

(No Model.)

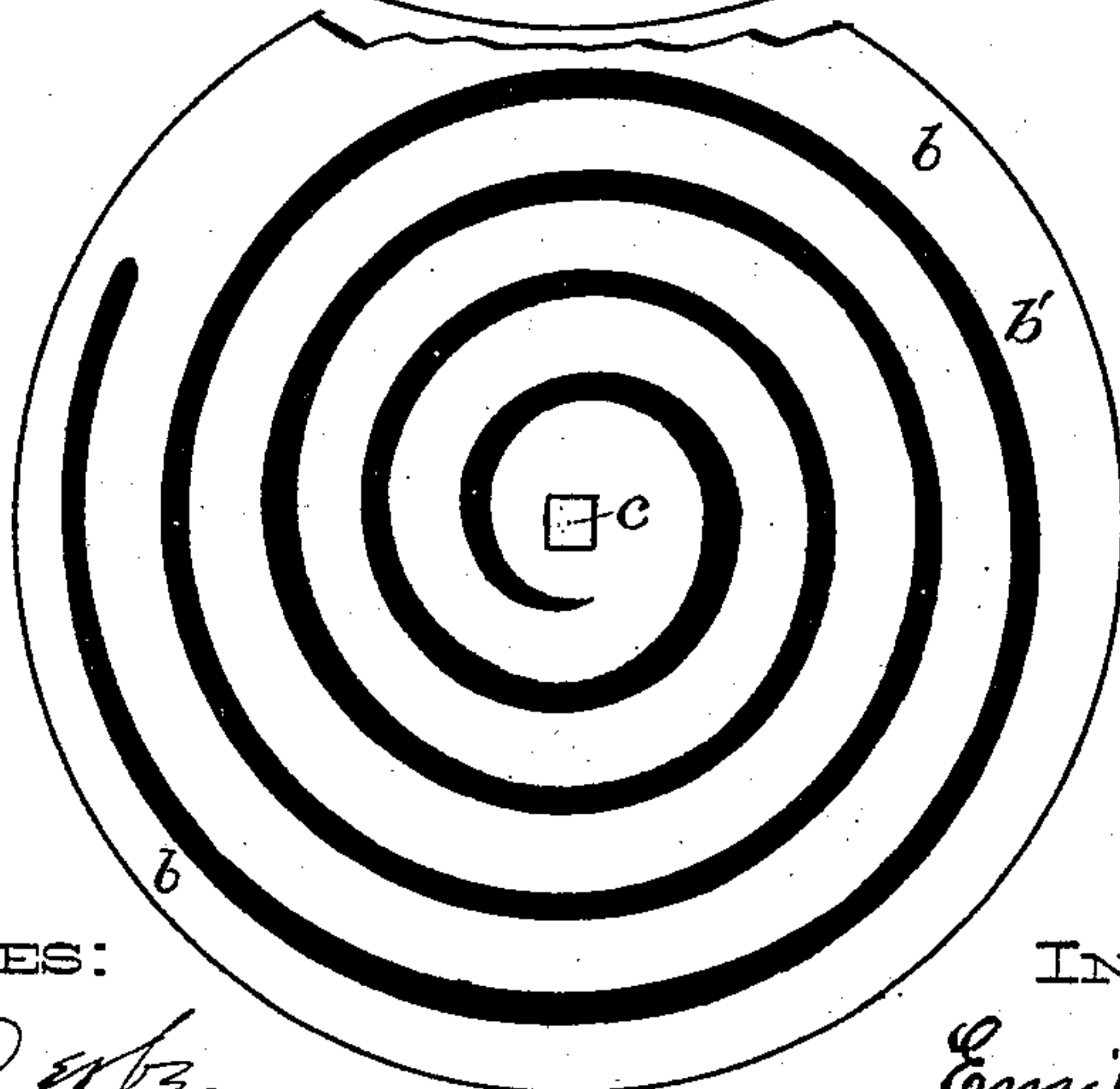
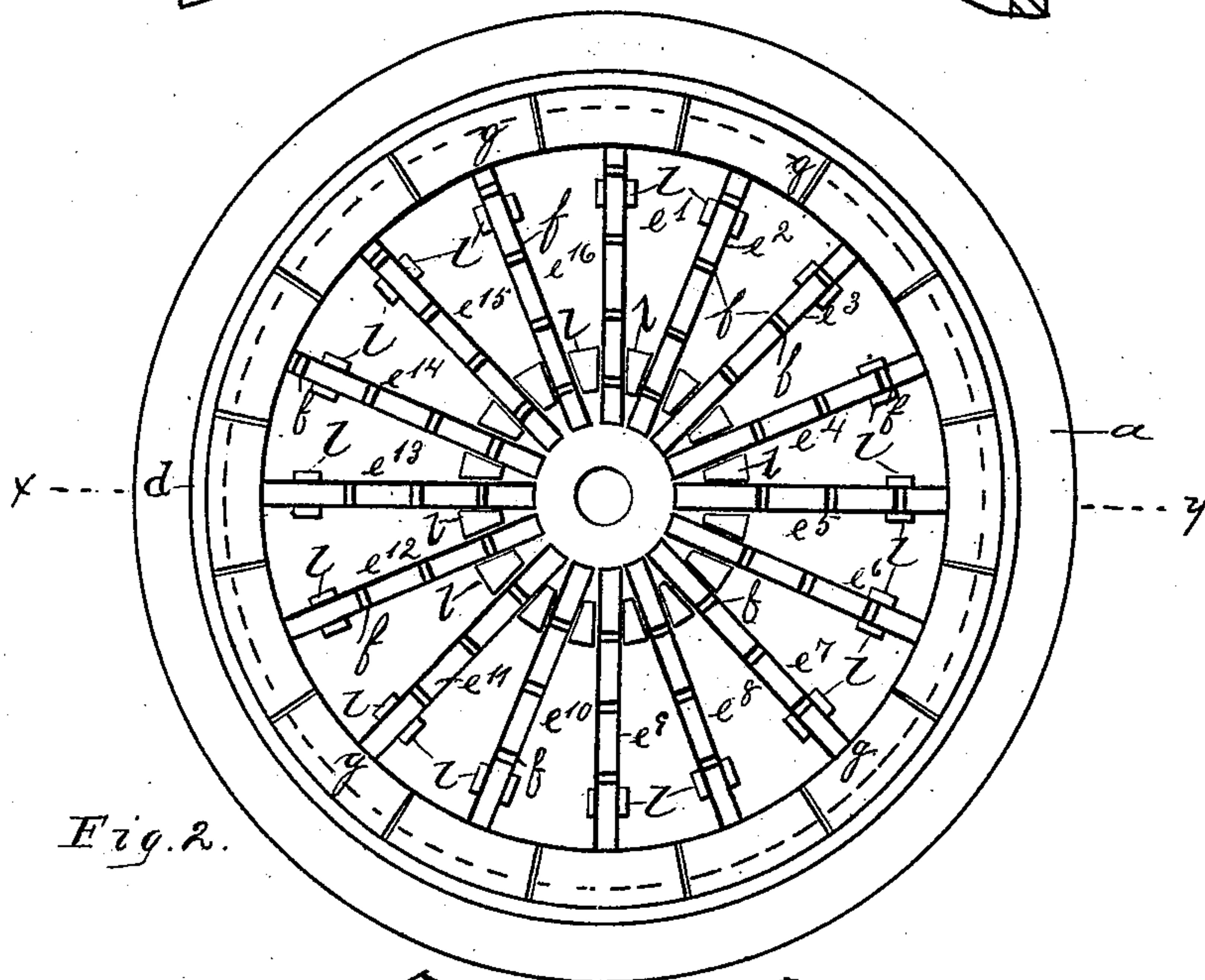
