

(No Model.)

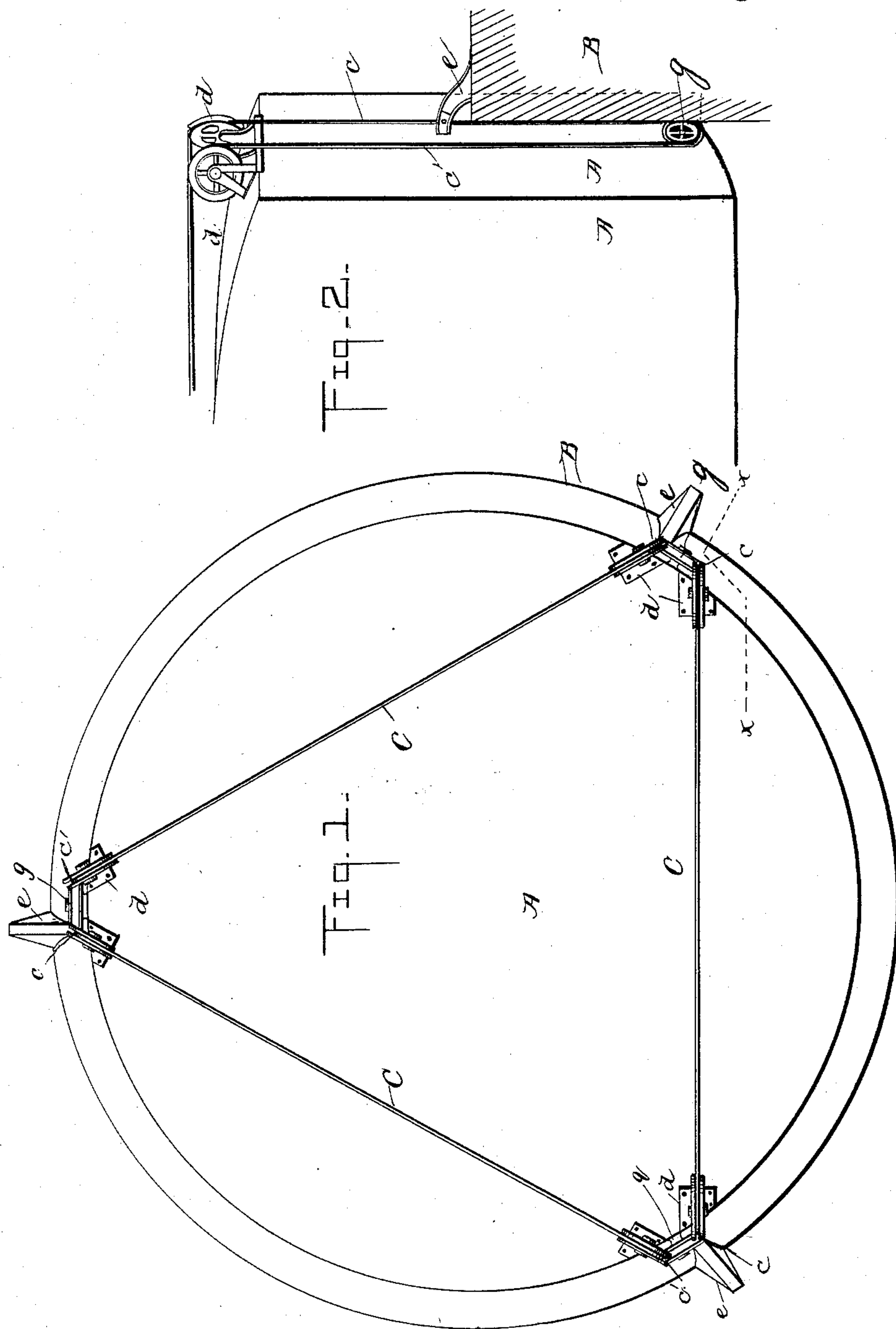
E. L. PEASE.

2 Sheets—Sheet 1.

MEANS FOR REGULATING THE MOVEMENTS OF GAS HOLDERS.

No. 435,187.

Patented Aug. 26, 1890.



Witnesses
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H. C. Newman

Inventor
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(No Model.)

