

No. 749,615.

PATENTED JAN. 12, 1904.

K. KALTSCHMID.

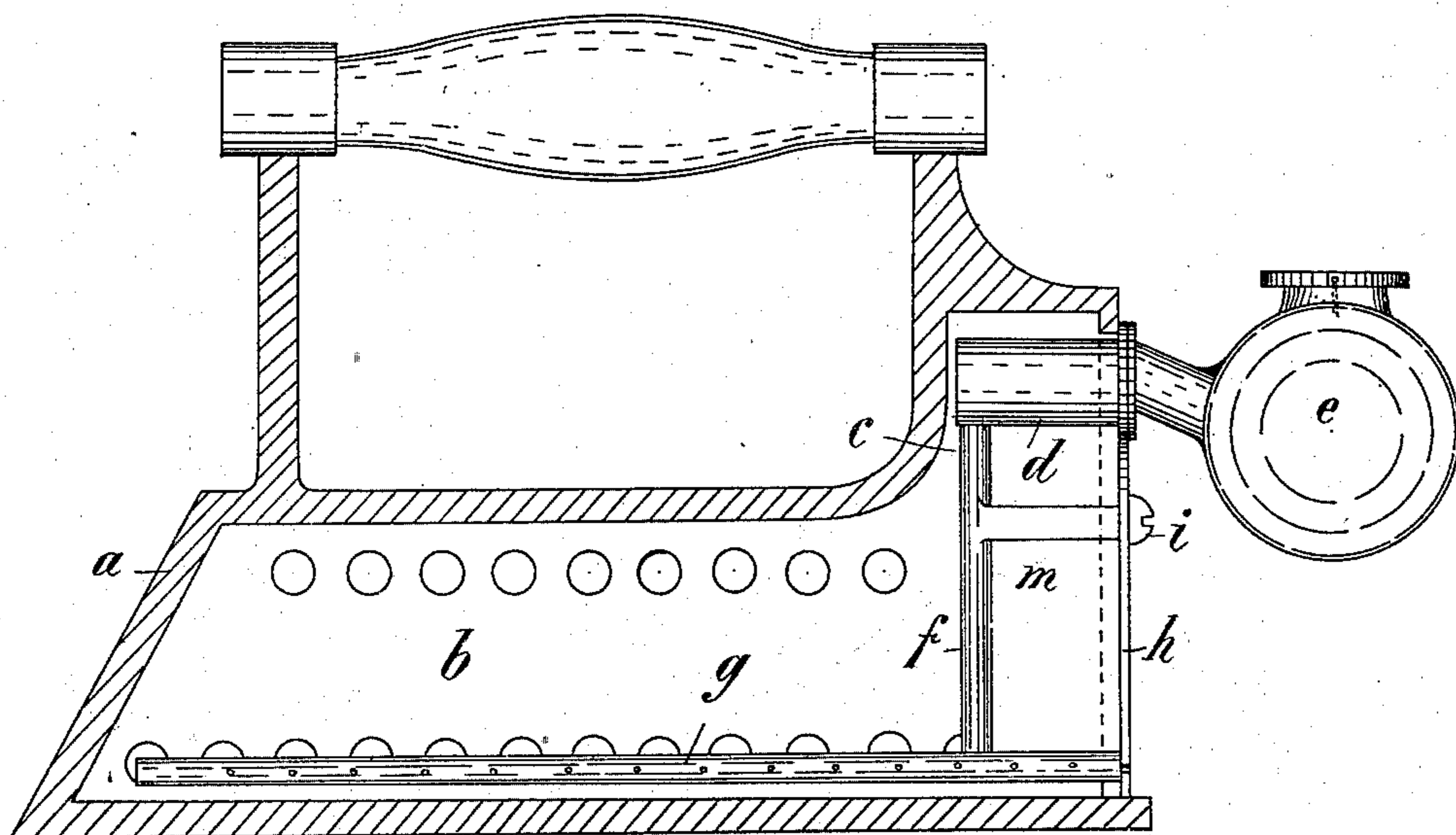
SAD IRON.

APPLICATION FILED SEPT. 12, 1902.

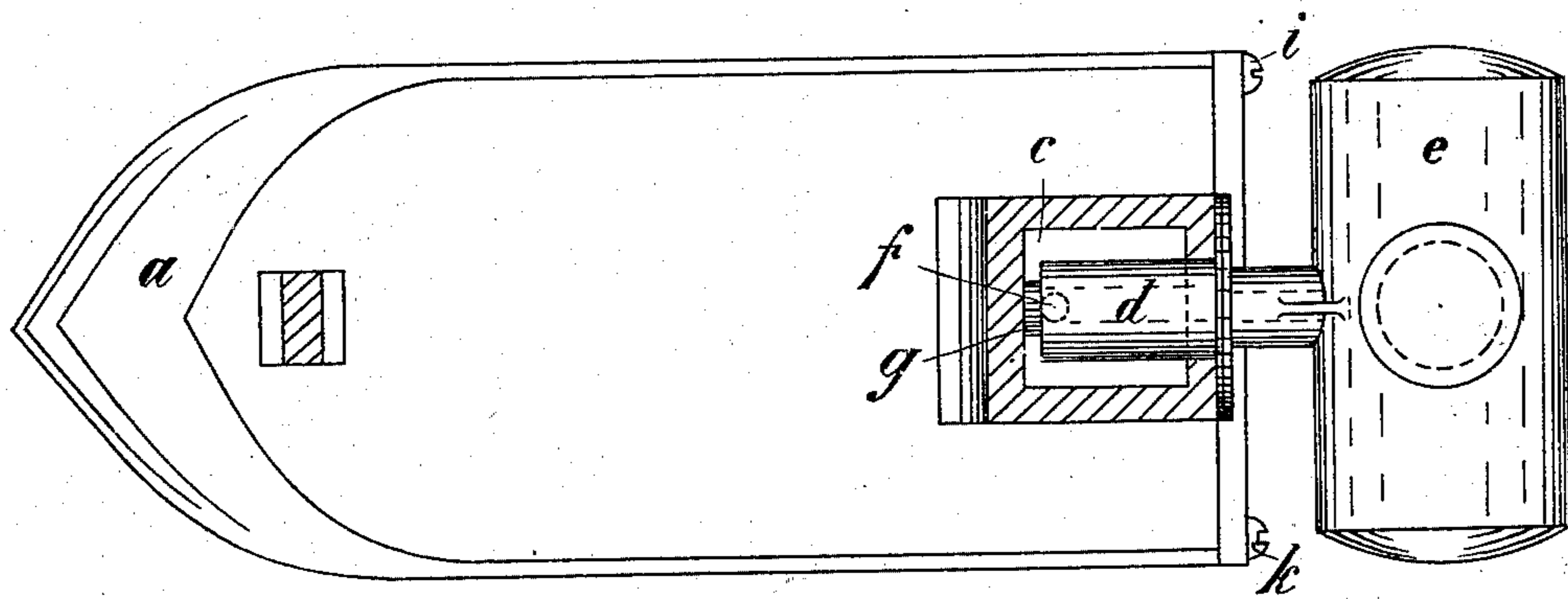
NO MODEL.

