

No. 816,145.

H. V. BLAKE.

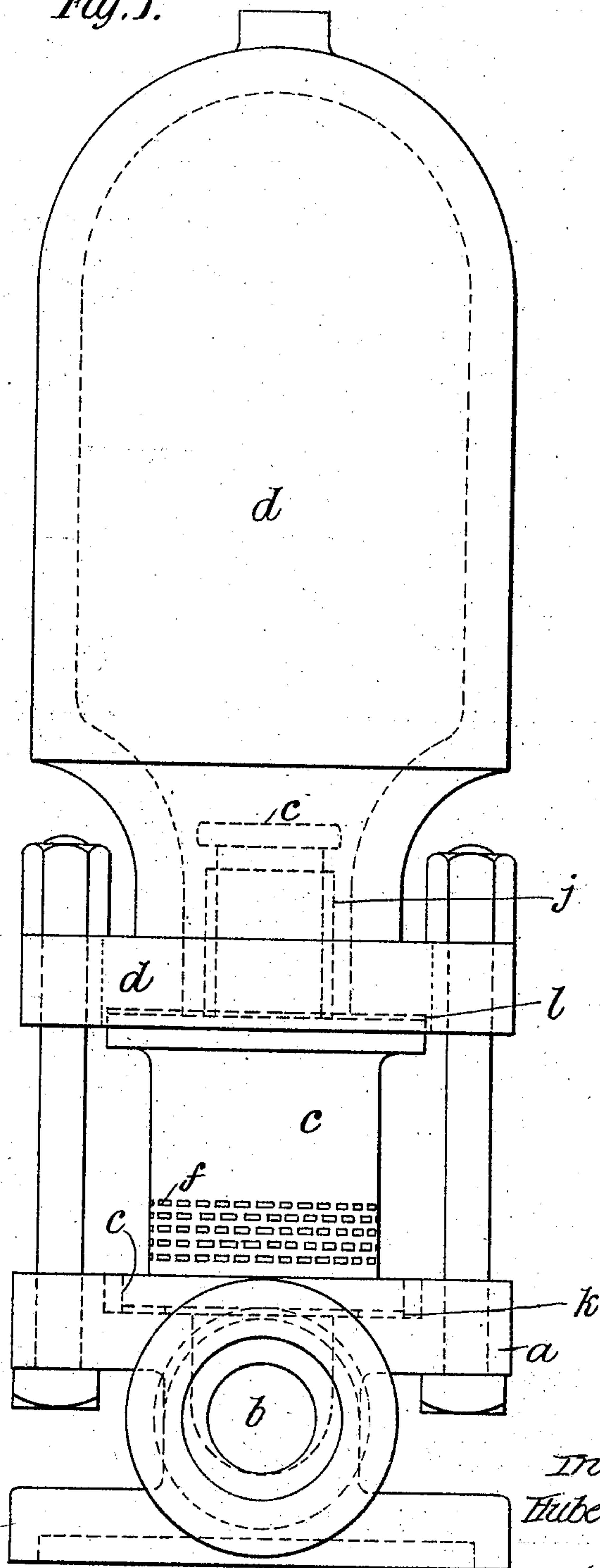
PATENTED MAR. 27, 1906.

HYDRAULIC RAM.

APPLICATION FILED MAY 10, 1905.

