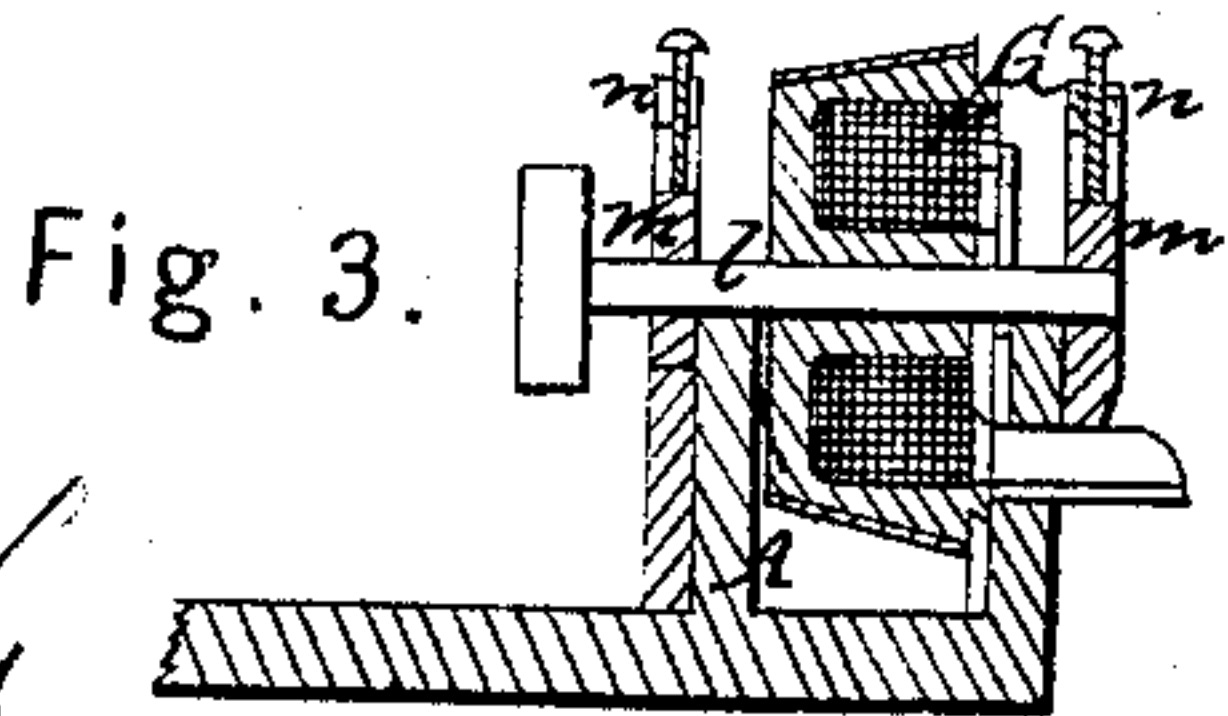
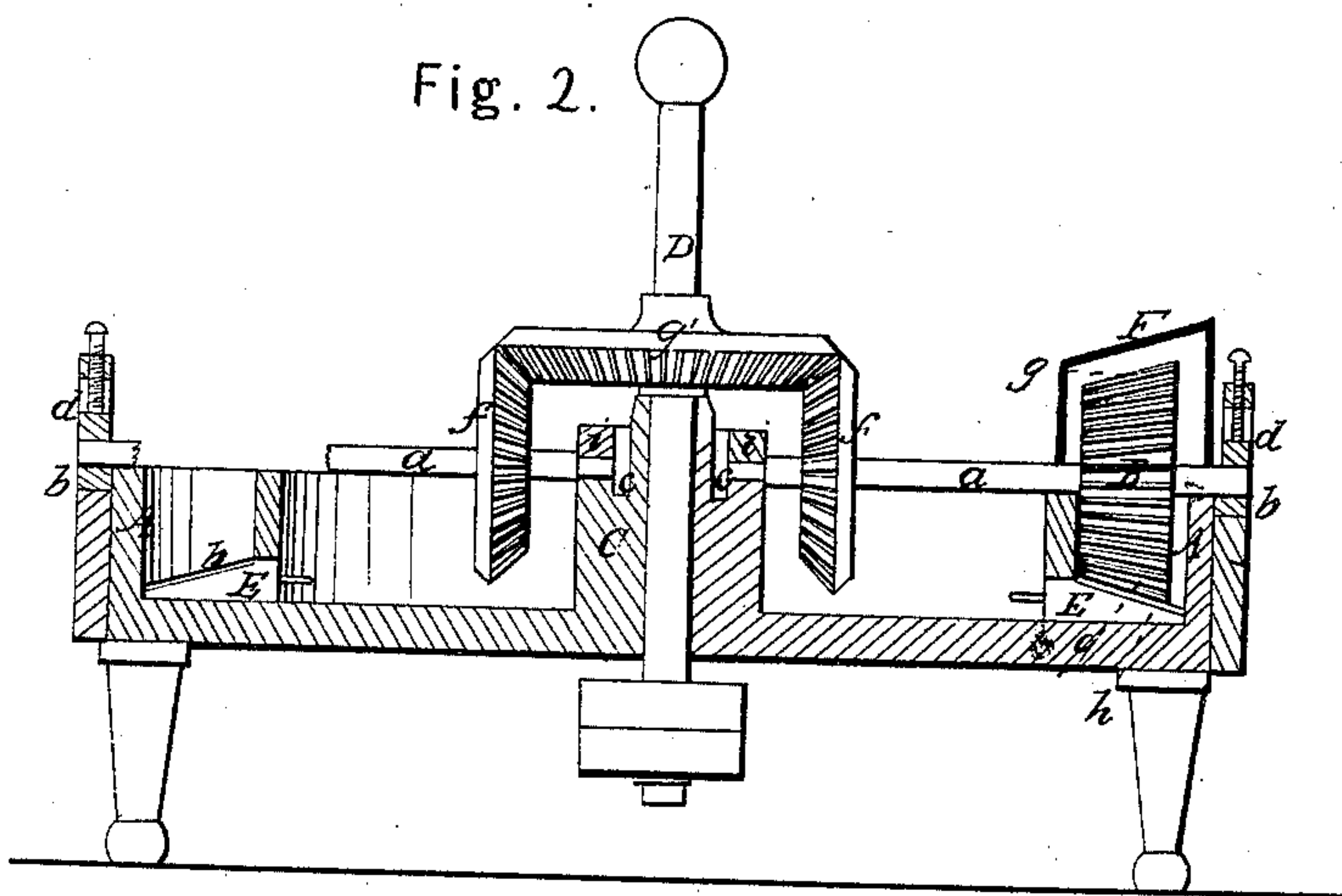
