

(No Model.)

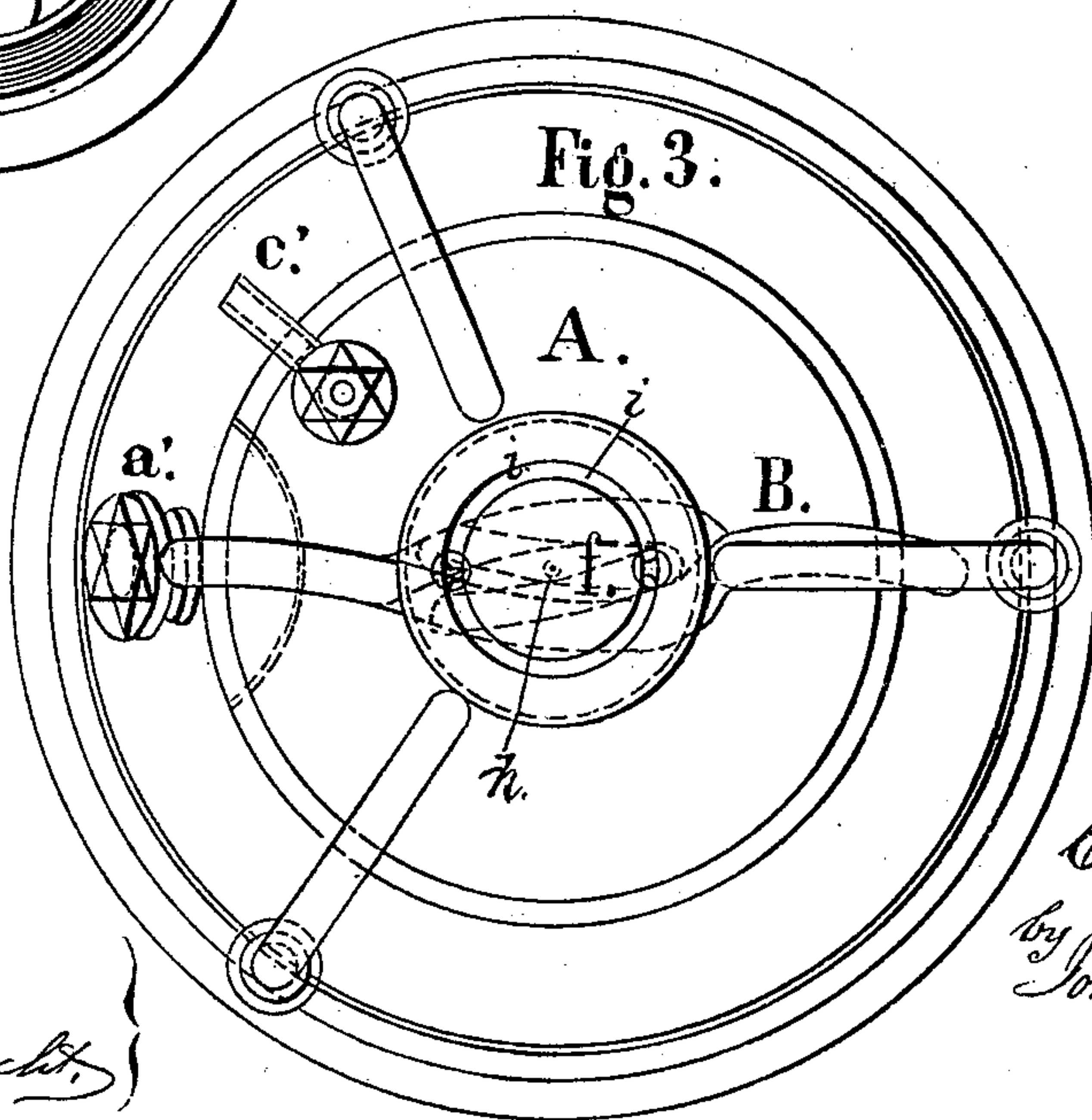
