

No. 633,059.

Patented Sept. 12, 1899.

J. WOODHAM.  
CONCENTRATOR.

(Application filed Oct. 26, 1898.)

(No Model.)

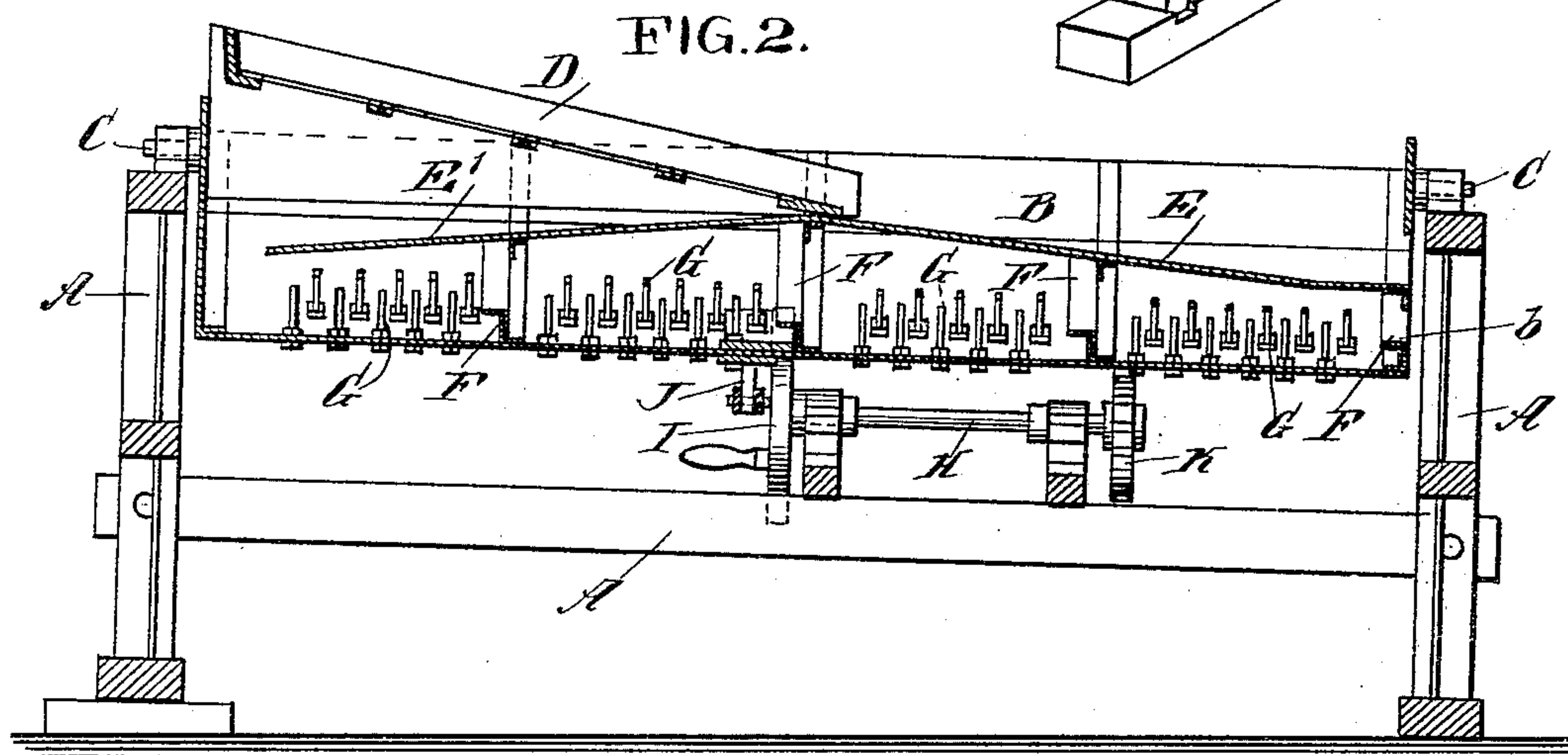