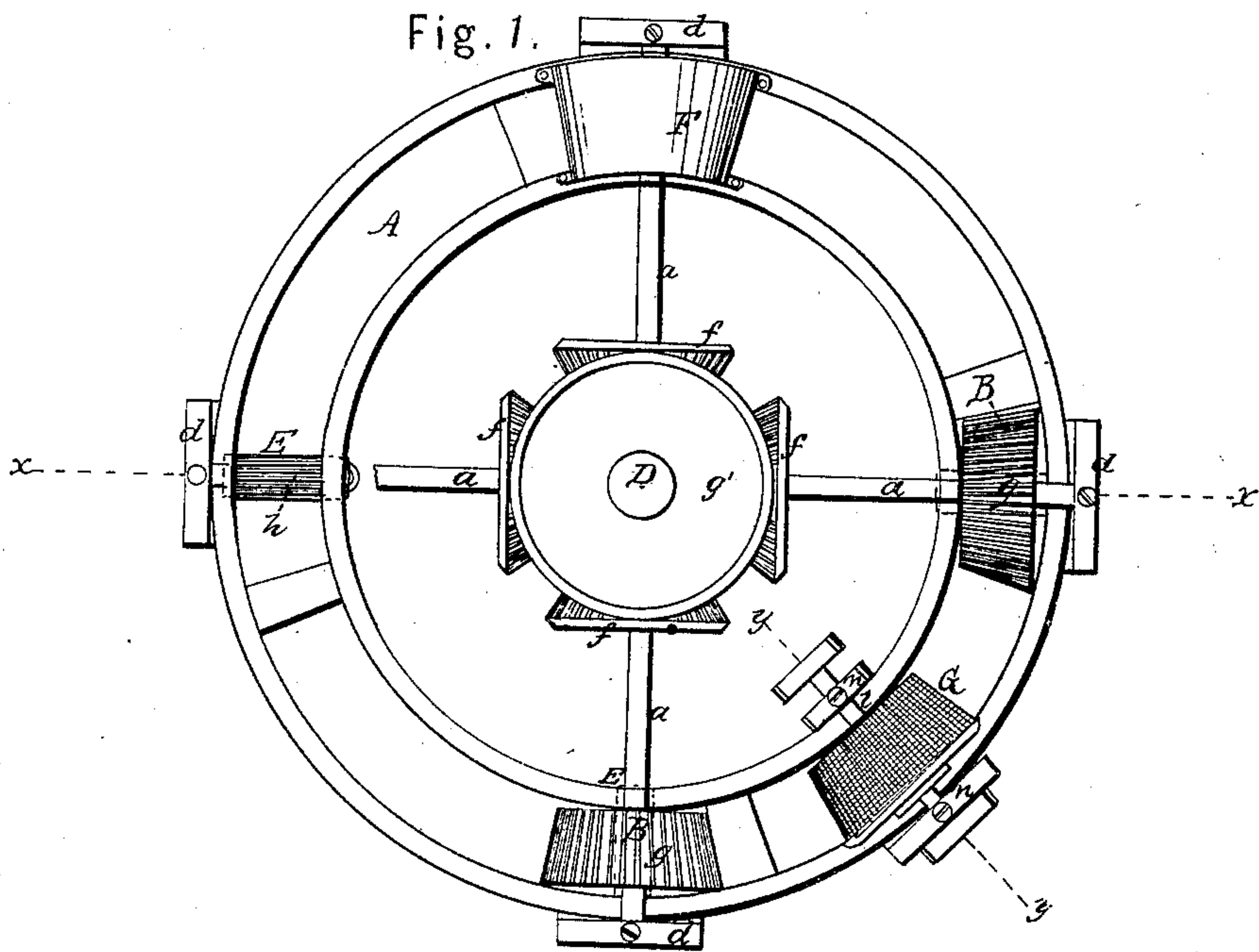