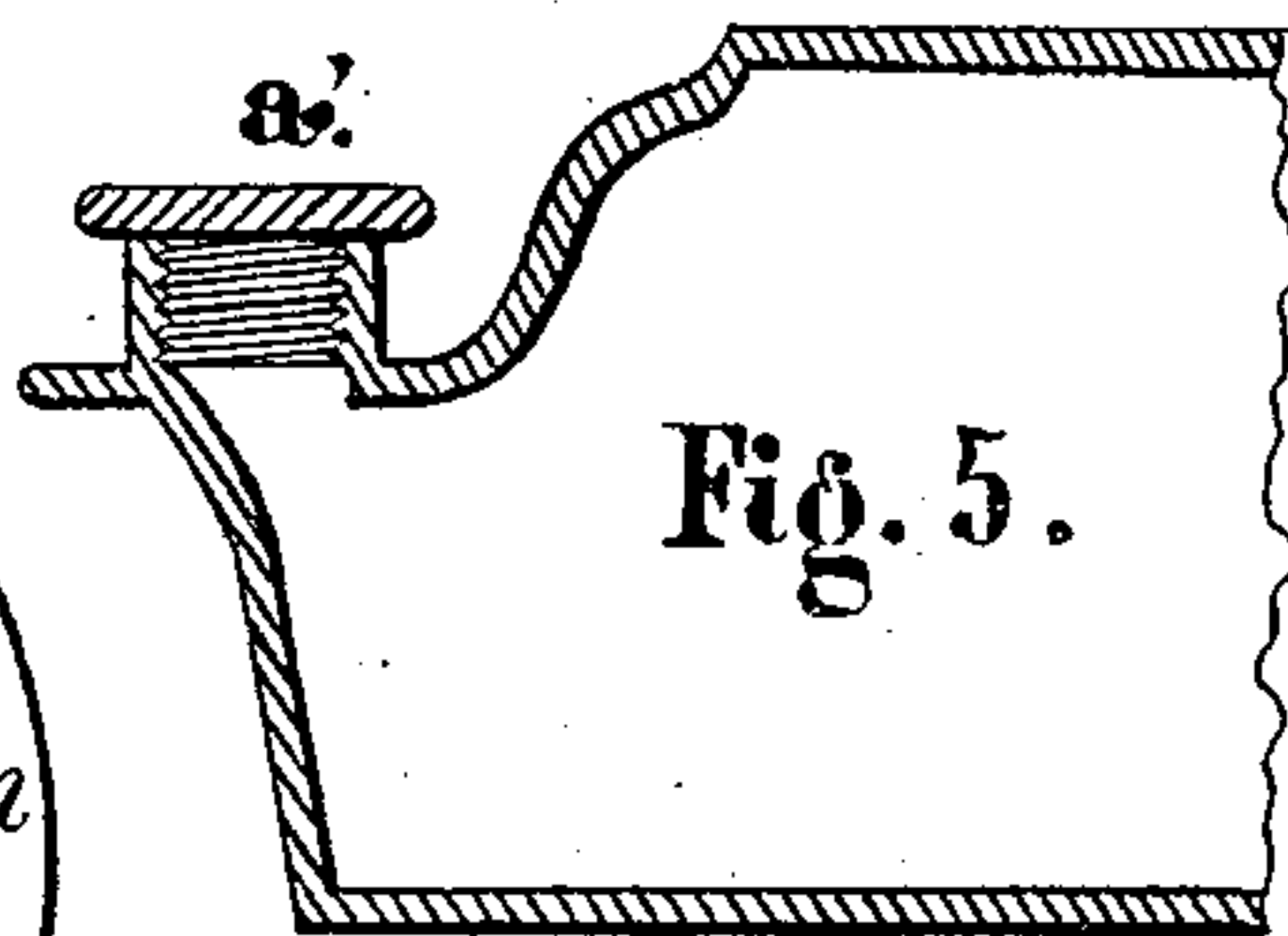
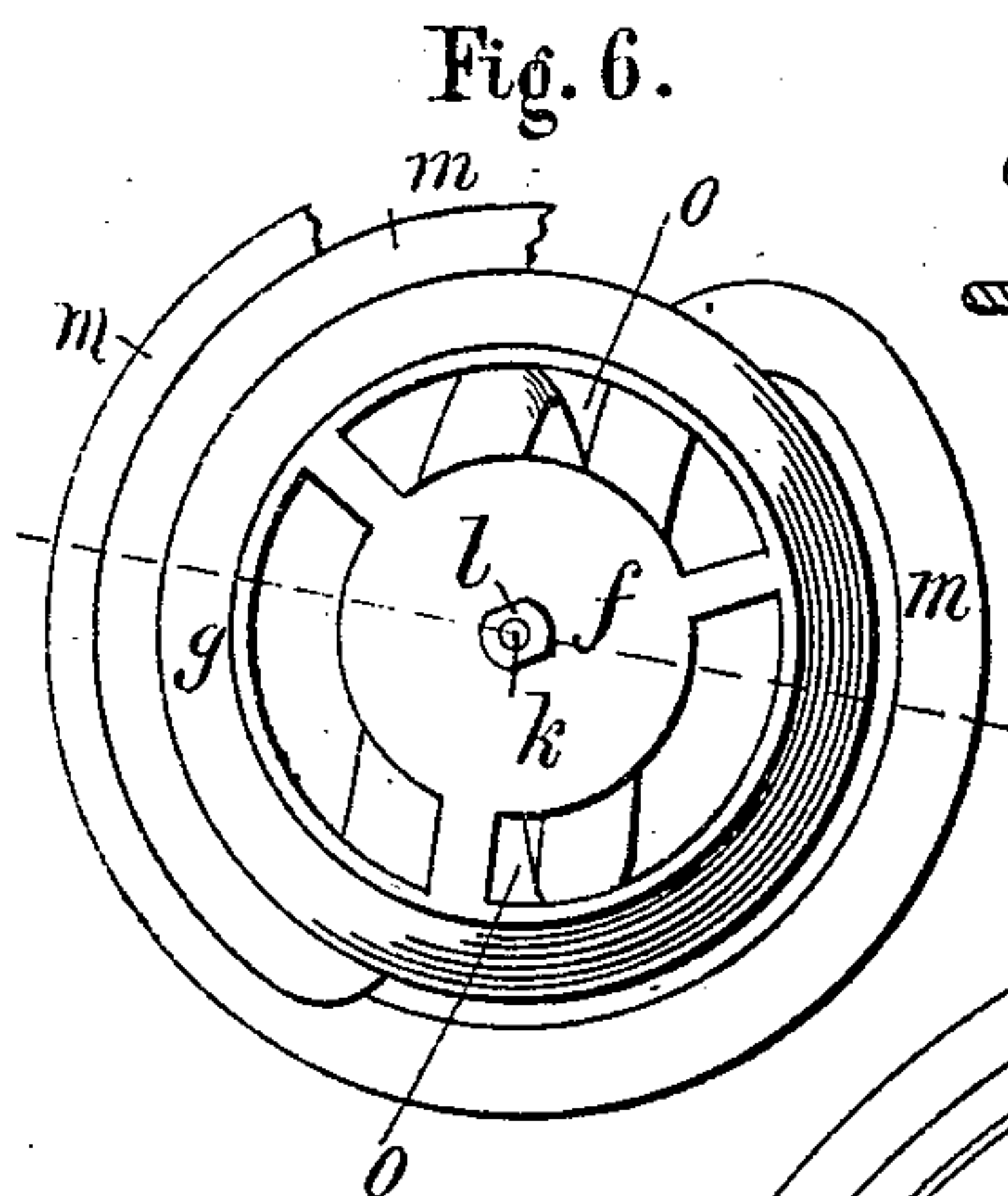