4 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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*F. E. Boyce*

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*Karl Kaltschmid*  
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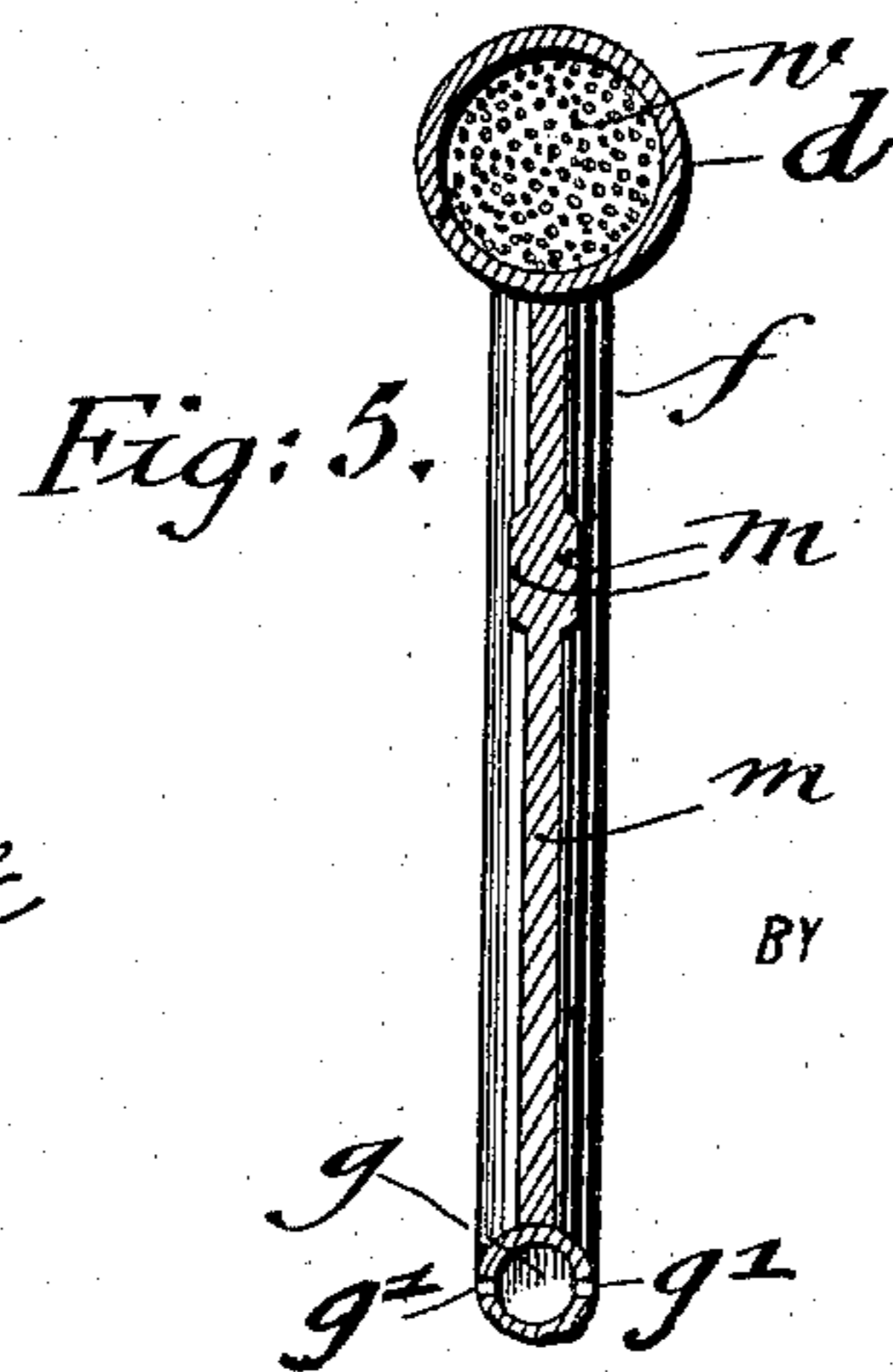
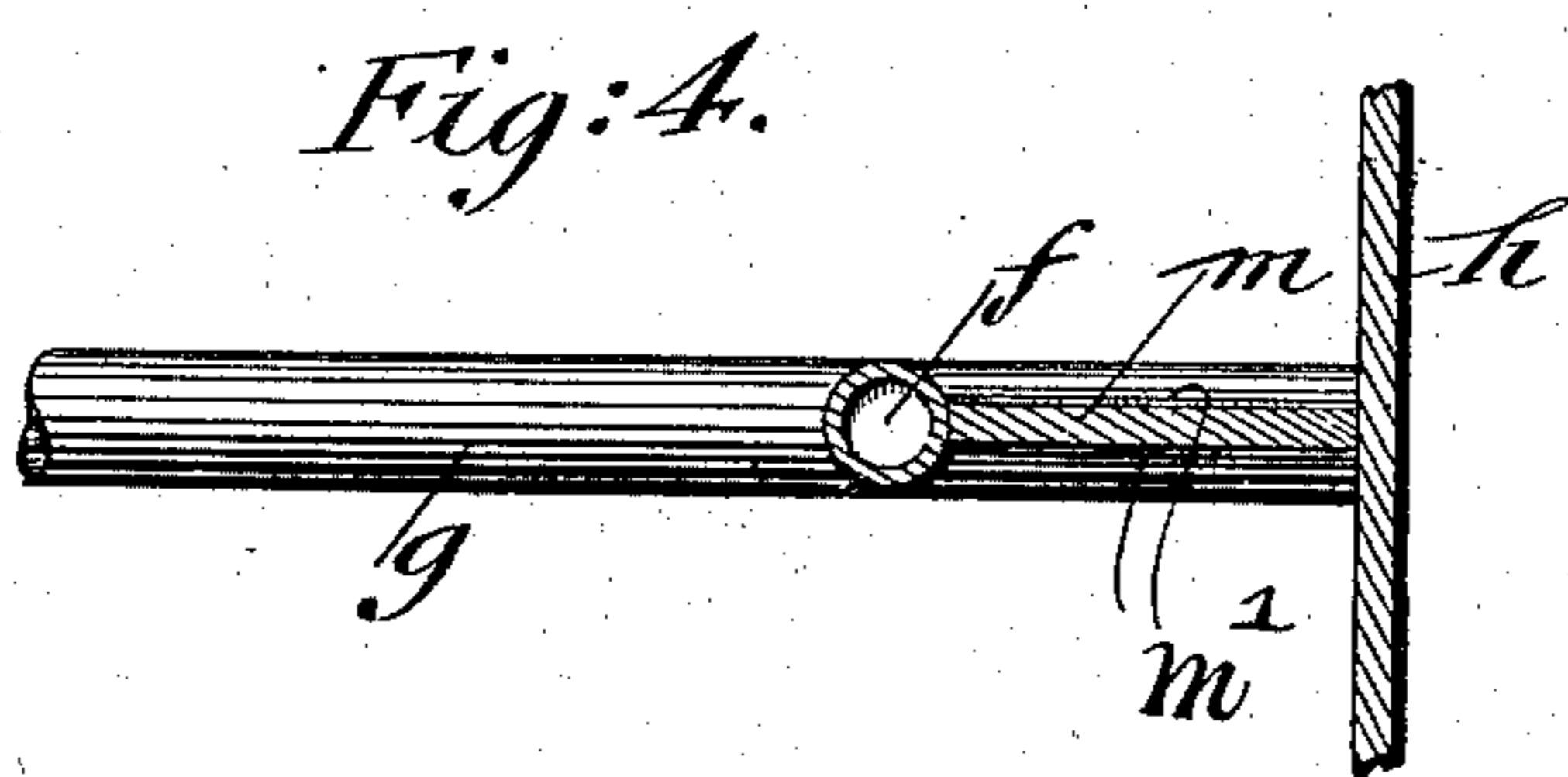
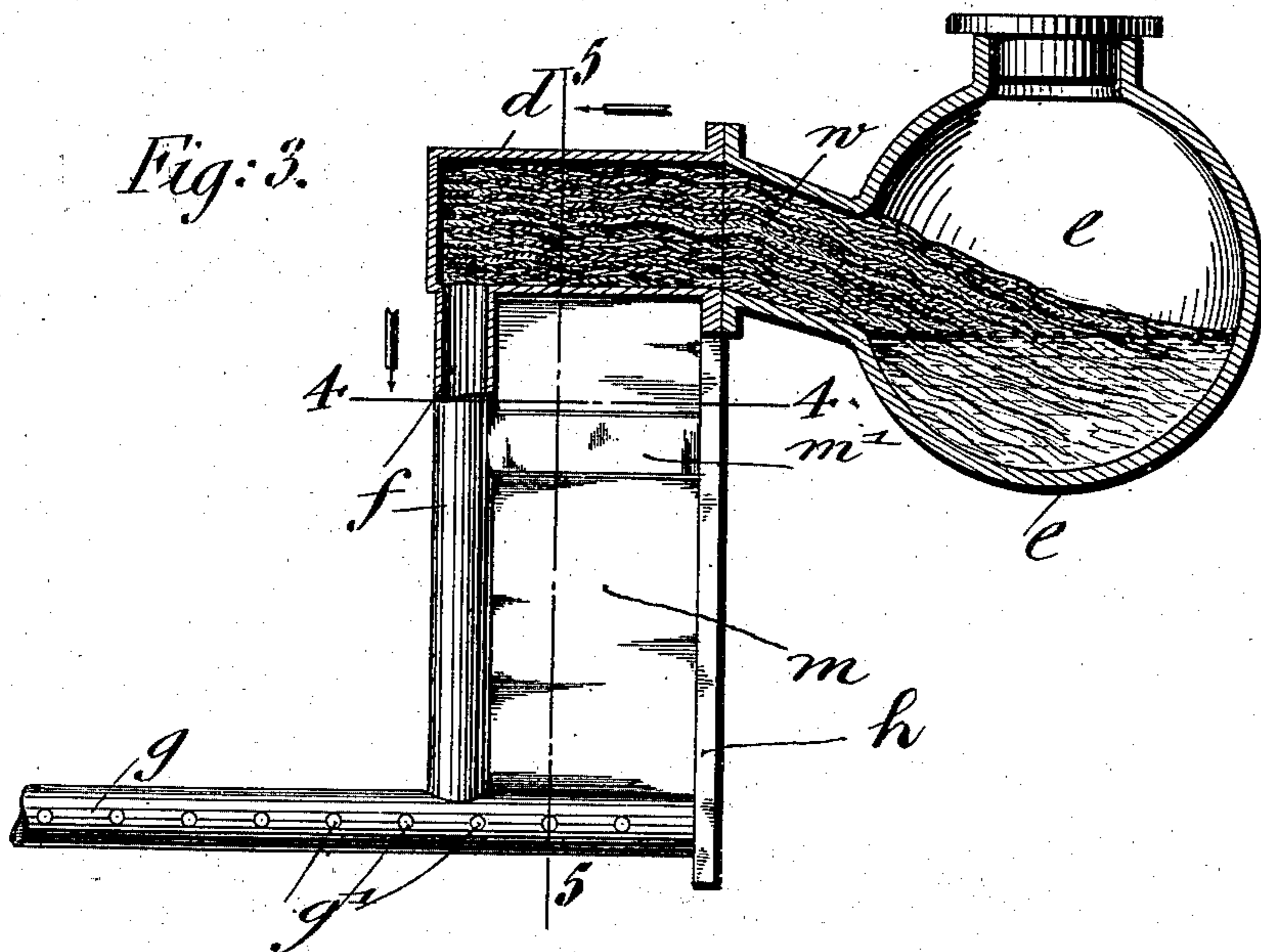
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APPLICATION FILED SEPT. 12, 1902.