3 SHEETS—SHEET 1.

*Fig. 1.*



Witnesses a—  
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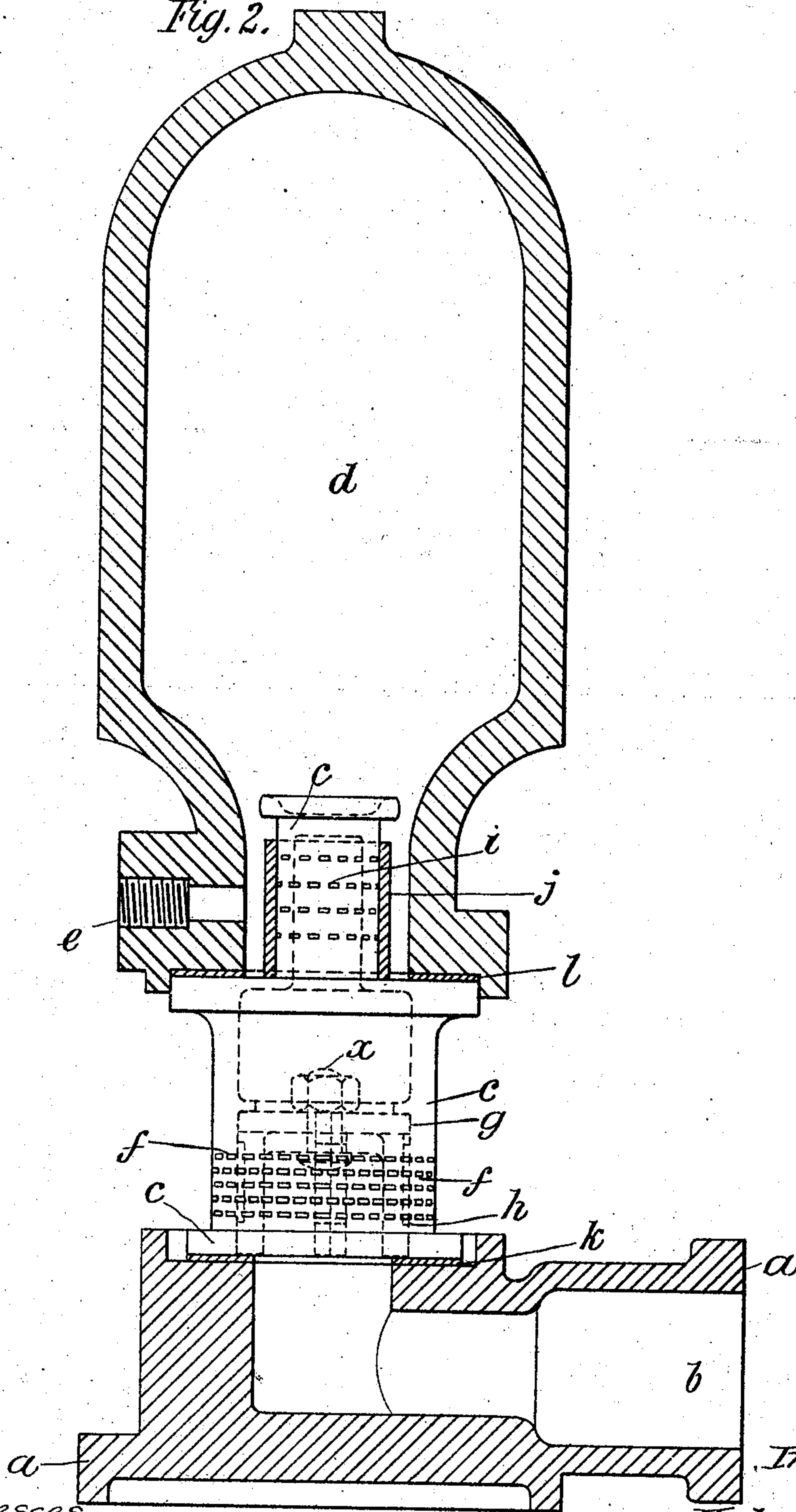
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