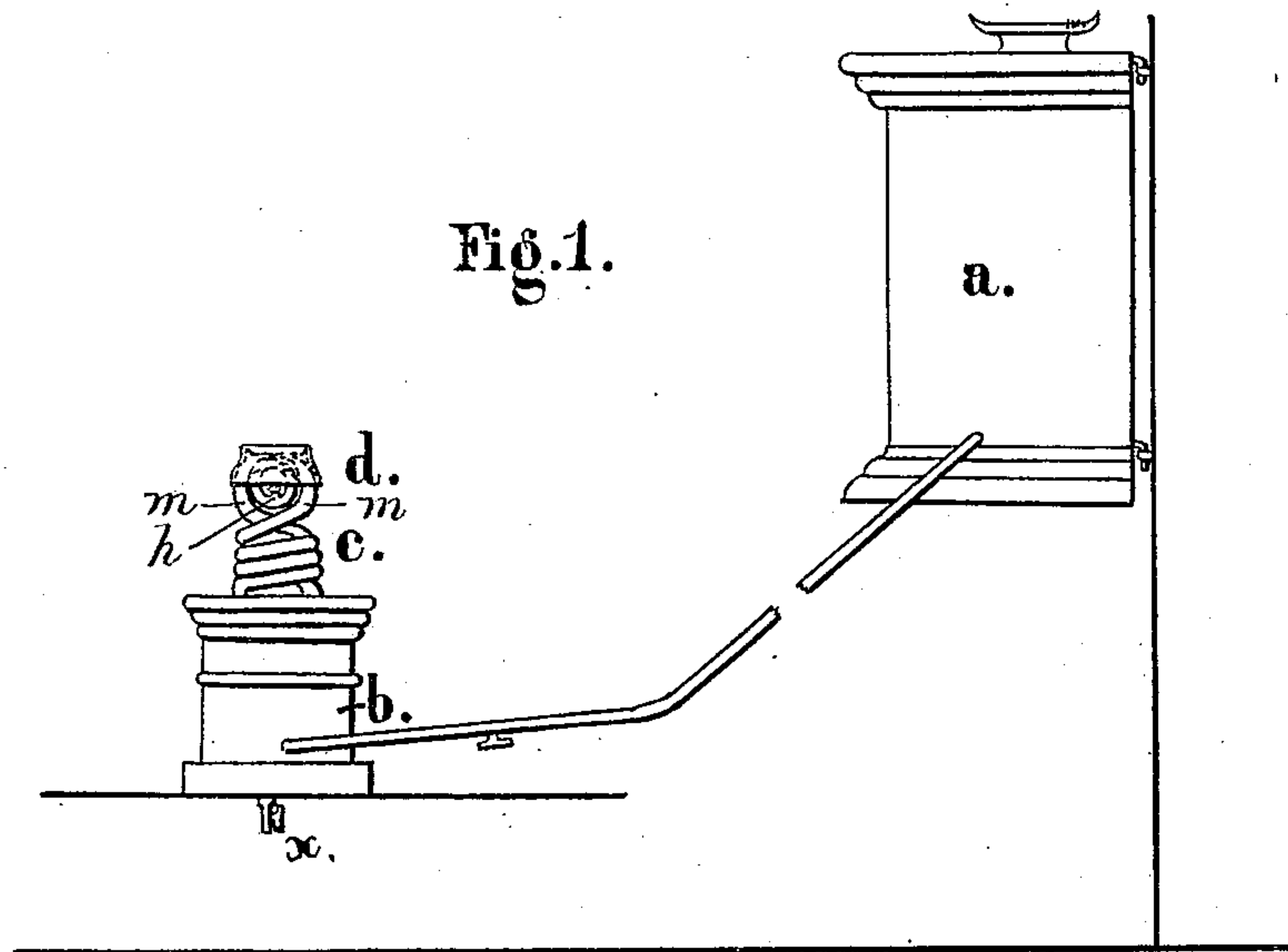
2 Sheets—Sheet 1.