NO MODEL.

4 SHEETS—SHEET 2.



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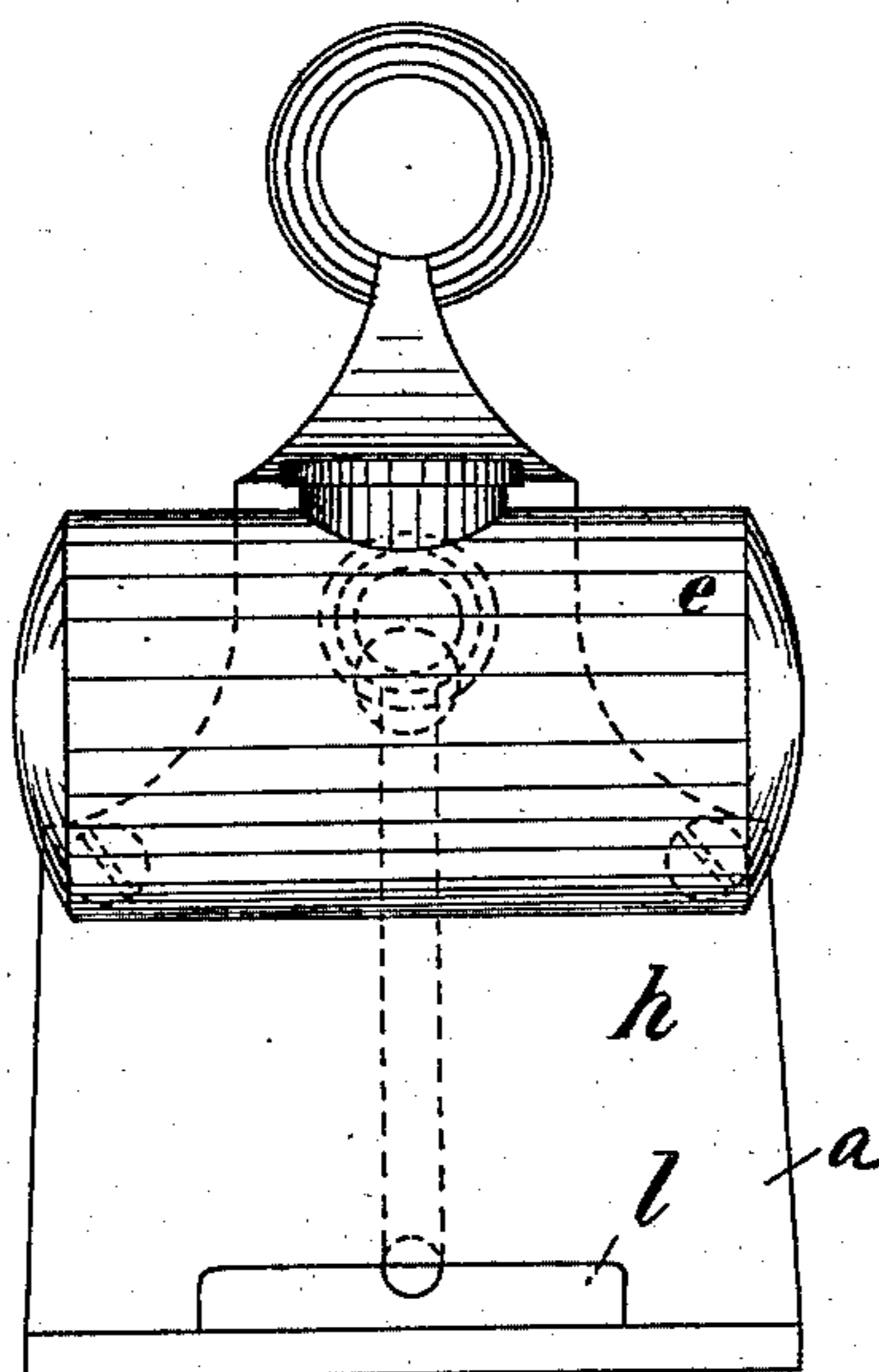
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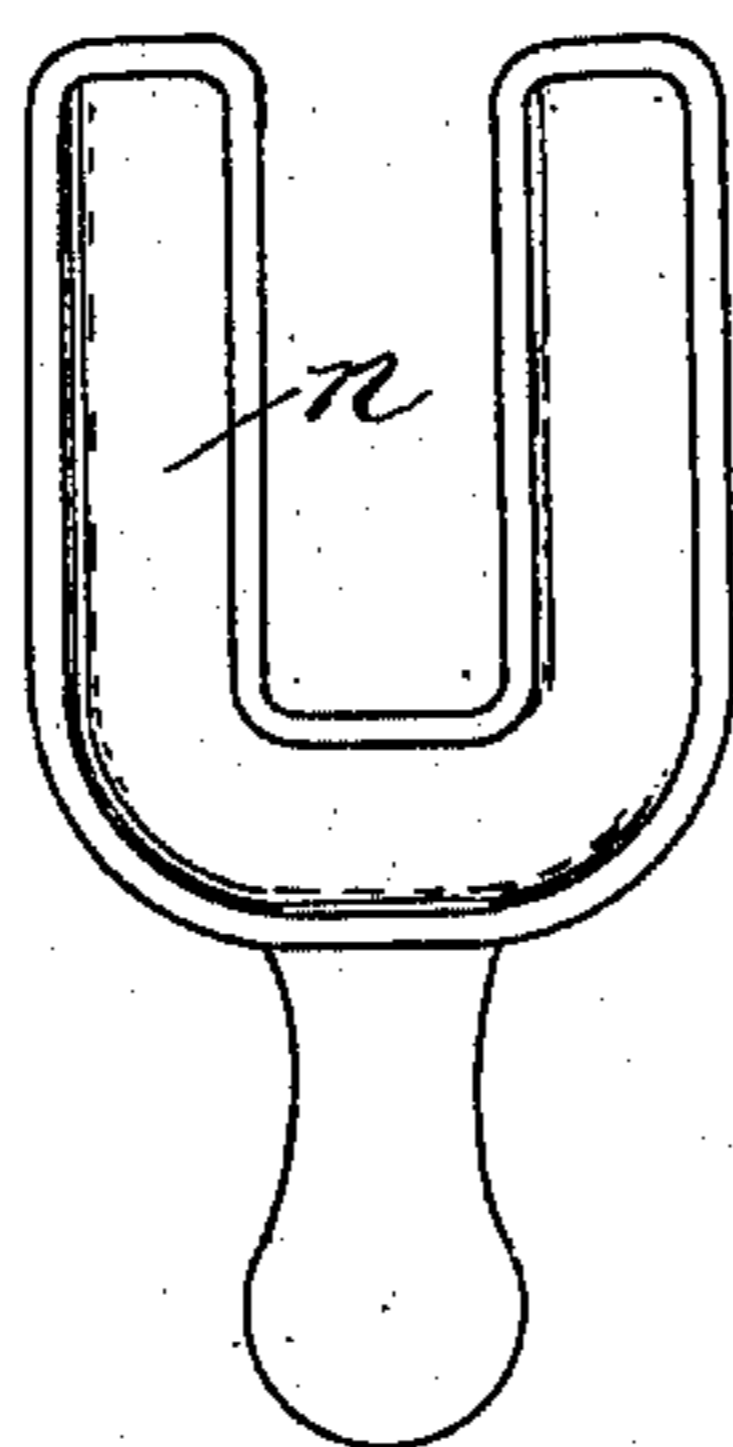
NO MODEL.

