(No Model.) 3 Sheets—Sheet 1.

W. WOOD.

GASOMETER.

No. 517,254. Patented Mar. 27, 1894.

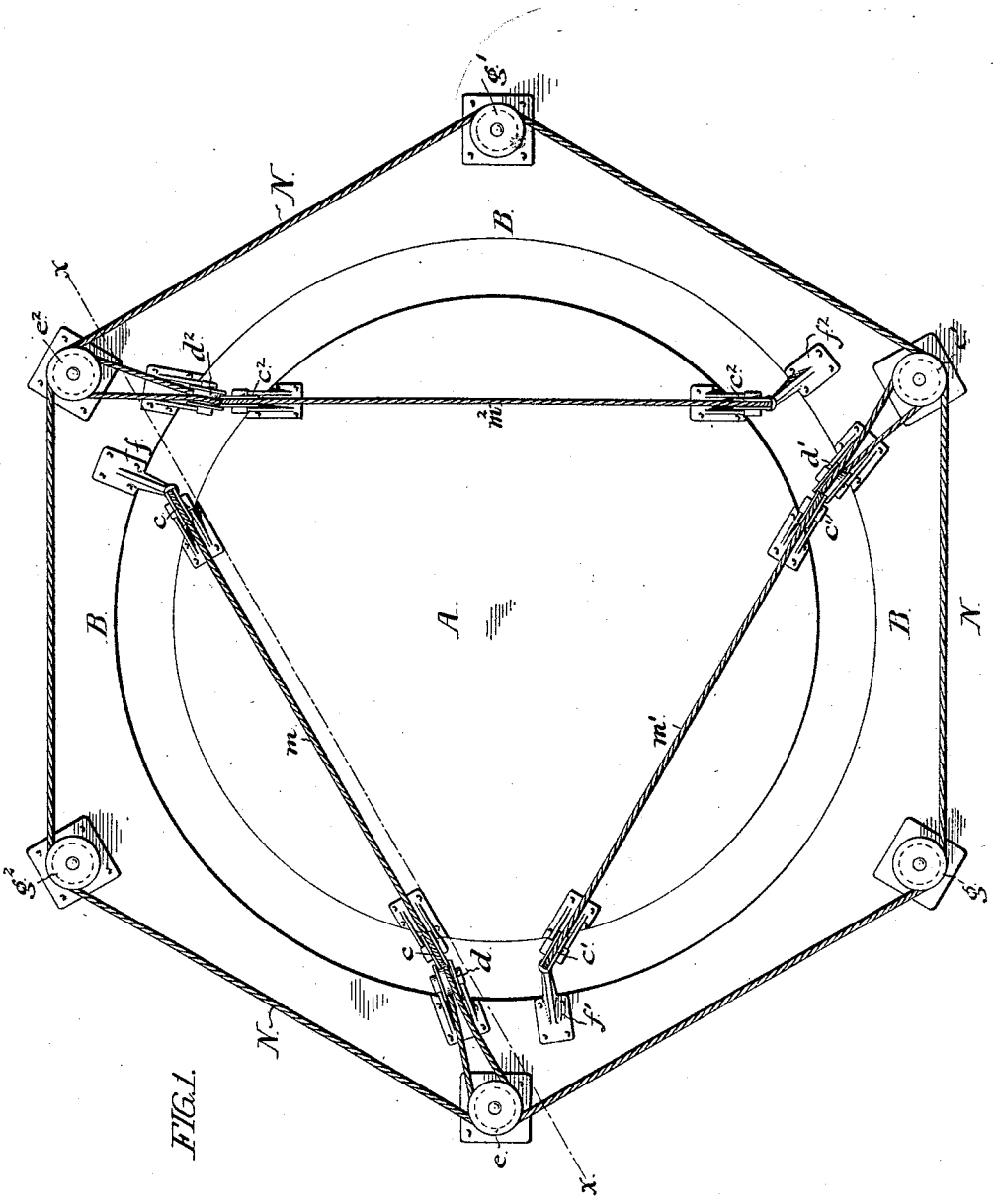

FIG. 1.

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(No Model.)

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GASOMETER.

