

No. 686,737.

Patented Nov. 19, 1901.

E. JOSSE.

PACKING FOR COLD VAPOR MACHINES.

(Application filed Nov. 30, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

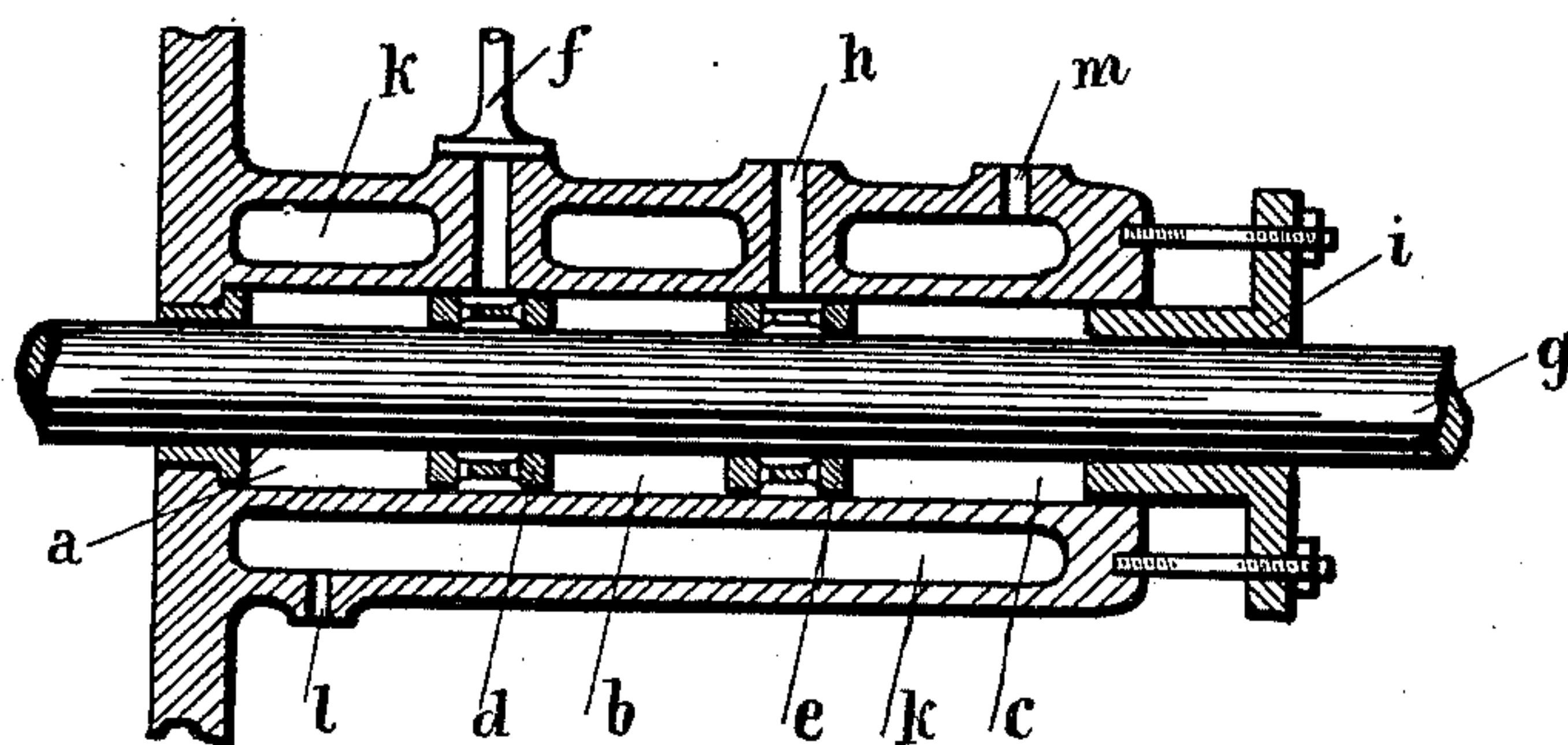
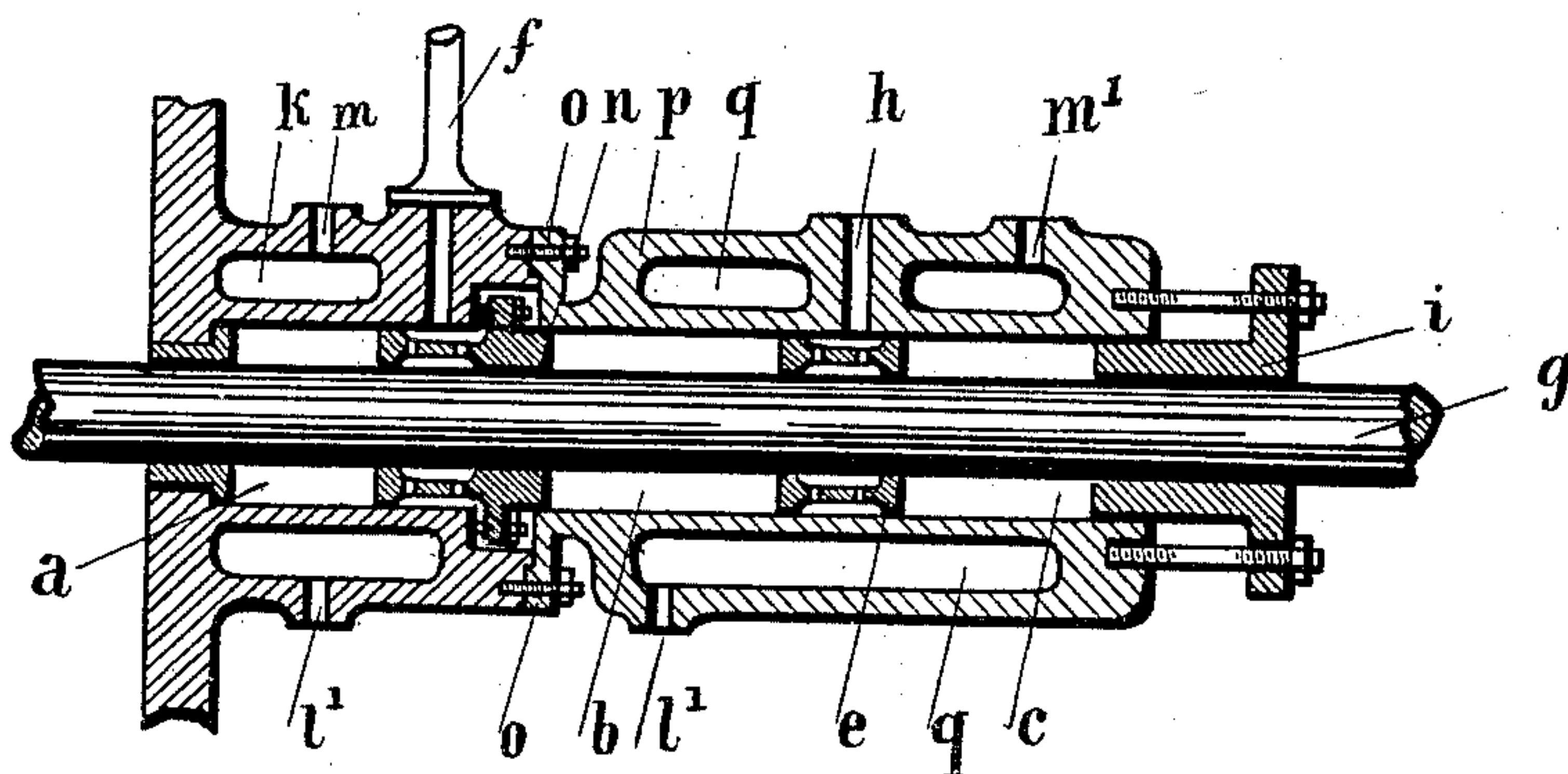


Fig. 2.



Witnesses,
Charles E. Smith
S. J. Chase

Inventor
E. Josse
by Briesen Thumt
his attorneys.

