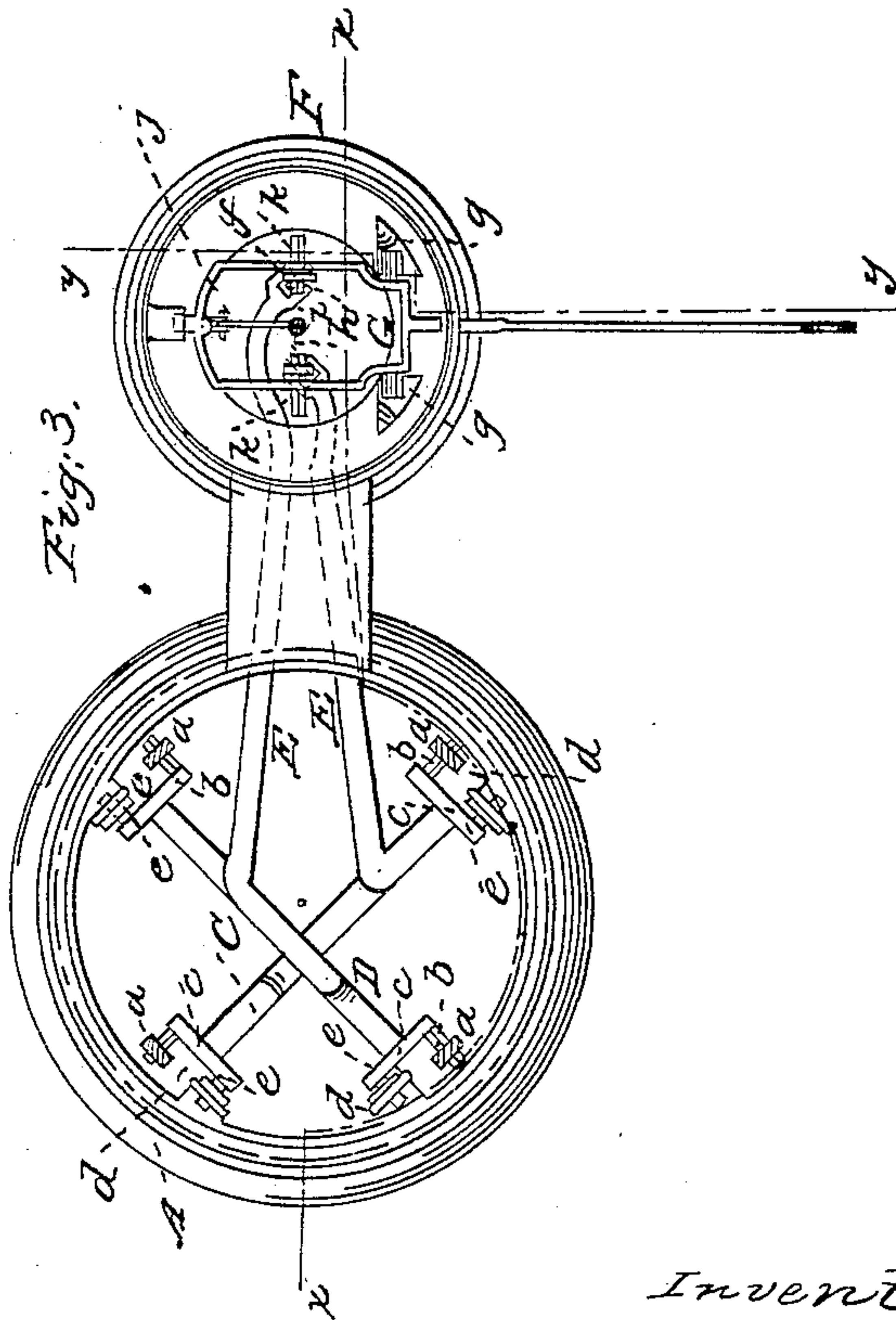
