

F. J. HERPER.

Coin Tester.

No. 18,973.

Patented Dec. 29, 1857.

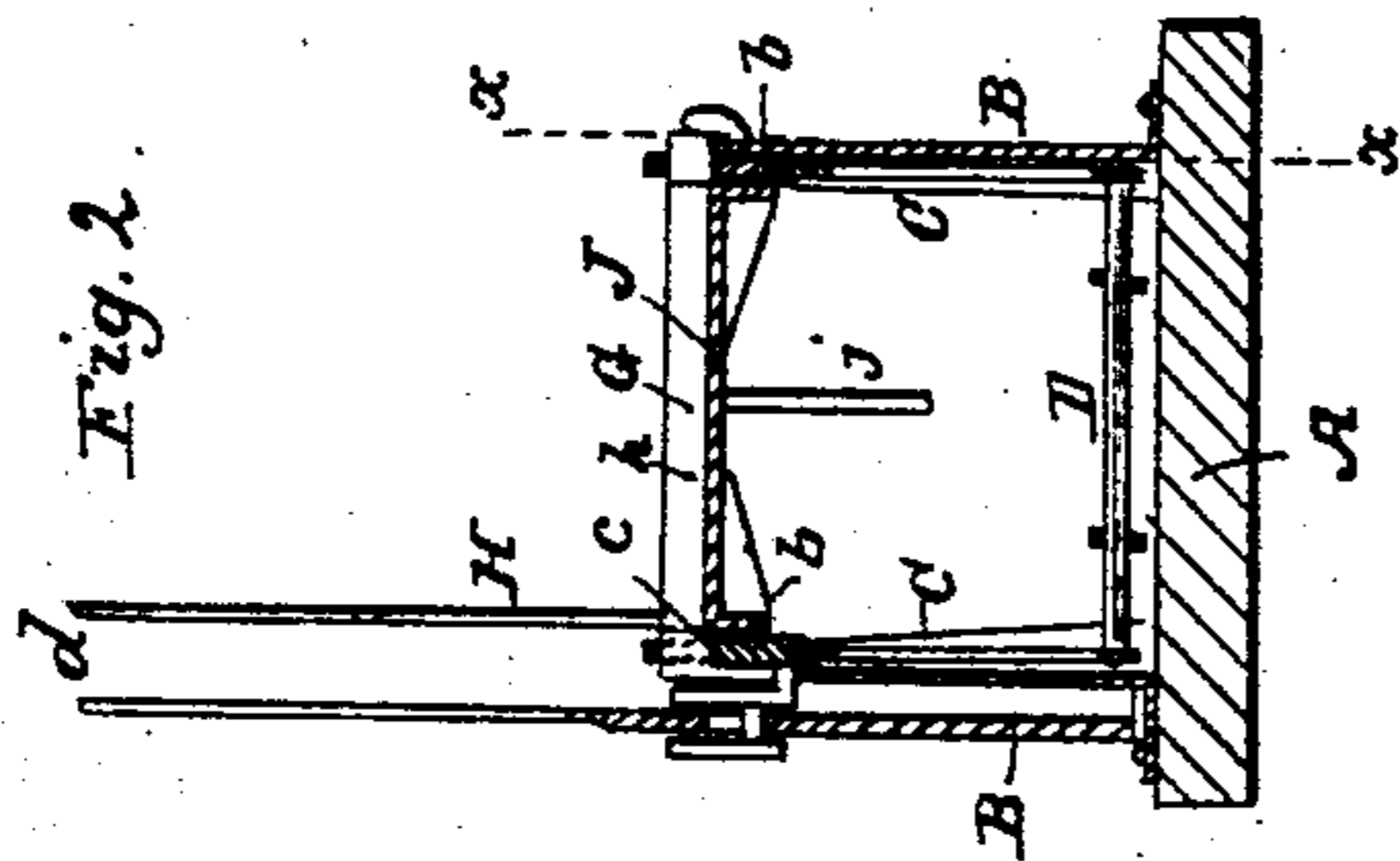


Fig. 1.