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Fig. 3.

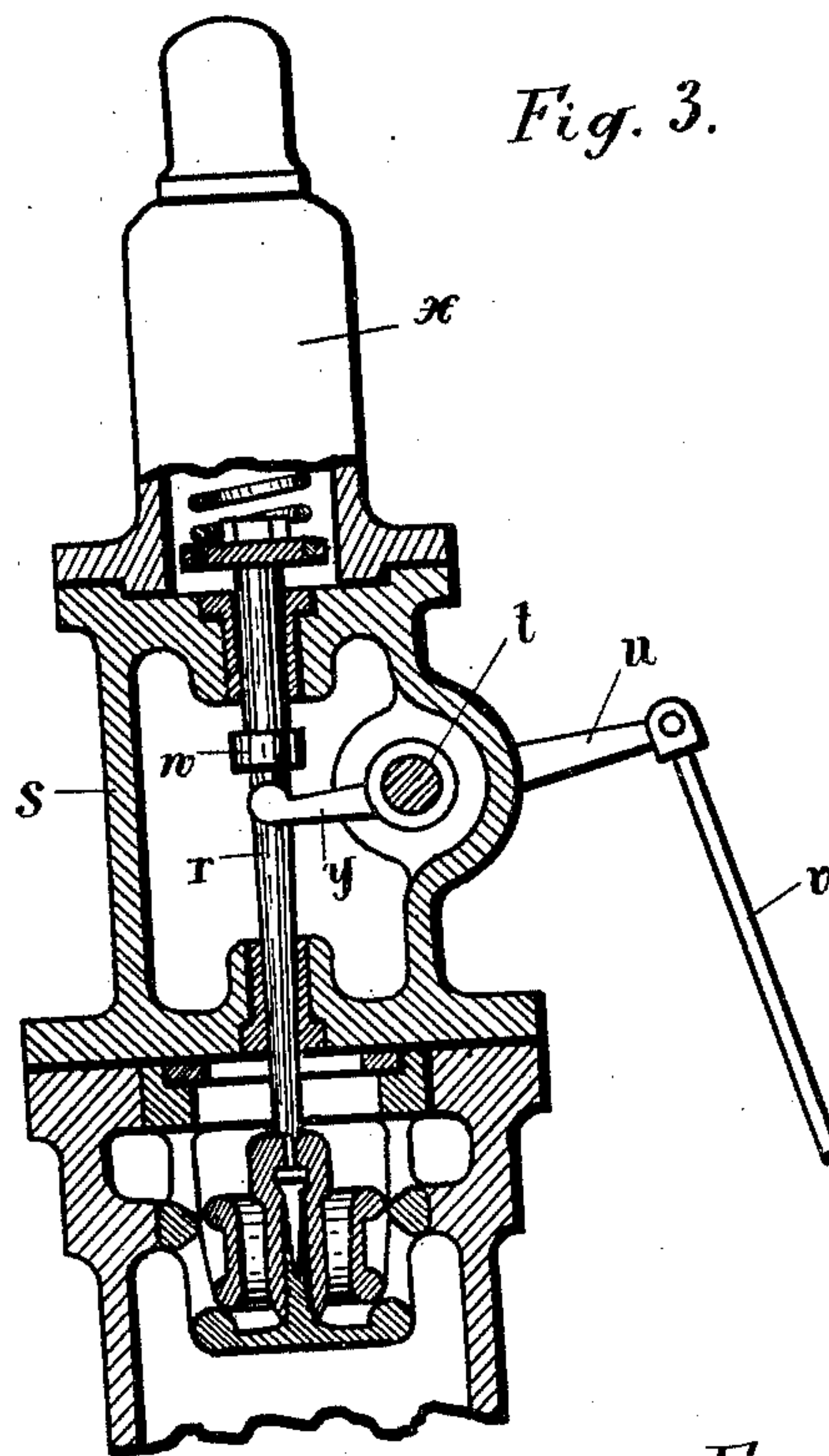
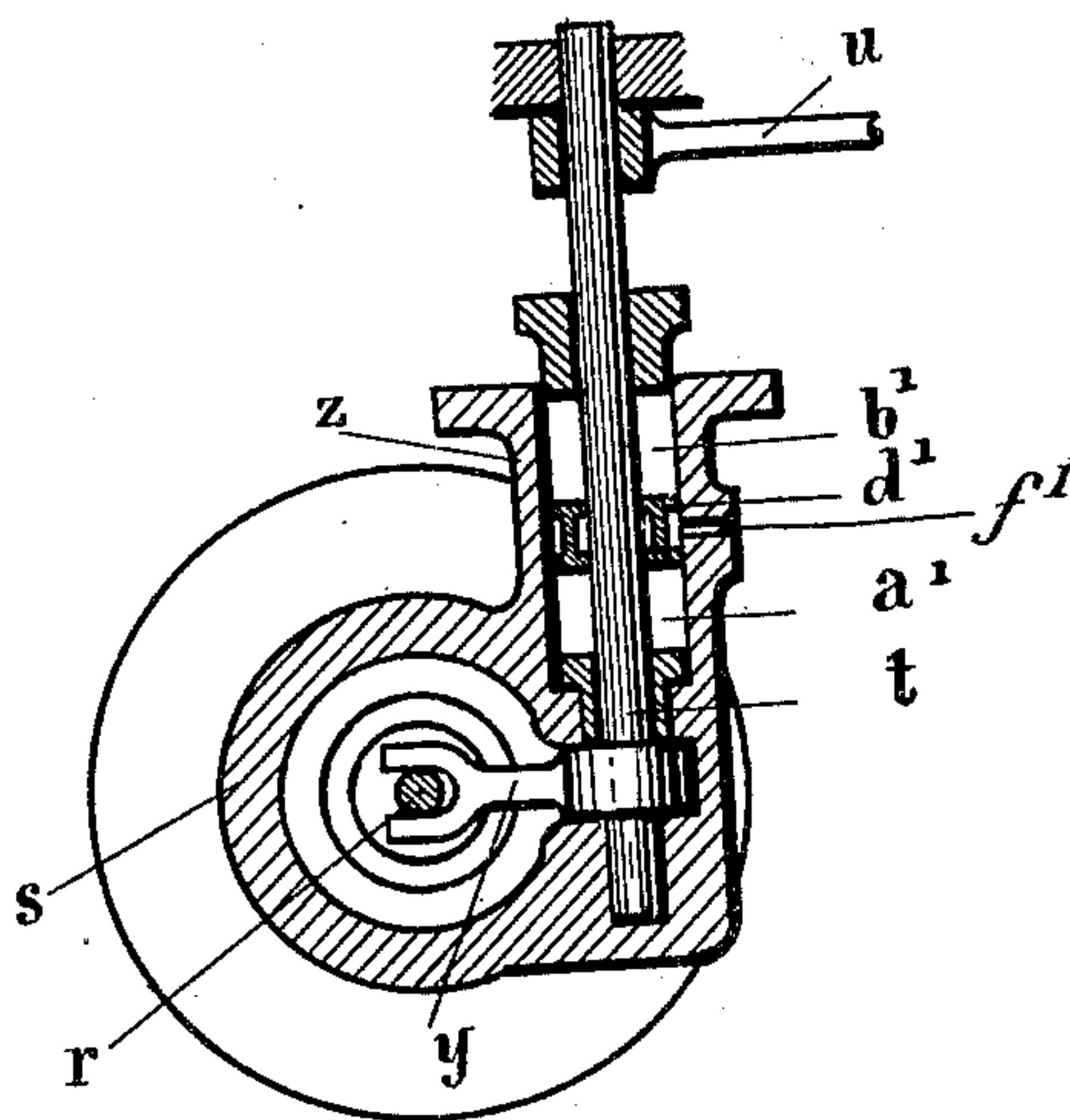


