

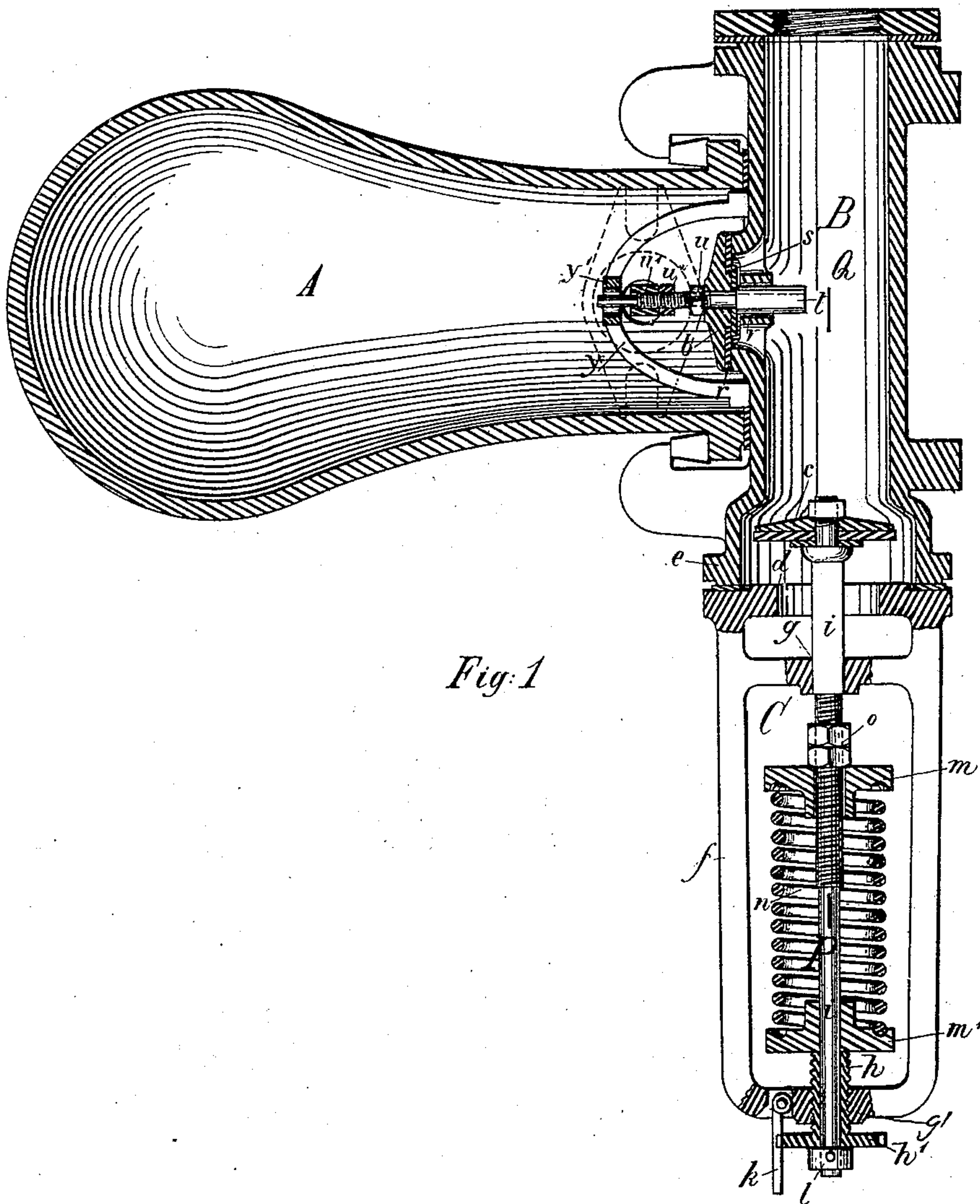
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3 Sheets—Sheet 1. .

A. BAER.  
HYDRAULIC RAM.

No. 337,112.

Patented Mar. 2, 1886.



