

(No Model.)

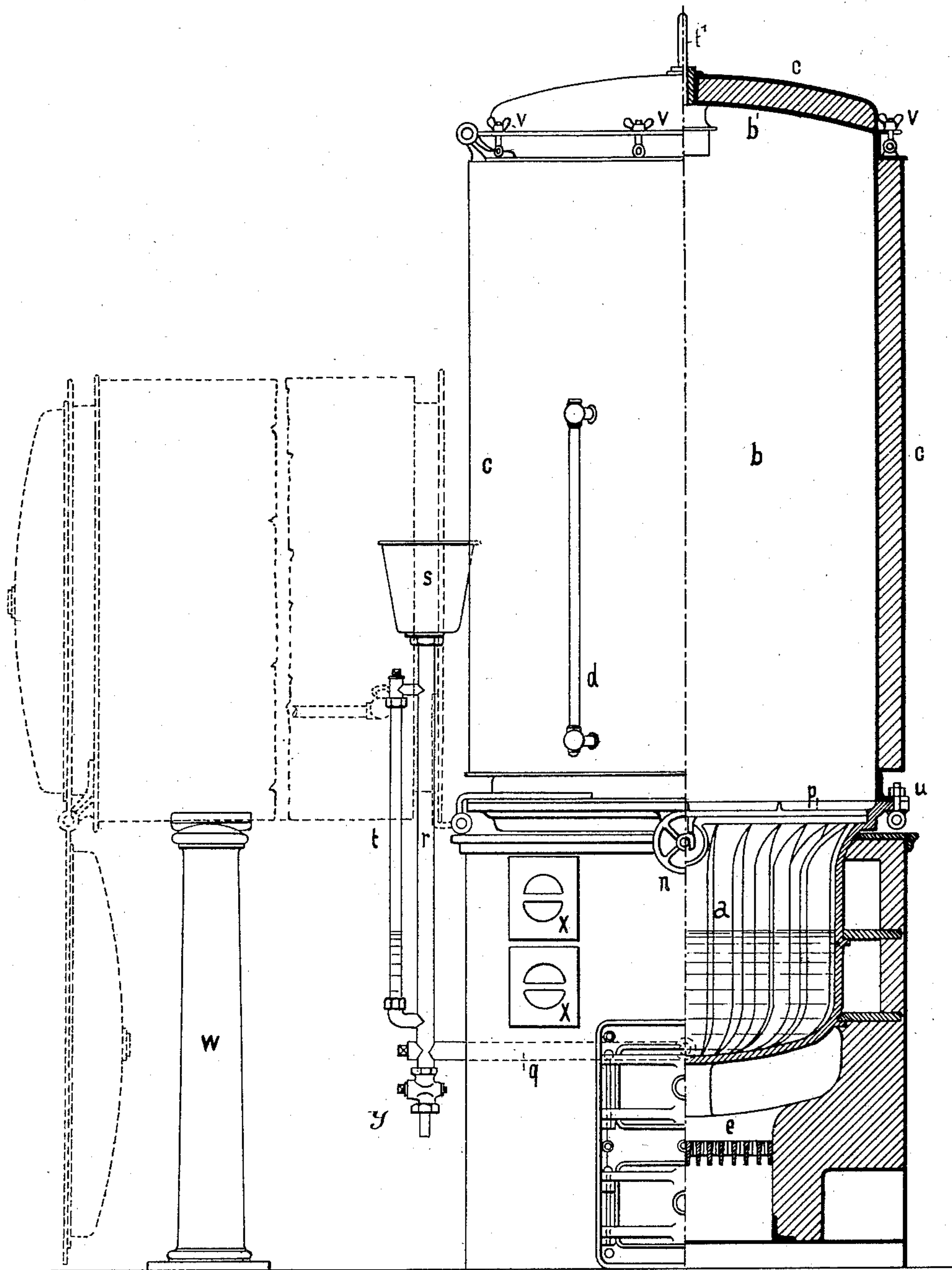
3 Sheets—Sheet 1.

R. HENNEBERG.  
DISINFECTING APPARATUS.

No. 327,395.

Patented Sept. 29, 1885.

Fig. 1.