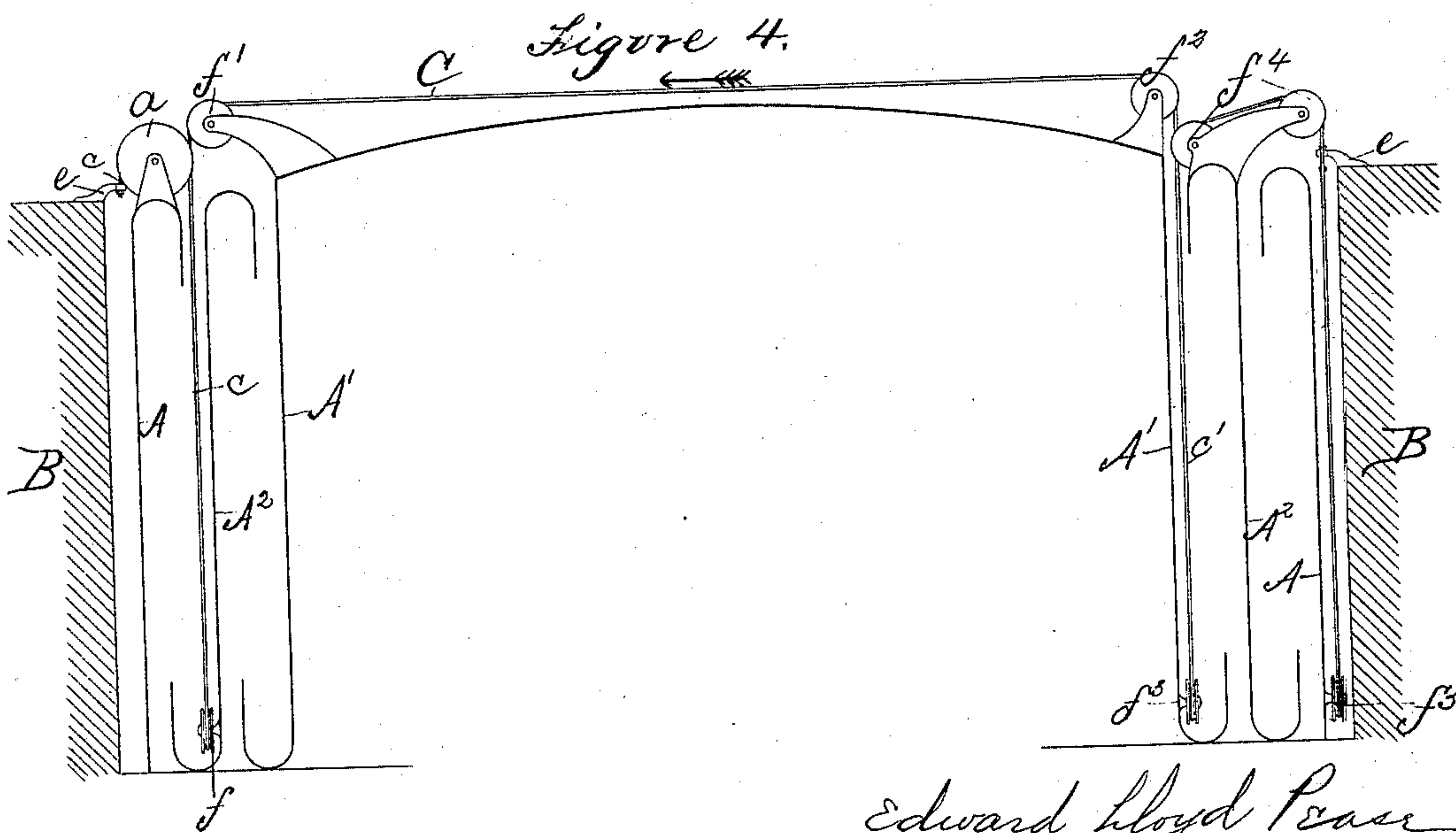
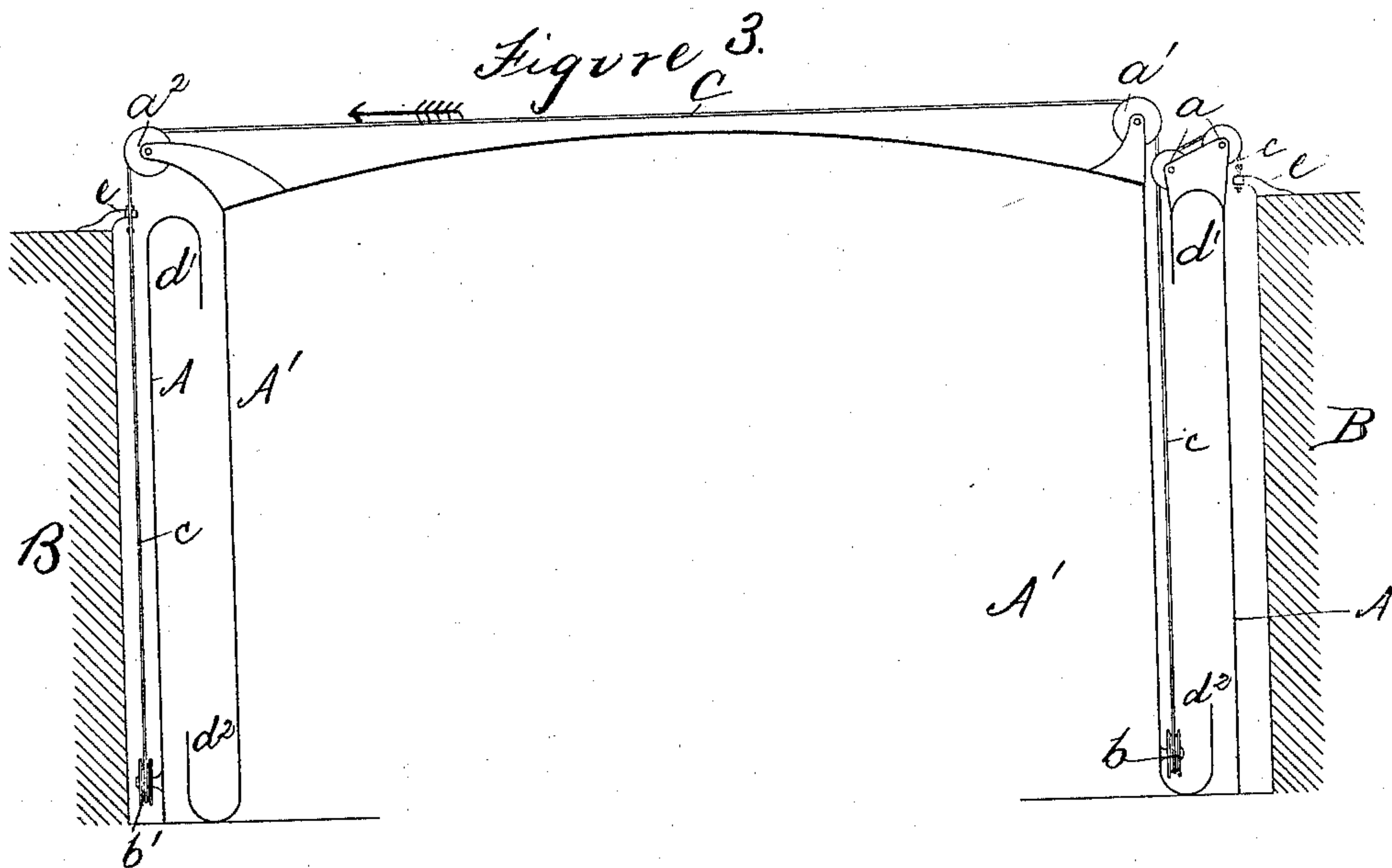
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E. L. PEASE.