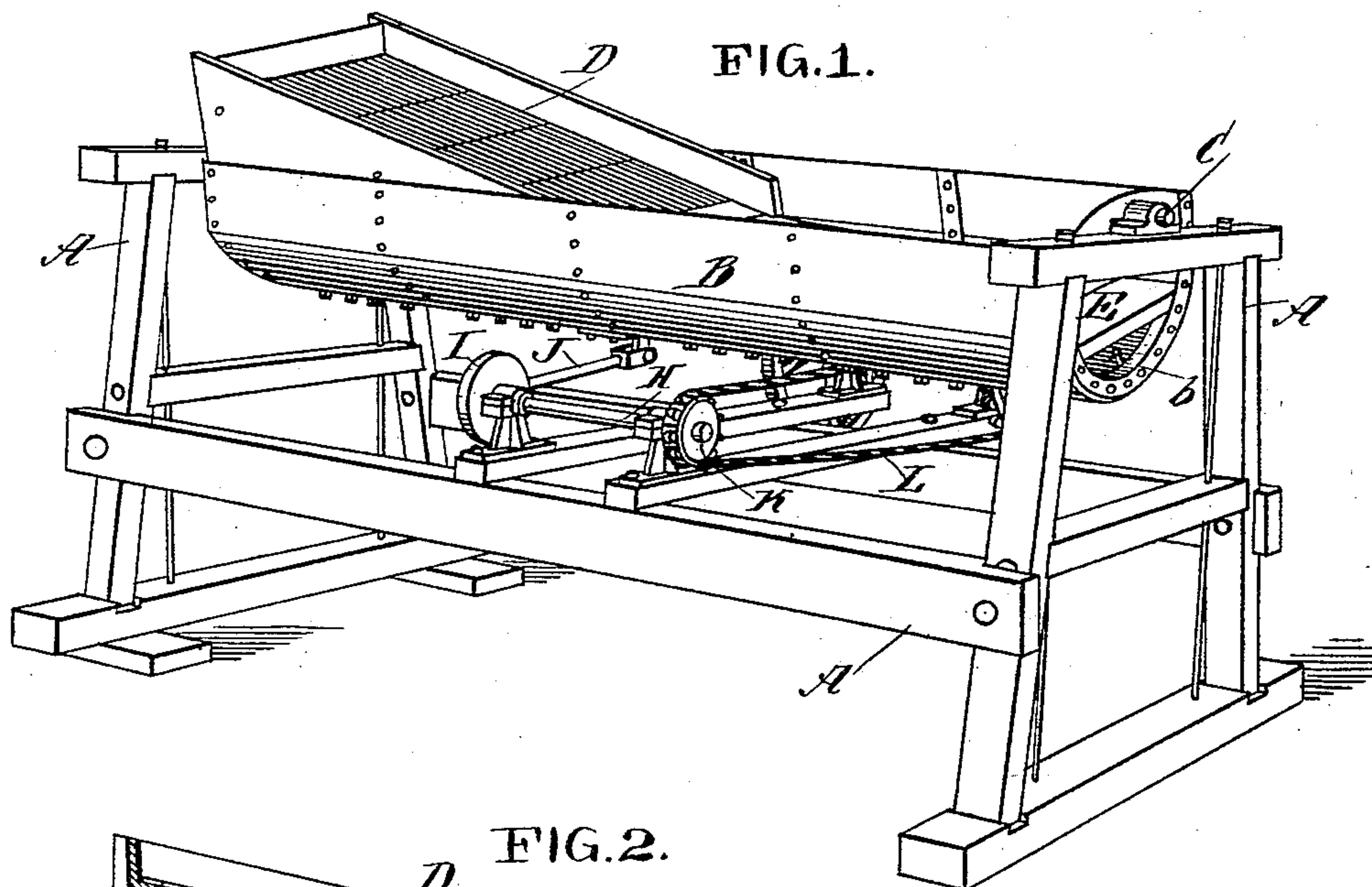
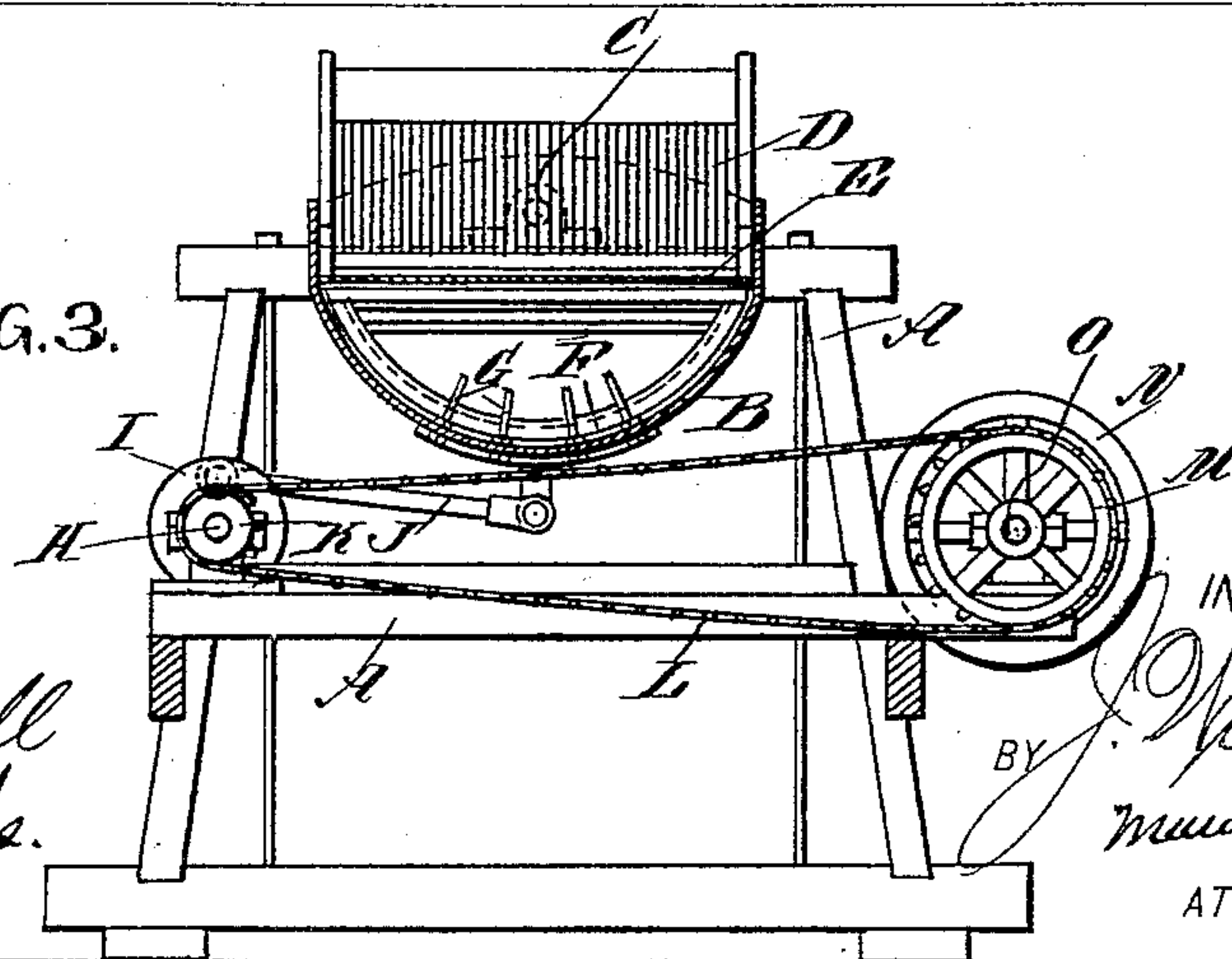