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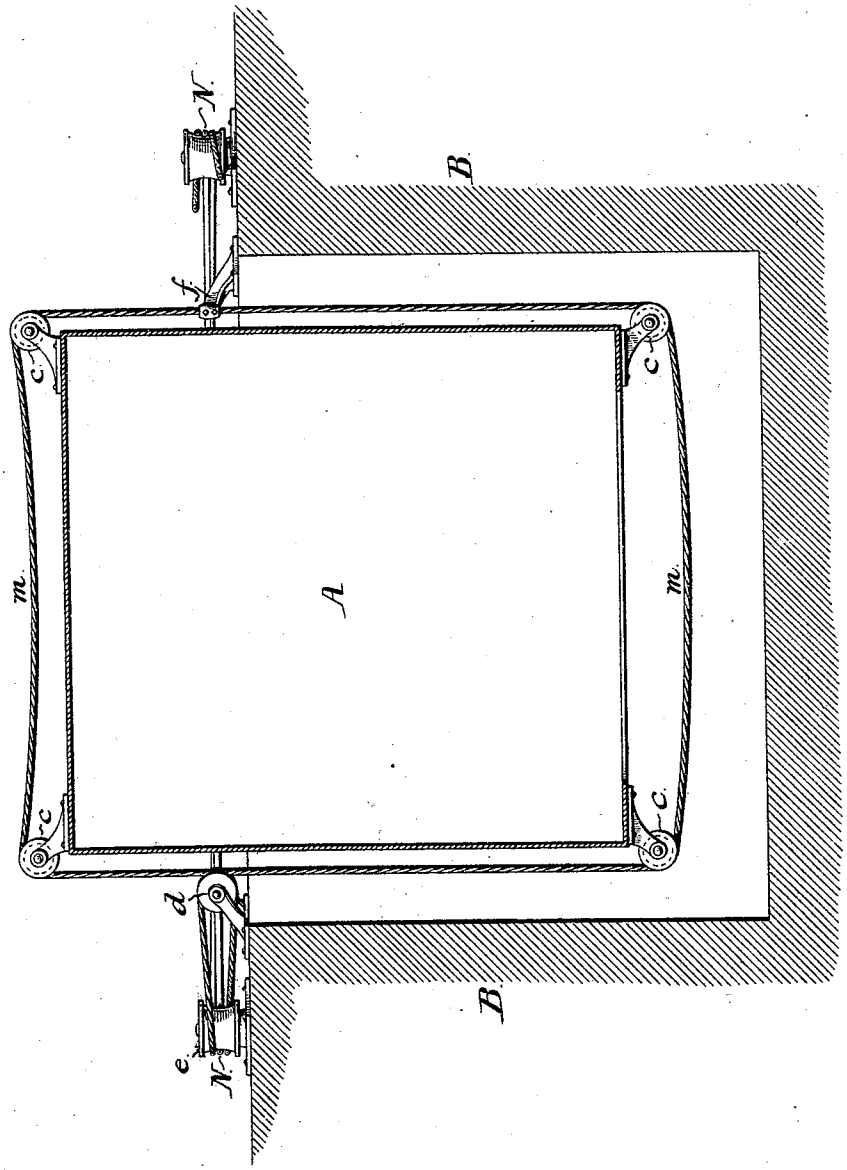
FIG. 2.



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(No Model.) 3 Sheets—Sheet 3.

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GASOMETER.