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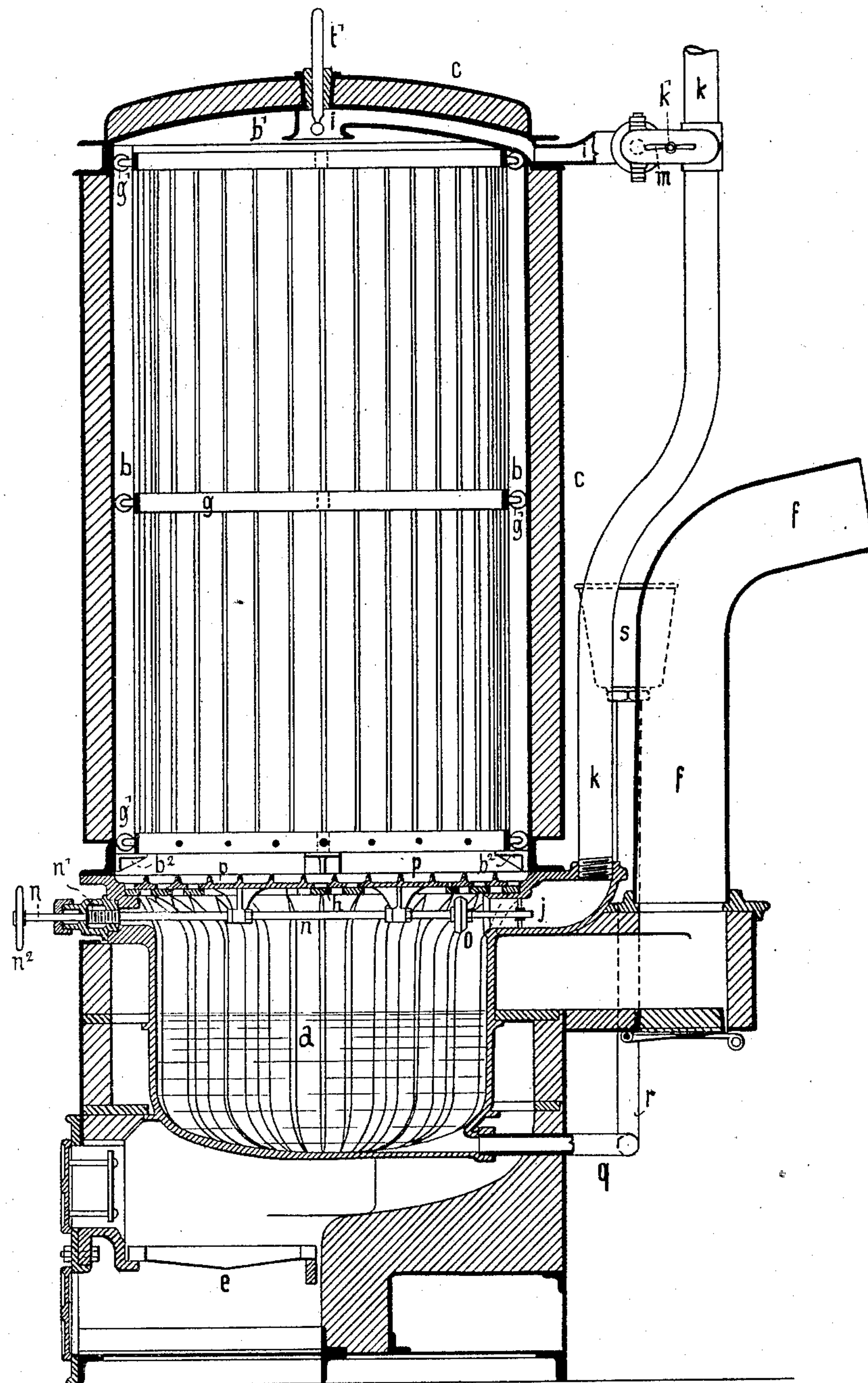
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Fig. 2.



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3 Sheets—Sheet 3.

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Fig. 3.