Fig. 4.



Witnesses:-

Charles E. Smith

Ed. R. Rouse

Inventor
E. Josse,
by Briesen & Thau
his Attorneys

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E. JOSSE.

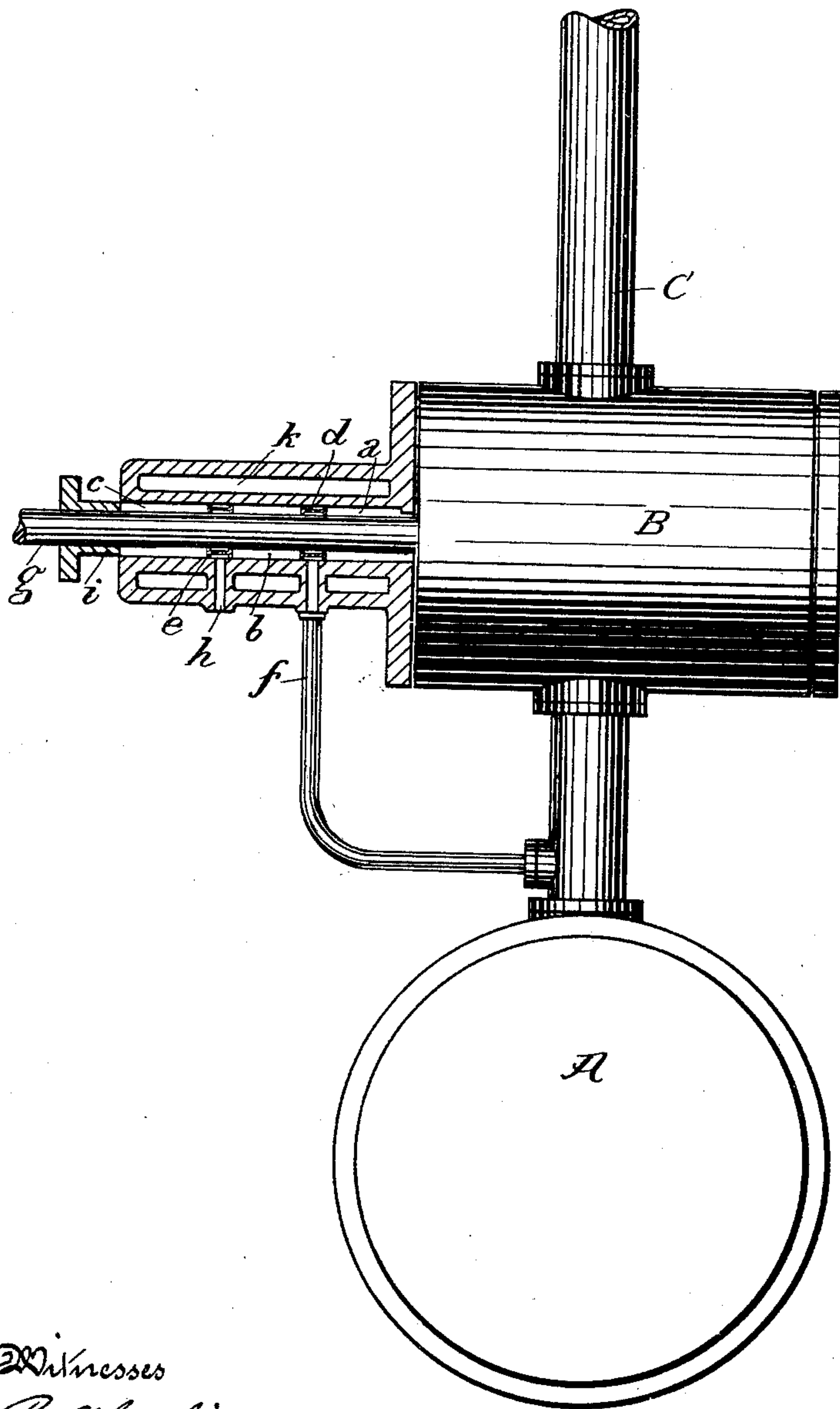
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3 Sheets—Sheet 3.

Fig. 5.



