

F. LA GROTTA.
 SASH BALANCE.
 APPLICATION FILED MAR. 26, 1909.

937,703.

Patented Oct. 19, 1909.

Fig. 1.

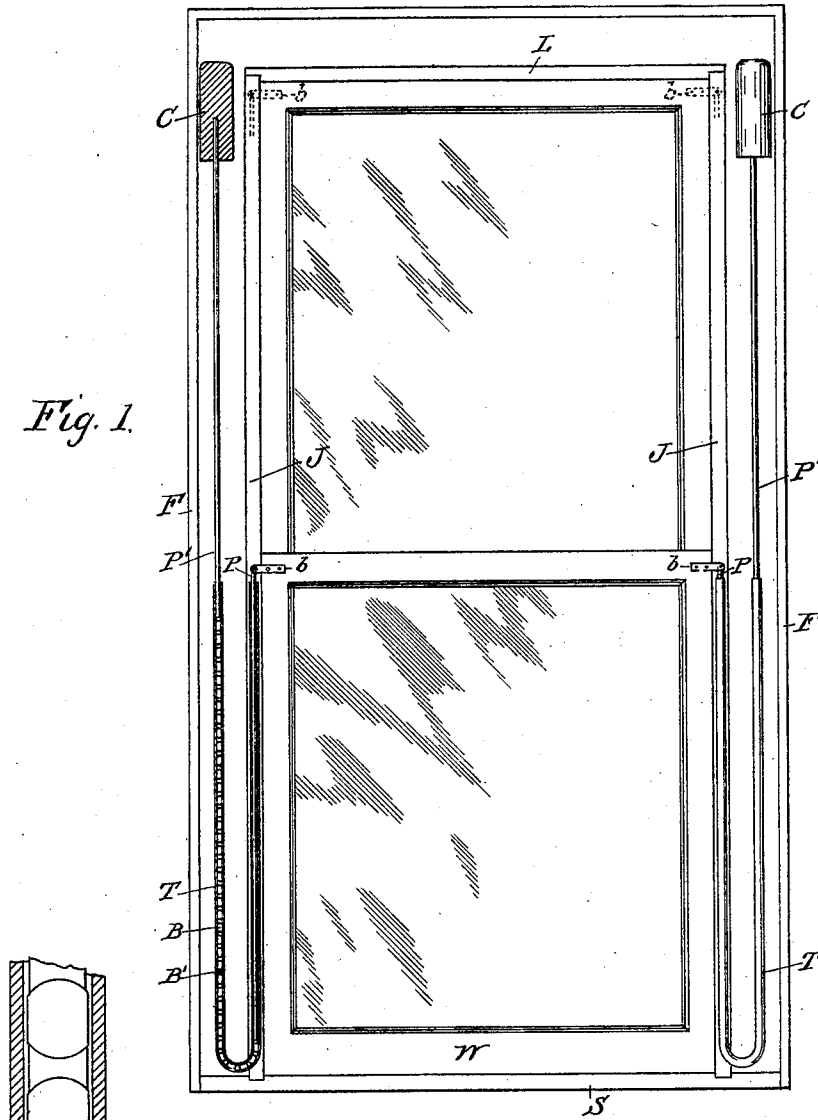
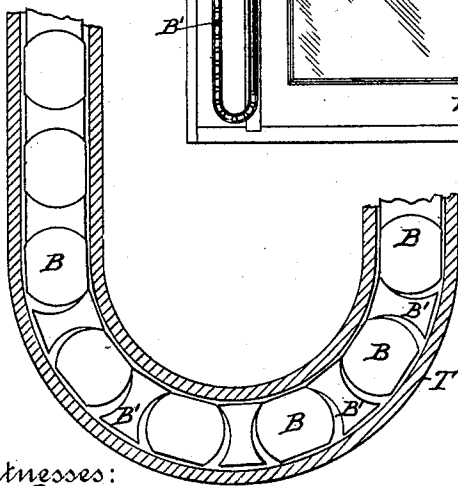


Fig. 2.



Witnesses:
 Wm. Dodge
 Wm. J. Singer

Inventor
 Frank La Grotta
 By his Attorney R. A. H. H. H.

UNITED STATES PATENT OFFICE.

FRANK LA GROTTA, OF NEW YORK, N. Y., ASSIGNOR OF ONE-FOURTH TO JACOB GLECKNER AND ONE-FOURTH TO GEORGE A. STEPHENS, BOTH OF NEW YORK, N. Y.

SASH-BALANCE.

937,703.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed March 26, 1909. Serial No. 486,063.