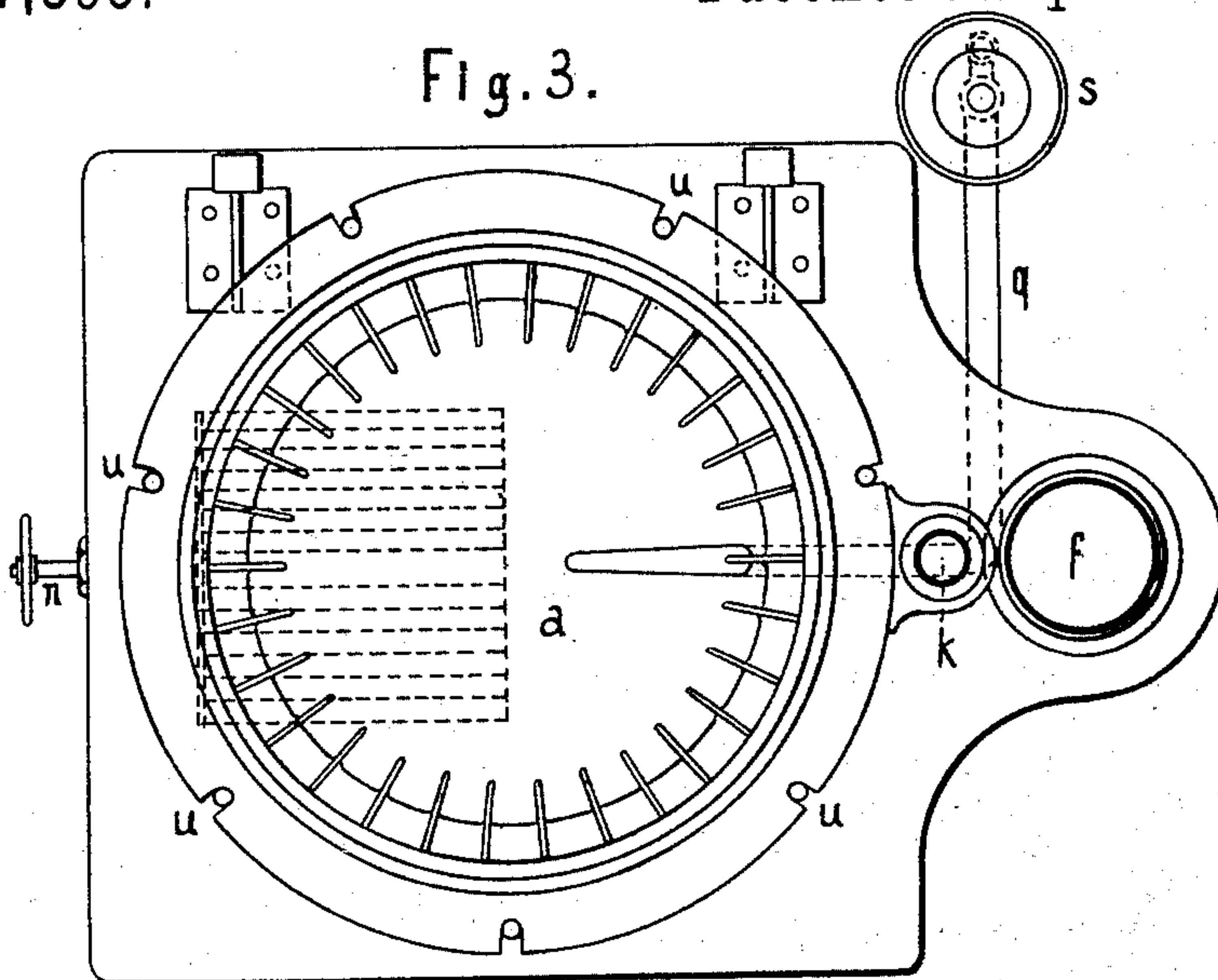


Fig. 4.