4 SHEETS—SHEET 3.

*Fig. 6.*



*Fig. 7.*



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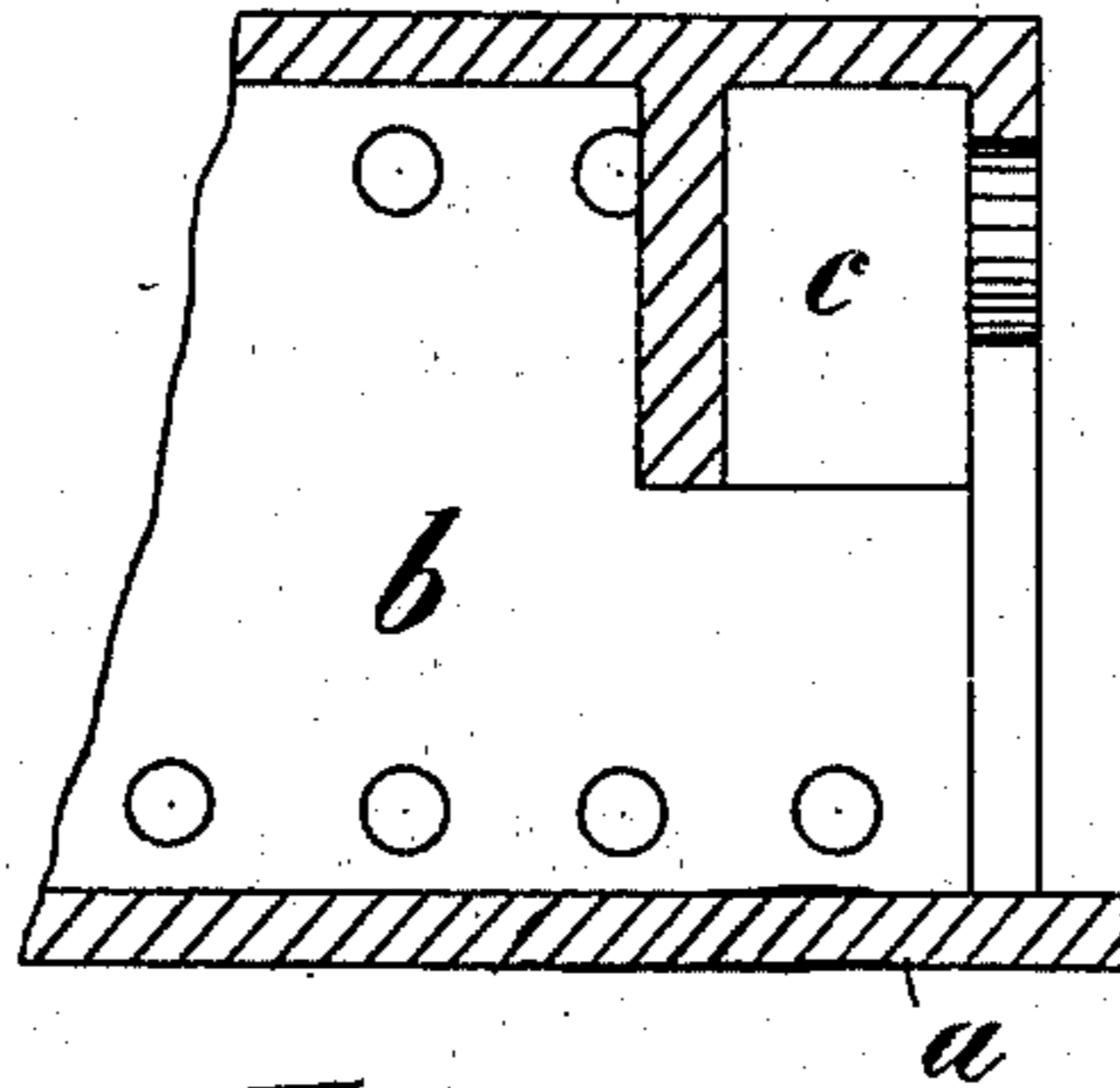