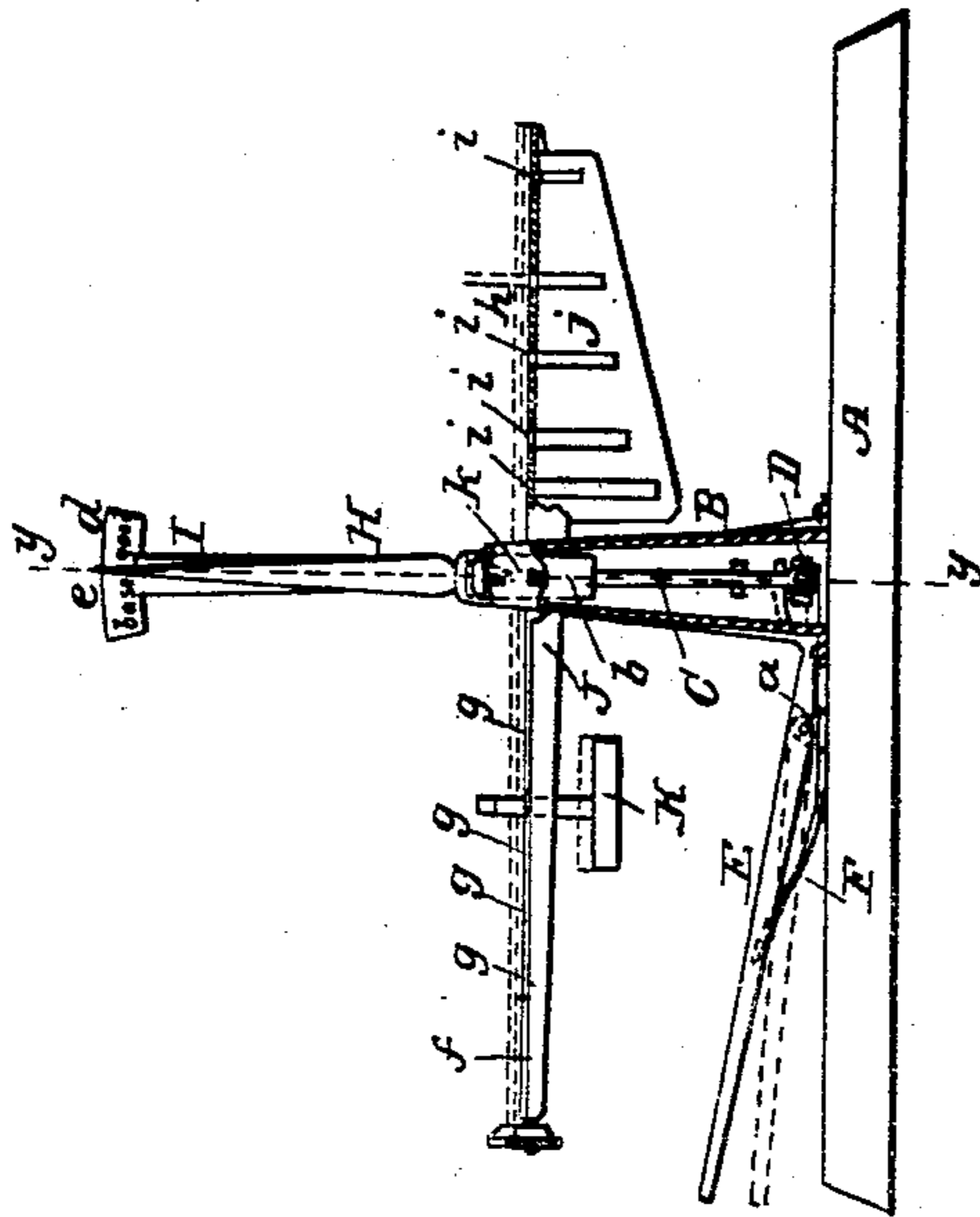