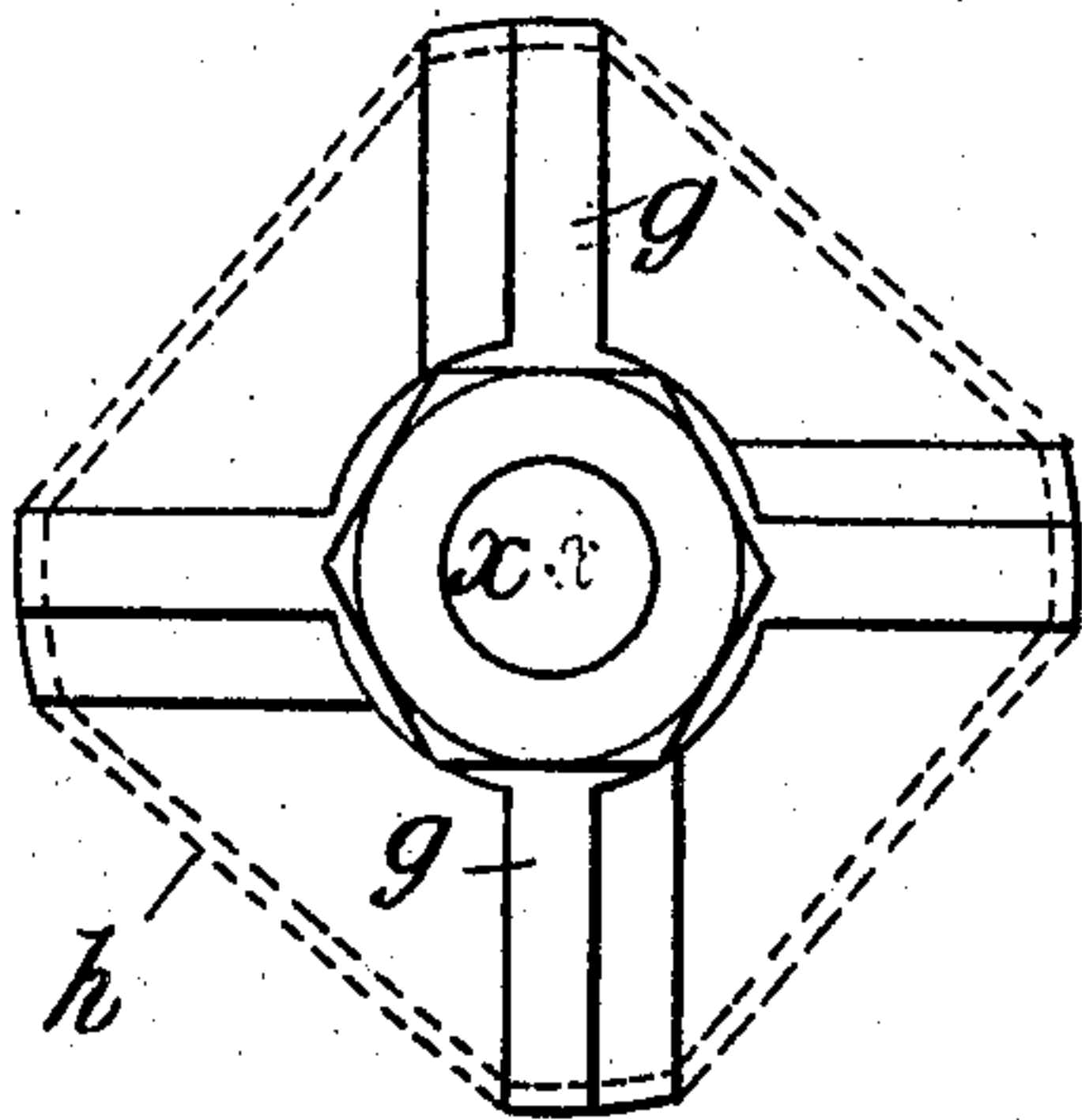


Fig. 4.

