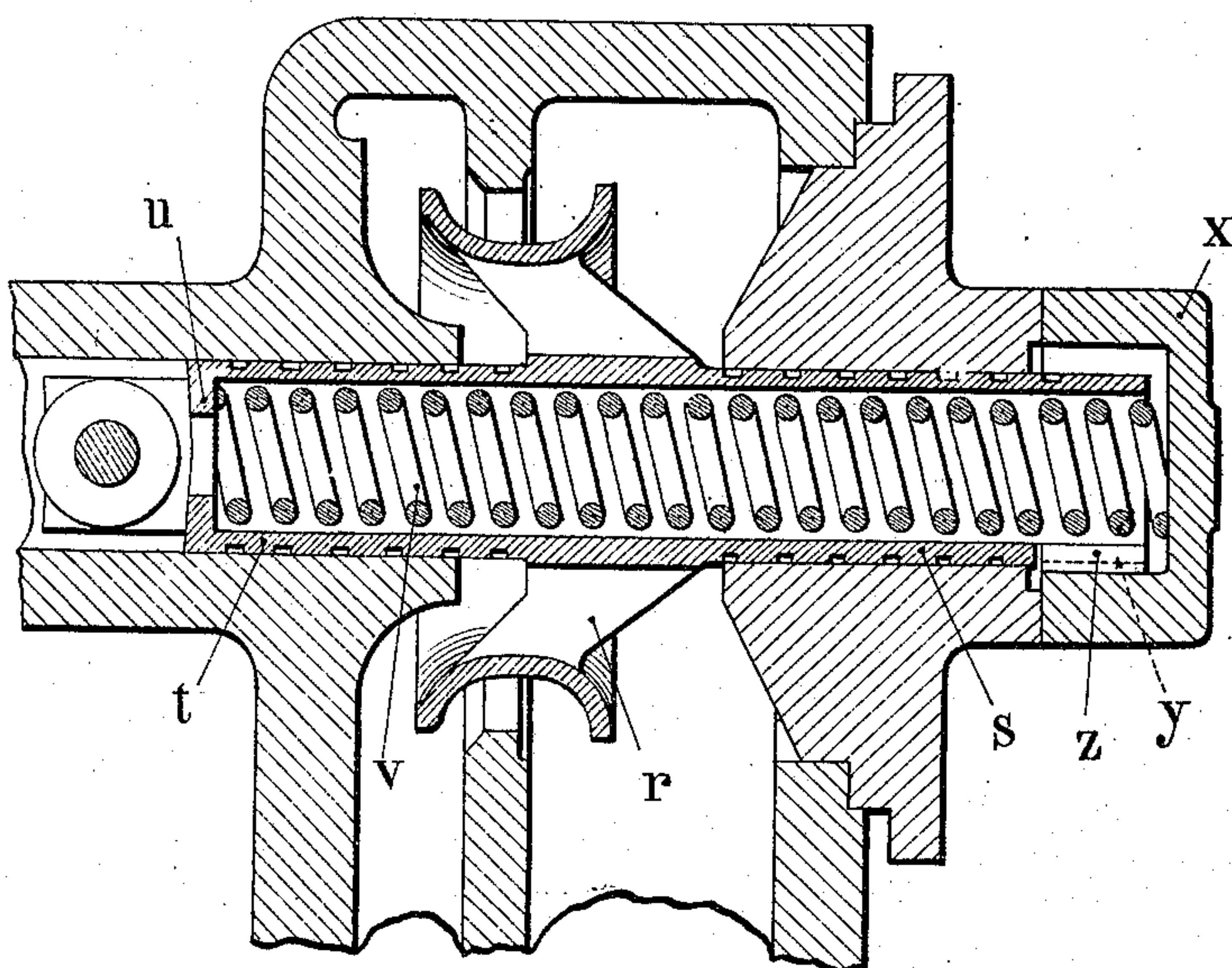


Fig.3



WITNESSES.

W. M. Avery

J. P. Davis

INVENTORS
Hugo Lentz
Wilhelm Voit

BY

Mum Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

HUGO LENTZ, OF HALENSEE, NEAR BERLIN, AND WILHELM VOIT, OF BERLIN-STEGLITZ, GERMANY.

DISTRIBUTING-VALVE.

No. 881,863.

Specification of Letters Patent. Patented March 10, 1908.

Application filed December 19, 1906. Serial No. 348,521.

To all whom it may concern:

Be it known that we, HUGO LENTZ, a subject of the German Emperor, residing at 123 Kurfurstendam, Halensee, near Berlin, in the German Empire, engineer, and WILHELM VOIT, a subject of the German Emperor, residing at 10 Grunewaldstrasse, Berlin-Steglitz, in the German Empire, engineer, have invented certain new and useful Improvements in and Relating to Distributing-Valves, of which the following is a specification.

This invention has for its object a form of double seat distributing valve for steam or other motors.

The invention is characterized by the fact that the double seat tubular valve of known form is combined with a hollow rod forming one with it and prolonged on both sides of the valve for the special purposes of improving the control, of facilitating the evacuation of the oil, of the products of condensation and other substances contained both in the box of the spring loading the valve and in the distributing chest and at the same time effecting the lubrication of the distributing mechanism.

The invention also provides a practical solution of the application of distributing gears with horizontally arranged valves.