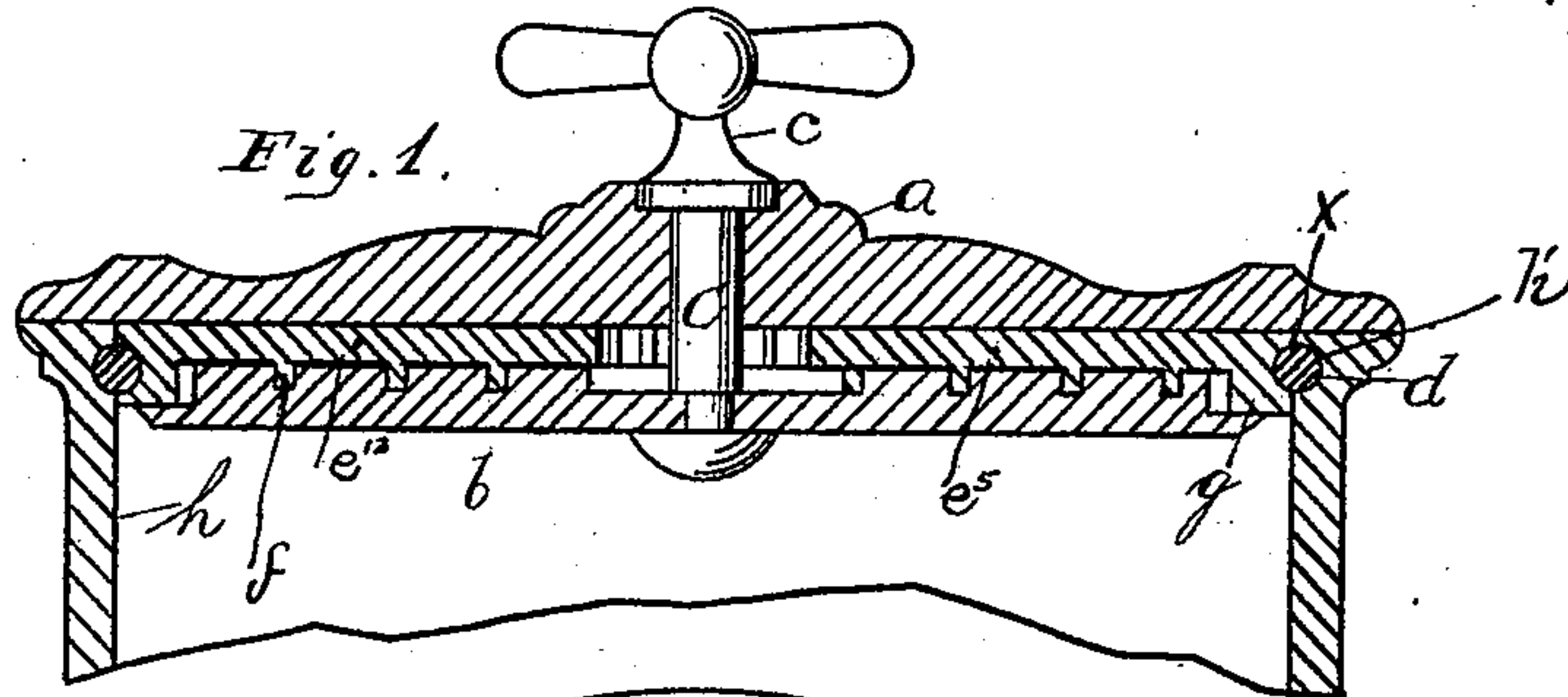
2 Sheets—Sheet 1.