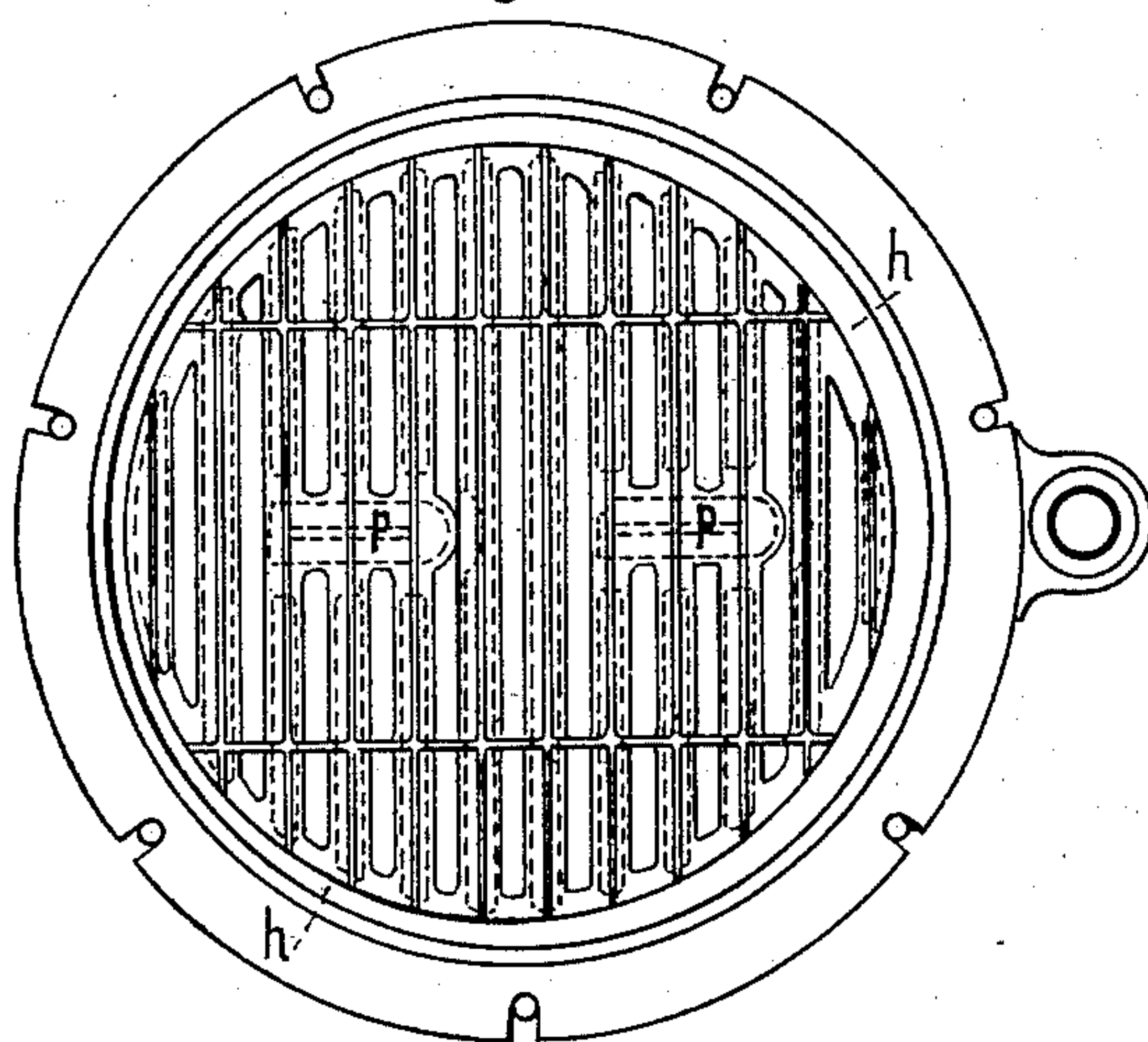


Fig. 6.