To all whom it may concern:

Be it known that I, FRANK LA GROTTA, a subject of the King of Italy, and a resident of Manhattan, New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Counterbalances, of which the following is a specification.

My invention relates to counterbalances for sashes and analogous articles, and it consists in combining the counterbalance and two rods, one adapted to support the counterbalance and the other the sash or other article, with a substantially U shaped device containing flexible transmission units for supporting the rods.

In the drawing, Figure 1 is an inner face view (partly in section) of a window frame and sash embodying my invention, the reveal of the frame having been removed to more clearly exhibit the material features. Fig. 2 is an enlarged view of a portion of the tube, in section, showing also, in full lines, a number of the units of the flexible support I prefer to use.

F, is the frame of an ordinary window, provided as usual with jambs J, sill S, and lintel L.

In the space behind the reveals, I mount a tube T, having preferably a U shape and in it I place flexible transmission units, preferably a series of short units or blocks B, with convex side faces, alternating with a series B' with concave faces, though I do not limit myself to the particular units shown, as I can omit the concave pieces, and the spirit of my invention, is, I believe, broad enough to include other forms and other materials than those shown; metal would answer as would water.

In the upper ends of the legs of the tube T, I place rods or plungers, P, in the leg nearest the sash frame and P', in the other leg. At the upper end of the plunger P', I mount the counterbalance C, and on the sash I secure arms, lugs or brackets b which make contact with, and preferably are hinged to, the upper ends of plungers P.

The operation is manifest. With the parts in position shown in Fig. 1, the weight acting through plunger P', units B B', plunger P, and the bracket b brings the pressure, due to its weight, upon the sash, applied toward the labor of lifting it, and, if the weight be suitably proportioned, will be almost or

quite equal to the weight of the sash, so that to raise the latter will only need that its inertia and the friction between it and the frame be overcome. As the sash is lifted, the weight descends driving down its plunger P' and forcing more of the flexible transmission units around the turn of the tube and up its other leg, thus continuing the pressure against plunger P and, through it, against the sash, so that the latter is supported thereby at whatever height it reaches.

The result is, that very light or very heavy sashes or analogous articles may be readily so supported as to be moved easily in either direction, with the application of very little force, and be held at rest in any desired position without the use of other means of support than those shown. It also renders it a simple matter to so proportion the weight that it will normally open a window and keep it open, if that arrangement be desired, or will permit the weight of the sash to normally close it and keep it closed, though requiring the minimum of effort to change its position. The tube T, as is manifest, is principally a guide for the flexible transmission units, and any form of apparatus which would guide the said medium so that parts of it will pass from under one plunger to a position under the other, would in my opinion be equivalent to the tube in my combinations.

While I have described my device as employed to lift a sash, it is manifest, that it would lift a sliding door or other article equally as well, and I do not, in my use of the term sash, intend to restrict my claims to combinations including sashes.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. The combination with an article to be lifted—such as a sash—of flexible transmission units, a vessel adapted to contain said medium and provided with upright portions, two plungers entering said upright portions, a counter-weight secured to one plunger and an arm projecting from the sash and engaging the other plunger, all substantially as set forth.

2. The combination with an article to be lifted—such as a sash—of flexible transmission units, a U shaped tube adapted to contain said medium and provided with upright portions, two plungers entering said upright

portions, a counter-weight secured to one plunger and an arm projecting from the sash and engaging the other plunger, all substantially as set forth.

5 3. The combination with an article to be lifted—such as a sash—of a U shaped tube, a series of short pieces of rigid material located in said tube, a plunger, entering one
10 leg of said tube above said short pieces, a counter-weight connected with the upper part of said plunger, a second plunger entering the other leg of said tube above said short pieces and a connection between the sash and the second plunger.

15 4. The combination with an article to be lifted—such as a sash—of a U shaped tube, a series of short pieces of rigid material, some of which are curved on the faces adjacent to others of the series, located in said tube, a
20 plunger entering one leg of said tube above said short pieces, a counter-weight connected with the upper part of said plunger, a second

plunger entering the other leg of said tube above said short pieces and a connection between the sash and the second plunger. 25

5. The combination with an article to be lifted—such as a sash—of a U shaped tube, a series of short pieces of rigid material, some with convex faces alternating with others having concave faces located in said
30 tube, a plunger entering one leg of said tube above said short pieces, a counter-weight connected with the upper part of said plunger, a second plunger entering the other leg of said tube above said short pieces and a
35 connection between the sash and the second plunger.

Signed at New York in the county of New York and State of New York this 24th day of March A. D. 1909.

FRANK LA GROTTA.

Witnesses:

JACOB GLECKNER,
A. G. N. VERMILYA.