J. McCracken.

Rag Engine.

Nº 57,355.

Patented Aug. 21, 1866.



Witnesses

J. W. Coombs
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UNITED STATES PATENT OFFICE.

JAMES McCracken, OF BLOOMFIELD, NEW JERSEY.

IMPROVEMENT IN ENGINES FOR REDUCING RAGS, &c., TO FIBER.

Specification forming part of Letters Patent No. 57,355, dated August 21, 1866; antedated August 8, 1866.

To all whom it may concern:

Be it known that I, JAMES McCracken, of Bloomfield, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Engines for Reducing Rags and other Stock to Fiber; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of an engine constructed according to my invention. Fig. 2 is a central vertical section of the same in the plane indicated by the line *x x* in Fig. 1. Fig. 3 is a vertical section in the plane indicated by the line *y y* in Fig. 1.

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

This invention relates to what are known to paper-manufacturers as "rag-engines," and to engines operating on a similar principle for reducing or disintegrating fibrous substance.

The trough is stationary and of circular form, and the rollers are of conical form; and the invention consists in the employment, in an engine having such a trough and rollers, of a conical washer.

It also consists in the employment in such a trough, in combination with conical rollers, of straight knives arranged across the trough, with their edges in planes parallel with the axis of their respective rollers.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the trough, stationary and made of circular—or, more strictly speaking, of annular—form, instead of oblong, with rounded ends, like those of the rag-engines in common use. B B are the rollers, of which there are four in the machine represented, arranged at equal distances apart, with their shafts *a a* radial to the center of the trough, the outer bearings, *b*, of the said shafts being adjustable vertically in housings *d*, firmly secured to the outside of the trough, and the inner ones, *i*, being adjustable vertically in housings *c* in a fixed standard, C, erected in the center of the trough. The shafts are each furnished with bevel-gears *f*, gearing with a bevel-gear, *g'*, on an upright central driving-shaft, D, so that all the rollers

receive rotary motion at the same speed and in the same direction.

The rollers B B are of such conical form that their sides, if continued, would meet in a point where the axis of the roller, if prolonged, would meet the axis of the trough and central driving-shaft, D; but in other respects they are like those used in other rag-engines, being furnished with straight knives *g g*, the edges of which conform to the profile of the roller, and therefore converge toward the point in which the axis of the roller would meet the axis of the trough. The bottom of the trough may be of a shape to conform to the profile of the rollers, though it is represented as flat.

Under each roller is a set of knives, *h h*, secured in a stationary block, E, secured to the bottom of the trough. The edges of these knives are inclined to correspond with the axial profiles of the rollers; but the said knives, instead of being set in planes oblique to the axis of the rollers, or made in elbow form, as in other machines, are straight and set in planes parallel with the axis of their respective rollers, which, owing to the conical form of the rollers and the arrangement of the knives *g g* thereon, causes the latter to operate, in combination with the said knives *h h*, in such manner as to produce a shearing cut, the shearing being from the center of the machine until the knives *g* severally arrive over the middle knife *h* in each block E, and afterward toward the center.

The conical form of the rollers causes them to give motion to every part of the stock at a speed proportioned to its distance from the center of the circle of the trough, and hence all parts are acted upon uniformly by the knives, and one portion is prevented from being reduced too fine, while another portion is not reduced fine enough. The necessity of using a hand-paddle to produce a proper circulation of the stock around the trough is also obviated.

Covers F are placed over the several rollers; but in Fig. 1 all but one of the said covers are omitted to expose the rollers to view, and in that figure one of the rollers is omitted to show the knives *h h* and knife-block E below.

G is the wire-gauze washer, constructed in

the usual manner, except that it is of the same conical form as the rollers. This washer is arranged in the trough midway between two of the rollers, its shaft *l* being radial to the center of the trough and fitted to bearings *m*, which are adjustable vertically in housings *n*, secured to the trough.

By making the washer conical the velocity of every part of its periphery is in proportion to its distance from the center of the circle of the trough, and hence it draws off the water equally all across the trough, and obviates the use of an unnecessarily large quantity of water to effect a perfect washing. By using several rollers with one washer several mixings are effected.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in an engine of similar character to what is known as a "rag-engine," for the reduction of fibrous stock, of a circular or annular stationary trough, one or more conical rollers, and a conical washer, substantially as and for the purpose herein specified.

2. The combination of a circular or annular stationary trough, one or more conical rollers, and one or more series of stationary straight knives, *h h*, arranged in planes parallel with the shaft or shafts of the roller or rollers, substantially as and for the purpose herein specified.

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Witnesses:

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