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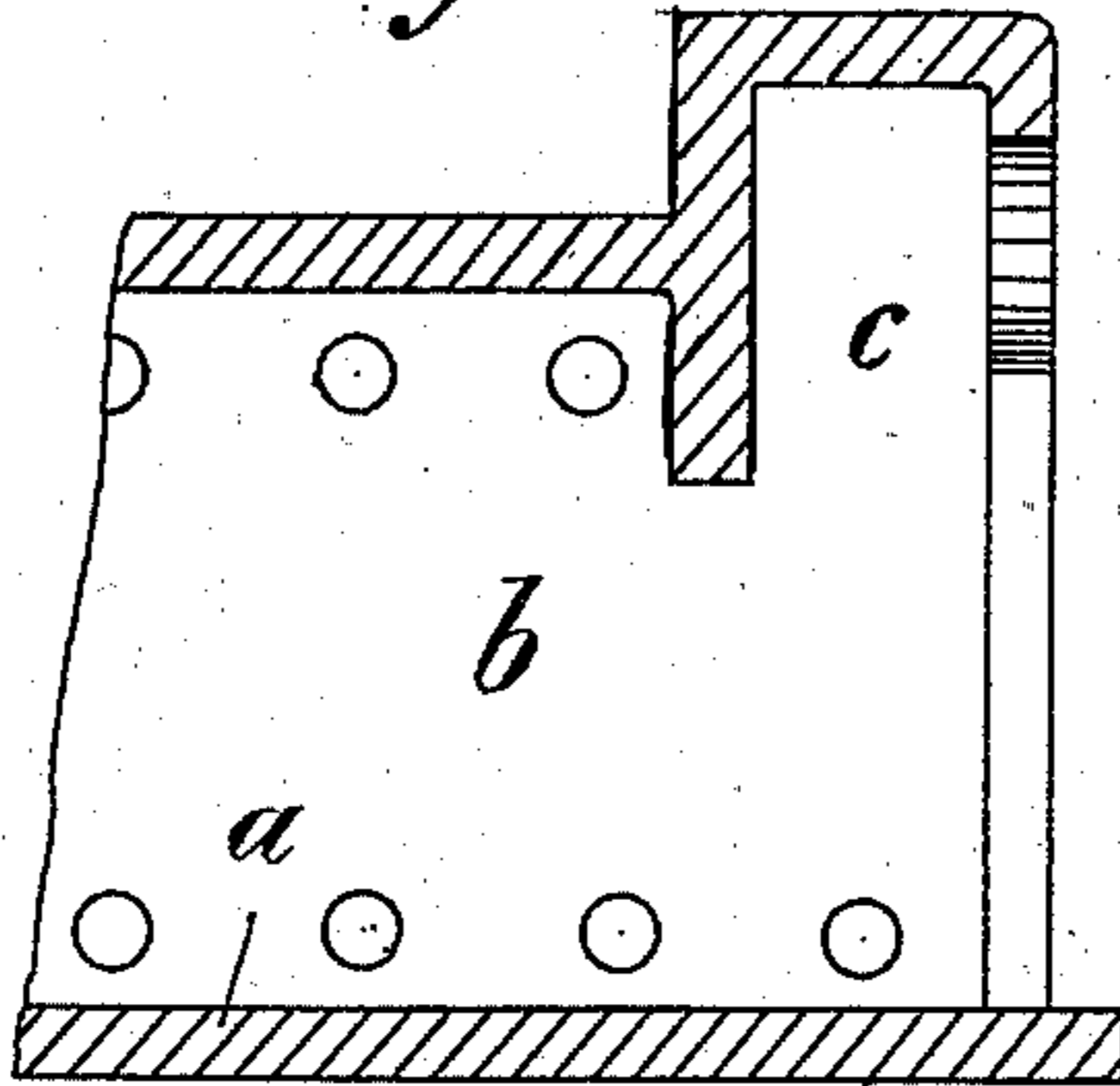
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4 SHEETS—SHEET 4.