*Fig: 1*

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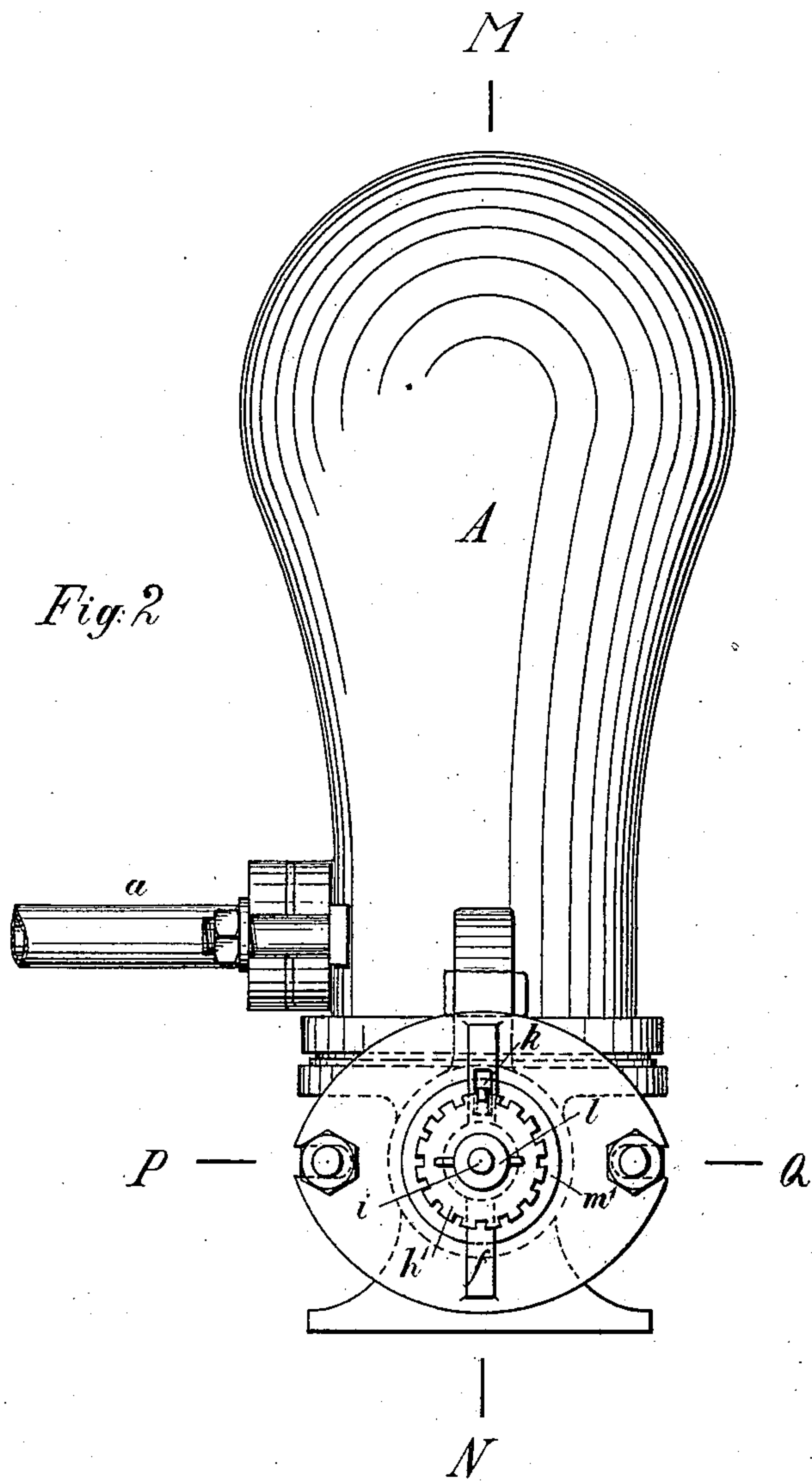
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(No Model.)