MEANS FOR REGULATING THE MOVEMENTS OF GAS HOLDERS.

No. 435,187.

Patented Aug. 26, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD LLOYD PEASE, OF DARLINGTON, COUNTY OF DURHAM,
ENGLAND.

MEANS FOR REGULATING THE MOVEMENTS OF GAS-HOLDERS.

SPECIFICATION forming part of Letters Patent No. 435,187, dated August 26, 1890.

Application filed June 23, 1890. Serial No. 356,488. (No model.) Patented in England December 14, 1888, No. 18,272; in Germany June 1, 1889, No. 49,803; in France June 13, 1889, No. 198,910; in Spain July 31, 1889, No. 9,883; in Belgium August 3, 1889, No. 87,249; in Cape Colony August 24, 1889, No. 540; in South Australia October 24, 1889, No. 1,443; in Tasmania October 24, 1889, No. 754/10; in Victoria November 26, 1889, No. 7,299; in New South Wales November 26, 1889, No. 1,876, and in Queensland December 13, 1889, No. 891.

To all whom it may concern:

Be it known that I, EDWARD LLOYD PEASE, a subject of the Queen of Great Britain, residing at Darlington, in the county of Durham, England, have invented certain new and useful Improvements in Means for Regulating the Movements of Gas-Holders, (which has been patented in Great Britain, No. 18,272, dated December 14, 1888; in Germany, No. 49,803, dated June 1, 1889; in France, No. 198,910, dated June 13, 1889; in Spain, No. 9,883, dated July 31, 1889; in Belgium, No. 87,249, dated August 3, 1889; in Cape Colony, No. 540, dated August 24, 1889; in South Australia, No. 1,443, dated October 24, 1889; in Tasmania, No. 754/10, dated October 24, 1889; in Victoria, No. 7,299, dated November 26, 1889; in New South Wales, No. 1,876, dated November 26, 1889, and in Queensland, No. 891, dated December 13, 1889;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In the application filed by me on July 31, 1889, Serial No. 319,361, Patent No. 432,434, dated July 15, 1890, I have shown a regulator for the movements of the lifts of gas-holders, consisting of a circulating ring arranged concentrically to the said holder and connected to the top and bottom thereof by means of ropes branching off in directions dependent upon their connection with the holder, and in the present application I will show means for accomplishing the same purpose consisting of a check-rope having its opposite ends directly attached to the sides of the tank and passing over anti-friction bearings placed upon the lift; and my present invention also consists of the combination, construction, and arrangement of the several parts of which it is composed, as will be hereinafter described and claimed.

Referring to the accompanying drawings, in which similar parts are designated by similar letters, Figure 1 is a plan view of my invention applied to a single-lift gas-holder. Fig. 2 is a vertical section on lines *x x* thereof.

Figs. 3 and 4 are central vertical sections of a two and a three lift gas-holder, respectively, each of the said holders having my invention applied thereto.

In Fig. 1 the lift A is contained within the tank B, the check-ropes C being adapted to regulate its movements. Each of these check-ropes C is carried by means of pulleys *d d* over the crown or dome of the lift, and is secured to holdfasts *e* and *e*, attached to the sides of the tank B, its end *c*, which serves as the upper check, passing directly over the pulley *d* to a holdfast *e*, while its opposite end *c'* passes from the pulley *d*, on an opposite side of the crown of the lift, down and around the pulley *g*, pivotally mounted on the side of the lift near its bottom and is brought up and attached to a holdfast *e*, so that as the lift rises from the gas contained therein the end *c* of the rope, which serves as an upper check, is given out, while the end *c'*, which serves as the lower check, is taken in, causing the opposite sides of the lift to rise together, while upon the lift falling again the reverse operation takes place, and it thus follows that such check-ropes applied to the lift at more than two equidistant parts will generally serve to cause all the sides of the lift to rise or fall together and to the same extent, preventing its leaving its proper vertical position. I also prefer to connect the end of one rope that serves as the upper check with that end of another rope which serves as a lower check; and in Figs. 1 and 2 I have thus shown three such ropes having their opposite ends connected together, forming one continuous rope, which is grasped at three points by the holdfasts *e*, mounted upon the side or top of the tank, and this will generally be found sufficient to cause all the sides of the lift to rise or fall together and to the same extent.

In Fig. 3 two lifts—an outer one A and inner one A—are shown, and in this case that end *c* of the check-rope C which serves as an upper check for the outer lift is attached to a holdfast *e*, attached to the side of the tank B, and passes directly therefrom over rollers *a*, mounted on top of the said outer

lift, and downward and around a pulley b , attached to the inner lift A' , near the bottom thereof, after which it rises and passes over the roller a' , carried on the top of the inner lift, the main portion of the rope being over the crown thereof, the opposite end c' of the rope passing over the roller a^2 , projecting from the top of the inner lift, and down to and around the pulley b' on the side of the outer lift near the bottom thereof, whence it rises and is connected to a holdfast e on the side or top of the tank. In the rise of a holder provided with this form of my invention the inner lift will first rise from the gas pressing upon the crown thereof, and in this rise the end c of the check-rope C will be taken in and the end c' given out, the body of the rope moving in the direction of the arrow. This will continue until the inner and outer holder "cup"—*i. e.*, until the annular exterior trough d^2 on the base of the inner lift—engage with the corresponding interior trough d' on the top of the outer lift, when the rise of the former will be communicated to the latter. When this takes place, the end c of the check-rope will be given out and the end c' taken in, causing the rope to move in a direction opposite to that heretofore described and to the direction of the arrow.

In Fig. 4 a gas-holder is shown having three lifts A , A' , and A^2 , the one contained within the other, and in this case that end c of the check-rope which serves as an upper check for the outer lift A is attached to the holdfast e , secured to the tank B , and passes over a roller a , mounted on the top of the lift A , after which it passes down and around the pulley f , mounted upon the intermediate lift A^2 , near the bottom thereof, and up again and over the roller f' , projecting from the top of the inner lift A' , the main portion of the rope running over the top thereof. The opposite end of the rope passes over the roller f^2 , down and around the pulley f^3 , mounted upon the inner lift near the bottom thereof, and up again and over the rollers f^4 upon the top of the intermediate lift A^2 , after which it passes down and around the pulleys f^5 , mounted upon the outer lift A near the base thereof, after which it rises and is secured to a holdfast e , attached to the tank.

