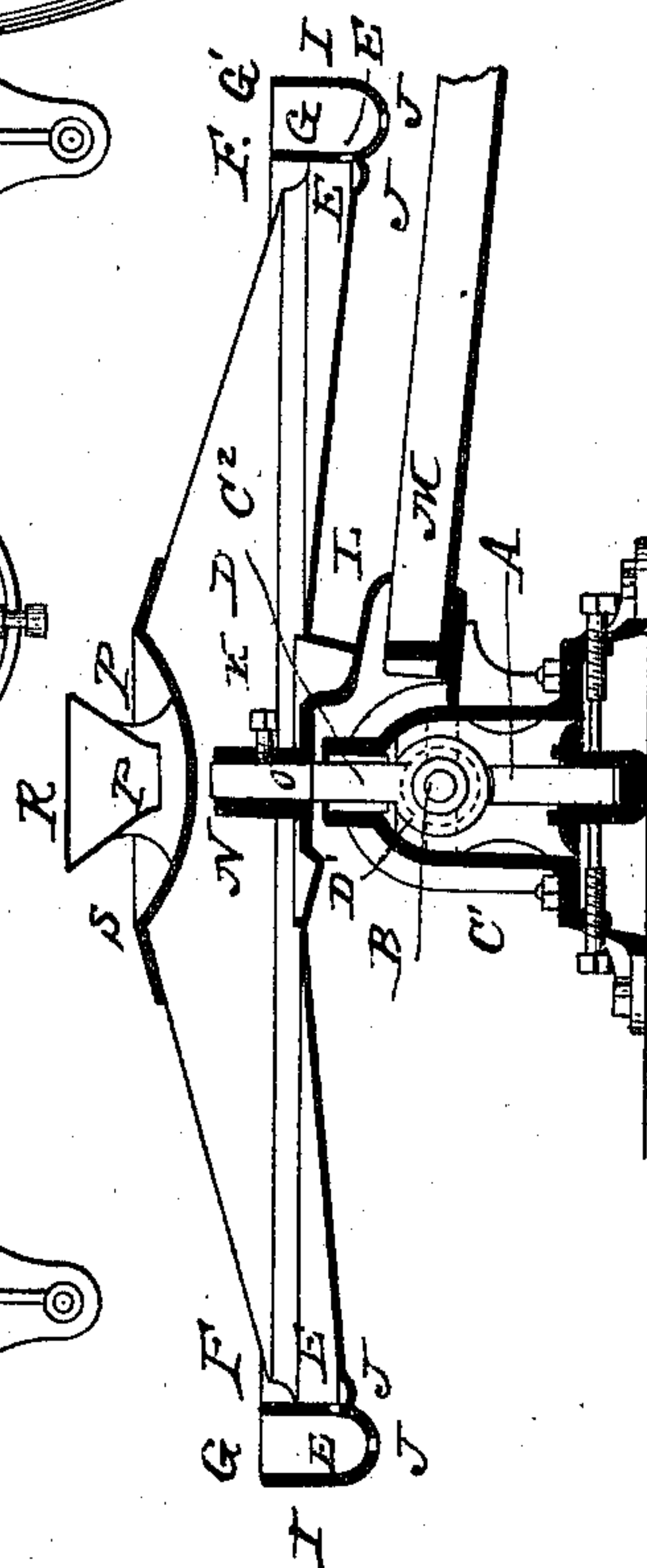