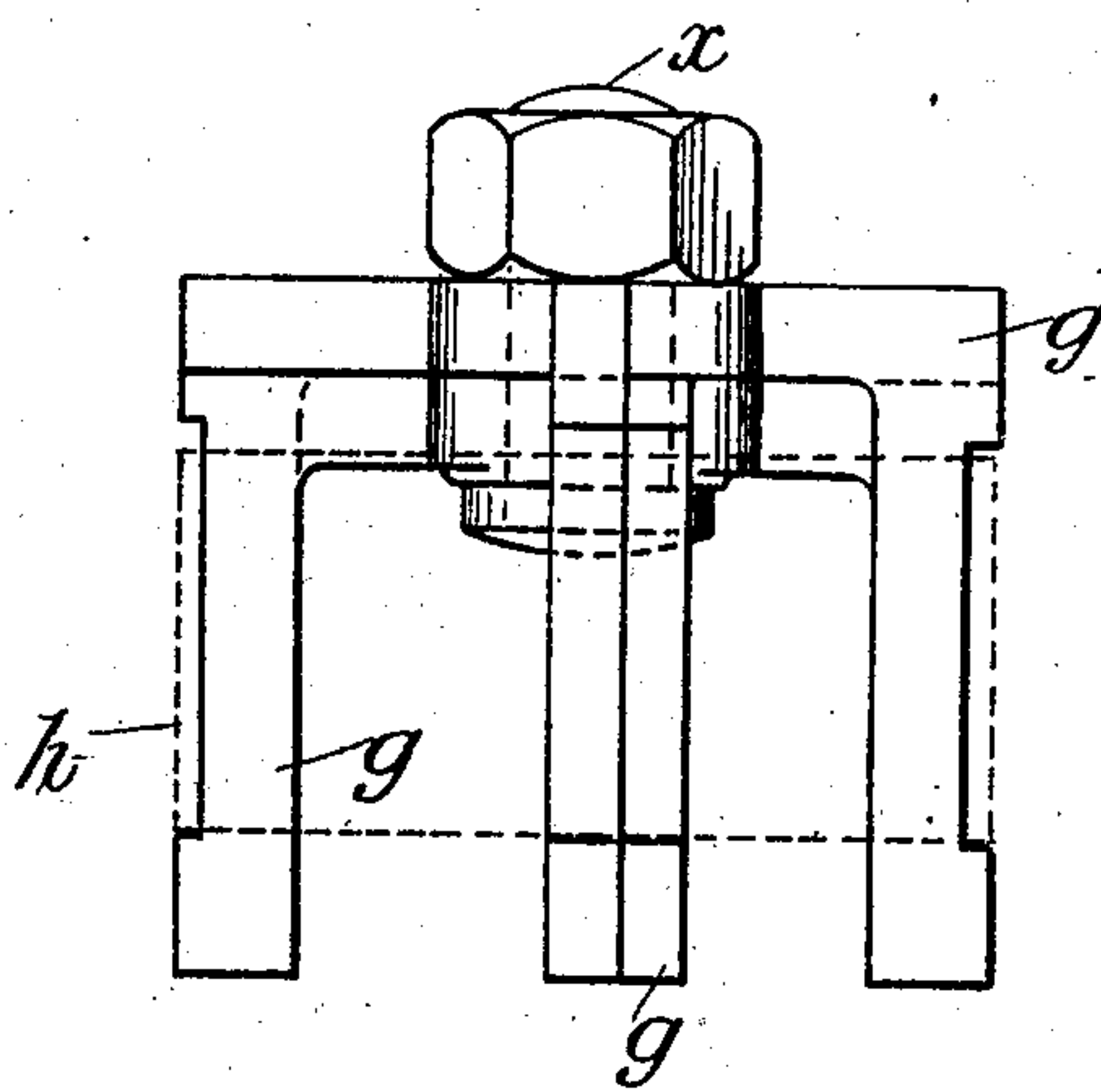


Fig. 5.