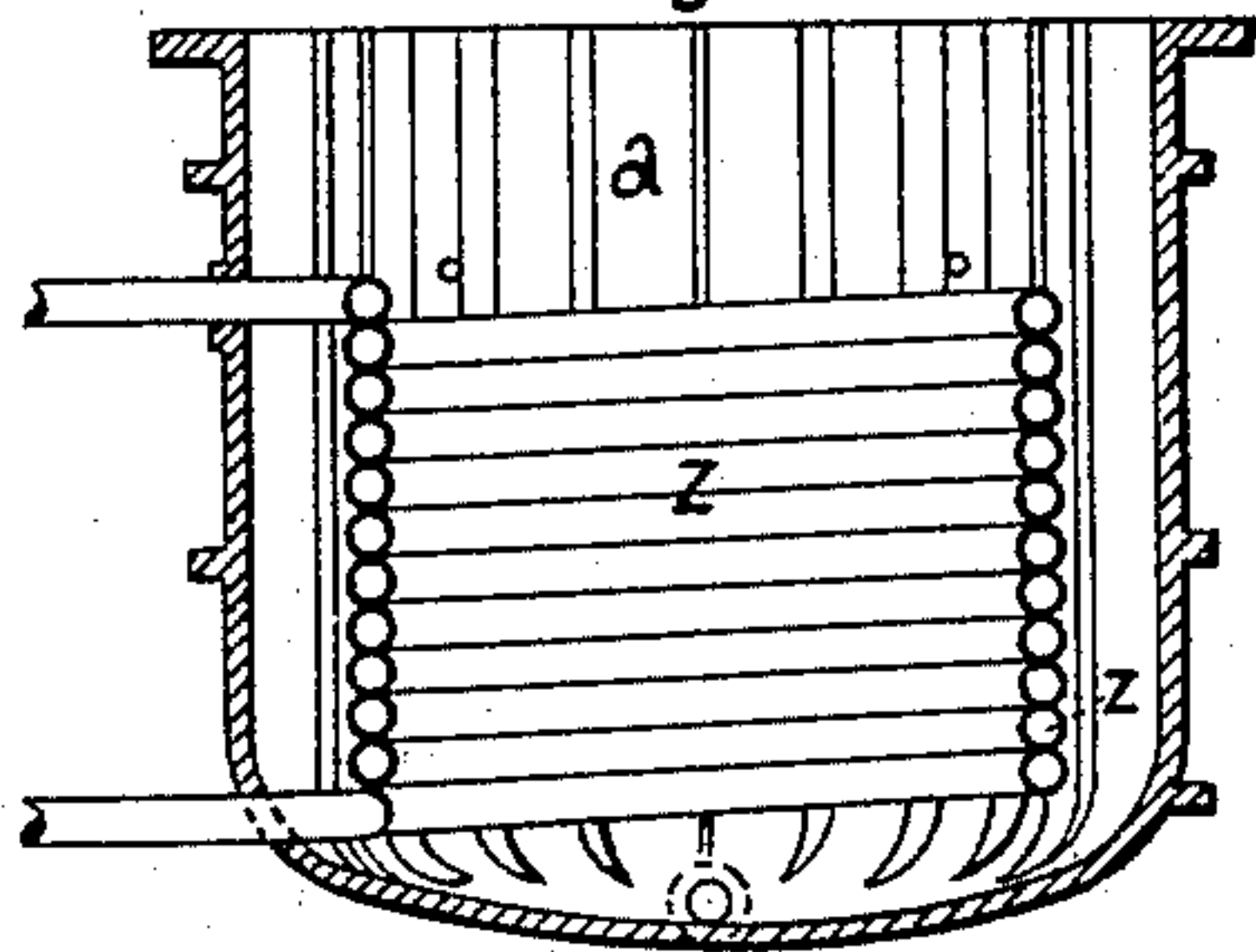
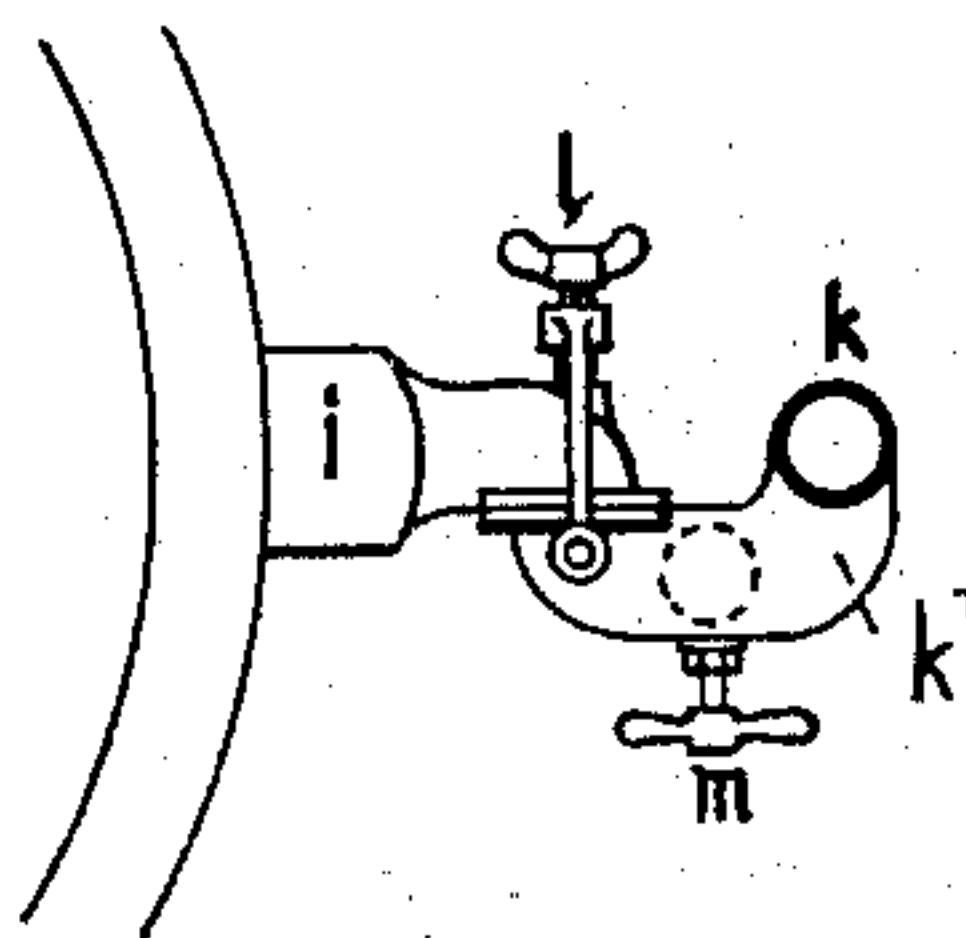