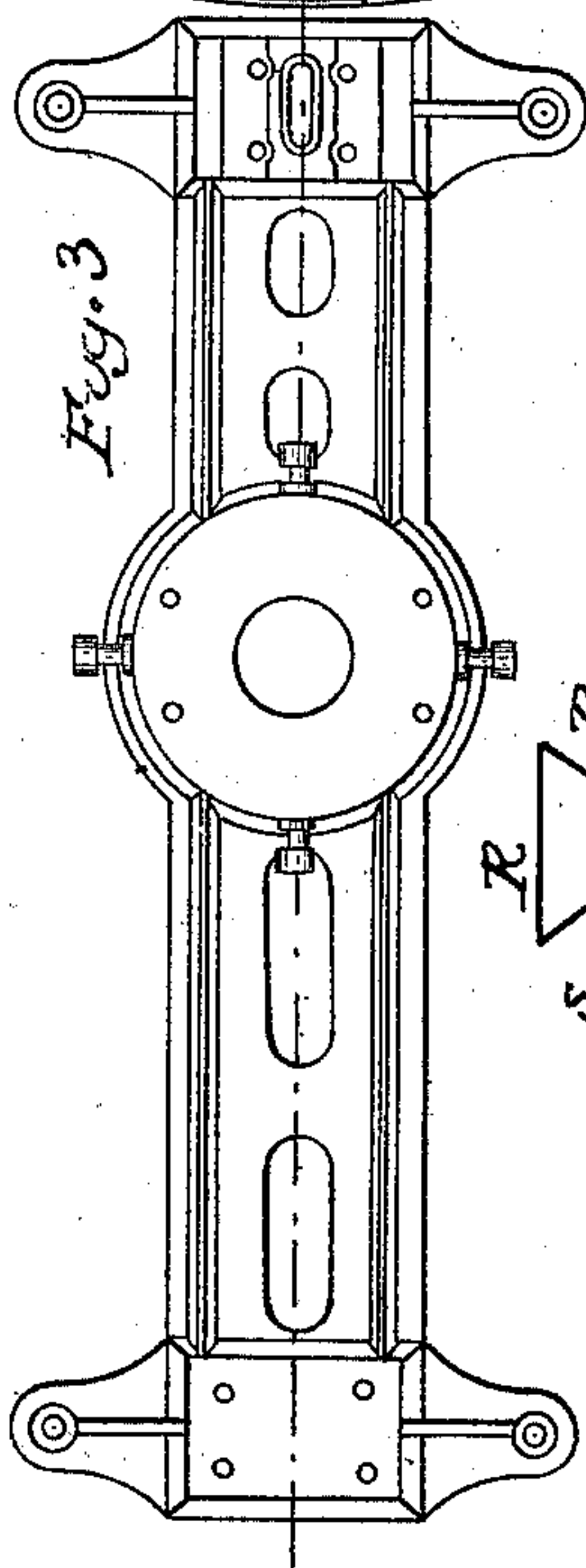
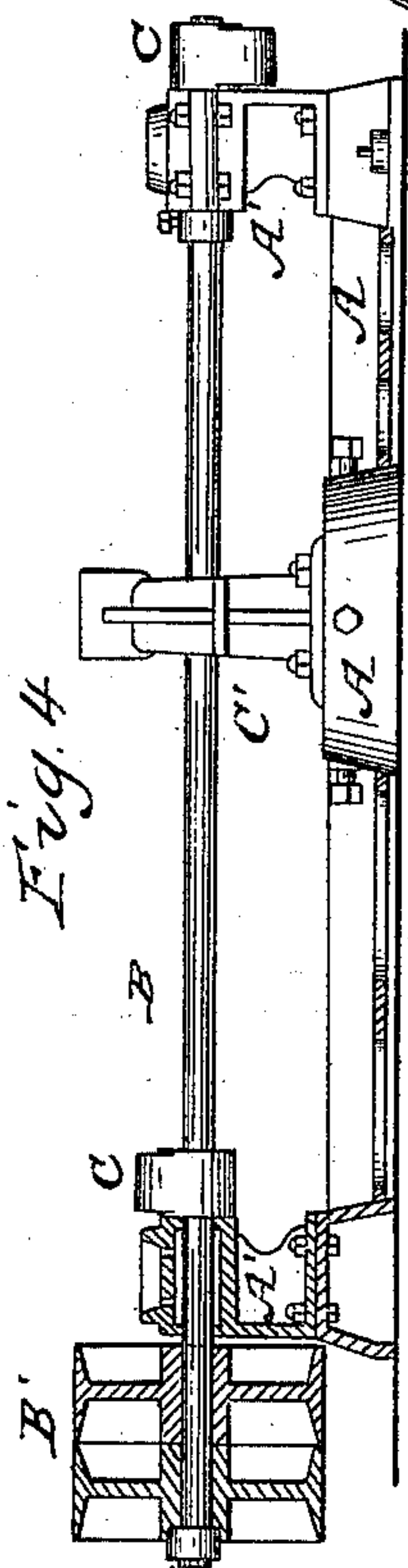