E. LEINERT.

APPARATUS FOR CLOSING VESSELS, &c.

No. 300,987.

Patented June 24, 1884.



WITNESSES:

A. D. D. 1884.
A. Brumau.

INVENTOR :

Emil Leinert

By

A. D. D. 1884.

Attorney.

(No Model.)

2 Sheets—Sheet 2.

E. LEINERT.

APPARATUS FOR CLOSING VESSELS, &c.

No. 300,987.

Patented June 24, 1884.

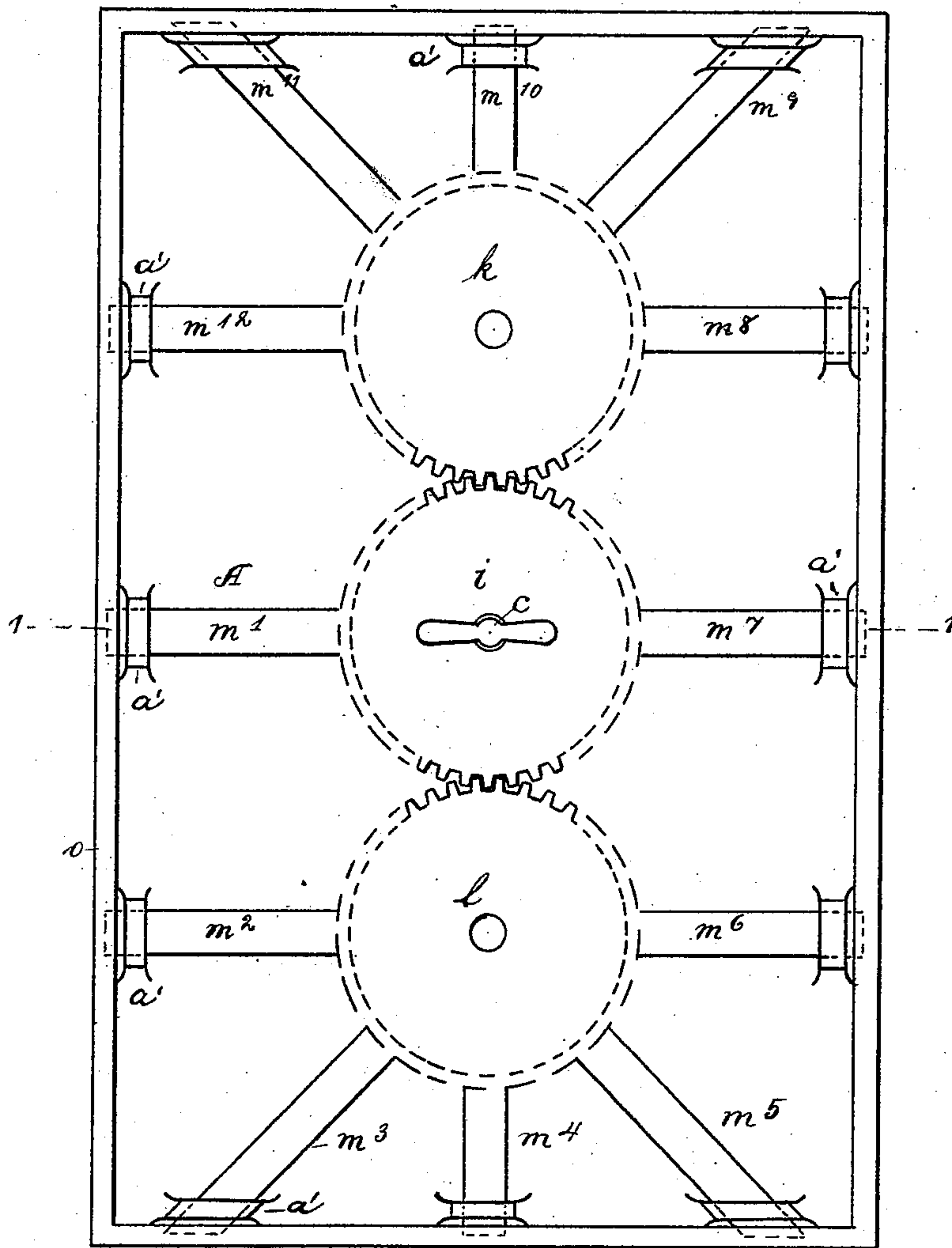


Fig. 4.

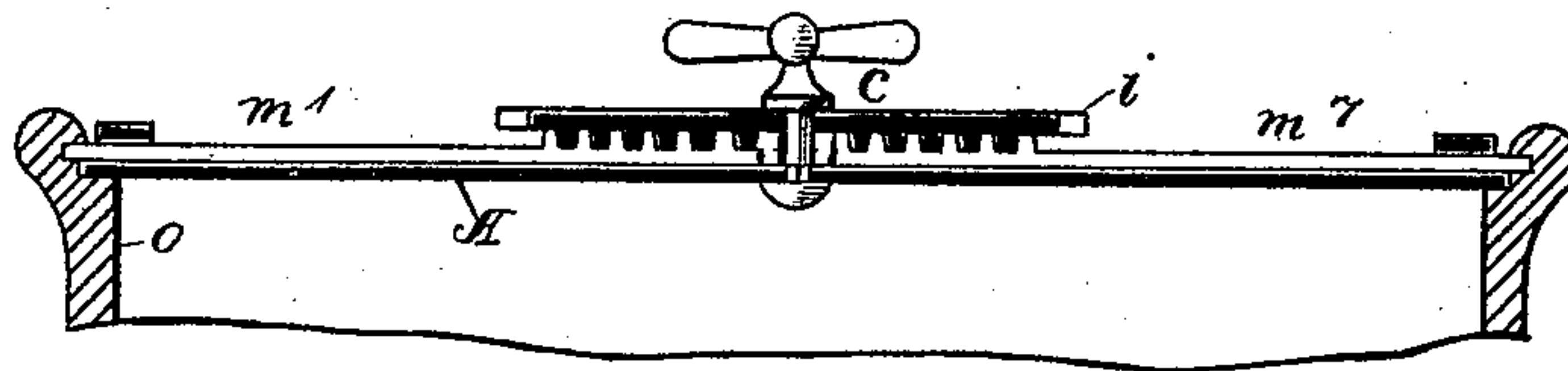


Fig. 5.

WITNESSES:

C. D. Zerk
A. Brenner

INVENTOR:

Emil Leinert

By

C. D. Zerk
Attorney.

UNITED STATES PATENT OFFICE.

EMIL LEINERT, OF DRESDEN, SAXONY, GERMANY.

APPARATUS FOR CLOSING VESSELS, &c.

SPECIFICATION forming part of Letters Patent No. 300,987, dated June 24, 1884.

Application filed March 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, EMIL LEINERT, of the city of Dresden, in the Kingdom of Saxony and German Empire, have invented certain new and useful Improvements in Apparatus for Closing Vessels, Doors, and Such Like Air-Tight and other Objects, of which the following is a specification.