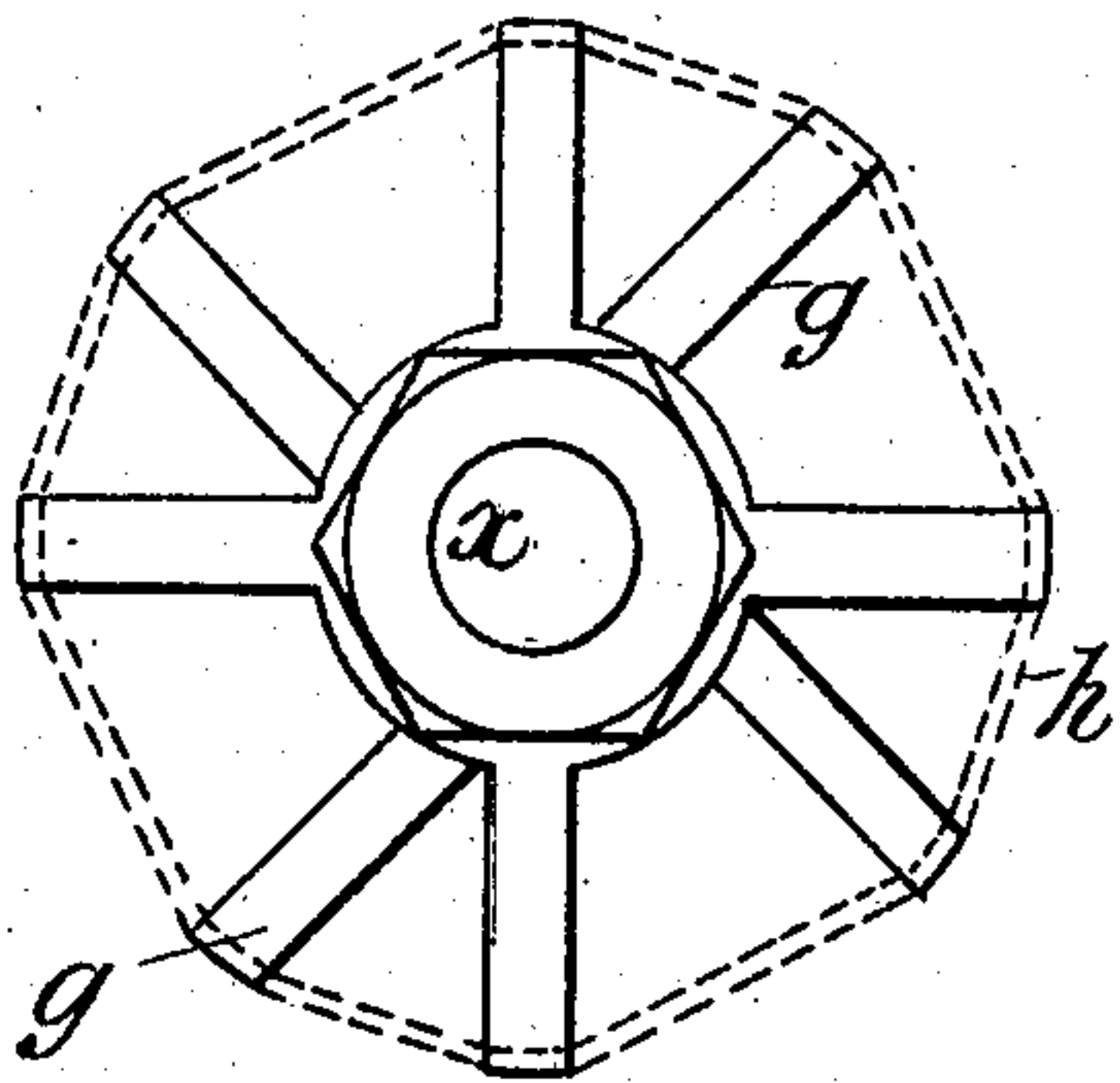


Fig. 6.