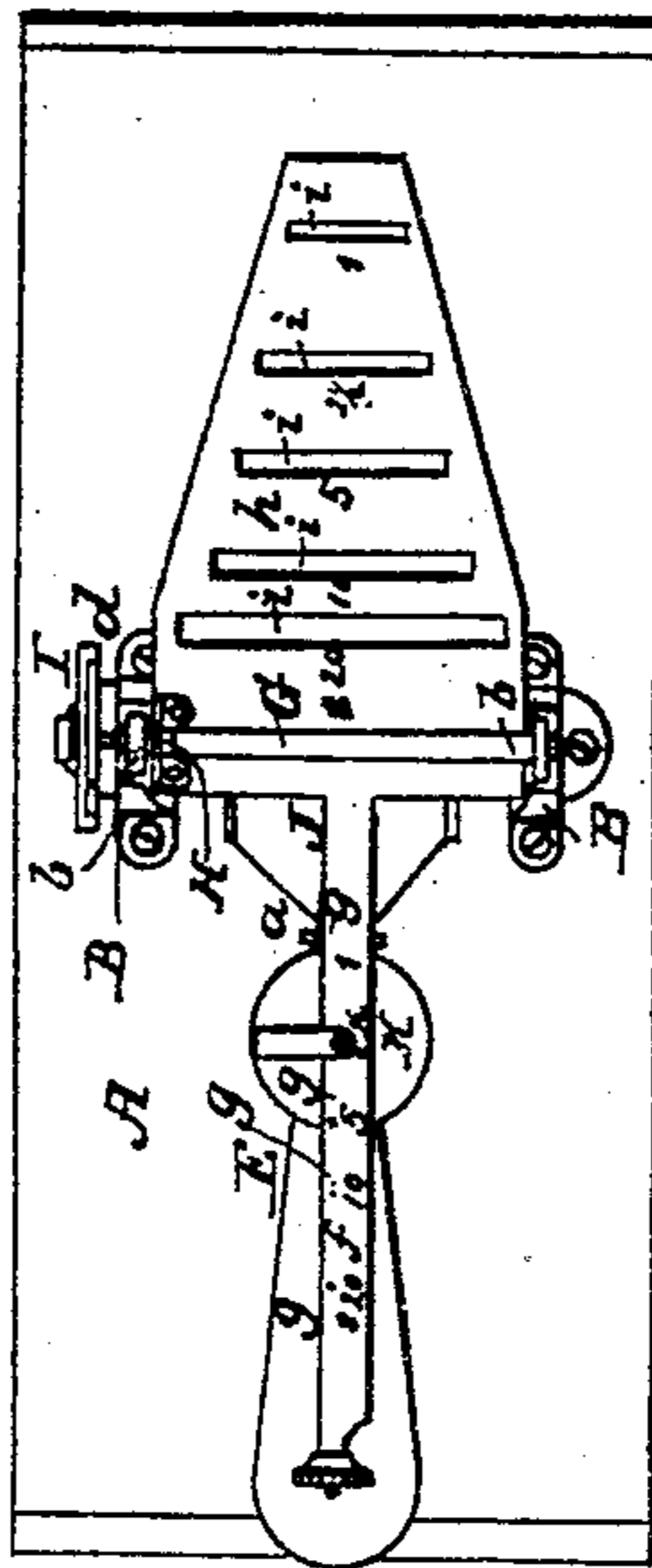


