

No. 720,094.

PATENTED FEB. 10, 1903.

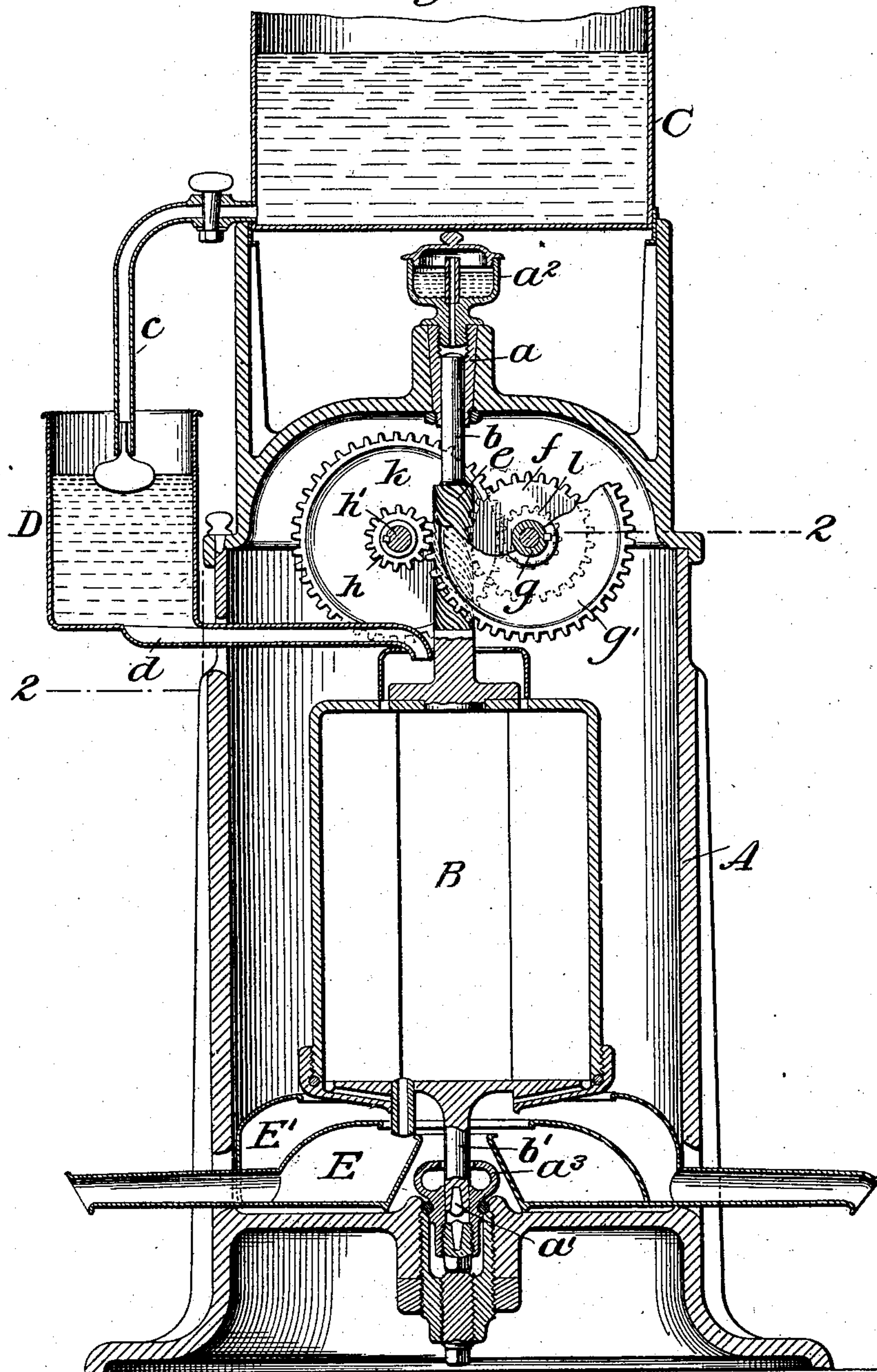
G. M. ANDERSSON.
GEARING FOR CENTRIFUGAL MACHINES.

APPLICATION FILED AUG. 16, 1894.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

J. F. Hampton
Alfred Scott

Inventor:

Gustaf M. Andersson
Henry & Henry
attys.