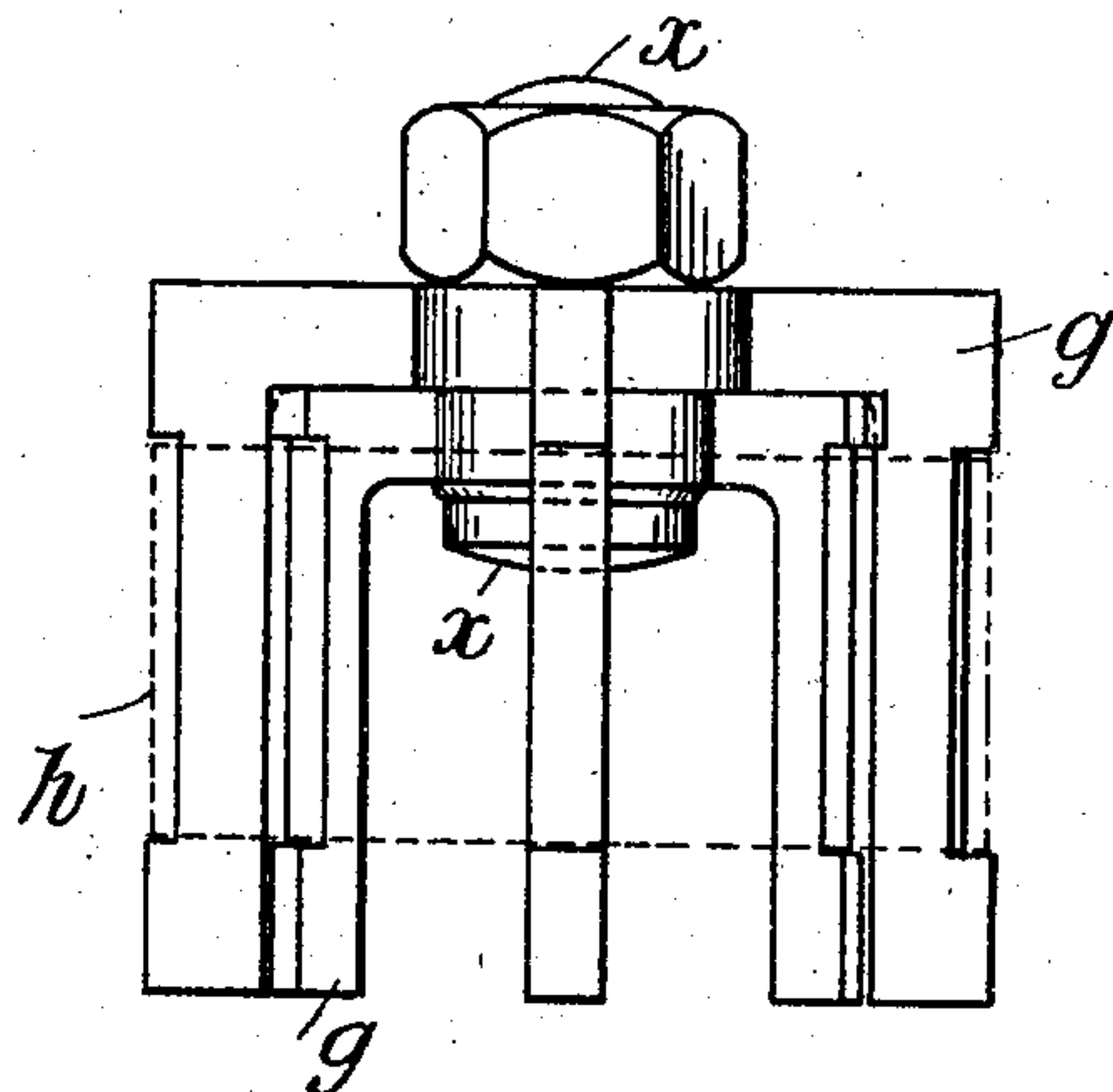


Fig. 7.



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# UNITED STATES PATENT OFFICE.