Fig. 3.



# UNITED STATES PATENT OFFICE.

FERDINAND J. HERPERS, OF NEWARK, NEW JERSEY.

## BALANCE FOR DETECTING COUNTERFEIT MONEY.

Specification of Letters Patent No. 18,973, dated December 29, 1857.

*To all whom it may concern:*

Be it known that I, F. J. HERPERS, of Newark, in the county of Essex and State of New Jersey, have invented a new and  
5 Improved Implement or Device for Detecting Counterfeit Gold Coin; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making  
10 a part of this specification, in which—

Figure 1, is a longitudinal vertical section of my improvement, *x, x*, Fig. 2, showing the plane of section. Fig. 2, is a transverse vertical section of ditto, *y, y*, Fig. 1, showing the plane of section. Fig. 3, is a plan  
15 or top view of ditto.

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

This invention consists of a new article of  
20 manufacture, viz., a coin balance, constructed substantially as hereinafter described.

To enable others skilled in the art to make and use my invention I will proceed to describe it.

25 A, represents the base of the implement, and B, B, are two uprights attached to the base.

C, C, represent two vertical rods which are placed at the inner sides of the uprights  
30 B, B, one to each. The lower ends of these rods are connected to the ends of a horizontal rod D, which is attached to the inner end of a lever E, said lever being pivoted at *a*, to the base A, and having a spring F, underneath it, the spring keeping the outer  
35 end of the lever elevated, and consequently the inner end depressed.

To the upper ends of the rods C, C, rectangular blocks *b, b*, are attached. These  
40 blocks *b, b*, fit in the uprights B, B, which are constructed of metal and bent or formed of three sides so as to serve as guides for the blocks—see Figs. 1 and 3. The blocks *b, b*, are also constructed of metal and have each  
45 a triangular opening or bearing *c*, made through them to receive the ends of a bar G, which are made in triangular or knife-edged form, similar to the pivots of all scale beams. To one end of the bar G, an  
50 index H, is attached and a vertical bar I, is suspended to said bar near the index H, the lower end of the bar I, being heavier than its upper part so that it will be retained in a vertical position, and the upper end of

said bar having a segment *d*, attached to it 55 with a vertical mark *e*, made at its center—see Fig. 1.

To the bar G, the scale beam J, is attached. One end or part, *f*, of this scale beam is graduated or has small holes *g*, 60 made in it to receive the point of a weight K, said holes being made in the beam at proper points and numbered corresponding to the different denominations of U. S. gold coin, see Fig. 3. The opposite end 65 of the scale beam is formed of a plate *h*, having slots *i*, made in it, said slots corresponding in length and width to the several U. S. gold coins, see Fig. 3. To the under side of the plate *h*, a vertical plate *j*, is at- 70 tached, said plate being slotted vertically, the vertical slots corresponding in width to the slots *i*, and being in line with them, see Fig. 1.

The knife-edged ends of the bar G, fit in 75 V-shaped notches *k*, in the upper ends of the uprights B, B, when the implement is not in use—the ends of the bar being kept in the notches *k*, by the spring F. By this means the bearings and knife edges of the 80 bar G, are kept in order or prevented from being injured by unnecessary wear.

The implement is used as follows. Suppose a \$2½ gold piece is to be tested. The coin is placed in the slot marked 2½ in the 85 plate *h*, said coin also fitting in the slot in the plate *j*, directly in line with the slot in the plate *h*. If the coin fits snugly in these slots it is of proper dimensions. The outer end of the lever E, is then depressed and 90 the blocks *b*, are elevated so that the bearings *c*, are raised above the upper ends of the uprights B, B, and the ends of the bar G raised above or out of the notches *k*, in the upper ends of the uprights B, B. The 95 scale beam J, then rests in the bearings *c*, and the point of the weight K, being placed in the point marked 2½ on the end or part *f*, of the scale beam, the coin will more than counterbalance the weight and the index H, 100 will be moved to the right of the mark *e*, on the segment *d*, and the coin is proved to be genuine.

Counterfeit coin, if of the same size as the genuine ones, are necessarily lighter, be- 105 cause the alloy is of less specific gravity than gold. If a spurious coin be of the same weight as a genuine one, the spurious coin

will necessarily be larger, consequently by measuring and weighing the coin spurious ones may be readily detected.

I have graduated the scale beam so that  
5 new genuine coins will more than counter-  
balance the weight K, in order to allow for  
a deficiency in weight occasioned by wear,  
but the wear will never be so great as to  
prevent genuine coins from exactly balanc-  
10 ing the weight and causing the index to be  
at the point *e*, on the segment. If a coin be  
not sufficiently heavy to do this, it is spu-  
rious.