C. ÖSTLUND.

COOKING STOVE.

No. 270,690.

Patented Jan. 16, 1883.



Witnesses

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his Attorneys

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Fig. 2.

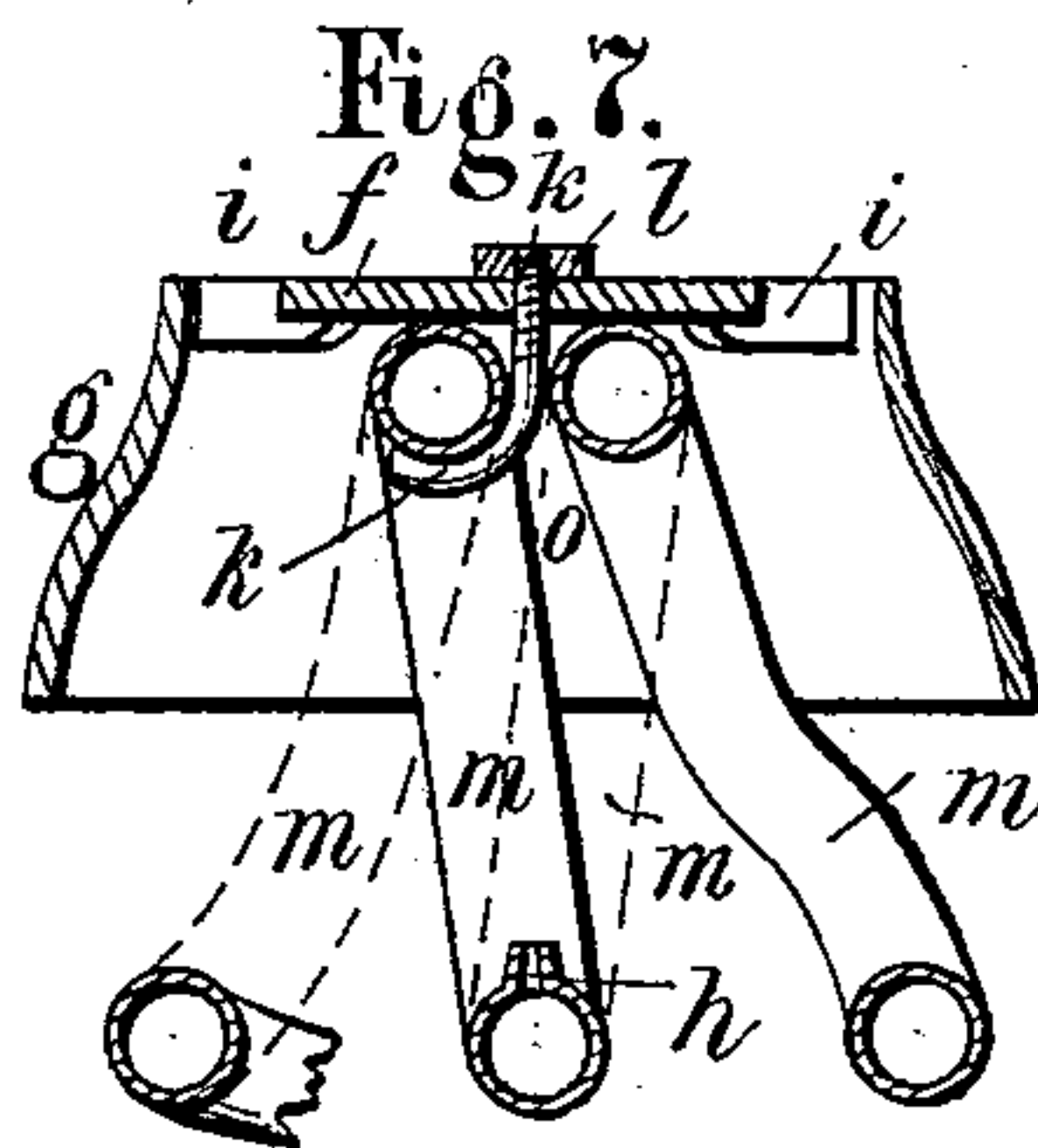
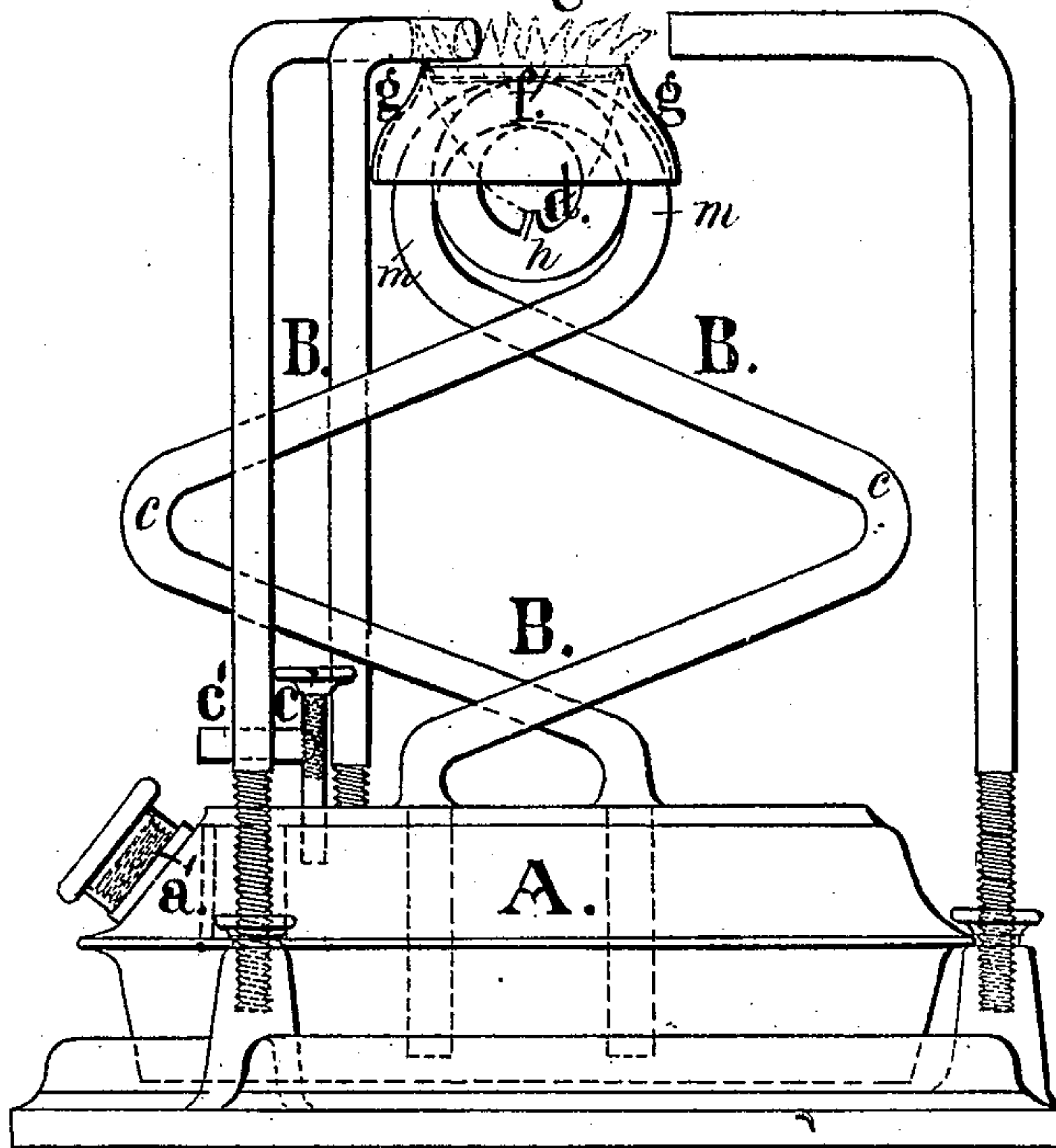
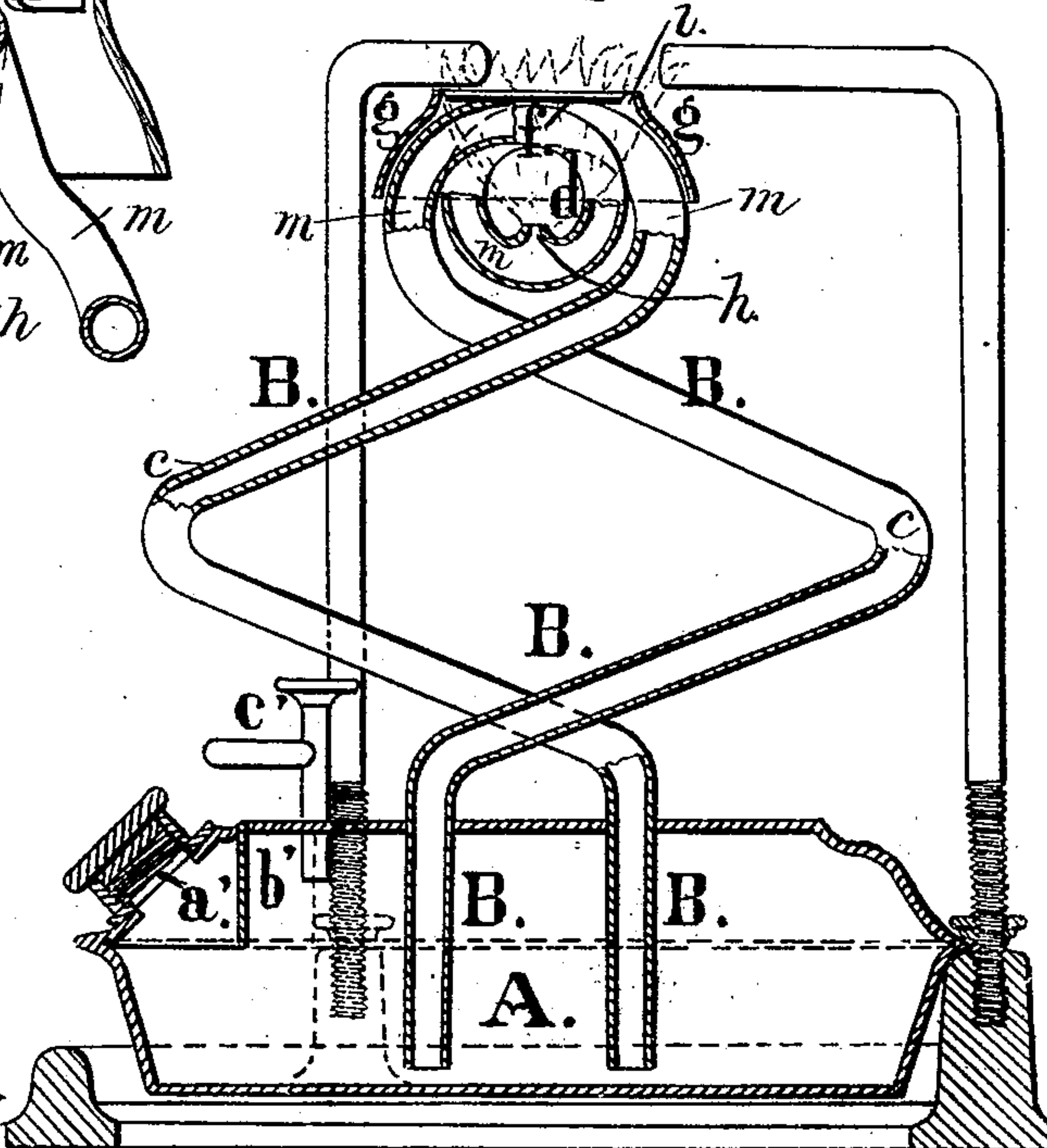