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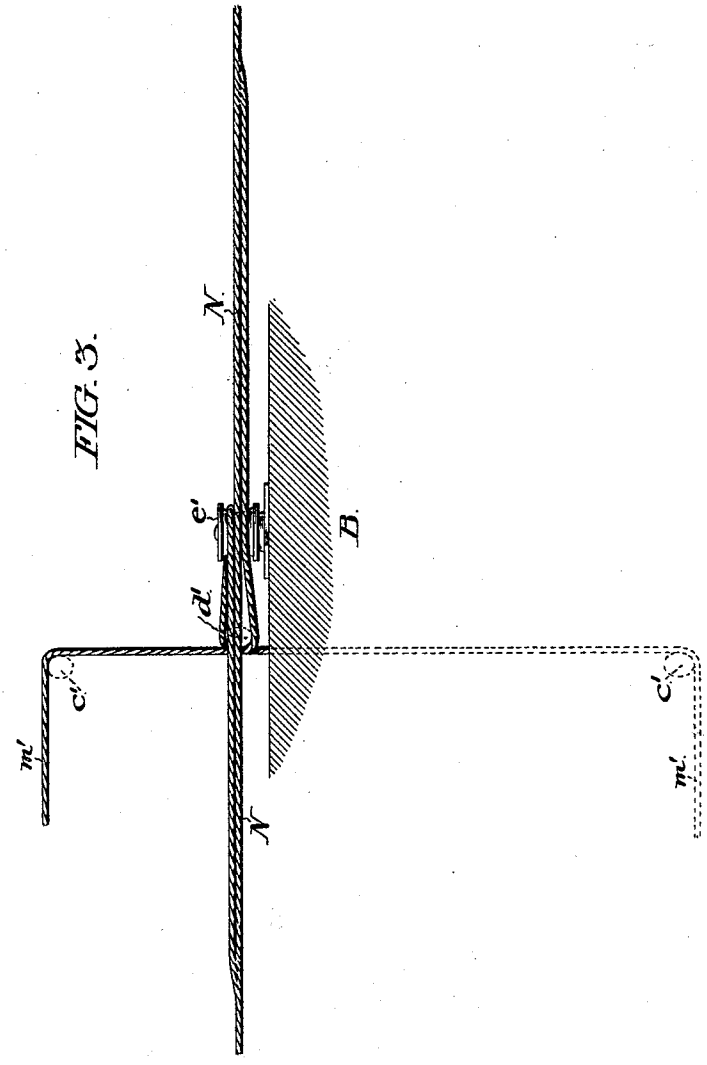
FIG. 3.



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WALTER WOOD, OF PHILADELPHIA, PENNSYLVANIA.

GASOMETER.

SPECIFICATION forming part of Letters Patent No. 517,254, dated March 27, 1894.

Application filed August 29, 1890. Serial No. 363,416. (No model.)

To all whom it may concern:

Be it known that I, WALTER WOOD, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Gasometers, whereof the following is a specification.

My invention relates to certain improvements in devices for guiding and controlling the rise and fall of the gas holder in its tank by means of ropes or their equivalent passing around the holder and so arranged as to insure the absolutely vertical translation of the holder, without the use of any fixed columns or standards or frame work; and has especial reference to such an arrangement of the ropes that this result may be obtained without the necessity of any of the ropes having their anchoring point beneath the surface of the water in the tank.

In the drawings, Figure 1 is a plan view of a holder with the ropes arranged according to my invention. Fig. 2 is a vertical section through x, x, Fig. 1. Fig. 3 is a diagrammatic view, showing the arrangement of certain of the ropes.

A, is a gas holder of the usual construction, B is the tank containing water or other liquid, within which the holder rises and falls. At the four corners of the holder which are presented by the section, Fig. 2, are mounted four pulleys c, c, c, c. A rope m passes in a vertical plane freely around these four pulleys, and consequently around a portion of the gas holder. Upon the edge of the tank at one side of the holder where the rope m, passes from top to bottom of the same is fixed the clamp f, and to it the rope although continuous is clamped. Upon the other side where the rope passes the edge of the tank is mounted the vertical roller d. The end of the rope m which comes from above passes under this roller and the end which comes from below passes over it. From this roller these ends are carried away from the holder and pass each around an opposite side of the large horizontal roller e. This roller e is one of a series e, g, e', g', e^2, g^2, mounted at intervals around the outside of the tank and around which there passes an endless rope N. It has a broad enough rim to carry three ropes, and in addition to the rope N, the two ends of the rope m are carried around it in different directions. Each of these ends after passing around this roller is carried each in the opposite direction, alongside of the rope N, and after a sufficient distance is made fast to it. This distance must be sufficient to allow to each of the ends of the rope m, at least an amount of play equaling double the amount of the possible vertical motion of the holder. The distinction between these extended ropes and the rope N is not seen in Fig. 1, as the ropes are in the same vertical plane. In Fig. 3, a portion of the rope N, adjacent to one of the pulleys e, is shown in vertical elevation, both ends being continued diagrammatically in the same plane. In this figure the arrangement of the ends of the rope m, passing around the pulleys d and e and then along side of the rope N, until they are fastened thereto, is clearly shown.

In the drawings Fig. 1, three ropes, m, m', m^2, are shown each of which is arranged precisely as the rope m, which has just been described. The number of these ropes is immaterial it being only necessary to have at least three. They may also be arranged in any desired way with the limitations that they must lie in at least three non-parallel planes, and also that they must not all cross each other at the axis of the cylinder. If these limitations were not observed it is obvious that the holder would have a possible motion of rotation within the ropes and without reference to them—a motion which it is the object of my device to avoid.