In the use of a holder constructed according to Fig. 4 the inner lift in rising will give out the end c of the check-rope and take in the end c' thereof, the rope moving in the direction of the arrow, and this will continue until the inner and intermediate lifts are cupped, when the rise of the latter will begin giving out the end c' of the rope and taking in the end c , the body of the rope now moving in a direction contrary to that before mentioned and to that of the arrow. This will continue until the intermediate and outer lifts are cupped, when, the latter rising, the end c will be given out and the end c' taken in, the rope now again moving in the direc-

tion of the arrow, while upon the lifts sinking the reverse motions of the parts will take place.

In the arrangement shown in Fig. 3 the end c of the check-rope serves as an upper check for one side of the outer lift and as a lower check for the same side of the inner lift, and the end c' serves as an upper check for the inner lift and as a lower check for the outer lift, while in Fig. 4 it will be seen that the end c serves as an upper check-rope for the corresponding sides of the outer and inner lifts and as a lower check-rope for the same side of the intermediate lift, while the end c' serves as a lower check-rope for the corresponding sides of the outer and inner lift and as an upper check for the intermediate lift. From this it follows that in the arrangement shown in both Figs. 3 and 4 the ropes C may be triplicated, the opposite ends of the several ropes being connected together, as is shown in Figs. 1 and 2, or that a separate check-rope, similar to those above described in respect to Figs. 3 and 4, but having its ends reversed, may be attached to the holder contiguous to the ones shown in the said figures, in which case it is obvious that the holder will be held in its proper position upon the principles already explained.

Although in the foregoing description and in the accompanying drawings I have described and shown the lifts as being contained within a tank, it will be no departure from the nature of my invention to substitute in place thereof another lift governed in any suitable manner, the ends of the check-ropes being connected therewith, and I accordingly use the word "tank" in the following claims to designate a receptacle holding the lifts and having the ends of the check-rope attached thereto, and I therefore do not limit my invention to the exact construction described in the foregoing specification; but

What I do claim is—

1. In gas-holders, the combination, with a tank having a lift resting therein, of a check-rope having its opposite ends attached to the opposite sides of the tank, and bearings mounted upon the upper portion of one side and upon the lower portion of an opposite side of the lift, over which bearings the check-rope passes, it being adapted to play thereon, as described.

2. In gas-holders, the combination of a tank, a lift resting therein, bearings mounted on the crown of the said lift and on one of its sides near its base, and a check-rope passing around the said bearings and having one of its ends brought down from the top of the lift and connected to the tank, the opposite end of the said rope being brought down from the top of the lift around the bearings on its sides and again brought and connected to the tank, as described.

3. In gas-holders, the combination of a tank, a lift resting therein, pulleys mounted on the crown of the said lift and on the sides

thereof near its base, holdfasts at the top of the tank, and a check-rope passing over the pulleys on the crown of the lift, one end thereof being brought down from the said pulleys and connected to a holdfast, the opposite end of the said rope being brought down from the crown of the lift around a pulley upon its side and again brought up and connected to a holdfast distant from the holdfast to which its opposite end is connected, as described.

4. In gas-holders, the combination of a tank, an inner lift therein, a second lift concentric with the inner lift, bearings mounted on the crown of the inner and upon the top of the second lift at one side thereof and upon the sides of the said lifts near the bases thereof, and a check-rope passing over the bearing upon the crown of the inner lift and having one of its ends brought down and around a pulley upon the side of the second lift, and carried up again and connected with the tank, the opposite end of the said rope being brought down and around the bearing upon the side of the inner lift and up and around the bearing upon the top of the second lift, and being carried down and connected with the tank, as described.

5. In gas-holders, the combination of a tank, of a plurality of lifts nested therein, comprising an inner, an intermediate, and an outer lift, bearings mounted upon the crown of the inner lift upon the tops of the outer and intermediate lifts, and upon the sides of all the said lifts near the bases thereof, and a check-rope passing over the bearings upon the crown of the inner lift, one end of the said rope passing down and around the bearing upon the base of the intermediate lift and up again and over the bearing at the top of the outer lift and connected to the tank, while the opposite end of the said rope is brought down from the crown of the inner lift, around the bearing upon its side, up and around the bearing on the top of the intermediate lift, and down and around the bearing at the base of the outer lift, and up again and connected with the tank, as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWARD LLOYD PEASE.

Witnesses:

GEORGE JAMES CLARKSON,
EDWARD THOMAS ELCOAT.