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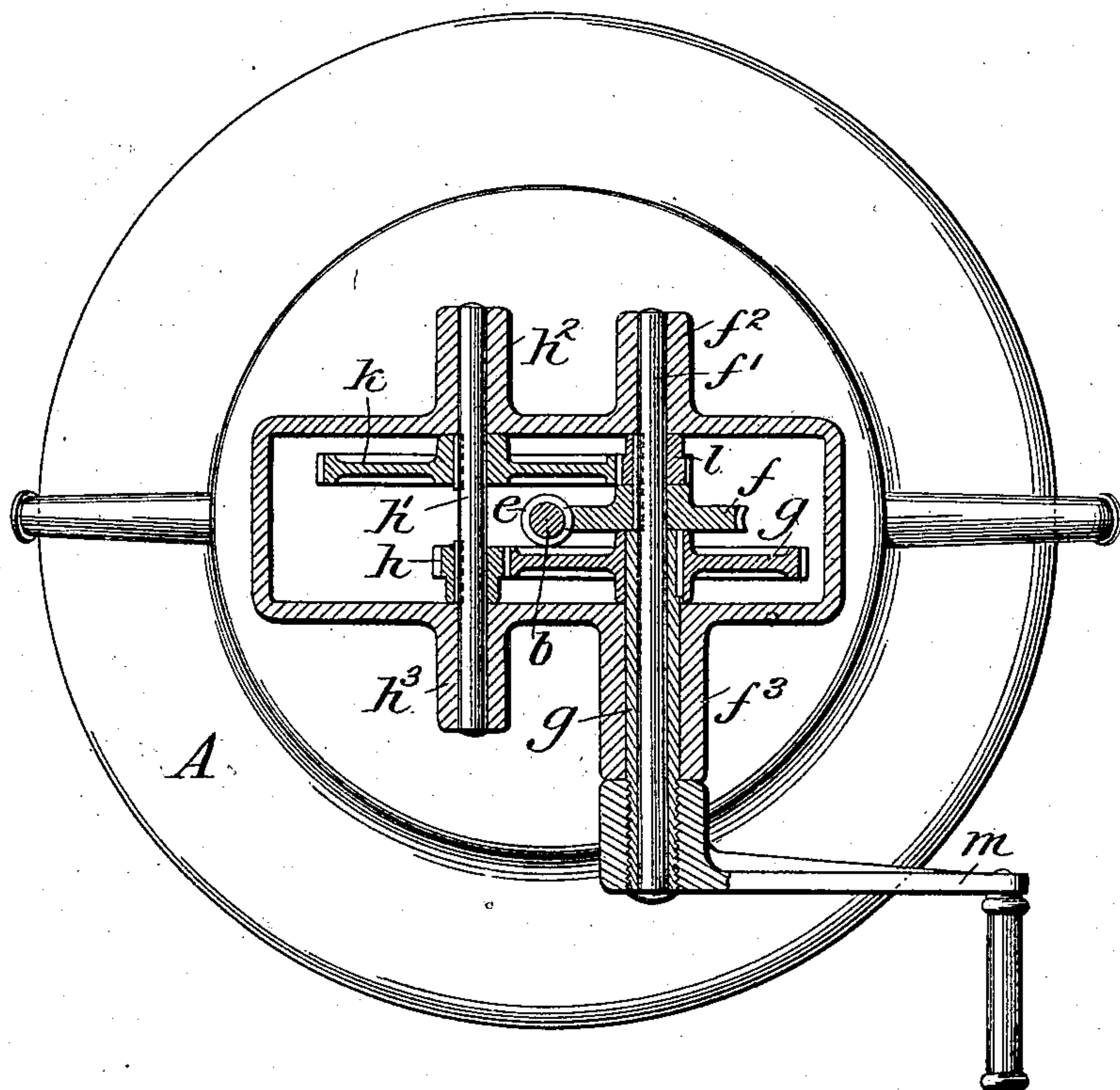
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GEARING FOR CENTRIFUGAL MACHINES.

APPLICATION FILED AUG. 16, 1894.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

F. F. Langdon

Alp. Scott

Inventor:

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UNITED STATES PATENT OFFICE.

GUSTAF M. ANDERSSON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES BUTTER EXTRACTOR COMPANY, OF NEWARK, NEW JERSEY.

GEARING FOR CENTRIFUGAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 720,094, dated February 10, 1903.

Application filed August 16, 1894. Serial No. 520,533. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF M. ANDERSSON, a subject of the King of Sweden and Norway, and a resident of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Gearing for Centrifugal Machines, of which the following is a specification.

My invention relates to centrifugal machines, and has for its object to improve the character and arrangement of the driving-gear, whereby the machine may be made more compact and efficient and may be constructed at less cost.