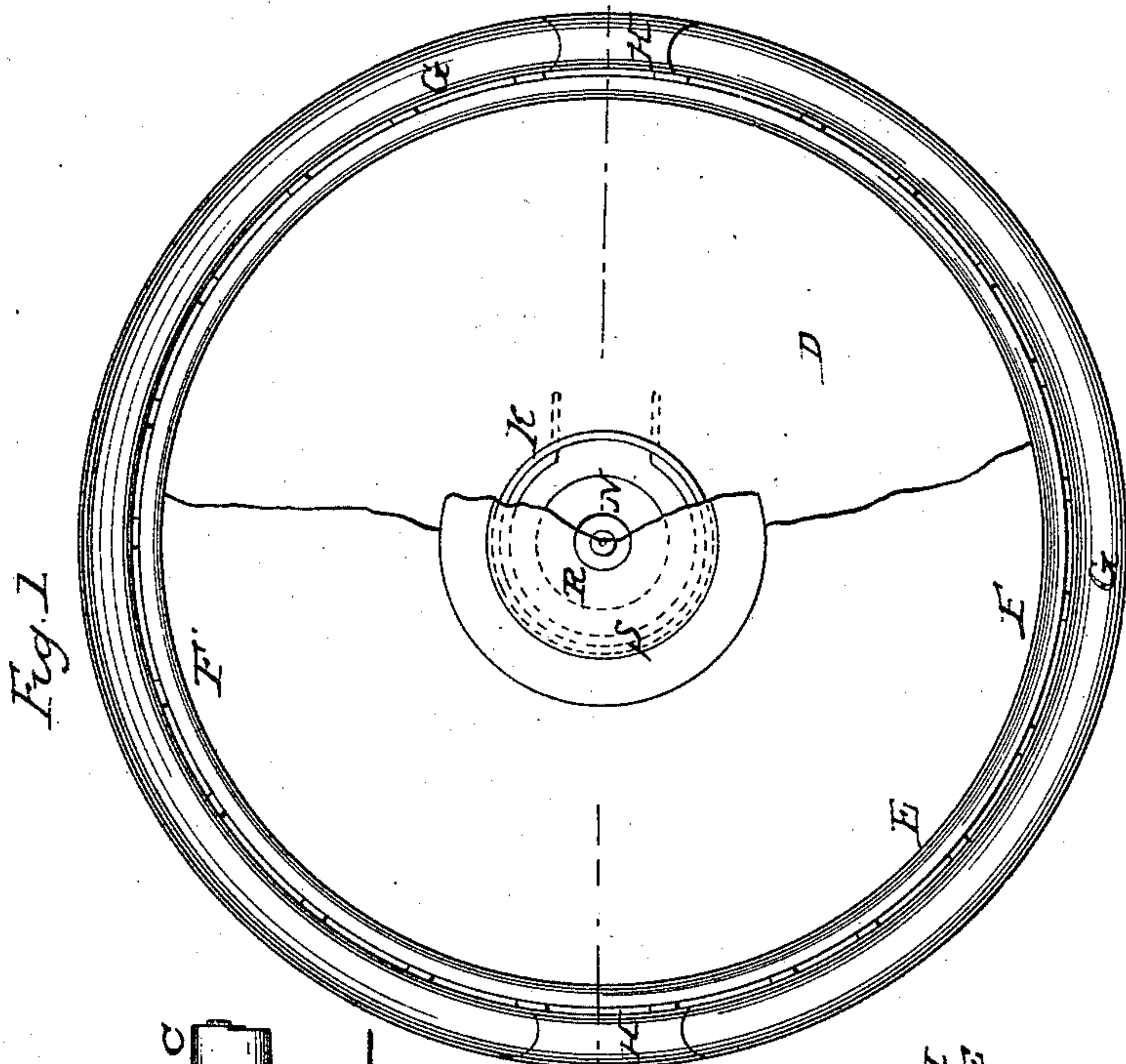