Witnesses
R. Alberti
John Lottka

Inventor
Emil Jasse
by Briesen & Smith
his Attorneys

UNITED STATES PATENT OFFICE.

EMIL JOSSE, OF WILMERSDORF, GERMANY.

PACKING FOR COLD-VAPOR MACHINES.

SPECIFICATION forming part of Letters Patent No. 686,737, dated November 19, 1901.

Application filed November 30, 1900. Serial No. 38,378. (No model.)

To all whom it may concern:

Be it known that I, EMIL JOSSE, a subject of the German Emperor, residing at Uhlandstrasse 158, Wilmersdorf, Germany, have invented certain new and useful Improvements in Packings for Cold-Vapor Machines, of which the following is a specification.

The present invention relates to an arrangement of packing for piston and valve rods and the like for cold-vapor machines; and the invention is more particularly adapted to machines which can be worked by vapors of a low temperature, but of a high tension—such, for instance, as sulfurous-acid machines.

In cold-vapor machines the odor of the vapors employed is, as a rule, very disagreeable, and for this reason it is essential that a perfect packing be employed. It has been customary heretofore, in order to provide a satisfactory packing for this purpose, to employ a very long packing—that is to say, a packing which extends over a considerable length of the piston or valve rod. The difficulty with such packings is that the piston-rod and other cooperating elements become unduly heated by frictional contact through the necessary close embrasure of the packing on the rod. This undue heating of the parts is increased by reason of the fact that in such devices a lubricating of the parts in the ordinary manner with fat or oil is not admissible, because of the character of the vapors employed.

The object of the invention is to provide a simple and efficient device which will overcome the difficulties above set forth; and to these ends my invention consists in the novel arrangement and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of sufficient number of parts of a cold-vapor machine to illustrate my invention. Fig. 2 is a like view of a modified form of construction. Fig. 3 is a vertical sectional view of a still further modification of the device. Fig. 4 is a transverse sectional view of the same, taken on the line of the shaft *t*; and Fig. 5 shows the cylinder and the condenser in connection with the parts represented in Fig. 1.

In Fig. 1 I have illustrated a piston-rod packing embodying my invention, wherein a

long stuffing-box is used to obtain the necessary perfect packing. The stuffing-box is divided into two or more chambers *a b c*, so that it may be employed with two or more different packings. The chambers are formed by packing-rings *d e*, inserted in the stuffing-box. To obtain a cooling and lubrication of the piston-rod *g* and at the same time to absorb the vapors that may enter the first chamber *a* of the stuffing-box, the same fluid from which the cold vapors are generated and with which the cold-vapor machine is operated is introduced through the tube or channel *f* into the perforated ring *d*. This fluid should be under a lower pressure and of a lower temperature than the vapors in the cylinder. In order to accomplish this end, the fluid may be taken from the condenser A, which is connected with the exhaust of the cylinder B, or from any other suitable point. By this construction the following results are attained: The high-tension penetrating vapors which pass through and into the packings from the cylinder are condensed by the fluid and are conducted into the condenser. C is the tube for admitting the motive agent to the cylinder B. Furthermore, the heated piston-rod is cooled off by the sudden contact with the cold fluid, which causes a rapid evaporation of the fluid, and thus takes off the heat from the piston-rod. Furthermore, if the cold-vapor fluid is in a greasy condition, containing, for instance, sulfurous acid, the piston-rod is at the same time lubricated automatically. In this manner the packing in the chamber *b* is prevented from drying out and the piston-rod between the chambers *a* and *b* cannot become heated. In the event of the vapors penetrating the packing-chamber *b* they will be absorbed by another body of fluid, which is conveyed through the openings *h*. This absorbing fluid can escape to the outside of the stuffing-box through a gland *i*. The absorbing fluid just mentioned can only escape in this way because of the fact that the high pressure of the vapors inside the cylinder prevents the fluid from entering into the cylinder. Furthermore, this last-mentioned body of fluid constitutes a lubricant for the piston-rod. If it be found that an undue heating of the piston-rod should still be prevented, cold water

can be introduced into the jacket *k*, which surrounds the whole stuffing-box. The water may be introduced at *i* and may escape at *m*.