I have practically tested the above de-  
15 scribed machine as follows: I took two  
pieces of gold, one being  $21\frac{1}{2}$  carats U. S.  
standard, and the other 18 carats. These  
two pieces I worked into wires exactly of  
the same thickness. The piece of  $21\frac{1}{2}$  car-  
20 ats, I made of the same weight as a half-  
eagle or \$5 gold piece. The piece of 18  
carats wire was then cut so as to corre-  
spond exactly in size with the wire of  $21\frac{1}{2}$   
carats. I then weighed the two pieces of  
25 wire and found the wire of 18 carats to be  
18 grains lighter than the one of  $21\frac{1}{2}$   
carats, thereby showing a difference of  $3\frac{1}{2}$   
grains on the dollar. If, therefore, an al-  
lowance of one grain on the dollar be made  
30 for the wear of gold coin, to which extent  
it probably will not wear, as only the pro-  
jecting surfaces are exposed, the implement  
will detect base coin made of as good a qual-  
ity or of as fine gold as profit would permit.

I am aware that there is in some coins a  
35 small difference in size owing to the differ-  
ent degrees of pressure given it by coining,  
but this difference is so minute, and the  
difference between the genuine coin and  
40 18-carat gold so great, being (after a de-  
duction of one grain on the dollar for wear)  
 $2\frac{3}{4}$  grains, that a well constructed imple-  
ment will detect any base coin. The accu-  
racy, therefore, of an implement for the pur-  
45 pose of detecting base coin is important,  
and by having the implement constructed  
or arranged as shown so that the beam is  
not allowed to rest in its bearings when not  
in use, the bearings are kept in perfect  
50 order, being subjected to wear only when  
the implement is used.

I am aware that implements have been  
previously invented for effecting the same  
purpose as the one herein described. I  
55 therefore do not claim detecting spurious

coin by weight and measurement irrespec-  
tive of the construction of the implement as  
descried, but to the best of my knowledge  
and belief, it is new in balances of this de-  
scription to arrange the knife edges as here- 60  
in described, so that the knife edges can only  
come in contact with their bearings at the  
moment of weighing.

I do not claim to be the inventor of slid-  
ing or movable supports for the knife edges, 65  
as this feature is seen in jewelers' scales,  
apothecaries' scales, etc. But in all of these,  
it will be found that the knife edges rest  
upon their bearings when the scales are not  
in use. Consequently every concussion or 70  
jarring in the apartment or building injures  
the knife edges and bearings, and after a  
time the scales become inaccurate. This can  
never happen in my improvement, because  
the knife edges never come in contact with 75  
their bearings, except when the lever is  
pressed, and they wholly separate and are  
held steadily apart when the lever is re-  
leased. It is also new to have vertical  
pockets of the exact size of the coins, upon 80  
the fulcrum bar, which pockets serve as  
measures of the dimensions of the pieces of  
money, and also indicate the exact spot  
where the coin is to be placed by the op-  
erator. I do not, however, claim, broadly, 85  
the placing of gages or receptacles upon bal-  
ances. But no balances have ever been ar-  
ranged with a number of vertical pockets in  
close proximity. The apparatus is thus  
made very compact and highly convenient. 90

I do not claim to be the inventor of  
swinging index bars for weighing machines;  
and therefore I disclaim the same as used  
in my apparatus. Their employment is not  
essential as my instrument can be made and 95  
used either with or without the same, as  
may be desired.

No coin balance like mine has ever been  
known or used, to the best of my knowledge  
and belief. It is therefore a new article of 100  
manufacture, and possesses useful qualities  
not seen in any other analogous article.

I claim and desire to secure by Letters  
Patent, as a new article of manufacture,—

A coin balance when constructed as here- 105  
in described.

FERDINAND J. HERPERS.

Witnesses:

JAMES F. BUCKLEY,  
W. TUSCH.