In the accompanying drawing. Figure 1 is a longitudinal section through the device as a whole on the axis of the valve rod. Fig. 1^a—is a plan view of a detail of Fig. 1. Fig. 2 is an external elevation of the valve with its hollow rod. Fig. 3 illustrates a modified construction of the valve.

The double seat valve *a* is made in one piece with its valve rod *b c* which is hollow throughout its length. It is loaded by the spring *d* and actuated by the distributing cam *e* acting upon the roller *f* mounted at the extremity of the rod.

In order to prevent the rotation of the valve and so that it may invariably be controlled under favorable conditions, the roller *f* lodged in the fork-shaped extremity of the hollow rod is arranged sufficiently far back to insure that the cheeks *g* of the fork will constantly embrace the distributing cam *e*. The rotation of the rod may likewise be prevented by prolonging the journal *h* of the roller *f* on one or both sides, and causing it to enter a groove *i*, shown in Fig. 1^a, which

is formed in the guide member for the valve rod.

The spring *d* acts upon the valve rod by the intermediary of a plate *k* fixed to the extremity of the part *c* of the rod and provided with a passage *m* establishing communication between the chamber of the spring and the interior of the hollow rod.

Apertures *n* formed in the hollow rod *b c* permit of the lubrication of the contact surfaces. A drain orifice *o* is formed in the part *p* of the distributing chest.

Grooves *q* are formed in the two parts of the valve rod to provide for lubrication and the formation of a good joint.

In view of the fact that valves of this kind are closed by means of springs it is advisable in order that the distribution may be effected as uniformly as possible that the strength of the spring should vary as little as possible during the operation of the valve. This result would be attained by the employment of a spring of as great a length as possible, but the employment of a long spring frequently presents difficulties especially when it is not lodged in a part forming one with the usual parts of the machine.

The hollow rod which forms the object of the present invention therefore presents the advantage that it may be utilized as the complete or partial housing of a spring relatively long, as represented in Fig. 3. The two parts *s t* of the hollow rod situated on each side of the valve *r* are preferably of the same diameter. This rod is provided at one of its extremities with a flange *u* upon which one extremity of a long spring *v* bears, its other extremity bearing against the cover *x*.

In order to prevent the rotation of the valve the part *s* of the rod is provided at its upper part with a groove *y* into which a tenon *z* forming one with the cap or cover *x* enters.

The advantages are as follows:—The long bearing surfaces of the valve rod provide a good steam tight joint without the assistance of a stuffing box, they also provide efficient guidance for the valve and this without much friction, so that the valve cannot remain open accidentally.

Owing to the employment of the hollow rod, although it is horizontal, the products of condensation and likewise the oil are constantly evacuated both from the distribut-

ing chest and from the spring box. These liquids flow together from these two boxes into a single chamber from which they may be discharged lubricating the contacting surfaces on their way.

As regards the constructional form illustrated in Fig. 3 it will be seen that a spring of great length and consequently very weak may be employed very readily without any necessity for providing an external housing for this spring. In addition to this, the walls of the hollow rod at the same time protect the spring from contact with the superheated steam. The invention therefore provides a practical solution of the application of horizontally arranged valve distributing gears, because the relatively large diameter of the rod, which does not increase the weight, creates an extensive bearing surface with very moderate specific superficial pressure. The valve itself also becomes small. As a result of the small weight the inertia effects which are produced during the movement of the valve likewise assume a minimum value, so that the spring d may be of moderate strength and the effort necessary for controlling the valve becomes very small.

By making the portions of valve rods situated on different sides of the valve of different diameters, a means is provided for balancing or loading the valve at will within desired limits by means of the pressure of the steam.

The invention is applicable whatever the method of actuating the valve rod may be, and also to vertical or inclined rods.

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

1. The combination with a distributing chest and a multiple seat tubular valve, of a hollow rod integral with the valve and having a fork-shaped end, said rod being

guided by the distributing chest of the valve, a roller lodged in the fork-shaped extremity of the rod, and a journal for said roller having extensions entering grooves formed in the guide member of the rod.

2. The combination with a multiple seat tubular valve, of a hollow rod integral with the valve, one of the extremities of said rod being fork-shaped and receiving a roller, a distributing cam engaging the roller, a plate at the other extremity of the rod, and a spring engaging the plate.

3. The combination with a multiple seat tubular valve, of a hollow rod, one of the extremities of said rod being fork-shaped and receiving a roller, a distributing cam engaging the roller, a plate at the other extremity of the rod, and a spring engaging the plate, the plate having a passage for establishing communication between the chamber of the spring and the interior of the hollow rod, and the hollow rod apertured for the passage of lubricating materials.

4. The combination with a multiple seat tubular valve, of a hollow rod, one of the extremities of said rod being fork-shaped and receiving a roller, a distributing cam engaging the roller, a plate at the other extremity of the rod, and a spring engaging the plate, the plate having a passage for establishing communication between the chamber of the spring and the interior of the hollow rod, and the hollow rod apertured for the passage of lubricating materials, and grooves providing for lubrication and the formation of a good joint.

In testimony whereof we have hereunto set our hands this twenty-eighth day of November, 1906.

HUGO LENTZ.
WILHELM VOIT.

In the presence of two witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.