My invention relates to improvements in apparatus for closing openings and making the same air-tight.

Figure 1 shows a section of the apparatus arranged as closure for a vessel on line *x x*. Fig. 2 is a plan view of the under side of the upper plate, with the headed arms in place, and with the under plate, *b*, and bolt *c* removed. Fig. 3 is a top view of the lower plate of the apparatus. Fig. 4 shows the combination of three apparatuses in a rectangular cover. Fig. 5 is a section of Fig. 4 on the line 1 1 of Fig. 4.

The apparatus consists of an upper plate, *a*, lower plate, *b*, and bolt *c*, having a handle for connecting both plates. Between the upper plate, *a*, and the lower plate, *b*, are provided any suitable number of packing-heads, *g*, each having an arm, *e*, or *e'*, or *e''*, and so on, which are to be moved in radial directions, as will be explained. Each of these arms *e* to *e''* can be slid outward in radial direction, guided by means of lugs *l* on the bottom of the upper plate, *a*. The arms carry a number of teeth, *f*, which are arranged in the form of a convolute thread. The heads *g* of these arms are, in the present arrangement as shown for a vessel-closure, semicircularly hollowed out at *x*, whereas like cavities *h* are formed in corresponding parts of the vessel. The spaces so formed serve to receive a packing-ring, *d*. The lower plate, *b*, of corresponding form with the upper plate, *a*, carries a convolute thread corresponding to the arrangement of the teeth *f* on the arms *e* to *e''*. The bolt *c*, which connects the two plates to each other, is fixed in the lower plate, *b*, and is movably arranged in the upper plate. If the plate *b* is turned by means of the handle of the bolt *c* to the right, the convolute thread on the lower plate, *b*, slides between the teeth of the arms *f* and compels the said arms *e* to *e''* to move from the

center outward. The ends or heads *g* press hereby equably on the packing-ring *d*, whereby a perfectly air-tight closure is attained all around the upper edge of the vessel; but this invention is not only applicable to vessels or packages which are round in horizontal section, for it is equally well adapted to square vessels or packages.

Three apparatuses can be combined side by side, as shown in Fig. 4. The center apparatus, *i*, carries a right-hand spiral thread. The right and left hand apparatus, *k* and *l*, carry on the other hand a left-hand thread. The spiral is in this case cut or milled into each of the upper plates, *i k l*, and the edge of each of these plates is toothed. The central plate, *i*, is firmly connected to the bolt *c*, as shown in Fig. 4. A number of bolts or arms are arranged to slide in the guides *a'* on the lower square plate, *A*. The bolts *m'* and *m''* are arranged radial to a circular plate, *i*, five bolts, *m² m³ m⁴ m⁵ m⁶*, radial to the one side plate, five bolts, *m⁸ m⁹ m¹⁰ m¹¹ m¹²*, radial to the other side plate. These bolts *m'* to *m¹²* are provided with teeth *f*, which are spirally arranged in correspondence with the aforementioned spirals. If the center plate, *i*, is turned to the right by means of the handle to the fixed bolt *c*, not only the first five bolts, *m'* to *m''*, are moved from the center outward, but the rotary movement of the plate *i* is transferred to the side plates, *k* and *l*, so that the same are moved to the left, and in consequence of the left-hand arrangement of the spirals the corresponding bolts moved from the center outward. The bolts catch in the rim *n* of the frame *o*, and connect in this manner the plate *a* with the frame *o*. In this manner it is possible to close openings of any desired section by adapting one or a combination of several apparatuses to the same.

Having now described my said invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a vessel, of arms which are constructed with heads on their outer ends, and radially movable between guides *l*, the upper plate, *a*, the lower plate, *b*, constructed with a convolute thread engaging with teeth on said radial arms, the bolt *c*, fixed to the lower plate, *b*, and a packing, all

constructed and adapted to operate substantially as described.

2. The combination, with the cover of a vessel, of radially-movable arms, guided as described, and having grooved heads, a packing fitted into the outer ends of these heads and into a groove formed inside of the vessel, a bottom plate provided with a convolute thread on its upper side engaging with teeth on said arms, and a turning-bolt, *c*, rigidly connected to said plate, substantially as described.

3. The combination of radially-movable

headed and toothed arms interposed between the cover *a* of a vessel, and a circularly-movable bottom plate having a convolute thread engaging with the teeth of said arms, a packing between the outer ends of the arms and the vessel, and means for connecting the cover and bottom plate and turning the latter, substantially as described.

EMIL LEINERT.

Witnesses:

OTTO WOLFF,

HUGO SCHUBERT.