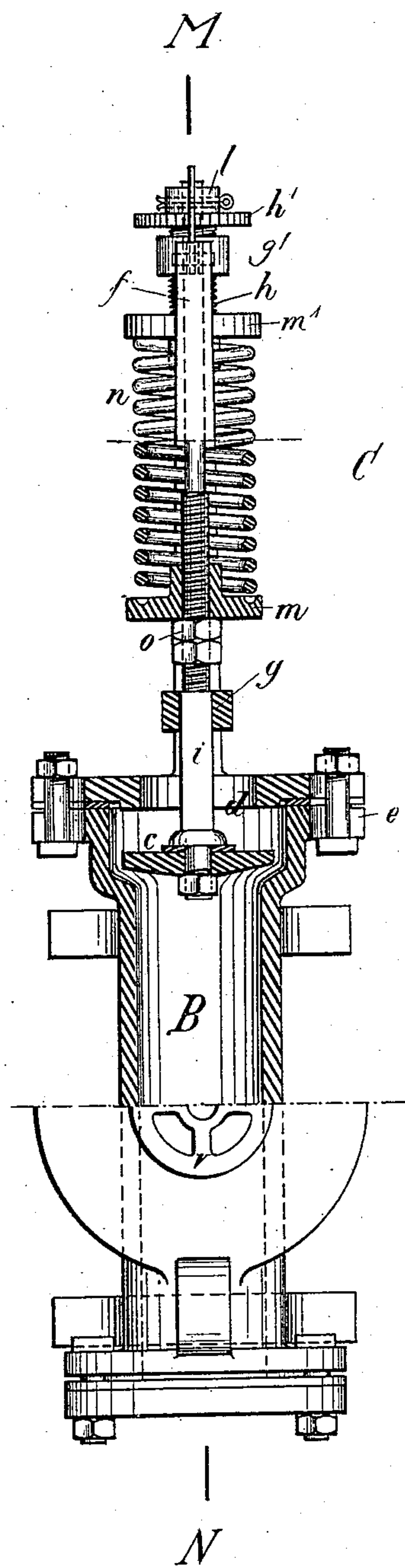
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Fig. 3



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# UNITED STATES PATENT OFFICE.

ADOLPHUS BAER, OF ZURICH, SWITZERLAND.

## HYDRAULIC RAM.

SPECIFICATION forming part of Letters Patent No. 337,112, dated March 2, 1886.

Application filed December 12, 1885. Serial No. 185,493. (No model.)

*To all whom it may concern:*

Be it known that I, ADOLPHUS BAER, a citizen of the Republic of Switzerland, residing at Zurich, in Switzerland, have invented certain  
5 new and useful Improvements in Hydraulic Rams, of which the following is a specification, reference being had to the accompanying drawings, which form a part of the specification, and in which—

10 Figure 1 is a longitudinal vertical sectional view of my improved hydraulic ram, taken on lines M N, Figs. 2 and 3. Fig. 2 is an end view of the same; and Fig. 3 is a top view of the ram, showing the air-chamber removed  
15 and showing portions taken in section on line P Q, Fig. 2.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to hydraulic rams;  
20 and it consists in the improved construction and combination of parts of a ram having means for adjusting the stroke of the discharge and outlet valves, and having means for adjusting the tension of the discharge-valve, as  
25 hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the air-chamber, which is provided with the outlet pipe *a*, and which is secured by suitable clamps and by a suitable packed  
30 joint upon the water-chamber B, into which the feed-pipe enters at one end. A valve-seat, *d*, having an outwardly-projecting guide-frame, C, is suitably clamped upon a flange, *e*, at the discharge end of the water-chamber,  
35 and the discharge or stop valve *c* plays upon the inner face of this seat. The guide-frame consists of side pieces, *f*, the end pieces of which are respectively formed with a smooth bearing, *g*, near the valve seat, and with a  
40 screw-threaded bearing, *g'*, at the outer end of the frame, and the stem *i* of the discharge-valve slides in the inner bearing, *g*. A screw-threaded sleeve, *h*, projecting inward from a disk, *h'*, having a series of notches in its edge,  
45 fits in the screw-threaded bearing *g'*, and has the outer end of the discharge-valve stem sliding in it, and the notches in the edge of the disk are engaged by a pawl or latch, *k*, pivoted at its inner end to the end piece of the guide-  
50 frame. The outer end of the valve-stem is formed with a collar, *l*, which bears against the