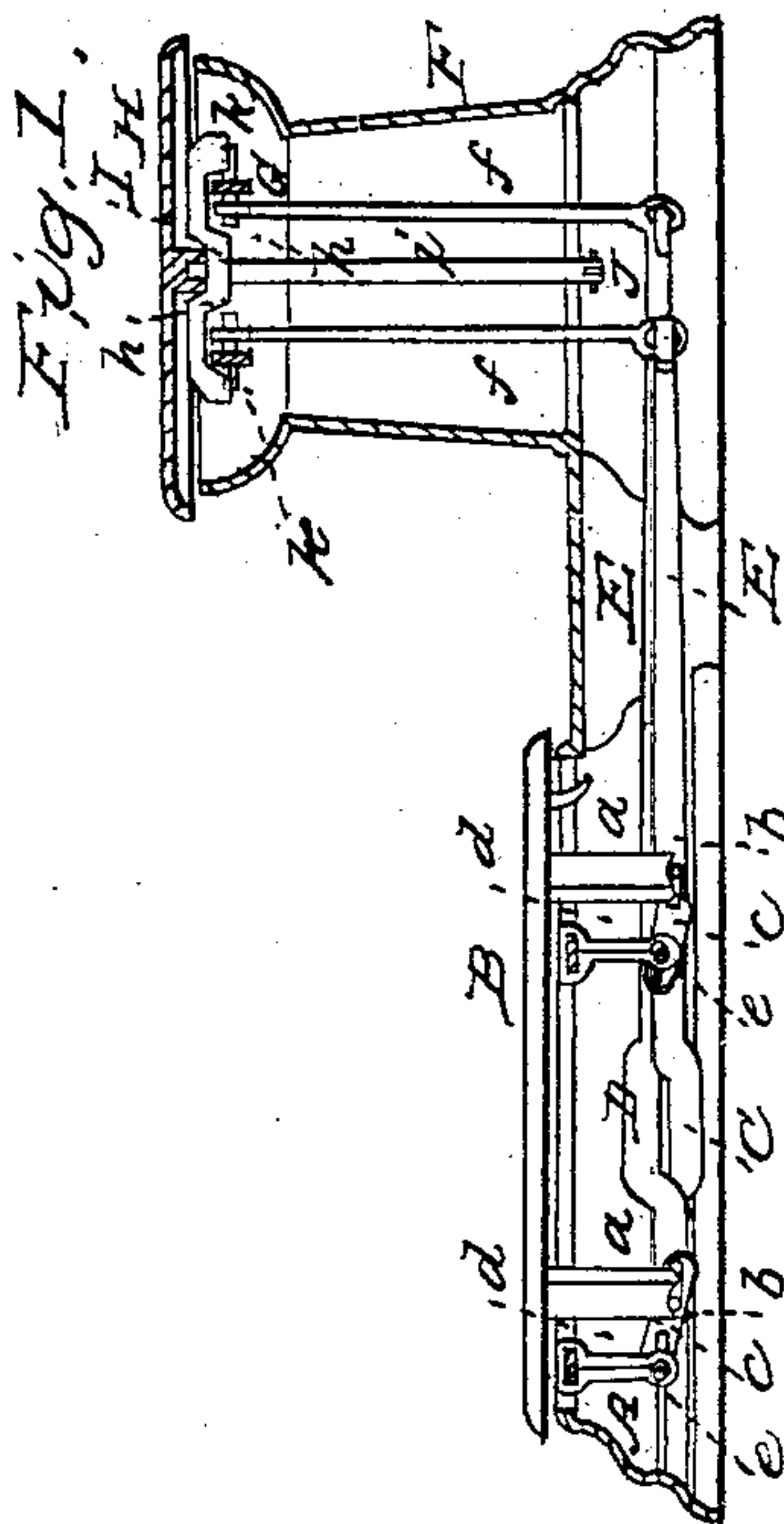