Fig. 5.



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# UNITED STATES PATENT OFFICE.

RUDOLF HENNEBERG, OF BERLIN, GERMANY.

## DISINFECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 327,395, dated September 29, 1885.

Application filed May 29, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLF HENNEBERG, engineer, subject of the King of Prussia, and residing at Berlin, Prussia, German Empire, have invented new and useful Improvements in Disinfecting Apparatus, whereof the following is a specification.

The subject of my invention consists in an improved apparatus for disinfecting, by means of steam, clothes and other articles polluted by contagious matter.

On the annexed three sheets of drawings, Figure 1 represents this apparatus partly in front elevation, partly in vertical section. Fig. 2 is a vertical section taken at a right angle to that of Fig. 1. Fig. 3 is a plan of the lower part of the apparatus, supposing the vessel *a* to be open. Fig. 4 is a plan of the vessel *a*, with parts serving to close the same. Fig. 5 is a part in detail. Fig. 6 shows a modification of the heating arrangement.

The apparatus consists of two vessels, *a* and *b*, preferably of cylindrical shape, placed with their open ends one upon the other, the lower vessel, *a*, forming a boiler for the generation of steam at low pressure, the upper one, *b*, constituting a chamber for the articles to be disinfected. The boiler is placed in a suitable furnace, and it is preferably provided on its inside with a plurality of vertical ribs for increasing its heating-surface. It is supplied with water through the horizontal pipe *q*, connected with its bottom, and the vertical pipe *r*, extending from the end of *q* upward to a certain height above the designed water-level in *a*. The pipe *r* has at its top a funnel, *s*, while it is fitted at the side with a gage-glass, *t*, and at its bottom with a discharge-cock, *y*.

The articles to be disinfected are put into a cage, *g*, Fig. 2, made of galvanized iron or other suitable material, and placed with the same from above into the upper vessel or chamber, *b*, after the lid *b'* thereof has been opened.

For the purpose of facilitating the insertion and the removal of the cage, the upper vessel is hinged to the lower one or to the top plate of the furnace, so that it may be turned on its side, as is shown by dotted lines in Fig. 1, and the cage is provided with rollers *g*, also serving to keep the space around the cage uniform.

*w* is a small column for supporting the ves-

sel when it is turned down, and *d* are bars for handling the same.

If preferred, the vessel may be balanced by chains running over rollers and having counter-weights attached to them. At the bottom of *b* there are small brackets *b*<sup>2</sup>, adapted to carry the cage when the vessel and the cage are in upright position.

For the purpose of connecting the vessels *a* and *b* together, hinged screw-bolts *u* are provided. Like bolts, *b*, serve for securing the lid *b'*.

The joints may be made tight by means of india-rubber rings sunk into suitable grooves.