Fig. 4.



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# UNITED STATES PATENT OFFICE.

CARL ÖSTLUND, OF STOCKHOLM, SWEDEN.

## COOKING-STOVE.

SPECIFICATION forming part of Letters Patent No. 270,690, dated January 16, 1883.

Application filed February 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CARL ÖSTLUND, a citizen of Sweden, residing at Stockholm, Sweden, have invented certain new and useful Improvements in Cooking-Stoves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to furnish an apparatus for heating with petroleum or the like, by which a great degree of heat can be obtained very cheaply and without danger from explosions. This apparatus consists mainly of four parts, namely: first, the vessel *a*, Fig. 1, for containing the petroleum, which is united by a tube with, second, a low vessel, *b*, for collecting any sediment or refuse from the petroleum, *x* being a faucet near the bottom of this vessel for drawing off this sediment or refuse; third, the pipe-coils *c*; and, fourth, the cap *d*, which expedites the complete consumption of the petroleum-gas. The two first-mentioned vessels can also be replaced or substituted by a single vessel, as shown in Figures 2, 3, and 4.

In the accompanying drawings, Fig. 1 represents such an apparatus with separated oil case or vessel and a burning-vessel. Fig. 2 is an apparatus with only one vessel in side elevation; Fig. 3, a plan view of the same, and Fig. 4 a vertical section. Fig. 5 shows a modified construction for attachment of the filling-faucet; Fig. 6, an enlarged partial plan view, showing the cap applied to the vertical spirals of the tube; and Fig. 7, a detached vertical section through the cap and these vertical coils or spirals.

The oil for burning is filled into the vessel *A* through the inlet-opening *a'*. It is, however, necessary that in this vessel there be sufficient room in the apparatus for the air to be pumped into it, which will be compressed therein, and serves to force the petroleum up into the pipe-coils, according to the quantity of oil burned therein. For this purpose I make the small wall *b'* behind the opening *a'*. When sufficient petroleum has been poured into the vessel to reach the lower edge of the wall *b'*, then, if the

filling is continued, the air above the surface of the oil in the vessel will be compressed, and prevents thereby further filling. However, this air-space can be produced in different ways—as, for example, as shown in Fig. 5. After the filling has been completed the opening *a'* is securely screwed up.