FIG. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH WOODHAM, OF LONGBEACH, WASHINGTON.

## CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 633,059, dated September 12, 1899.

Application filed October 26, 1898. Serial No. 694,644. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH WOODHAM, of Longbeach, in the county of Pacific and State of Washington, have invented a new and Improved Concentrator, of which the following is a full, clear, and exact description.

My invention relates to an improvement in concentrators adapted particularly for use in connection with placer deposits.

It consists, essentially, of a rocking curved trough having angularly-shaped riffles extending across its bottom and stirring projections or pins projecting upward from its bottom.

My invention also comprises the novel features hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of my device. Fig. 2 is a longitudinal sectional elevation, and Fig. 3 is a cross-sectional elevation thereof.

Upon any suitable frame or support A is mounted a semicylindrical trough B by axial pivots C. This trough is mounted so that one end is somewhat higher than the other, so as to cause a free current of water through the same. At intervals in its length riffles F are attached to the bottom of the trough, and consist of bars of angular cross-section and so attached to the bottom of the trough that one leg of the angle is raised a short distance above the surface of the trough and substantially parallel therewith and projects against the current or toward the upper end of the trough. This forms a pocket beneath said bar, where the concentrates may collect. The surface of the trough between the riffles is provided with a series of upwardly-extending pins or bolts G, which may be secured to the bottom of the trough by any convenient means. As herein shown, these bolts or pins are secured in place by nuts, one upon the inside of the trough and one upon the outside. At a short distance above the bolts or pins is a partition or apron formed in two parts—one part E sloping from the center toward the lower end of the trough and the other part E' sloping from the center toward the opposite or upper end of the trough.

Above the upper end of the trough and

above the apron E' is placed a screen D, which slopes toward the center of the trough. Upon this screen D the material to be concentrated and the water are discharged. The coarser materials which fail to go through the openings in the screen will be discharged upon the apron E and also be discharged from the lower end thereof. The finer materials which pass through the screen with the water will be carried by the apron E' to the upper end of the trough and be discharged into the same. The material will then pass downward through the trough until discharged from the discharge-opening b at the lower end thereof.

To the lower side of the trough is attached one end of a pitman J, which at its other end is attached to a pin upon a crank-disk I, mounted upon a shaft H and rotated by means of a sprocket-chain L, which connects a wheel K upon the shaft H and a second sprocket-wheel M upon a shaft O. This latter shaft is mounted upon the frame at one side of the device and is provided with a crank-disk N or other suitable device, by which it may be rotated. This shaft may be turned by hand or by the application of other power, as desired.

When in use, the trough B is rocked or swung upon its pivots C, which causes a free feed of the material over the surface of the device and also causes a thorough and constant stirring of the sand within the trough by the action of the pins or bolts G. The swinging motion of the trough will cause the pins or bolts G to pass back and forth through the water, while the water by reason of its inertia will not partake of this side motion. In consequence of this the material is kept constantly well stirred, so that the gold or other valuable particles may readily settle to the bottom, and thus be collected beneath the riffles F. In consequence of this the machine will be able to handle comparatively large quantities of material and at the expenditure of a very small amount of power.

The aprons E and E' may be made readily removable from the device, so that the bottom of the trough is rendered accessible for cleaning.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A concentrating device, comprising a semi-cylindrical trough journaled to oscillate upon its axis and having one end lower than the other and open, inclined aprons carried by  
5 the trough and extending from a central point downwards toward each end, one apron discharging beyond the lower end and the other terminating short of the upper end of the  
10 trough, an inclined screen or grizzly carried by the trough above the upper apron and

discharging at the center upon the lower apron, transverse undercut riffles within the trough, stirring-pins projecting upward from the trough, and means for oscillating the trough, substantially as described.

JOSEPH WOODHAM.

Witnesses:

COLONEL DE LONG,  
ALBERT JACOBSON.