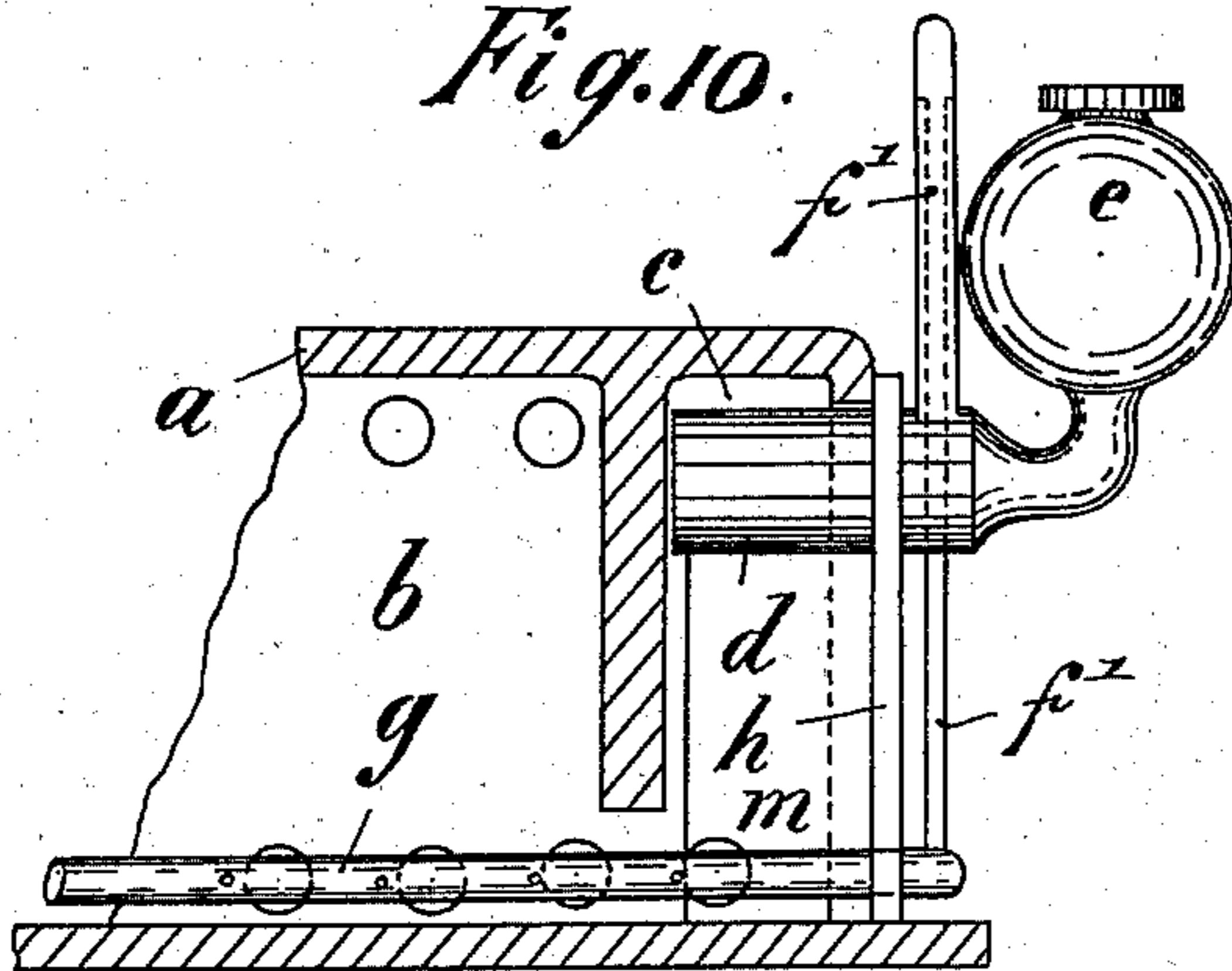
*Fig. 8.*



*Fig. 9.*



*Fig. 10.*



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# UNITED STATES PATENT OFFICE.

KARL KALTSCHMID, OF OBERRIEXINGEN, GERMANY.

## SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 749,615, dated January 12, 1904.

Application filed September 12, 1902. Serial No. 123,090. (No model.)

*To all whom it may concern:*

Be it known that I, KARL KALTSCHMID, a subject of the German Emperor, and a resident of Oberriexingen, in the Kingdom of Würtemberg, German Empire, have invented new and useful Improvements in Sad-Irons, of which the following is a full, clear, and exact specification.

My invention relates to sad-irons which are heated by means of combustible liquids, preferably alcohol; and the invention consists of a body of a sad-iron having a cavity or heating-chamber and provided with openings at its bottom and top for supplying air at the bottom and allowing the products of combustion to escape at the top, a fluid-reservoir arranged outside of the sad-iron, a vapor-generator chamber arranged outside of the cavity or heating chamber of the sad-iron, but in communication with this heating-chamber, a wick-tube containing a wick connecting the fluid-reservoir with the vapor-generator, a perforated burner-tube near the bottom of the body of the sad-iron, a supply-tube connecting the vapor-generator with the burner-tube, and an upright heat-transmitting plate connected with the vapor-generator, supply-tube, and burner-tube heated by the last jets of the burner-tube, so that when the burner is once ignited a continued vaporization takes place by the heat conduction of the upright plate to the vapor-generator combined with the heat produced by the hot-air current entering the vapor-generator chamber; and the invention consists of further details of construction which will be more fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section. Fig. 2 is a plan view showing the vapor-generator chamber in section. Fig. 3 is a detail view, partly in section and partly in elevation, of the reservoir, vapor-generator, and connecting-plate drawn on a larger scale. Fig. 4 is a horizontal section of Fig. 3, taken on line 4 4, showing the connecting-plate as connected with the supply-tube. Fig. 5 is a vertical transverse section of Fig. 3, taken on line 5 5, showing the connecting-plate as connected with the vapor-generator. Fig. 6 is a rear view. Fig.

7 shows a vessel for preheating the vapor-generator preparatory to putting the sad-iron in operation. Fig. 8 shows a modified form with a vapor-generator chamber extending downwardly. Fig. 9 shows a modified form with the vapor-generator chamber arranged so as to extend partly above the top of the sad-iron and partly below, and Fig. 10 shows another form showing the upwardly-extending vapor-supply tube on the outside of the sad-iron body.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, *a* represents the body of the sad-iron having a cavity or heating-chamber *b*, to which is connected a chamber *c*, in which is placed a vapor-generator *d*, which is supplied with alcohol or other combustible liquid from a reservoir *e* by means of a wick in a wick-tube, which connects the reservoir *e* and vapor-generator *d*. The alcohol drawn up by the wick is vaporized in the vapor-generator *d*, and this vaporized alcohol passes, by means of the conducting-tube *f*, to a burner-tube *g*, provided with perforations *g'*, said tube being located near the bottom of the body of the sad-iron, where the vapor is burned in the form of thin flames or jets. The heating-chamber *b* is provided with openings at its bottom and top for supplying air to the burner *g* at the bottom and allowing the products of combustion to escape at the top.