M. HUNGERFORD.

Ore Concentrator.

No. 62,749.

Patented March 12, 1867.



WITNESSES
C. M. Smith
Geo. F. Manthey

INVENTOR
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MORGAN HUNGERFORD, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 62,749, dated March 12, 1867.

IMPROVED ORE-CONCENTRATOR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, MORGAN HUNGERFORD, of the city and county of San Francisco, State of California, have invented certain new and useful improvements in "Concentrators and Amalgamators" for saving metals contained in ores or rock, whether of sulphurets, gold, silver, or copper; and I hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

The nature of my invention consists in the employment of a circular disk, with incline sides deviating from its centre or central line to its circumference, with a groove around the periphery, with another rim around the pan, this rim being provided with stops placed at opposite sides.

Figure 1 represents a top view of my machine, with part of cover removed.

Figure 2, a sectional elevation.

Figure 3, a plan of frame, gear, and centre.

Figure 4, elevation of frame and gear.

The efforts heretofore made to concentrate sulphurets by means of a current of water passing over a convex disk have, so far as I am informed, been unsuccessful, in a measure, owing to the fact, among others, that the sand and debris which are contained in them are carried into the amalgam or quicksilver channels, to be reduced and separated afterwards by a more laborious process, or wasted in the effort to free the sulphurets from sand. The object of my invention is to provide a machine of such construction as will carry the sand and debris as nearly as possible up the peculiar incline sides of the pan, and out through a central opening, when the metal or sulphurets, by their greater specific gravity, will be carried down the incline sides to the inner groove of the pan, and from thence drawn into the rim surrounding the inner groove at the same angle of inclination as that of the sides of said pan; and also, should the sand or debris be carried down upon the sulphurets around the inner groove, that they may form in a crust, from beneath which they may be drawn into the outer rim or receptacle, leaving the sand.

Referring to the drawings, A represents a suitable frame, upon which the driving-shaft and pulley B B' are placed. Upon this shaft are two eccentrics, C C, operating between two lugs on the bottom of the pan. The pan D is of circular form, of convex surface, cut in two in form of a semicircle, with sides dropped one inch from its centre, making the lowest point of depression two inches, presenting upon its central line a ridge or nearly acute angle, gradually declining to its periphery, presenting nearly flat incline sides. The groove E, with rim which surrounds the disk of the pan, partakes of the peculiar nature of its surface; consequently the channels decline from the ridge or elevation through the centre to the lowest point of the declining sides in which the heavy particles of metal are deposited. Above the line of the groove, I place slots or outlets F F, about six inches apart, around the whole circumference, through which the sulphurets are drawn into an outer rim or receptacle, leaving the amalgam in the groove, and the sand and debris above, which latter is compact, or in form of a crust, to be washed away by the oscillating motion of the machine. The outer rim G is carried below the line of the bottom of the pan, forming a hollow receptacle or rim around the inner rim, at the same elevation and partaking of the same general character as that of the surface of the pan. At opposite sides of the ridge through the pan, between the inner and outer rims, I place stops H H, so that the particles of ore and debris will be checked, and carried backward and forward, and the debris become agitated and brought to the surface to be drawn off through the discharge hole I I in the rim above the heavy particles. The sulphurets and amalgam are discharged from under the outer rim by means of holes J J, leaving the lighter particles to be washed away by water. By this arrangement the sulphurets are rendered comparatively clean in shorter time and at much less expense than by other machines now in use.

Having thus described my invention, I do not claim a concentrator for saving metals with a convex surface with outlets near the centre of the pan, and circumferential gutter around it; but what I do claim, and desire to secure by Letters Patent, is—

1. A pan cut in two and dropped about one inch, so that the lowest depression shall be two inches, more or less, below the ridge or angle of such concentrator, substantially as described and for the purpose set forth.
2. The slots or outlets F F above the line of the groove around the inner rim, as described.
3. The outer rim G, with stops H H; also the discharge holes J J, under the pan, around the said outer rim, substantially as described and for the purpose set forth.

In witness whereof I have hereunto set my hand and seal this 9th day of May, A. D. 1866.

MORGAN HUNGERFORD. [L. s.]

Witnesses:

C. W. M. SMITH,
GUS. A. MANTHEY.