G. F. EISENHARDT.
Centrifugal Machine.

No. 202,251. Patented April 9, 1878.

Fig 1.

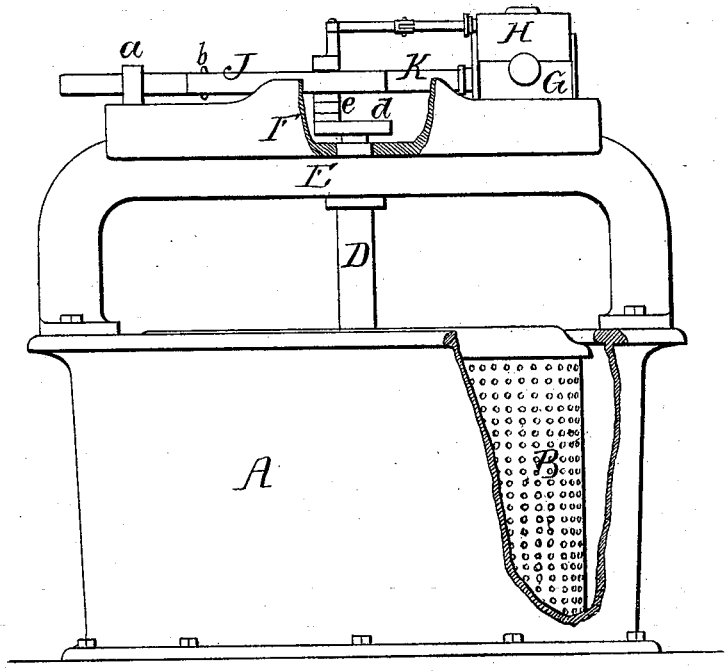
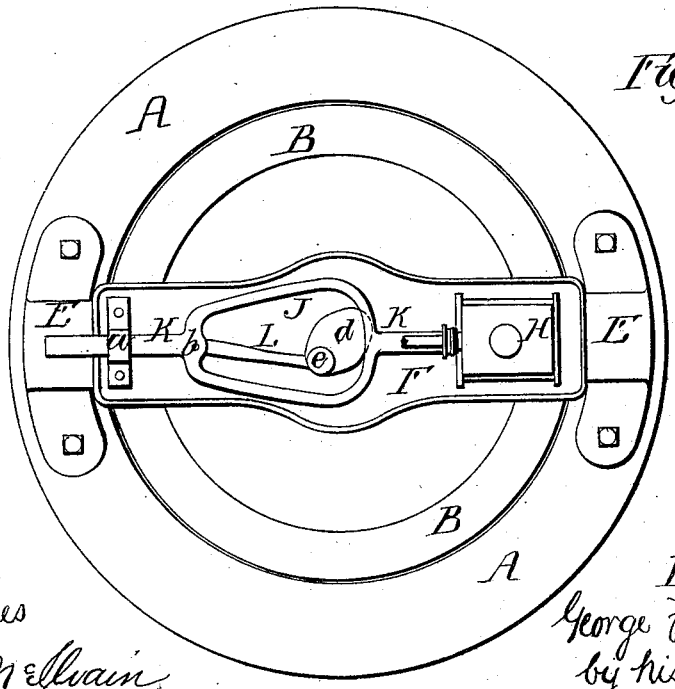


Fig 2.



Witnesses
Thomas McElwain
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UNITED STATES PATENT OFFICE.

GEORGE F. EISENHARDT, OF PHILADELPHIA, PA., ASSIGNOR TO HIMSELF, HERMAN DIENELT, AND GEO. F. GELBACH, OF SAME PLACE.

IMPROVEMENT IN CENTRIFUGAL MACHINES.

Specification forming part of Letters Patent No. **202,251**, dated April 9, 1878; application filed December 29, 1877.

To all whom it may concern:

Be it known that I, GEORGE F. EISENHARDT, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Hydro-Extractors, of which the following is a specification:

My invention relates to an improvement in that class of hydro-extractors in which the vertical shaft is driven by a steam-engine secured to the machine; and the object of my invention is to so combine a steam-engine with the machine that the heaviest parts of the former shall be within the limits of the latter, and much nearer to the vertical shaft than usual, thereby obviating the jarring which has hitherto been an objectionable feature in machinery of this class.

In the accompanying drawings, Figure 1 is a front view, partly in section, of my combined steam-engine and hydro-extractor, and Fig. 2 a plan view.

A is the outer casing or stationary cylinder of the hydro-extractor; B, the inner rotating perforated casing secured to the vertical shaft D, and E the bridge forming the upper bearing for the vertical shaft.

All these parts are common to other hydro-extractors, and it may be remarked here that a steam-engine has been heretofore secured to the bridge or bracket of a hydro-extractor; but the heaviest part of the engine has been arranged so far from the vertical shaft as to overhang, or partly overhang, the casing on one side, thereby inducing that objectionable tremor of the machine when in operation which it is the object of my invention to obviate.

On the top of the bridge, or forming part of the same, is the base-plate F of the engine, G being the steam-cylinder, and H the valve-chest.

It has been usual to connect the piston-rod to the pin of the crank on the vertical shaft through the medium of the ordinary connecting-rod and guided cross-head, and this demanded the placing of the cylinder and its valve-chest at an objectionable distance from the vertical shaft.

In my improvements a yoke, J, is formed on the piston-rod K, the latter being guided by a sleeve, *a*, secured to the base-plate.

The pin *e* of the crank *d* is connected, by a rod, L, to a pin, *b*, on the piston-rod, which pin, instead of being situated, as usual, between the crank-shaft and the cylinder, is situated on the opposite side of the crank-shaft. In other words, the crank-shaft is between the pin *b* of the guided piston-rod and the cylinder, which can consequently be brought much nearer to the vertical shaft than by the old arrangement, and the heaviest parts of the engine are brought within the circumferential limits of the casing of the hydro-extractor, so that the above-mentioned objectionable jarring or tremor of the machine when in operation is obviated.

The yoke J, which is for the purpose of permitting the free movement of the crank and connecting-rod, may be dispensed with if the said connecting-rod be placed below the piston-rod; but I prefer the yoke.

The valve of the engine is driven, in the present instance, from a pin projecting from the main crank; but other modes of operating the valve may be adopted.

I do not desire to claim, broadly, mounting an engine on the bridge of a hydro-extractor or centrifugal machine, which engine is connected to a crank on the vertical axis of the machine; but

I claim as my invention—

The combination, in a hydro-extractor, of the bridge E and the vertical shaft D with a steam-engine arranged on the said bridge within the limits of the base of the casing A, the crank on the said shaft D being situated between the steam-engine cylinder and the pin, by which the connecting-rod is jointed to the piston-rod, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. F. EISENHARDT.

Witnesses:

RICHARD L. GARDINER,

HARRY SMITH.