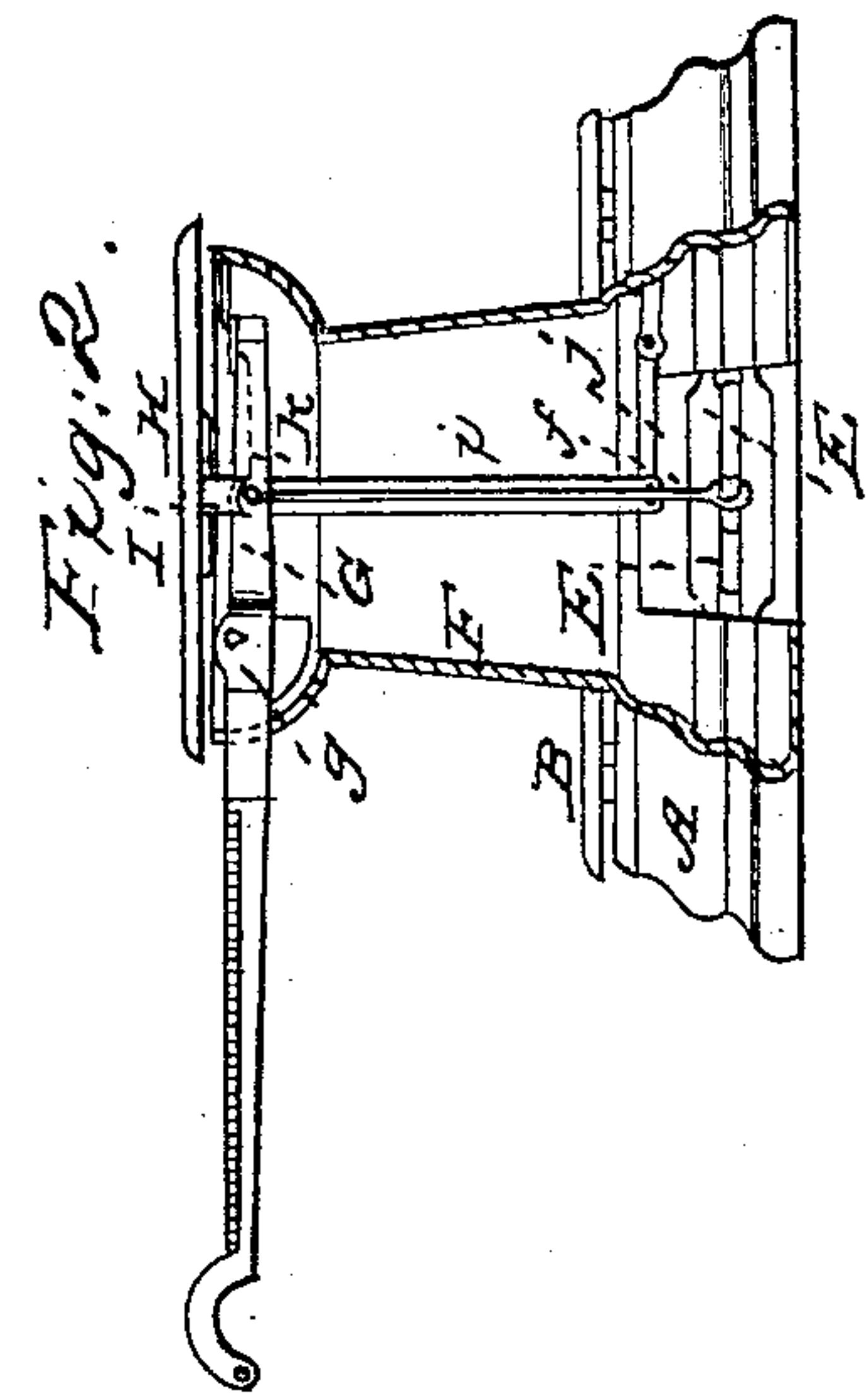