notched disk, and it will be seen that the inward stroke of the valve and valve-stem will be regulated by adjusting the screw-threaded sleeve and its disk in the female-threaded  
55 bearing in the end of the frame, the stem sliding in the inner bearing in the frame and in the sleeve. An outer disk, *m'*, and an inner disk, *m*, slide upon the valve-stem and confine a spiral spring, *n*, which is wrapped around  
60 the stem and bears with its ends against the grooved and flanged inner faces of the disks; and the outer disk bears against the inner end of the screw-threaded sleeve, while the inner disk is adjusted upon the valve-stem by means  
65 of a nut and its jam-nut *o*, which fit upon the stem, which at that portion is screw-threaded. It will be seen that the tension of the spring which furnishes resistance for the discharge-valve against the flow of water may be regulated  
70 by means of the nuts upon the threaded portion of the valve-stem. The upper side of the water-chamber is provided with a valve-seat and aperture having a cross-bar formed with a vertical bearing, *v*, and a valve, *b*, having  
75 an elastic disk, *r*, secured to its under side, plays upon this seat, being clamped upon the valve-stem *t* between a disk, *s*, bearing against the elastic disk and held upon the stem by the lower portion of the stem being  
80 enlarged, and a nut, *u*, which fits upon a threaded portion of the upper end of the stem. The upper end of the stem slides in a vertical bearing, *y'*, formed at the top of a yoke, *y*, projecting into the air-chamber, and an adjusting-nut, *u'*, and a jam-nut, *u''*, serve to limit  
85 the upward stroke of the valve and stem, the adjusting-nut stopping against the bearing in the yoke when the valve is raised, and the jam-nut bearing against the lower end of the adjusting-nut. In this manner it will be seen  
90 that the flow of water into the air-chamber, and consequently out through the outlet-pipe, may be regulated, and the resistance of the discharge or stop valve may be regulated, as  
95 well as its stroke, regulating the force with which the water will enter the air-chamber and rise in the outlet-pipe, as well as the volume of the same, by regulating the volume  
100 of water flowing out of the discharge-aperture before the same is closed and the water repelled and forced through the outlet-valve.



Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a hydraulic ram, the combination of a  
5 water-chamber, a valve-seat secured at the  
discharge end of the chamber and having an  
outwardly-projecting guide-frame formed with  
an inner smooth longitudinal bearing and an  
outer screw-threaded longitudinal bearing, a  
10 discharge or stop valve having a stem passing  
through the bearings, and having a collar se-  
cured at its outer end, a screw-threaded sleeve  
fitting in the threaded bearing and having a  
notched disk at its outer end, the stem sliding  
15 in the sleeve with its disk bearing against the  
outside of the disk, and a latch pivoted to the  
end of the guide-frame and engaging the  
notched disk, as and for the purpose shown  
and set forth.
2. In a hydraulic ram, the combination of a  
20 water-chamber, a valve-seat secured at its  
discharge end, and having an outwardly-pro-  
jecting frame provided with a smooth longi-  
tudinal inner bearing at one end and a screw-  
threaded bearing at its outer end, a screw-  
25 threaded sleeve fitting in the threaded bearing  
and having a disk with a notched edge at its  
outer end, a pivoted latch engaging the notched  
edge of the disk, a discharge or stop valve  
30 playing upon the seat and having a stem slid-  
ing in the bearing and sleeve, and formed with

a collar at its outer end and with a screw-  
threaded inner portion, a disk upon the stem  
bearing against the inner end of the threaded  
sleeve, a disk fitting upon the inner portion 35  
of the stem, adjusting-nuts bearing against the  
inner face of the disk and fitting upon the  
threaded portion of the stem, and a spiral  
spring wrapped around the stem and held be-  
tween the disks, as and for the purpose shown 40  
and set forth.

3. In a hydraulic ram, the combination of a  
water chamber having a valve-seat at its up-  
per side formed with a central bearing, an  
air-chamber having an outlet and secured over 45  
the valve-seat, a stem sliding with its enlarged  
lower portion in the bearing of the seat and  
having a threaded middle portion, a yoke  
having a bearing in its upper portion for the  
upper end of the stem, a valve upon the stem 50  
having an elastic disk clamped between a disk  
upon the shoulder and a nut upon the threaded  
portion of the stem, and a stop-nut and a jam-  
nut upon the threaded portion of the stem, as  
and for the purpose shown and set forth. 55

In testimony whereof I hereunto sign my  
name, in the presence of two subscribing wit-  
nesses, this 14th day of November, 1885.

ADOLPHUS BAER.

Witnesses:

EMIL BLUM,

WILLIAM SCHNEIDER.