HUBERT VINCENT BLAKE, OF ACCRINGTON, ENGLAND.

## HYDRAULIC RAM.

No. 816,145.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed May 10, 1905. Serial No. 259,763.

*To all whom it may concern:*

Be it known that I, HUBERT VINCENT BLAKE, hydraulic engineer, a subject of the King of Great Britain, residing at Oxford Street Works, Accrington, in the county of Lancaster, England, have invented new and useful Improvements in Hydraulic Rams, of which the following is a specification.

My invention relates to improvements in hydraulic rams, and particularly to the construction and arrangement of the valves and the construction of the ram generally to economize material and labor.

In the accompanying three sheets of drawings, Figure 1 is a front elevation, and Fig. 2 a side elevation, partly in section, of a hydraulic ram made according to my invention. Figs. 3 and 4 are plan view and side elevation, respectively, of my improved frame for the pulse-valve; and Figs. 5 and 6 are similar views with the parts set in a different position. Fig. 7 is a plan showing an open slot which is formed in each of the lugs on the ram-body and air vessel.

In the drawings, *a* designates the body of the ram; *b*, the inlet for water; *c*, the casing of the pulse or waste valve and the delivery-valve, and *d* the air vessel, in which is a hole *e* to receive an outlet-pipe for the delivery of water. The casing *c* is provided with a group of openings consisting of slots or holes *f*, and inside this casing is fitted a frame *g* for the pulse-valve *h*, the frame *g* being formed in two parts pivoted together upon a single bolt *x*. Figs. 3 and 4 show this frame with its two parts or legs brought close together, while in Figs. 5 and 6 the legs are shown separated and the frame expanded. Round the legs of the frame *g* is stretched the band of india-rubber or other suitable material forming the pulse-valve *h*, which when the frame *g* is expanded nearly fills the interior of the casing *c* when the parts are put together.

The delivery-valve casing is formed of one piece of metal or of pieces of metal combined as one piece with the pulse-valve casing and is a smaller hollow vessel provided with a group of openings *i*, extending, preferably, all round it, and over this group of openings is stretched a rubber or other suitable flexible band *j*, forming the delivery-valve.

The valve-casing *c* is fitted between a flexible washer *k* on the body of the ram and a

similar washer *l* on the air vessel. The ram-body *a*, valve-casing *c*, and the air vessel *d* are all connected together by two bolts, which pass through open slots *o* in the ram-body and air vessel. (See Fig. 7.)

In operation water enters the body of the ram at *b* and passes forward into the valve-casing *c*, where a certain quantity escapes under the rubber-band pulse-valve *h* through the openings *f* until the pressure of water in the ram increases sufficiently to temporarily drive the band *h* up to the interior of the casing, thus closing the openings *f*, when a portion of the water will be forced through the openings *i* under the delivery-band valve *j* and into the air vessel. The band *h* will now fall away from its casing *c* and water will again escape through the openings *f* until sufficient pressure or momentum is attained in the ram-body to force more water through the delivery-valve into the air vessel, from which it is forced through a pipe connected to the outlet *e*.

When there is a full supply of water, the legs of the pulse-valve frame *g* are set close together, as shown in Figs. 3 and 4; but if the available supply of water should be much reduced the ram can be adjusted to work with the smaller quantity by expanding the legs and setting the frame *g* as shown in Figs. 5 and 6, where the band-valve *h* is stretched in a form more approaching a circle to agree more nearly with and so approximately close the interior of the casing.

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

A regulator for an elastic-band pulse-valve consisting of two frames each having a plurality of legs or supporting-corners for the elastic band, the one frame pivoting concentrically with the other and being adapted to be adjusted to make the elastic band more nearly approach or recede from the perforated casing surrounding it.

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

HUBERT VINCENT BLAKE.

Witnesses:

HENRY REMOULLI BARLOW,  
HERBERT ROWLAND ABBEY.