In using the apparatus the pipe-coils *B* are, as a preparatory step, first warmed by means of an alcohol-flame. The air is then blown into the oil-receptacle through the tube *c'*, or is pressed into it by means of a rubber bulb or a small pump. In the construction shown in Fig. 1 the petroleum is forced up in the tube-coils by its own weight from the higher-placed vessel *a'*. By the pressure produced thereby the petroleum is driven out of the vessel into the warmed pipe-coils, is there gasified, and passes through the holes in the tubes (the apparatus represented in the drawings has only one, *n*, of these holes) in the form of burning gas. Mixed with the surrounding air, the outflowing gas comes in contact with the parts of the tubes immediately above the outlet *h*, by which its rapidity is diminished, so that it can become ignited by the heating-flame. Then the flame of gas is deflected by the under surface of the top plate, *f*, of the cap *d* and against the part *g* of this cap, and it then passes out through the annular opening *i*, between the plate and cap, and produces here a draft, whereby the surrounding air flows into the cap and expedites the burning of the oil-gas, so that this is done far more perfectly than by the burning of alcohol in an ordinary alcohol-lamp. This cap is an inverted flaring cup, so that when applied to the top of the coils, as shown, it is entirely open at the bottom, entirely closed at its sides, and its top is flat and provided with openings around a central disk, which is integral with the cap, these openings forming almost a complete annular passage for the flame, as shown. This cap is cast all in one piece. This cap is removably secured to the coils of the tube in any suitable way to hold it in its proper position; but a simple and efficient mode is by means of a short iron rod, *k*, held by a nut, *l*, to the cap, the lower end of such rod passing down between two coils, and a bend or head on such end holding the cap to the coils, the nut serving to tighten the cap to place. The preparatory heating-flame is now



removed, and the heat from the burning of the gas will now be sufficient of itself to insure the continued generation of gas.

It will be observed that not only do the coils *m* of the tube B, which are above the burner jet or hole *h*, continue directly across and through the path of the flame, but also that a space, *o*, is left between these coils, and through which space, also, the flame passes upward directly to the under side of the central part, *f*, of the cap. Thus each of the coils is intensely heated by direct contact with the flame on both its sides as well as underneath it, and a current of atmospheric air rises freely through the space *o* between these adjacent coils.

The vessel containing the article to be warmed is placed above the cap in any suitable manner. When the flame has reached the desired height no more air is forced in through the tube *c'*, and this opening is then closed. If a decrease of heat is desired, the faucet or opening *c'* is again opened for diminishing the pressure in the oil-vessel. The flame will be extinguished at once when this faucet *c'* is opened wide.

The tube system B can consist of one, two, or more coils, *c*, extending from the lower part of the oil-vessel. This system B is composed of a single continuous pipe, both open ends of which are in the vessel A. Above this vessel they may be bent, so as to extend through a considerable length without occupying much space, and at about the central portion of the length of this tube it is coiled, as above stated, into as many coils as may be desired, the coils being in planes which are nearly vertical, as shown, and the burner jet or outlet *h* being made on the upper side of a lowermost portion of a coil, as shown, so that the coils stand in the path of the flame and check the rapidity of the flow of the outflowing gas, while at the same time permitting the coils to be properly heated, and at the uppermost part being wound into vertical coils, with an open space between each two adjacent coils, as shown and as previously stated. These tubes must have a relatively great length, and must be therefore coiled to take up as little space as possible. By this arrangement the advantage

is gained that the petroleum is only slightly heated in passing the pipe-coils. Therefore no heat is carried to the oil-vessel, and thereby no explosive gases can be generated there and no explosions need be feared. By the generation of gas in the tubes there is always a little deposit or tar produced, which sinks slowly toward the bottom of the oil-vessel, from which it can be withdrawn through the filling-openings *a'* into another vessel, in which it will form a sediment after standing sufficiently long. The petroleum clarified by this means in such vessel can then be used again. In the apparatus Fig. 1 this is done by withdrawing through the faucet *x*.

In my apparatus the petroleum is entirely consumed, and not in such manner that the more volatile parts escape first, but so that the remaining quantity of petroleum in the oil-vessel always retains the specific gravity it had when first filled in. The flame from this apparatus produces therefore no soot. In the consumption of the petroleum no offensive smell is produced. This lamp is therefore entirely free from soot, as also smoke, and consumes the material for burning in the most economical manner. The flame can be instantly regulated, as desired.

The apparatus can be used for heating small steam-boilers, for the heating and evaporation of fluids, as cooking apparatus, for heating of rooms, &c.

Instead of refined petroleum, ordinary gas-oil, wood-oil, crude petroleum, alcohol, &c., can be used as the combustible.

I claim—

In combination with the pipe B *c*, having the vertical spirals *m*, and having an open space, *o*, between these spirals and above the burner *h* in the coil, the cap *f g i*, made open at bottom and with closed flaring sides and integral with its central plate, and provided with a central rod, *k*, adapted for insertion between the coils and for securing the cap to them, as set forth.

CARL ÖSTLUND.

Witnesses:

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ROBT. M. HOOPER.