The steam, after having acted in *b*, issues by the pipe *i* into the exhaust-pipe *k*. As shown by Fig. 5, a separable connection is formed between these pipes by means of elbows on the end of the pipe *i* and on the branch *k'* of the pipe *k*, the said elbows joining each other when the vessel *b* is standing upright, and being fitted with a screw-clamp, *l*, for securing them together, as shown in Fig. 5. *m* is a throttle-valve arranged in the branch pipe *k'*, and *t'* a thermometer for indicating the temperature of the steam. The vessel *b* and its lid are protected against radiation of heat by jackets *c*.

The lower vessel, *a*, is provided with means for cutting off its communication with the upper vessel or disinfecting-chamber, *b*, and at the same time establishing communication between it and the exhaust-pipe, which is carried down to the vessel *a*, and connected to a branch or channel, *j*, thereof. For this purpose a plate, *h*, having a number of apertures, preferably in the form of parallel slits, is inserted into the top of the vessel *a*, and upon this plate is placed a slide, *p*, having like apertures, and adapted to cover and uncover the apertures of the plate *h*, according as it is shifted thereon in one direction or the other. Besides, in front of the aforesaid channel *j*, a valve, *o*, is arranged, and this valve is so connected to the slide *p*, by means of the rod *n*, working with a screw-thread in a box, *n'*, that when the rod *n* is rotated by the hand-wheel *n*<sup>2</sup> the slide *p* and the valve *o* will be moved simultaneously, the slide opening the apertures in the plate *h* when the valve closes the channel *j*, and vice versa. This arrangement allows the chamber *b* to be emptied and to be filled anew without interruption of the generation of steam.



When the described apparatus is to be put into operation, the vessel *b*, containing a cage with articles to be disinfected, is properly tightened down on *a*, the lid *b'* closed and secured, the pipes *i* and *k* connected together, the communication between *a* and *b* established by the slide *p* and that between *a* and *k* cut off by the valve *o*, the vessel *a* filled with water by about one-half, and the fire lighted. The effect of the latter will then be first to heat the upper portion of the vessel *a*, whereby the air contained in the apparatus, and the walls of the vessel *b* are brought to a temperature of about 100° centigrade. The steam subsequently generated from the water in *a* will thereby be prevented from condensing as it rises in *b*, and its temperature will even be raised above that of the water by its contact with the upper portion of the heating-surface of *a*, this increase of temperature becoming greater in the measure as the water in *a* becomes lower, and the heating-surface above the water-level augments. After the steam has acted for the required period on the articles under treatment the slide *p* is shifted and valve *o* opened, so that the steam will be cut off from *b* and conducted directly into the exhaust-pipe. The vessel *b* is then unscrewed from *a* and from the exhaust-pipe, and turned down, the lid opened, and the cage with the disinfected articles removed, whereupon a new operation may commence.

Fig. 6 shows a modification of the means for heating the apparatus, consisting in the insertion into the vessel *a* of a coil, *z*, through which steam of high pressure, and consequently of high temperature, is passed. In the vessel shown by the said figure the ribs on the inner surface thereof have been retained, in

order that it may also be adapted for being economically heated by fire.

I claim as my invention—

1. The combination, with the vessel or boiler *a*, the vessel or disinfecting-chamber *b*, and means for heating the water in *a*, of an exhaust-pipe, *k*, connected to *a* and *b*, a plate, *h*, having apertures and inserted between *a* and *b*, a slide, *p*, adapted to cover and uncover the apertures of *h*, a valve, *o*, adapted to close the channel *j*, and means whereby the slide *p* and the valve *o* may be operated simultaneously, substantially as and for the purposes specified.

2. The combination, with the vessel or disinfecting-chamber *b*, of a vessel or boiler, *a*, having vertical ribs integral therewith on the inside, and means for heating the vessel *a* from the outside, substantially as described.

3. The combination, with the vessel or boiler *a* and vessel or chamber *b*, and adapted to be turned down horizontally, having the lid *b*, of a cage, *g*, having rollers, as described, and adapted to be removed from *b* and to contain the articles to be disinfected, substantially as set forth.

4. The combination, with the vessel or boiler *a*, connected to the removable vessel or chamber *b*, of the pipes *q* and *r* and the funnel *s*, the boiler *a* being provided with means for closing its top and the pipe *q* being conducted into the boiler at or near the bottom thereof, as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RUDOLF HENNEBERG.

Witnesses:

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