To the burner-tube *g*, vapor-generator *d*, and supply-tube *f* is connected by soldering a connecting piece or plate *m*, made of iron, brass, or other suitable heat-conducting material, to transmit heat by conduction from the burner-tube *g* to the vapor-generator *d* to aid that part of the hot-air current produced by the burner and entering the vapor-generator chamber in vaporizing therein the liquid fuel after the burner has been ignited. The connecting-piece *m*, preferably reinforced by the enlarged portion *m'*, as shown in Figs. 3, 4, and 5, is connected by soldering at one side to the conducting-tube *f* and at the other side to the back part *h*, which back part is fastened to the sad-iron body by means of screws *i* and *k* and provided with an opening *l* (shown clearly in Fig. 6) for entrance of a cast or

pressed shallow vessel *n*, made of suitable material and of the form shown in Fig. 4 of horseshoe shape, one leg of the same being adapted to be placed at each side of the burner-tube.

When it is desired to use the sad-iron, this vessel is filled with alcohol and introduced in the opening *l* of back *h* of the body *a* of the sad-iron. The alcohol in the vessel is then ignited and the vapor-generator *d* heated by the rising hot-air currents and the connecting-plate *m* heated by contact with the flames of the burning alcohol in the vessel, whereupon the liquid fuel is drawn by the wick from the reservoir *e* to the vapor-generator *d*, the vapors passing down through the supply-tube *f* to the burner-tube *g*, being ignited as they are emitted through jet-holes of the burner-tube. When the alcohol in the vessel is consumed, the vessel is taken out and the heat generated by the jets of the burner-tube heats the body of the sad-iron. The further vaporization of the liquid fuel drawn into the vapor-generator is caused partly by metallic conduction in the connecting piece or plate *m*, heated by the rear jets of the burner-tube, and partly by that part of the hot products of combustion entering the vapor-generator chamber rising at both sides of the vapor-generator and overlapping the sides of the same, whereby the supply of vapor is continued, the jets kept burning, and the iron heated. The supply-tube *f* being soldered to the heat-transmitting piece or plate *m*, connecting the burner-tube *g* and vapor-generator *d*, the vapors entering the burner-tube are strongly heated, whereby a higher heating effect is attained and a smaller quantity of heating material required than when the gases are not previously heated.

Sufficient vaporization is obtained by the combined effect of the small quantities of heated combustion-current passing into the vapor-generator chamber *c* and by the heat radiated by the few flames burning below the connecting-piece *m* and transmitted to the vapor-generator *d* by such connecting-piece. The vapor-generator is thereby sufficiently heated, but prevented from being overheated, as the greater quantity of the combustion-current generated by the burner does not pass to the vapor-generator chamber and around the vapor-generator, but escapes through the openings provided at the top of the heating-chamber. By this arrangement a sufficient vaporization is secured, while an overheating of the vapor-generator is prevented. Moreover, loss of heat is obviated and the heating of the sad-iron begun by the combustion of alcohol in the heating-chamber itself.

The vapor-generator chamber may also be arranged so as to extend downward from the top of the sad-iron into the interior, as shown in Figs. 8 and 10, which permits the sad-iron being made lower, and also be arranged to extend partly above the top of the sad-iron and

partly below, as shown in Fig. 9. The section of the vapor-generator chamber may be of any suitable form and may be placed at any part of the sad-iron.

If the sad-iron is to be made very low, so as to render it impossible to put the reservoir at a lower point than the vapor-generator, as shown in Fig. 10, the tube *f'*, connecting the vapor-generator and the burner-tube, must be extended up to a point above the reservoir in order to prevent the liquid fuel from flowing from the vapor-generator to the burner-tube while the sad-iron is not in operation. After having used the sad-iron the liquid fuel may also be prevented from flowing down by hermetically closing the air-supply opening of the reservoir.

I claim as new and desire to secure by Letters Patent—

1. The combination, with the body of a sad-iron, having a cavity or heating-chamber and provided with openings at its top and bottom, of a fluid-reservoir arranged outside of said body, a vapor-generator chamber arranged outside of the cavity or heating-chamber of the sad-iron, but in communication with this cavity or heating-chamber, a vapor-generator in said vapor-generator chamber, a wick-tube containing a wick connecting the fluid-reservoir with the vapor-generator, a perforated burner-tube near the bottom of the body of the sad-iron, a supply-tube connecting the vapor-generator with the burner-tube, and an upright heat-transmitting plate connected with the vapor-generator, supply-tube and burner-tube, substantially as set forth.

2. The combination, with the body of a sad-iron, having a cavity or heating-chamber and provided with openings at its top and bottom, and with a vapor-generator chamber arranged at the upper rear end outside of the cavity or heating-chamber of the sad-iron, but in communication with the same, of a fluid-reservoir located outside of the body of the sad-iron, a vapor-generator in said vapor-generator chamber, a wick-tube containing a wick connecting the fluid-reservoir with the vapor-generator, a perforated burner-tube near the bottom of the body of the sad-iron, a supply-tube connecting the vapor-generator with the burner-tube, and an upright plate heated by the rear jets of the burner-tube, connected with the vapor-generator, supply-tube and burner-tube, for transmitting heat from the burner-tube to the vapor-generator, for vaporizing the fluid in the same, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

KARL KALTSCHMID.

Witnesses:

ERNST ENTENMANN,  
EDWARD H. OZMUN.