In the drawings forming part of this specification, and in which like letters designate corresponding parts, I have illustrated a hand operating cream-separator as embodying my invention; but it is of course understood that it may be embodied in other forms of rotary machines where high speed, compactness, and cheapness are desired, whether they be operated by hand or other power.

Figure 1 is a vertical central section of a separator embodying my invention. Fig. 2 is a transverse section on the line 2 2 of Fig. 1.

The frame A, which is preferably in the form of an inclosed casing, as shown, is provided with upper and lower vertical bearings a and a' , respectively. The separator-bowl B has upper and lower spindles b and b' rigidly connected thereto and working in the bearings a and a' , which are provided with the oil-cups a^2 and a^3 , respectively. Above the casing and supported thereby is a milk-supply tank C, which communicates with the upper end of the bowl B through the pipe c , the feed-tank D, and pipe d . Below the bowl B and supported by the casing are concentric milk and cream pans E and E'. The spindle b is provided with a worm e , preferably located between its bearing a and the top of the bowl, and with a worm-wheel f , rigidly fixed to a horizontal shaft f' , which has its bearings f^2 and f^3 in the top of the casing A. A tubular shaft g , sleeved on and concentric with the shaft f' , carries a gear-wheel g' rigidly fixed thereon, which meshes with a smaller gear-wheel h , carried by the horizontal shaft h' , mounted in bearings h^2 and h^3 in

the casing. The shaft h' carries also a larger gear-wheel k , meshing with the smaller gear-wheel l , carried by the shaft f' . The wheels g' and h constitute one set and the wheels k and l constitute another set of speed gear-wheels, and one set is arranged on each side of the spindle b . This arrangement secures great compactness and at the same time serves to balance the machine and prevent undue vibration when the machine is in operation. The shaft g may be driven by the hand-crank m or by other means. It will be seen that the driving mechanism is connected directly to the spindle, which in the form shown in the drawings is itself rigidly connected to the separator-bowl. This is the best form of the invention and is a very advantageous arrangement, since, among other things, it enables me to secure greater speed in the rotation of the bowl and simplifies the construction.

A machine constructed as above set forth is strong, compact, steady, and free in operation and cheap to manufacture. Forty revolutions of the crank m a minute will rotate the bowl B seven thousand times a minute, and this with a comparatively small expenditure of power. While I have shown only two sets of speed gear-wheels, it is of course understood that more sets might be used, if found desirable. I prefer to connect the upper spindle with the driving-gear, as shown; but in some cases the lower spindle might be so connected instead, if desired.

Various other changes, which will readily suggest themselves to any one skilled in the art, might be made without departing from my invention.

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

1. In a centrifugal driving mechanism the combination of a main spindle having a worm, a worm-wheel for driving the said worm, speed gear-wheels for operating the worm-wheel, one of said speed gear-wheels located on each side of the said worm-wheel, and the shaft of the worm-wheel and the shaft of the driven gear-wheels being concentric, whereby the said main spindle may be turned with great speed.

2. A centrifugal driving mechanism having

an upper and lower spindle rigidly connected, one of the spindles being provided with a worm, a worm-wheel for driving the said worm, and two sets of speed gear-wheels surrounding the spindle for operating the worm-wheel, the first and last of said gear-wheels being located on opposite sides of the worm-wheel and the three wheels supported by the same shaft, and the shaft of the worm-wheel and the shaft of the first of the speed gear-wheels being concentric, whereby the spindles may be operated at high speed.

3. A centrifugal machine having an upper and lower spindle one of the spindles having a worm, a shaft, a worm-wheel mounted on the said shaft for driving the said worm, gear-wheels surrounding the spindle for operating the worm-wheel, the first and last of said gear-wheels being mounted on opposite sides of the said worm-wheel, and the shaft of the

worm-wheel and the shaft of the first of the speed gear-wheels being concentric, whereby the spindles may be operated at a high speed.

4. In a centrifugal driving mechanism a main spindle provided with a worm *e*, a shaft *f'*, a worm-wheel *f* carried on the said shaft *f'*, gear-wheels *g'*, *h*, *k*, *l*, a tubular shaft *g* sleeved on the shaft *f'* and carrying the gear-wheel *g'*, a shaft *h'* carrying the gear-wheel *h* meshing with the gear-wheel *g'* and carrying also the gear-wheel *k* meshing with the gear-wheel *l* carried on the shaft *f'*, substantially as set forth.

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

GUSTAF M. ANDERSSON.

Witnesses:

HENNING G. TAUBE,
CHAS. W. MARSHALL.