The operation of the device is as follows: As the gas passes into the holder, tending to cause it to rise, the upper half of the rope m, draws an amount of rope equaling double the amount of the rise of the holder from around the roller e, causing an equal amount of rotation of the endless rope N, at the same time the lower half of the rope m pays out an equal amount, which is taken up by the revolution of the rope N. As all parts of the rope N move simultaneously and as all the ropes m, m', m^2, are attached to it, the same amount is taken up from the bottom of the ropes m, m', m^2, at the same time, and an equal amount let out from their tops. This necessitates the equal rise and fall of the three sections controlled by the ropes m, m', m^2, at the same time, and necessitates the absolutely vertical

translation of the holder which is the object to be attained. There are two distinct advantages to be found in this arrangement; first, as the rope m passes entirely around the holder the strain upon this rope at any one place is equalized throughout its entire circuit; second, the rope has no anchoring point below the surface of the water. Both the entire inner surface of the tank and the lower rim of the holder are necessarily never above water. If then there is any point of attachment at these places, and a break or loosening of the rope there attached occurs, great difficulty must be experienced in repairing it and re-fastening the rope to a point below water. In the present arrangement this difficulty is entirely absent, and even though the rope, m, should break it could readily be replaced by lowering the loop of a rope down the side of the tank and adjusting it under the pulleys, c, c, under the tank by a forked stick.

A very simple modification of my device consists in omitting the clamp, f, and putting in its place another roller, d, and otherwise precisely re-duplicating upon the right hand side of the drawings, Fig. 2, the arrangement shown upon the left hand side. In this case the movement of the rope, m, is taken up simultaneously at both sides and transferred to the endless rope N, instead of all the motion being taken up at one side. The result is that instead of the amount of motion taken up from the rope, m, on one side equaling twice the amount of the vertical motion of the holder, as is the case in the form of device first described, the amount taken up upon each side precisely equals the amount of the motion of the holder.

Another very simple modification of the device shown in Fig. 2, consists in omitting that portion of the rope N, which is between the points of attachment of the two ends of m, thus in effect making the ropes, m, m', m^2, continuous, or in other words reducing all the ropes to one. As in Fig. 1 the points of attachment of the ropes m, m', m^2, to the rope N, are not shown, it may be taken also to represent this modification. As such the course of the single rope would be as follows: Commencing at the clamp f, the rope passes up over the upper pulleys c, c, thence down under d, thence around e, g, e', thence over d', thence down under the lower pulleys c', c', (not shown,) thence up through the clamp f', thence up over the upper pulleys c', c', thence down under d', thence around e', g', e^2, thence over d^2, thence down under the lower pulleys c^2, c^2 (not shown), thence up through the clamp f^2, thence up over the upper pulleys c^2, c^2, thence down under d^2, thence around e^2, g^2, e, thence over d, thence down under the lower pulleys c, c, (not shown,) thence up to the clamp f.

Throughout this specification, the word "ropes" has been used as including either ordinary ropes, wire ropes or chains.

Having thus described my invention, I claim—

1. In a gasometer, the combination of the holder, A, the tank, B, the individually continuous ropes, m, m', m^2, which pass in non-parallel vertical planes entirely around portions of said holder; pulleys upon said holder whereby said ropes are freely connected therewith, and means substantially as set forth for equalizing the amount of take-up and let-out of each of these ropes, whereby the parallel translation of all sides of the holder, A, is at all times insured, substantially as set forth.

2. In a gasometer, the combination of the holder, A, the tank, B, a rope which passes horizontally entirely around the outside thereof and which at three or more points of its course describes vertical loops entirely around a portion of the holder, said loops being in non-parallel planes; suitable vertical pulleys for guiding said rope in its course situated at each of the corners of the holder where the vertical loops pass around it; suitable vertical pulleys for guiding said rope in its course situated upon the outer edge of the tank at each of the points where the loops have their origin; suitable horizontal pulleys for guiding said rope in its course situated at proper intervals around the edge of the tank; and clamps situated upon the edge of the tank whereby the head of each loop is made fast to it, substantially as set forth.

WALTER WOOD.

Witnesses:
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HENRY N. PAUL, Jr.