In order to facilitate taking out the packing in the chambers *a* and *b*, the stuffing-box can be made in several sections, as indicated in Fig. 2 of the drawings. In this case the packing contained in the chamber *a* is secured in place by a special gland or packing-ring *n*, through which at the same time the fluid entering at *f* can be employed to cool and lubricate the piston-rod. In order to establish a connection between this section and the section *p*, which contains the other chambers *b* and *c*, a flange *o* is provided on the section *p*. The auxiliary or cold-water cooling which might be necessary is effected by two chambers or jackets *k'* and *q*. The cooling-water may enter through the openings *l'* and escape through the openings *m'*.

The employment of the stuffing-box described in connection with machines embodying reciprocating piston valve-rods is in some instances found to be impracticable because of the lack of sufficient space. This disadvantage may be overcome by the employment of a different mechanism and one wherein the stuffing-box may be located in a convenient place where sufficient room is afforded therefor. Thus in Figs. 3 and 4 of the drawings a modification is illustrated, wherein the valve-spindle *r* is arranged in a special housing *s*. Motion is transmitted to the spindle *r* to open and close the valve by a rock-shaft *t*, which is provided with an arm *y*, that coöperates with an abutment *w* on the spindle, and a crank-arm *u* is connected with the shaft *t* and is moved by a rod *v*. The valve is closed by a spring contained within the housing *x*. The spindle is contained in the housing *s*, which is separate from the housing *x* and the valve-casing. The rock-shaft enters the housing *s* and coöperates with the spindle in the manner hereinbefore described. The shaft in extending into the housing *s* projects through a stuffing-box *Z*. (See Fig. 4.) The box *Z* is divided into chambers *a'* and *b'* by a ring *d'*.

The fluid from which the vapors used in the machine are formed is introduced through the channels *f'* in the ring *d'*. By this means the fluid introduced into the stuffing-box is under a low pressure and a comparatively low temperature, inasmuch as the fluid may, for instance, be conveyed from the condensing-chamber. Such vapors as penetrate the packing and pass toward the ring *d'* may be condensed therein or led off into the condensing-chamber.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described,

the combination of a packing surrounding a movable part and means for introducing into said packing the same fluid as that from which the vapors in the machine are produced, but at a lower pressure and temperature than the working vapors in the machine, whereby the parts are cooled and lubricated and a chemically-indifferent fluid can be employed to absorb the escaping vapors.

2. In a machine of the character described, the combination of a packing surrounding a movable part, means for introducing into said packing the same fluid as that from which the vapors in the machine are produced, but at a lower pressure and temperature than the working vapors in the machine, whereby the parts are cooled and lubricated and a chemically-indifferent fluid can be employed to absorb the escaping vapors and an auxiliary cooling-jacket surrounding said packing.

3. In a machine of the character described, the combination of a packing surrounding a movable part, said packing being made up of a plurality of separable sections and a separate packing-ring for each section and means for introducing into said packing the same fluid as that from which the vapors in the machine are produced, but at a lower pressure and temperature than the working vapors in the machine, whereby the parts are cooled and lubricated and a chemically-indifferent fluid can be employed to absorb the escaping vapors.

4. In a machine of the character described, the combination of a housing *s* in which a spindle *r* is adapted to operate and into which the controlling-shaft *t* for said spindle projects, a packing through which said shaft extends in its passage into the housing and means for introducing into the said packing the same fluid as that from which the vapors in the machine are produced.

5. In a machine of the character specified, the combination of a packing, a relatively movable part contained in said packing and means for introducing into the packing the same substance as that employed in the machine, whereby the parts are efficiently lubricated without detriment to the substance employed.

6. In a machine of the character specified, the combination of a packing, a relatively movable part contained in said packing and means for interposing into the packing the same substance as that employed in the machine but at a lower temperature, whereby the parts are efficiently lubricated and cooled without detriment to the substance employed.

EMIL JOSSE.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.