STRONG & ROSS.

Balance Scales.

No. 25,148.

Patented Aug. 16, 1859.



Witnesses  
John J. Estabrook  
C. H. Jones

Inventor:  
Francis M. Strong  
Thomas Ross



# UNITED STATES PATENT OFFICE.

FRANCIS M. STRONG AND THOMAS ROSS, OF BRANDON, VERMONT.

## WEIGHING-SCALE.

Specification of Letters Patent No. 25,148, dated August 16, 1859.

*To all whom it may concern:*

Be it known that we, FRANCIS M. STRONG and THOMAS ROSS, both of Brandon, in the county of Rutland and State of Vermont, have invented a new and useful Improvement in Weighing-Scales; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal vertical section of our invention taken in the line *x, x*, Fig. 3. Fig. 2, a transverse vertical section of the same taken in the line *y, y*, Fig. 3. Fig. 3, a plane or top view of the same with both platforms removed.

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

This invention relates to an improvement in what is generally known as the "Union scales" the same being a combination of the platform and counter scales.

The object of the within described invention is to obviate the inaccuracy hitherto attending the combination of the two forms of scales by having a certain independent relation between them, and also by having the larger platform so connected with the levers beneath it as to obviate undue friction hitherto attending the casual movement or displacement of the larger platform.

To enable those skilled in the art to fully understand and construct our invention we will proceed to describe it.

A, represents a circular box or case over which a platform B, is placed, said platform having four foot pieces *a*, attached to its under side about at equal distances apart, or as near so as may be and near its periphery, in order to form an even or uniform support for the platform. The foot pieces *a*, rest on knife-edged projections *b*, which are attached to one end of cross heads *c*, of levers C, D, which cross each other at about right angles and have the ends of their cross heads *c*, opposite to the ends where the knife-edged projections *b*, are attached, suspended by links *d*, from the upper part of the inner sides of the case or box A, the links *d*, being fitted on knife-edged projections *e*, attached to the cross heads *c*. By this arrangement it will be seen that the knife edged projections *b*, *e*, of the cross heads *c*, of one lever will be at or near right angles to those of the other

and consequently the foot pieces *a*, will be prevented from moving longitudinally on their projections *b*, for the foot pieces of one lever will counteract any such movement of those of the other. The foot pieces *a*, therefore will always be retained at a certain distance from the cross heads *c*, and all friction attending the contact of the foot pieces and cross heads and consequent inaccuracy imparted to the scales avoided, such contingency being frequent in the scales of ordinary construction.

To each lever C, D, an arm E, is attached. These arms extend along underneath a case F, and their ends are connected by rods *f, f*, with the scale beam G, which is graduated as usual and has its fulcrum *g*, in the upper part of the case F. The upper parts of the rods *f, f*, rest on knife-edged projections *h*, attached to the beam.

Over the case F, the smaller or scoop platform H, is placed. This platform has a vertical rod *i*, attached centrally to its under side said rod projecting down within the case and connected at its lower end with the interior of the case by a link *j*. On the upper part of rod *i*, just below the platform H, a cross bar I, is placed the ends of which bear on knife edged projection *k, k*, on the beam. The scoop platform it will be seen is not positively attached or connected to the arms E, of the levers C, D, and a certain independent relation exists between the smaller and larger platforms. The smaller or scoop platform H, in consequence of requiring the rod *i*, and link connection *j*, to keep it in proper position, will not on account of the slight variation from a vertical movement of rod *i*, and consequent friction attending the same operate as accurately as it otherwise would. The larger platform B, however operates perfectly correct.

In the union scales of ordinary construction the rods *f, f*, are attached directly or positively to the vertical rod *i*, and cross bar I, upon which the smaller scoop platform rests, and all the inaccuracy of the latter is transmitted to the larger platform. By having the rods *f, f*, attached to the beam G, instead of being attached directly to the smaller platform H, the friction attending the working of the latter is greatly avoided as an independent adjustment is allowed it on the knife edged bearings *k, k*.

The arms E, E, may be connected near

their outer ends and a single rod *f*, used for connecting them with the beam, but the effect would be the same in either case.

We do not claim broadly the connecting  
5 of a large platform with a scoop platform so that articles may be weighed on either platform with the same beam, for such device is well known; but,

We do claim as new and desire to secure  
10 by Letters Patent,

1. The arrangement of the levers C, D, of the larger platform B, as shown, to wit, one lever crossing the other at about right angles so that the knife edged bearings *b*,  
15 of the foot pieces, *a*, of one lever will be at

right angles to those of the other and the lateral movement of the foot pieces on the bearings prevented.

2. We further claim attaching the arms E, E, of the levers C, D either separately 20 or when connected direct to the beam G, and having the bar I, of the scoop or smaller platform H, rest on knife-edged bearings *k*, *k*, on the beam, substantially as and for the purpose set forth.

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Witnesses:

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C. H. FORBES.