

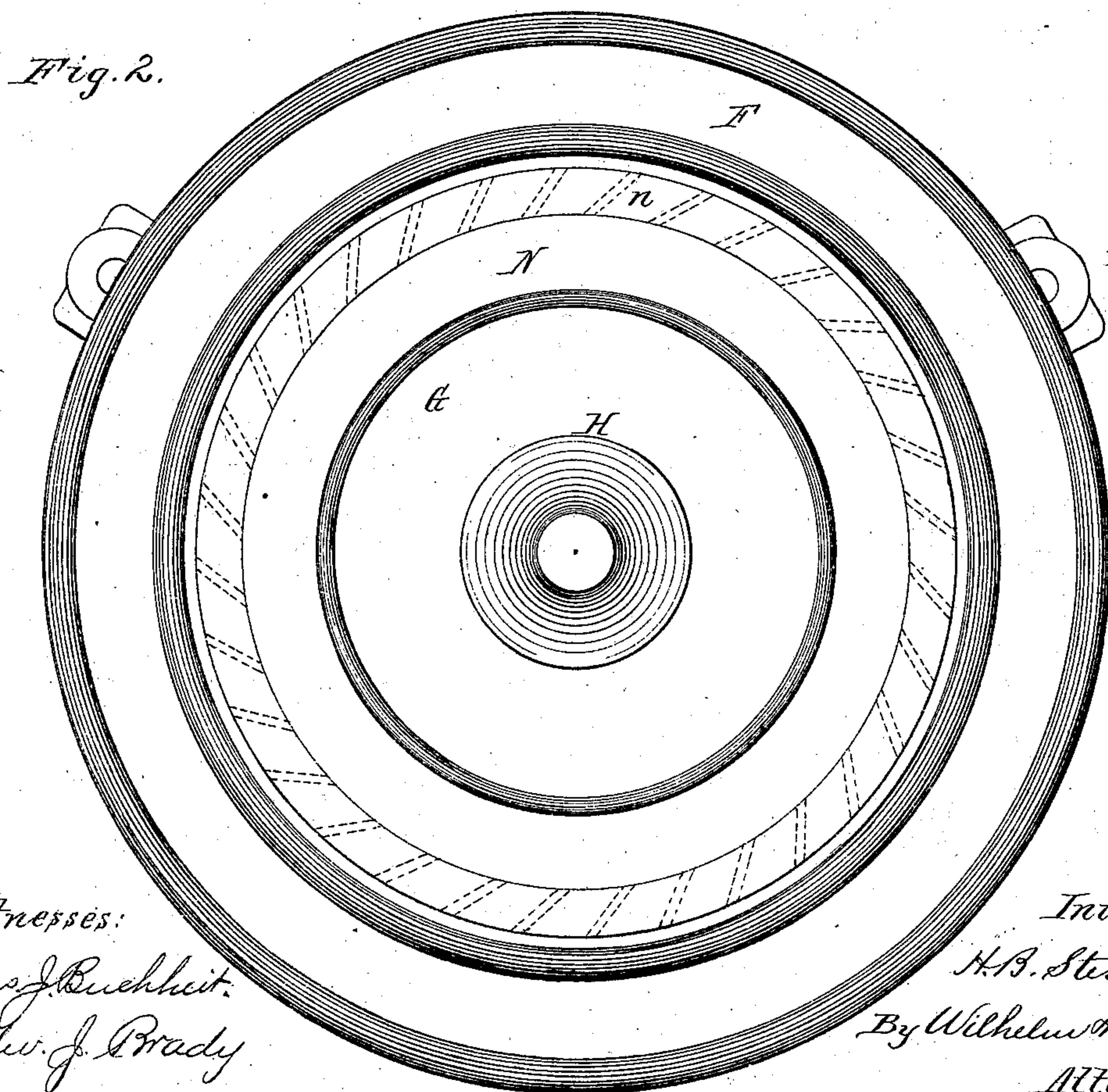
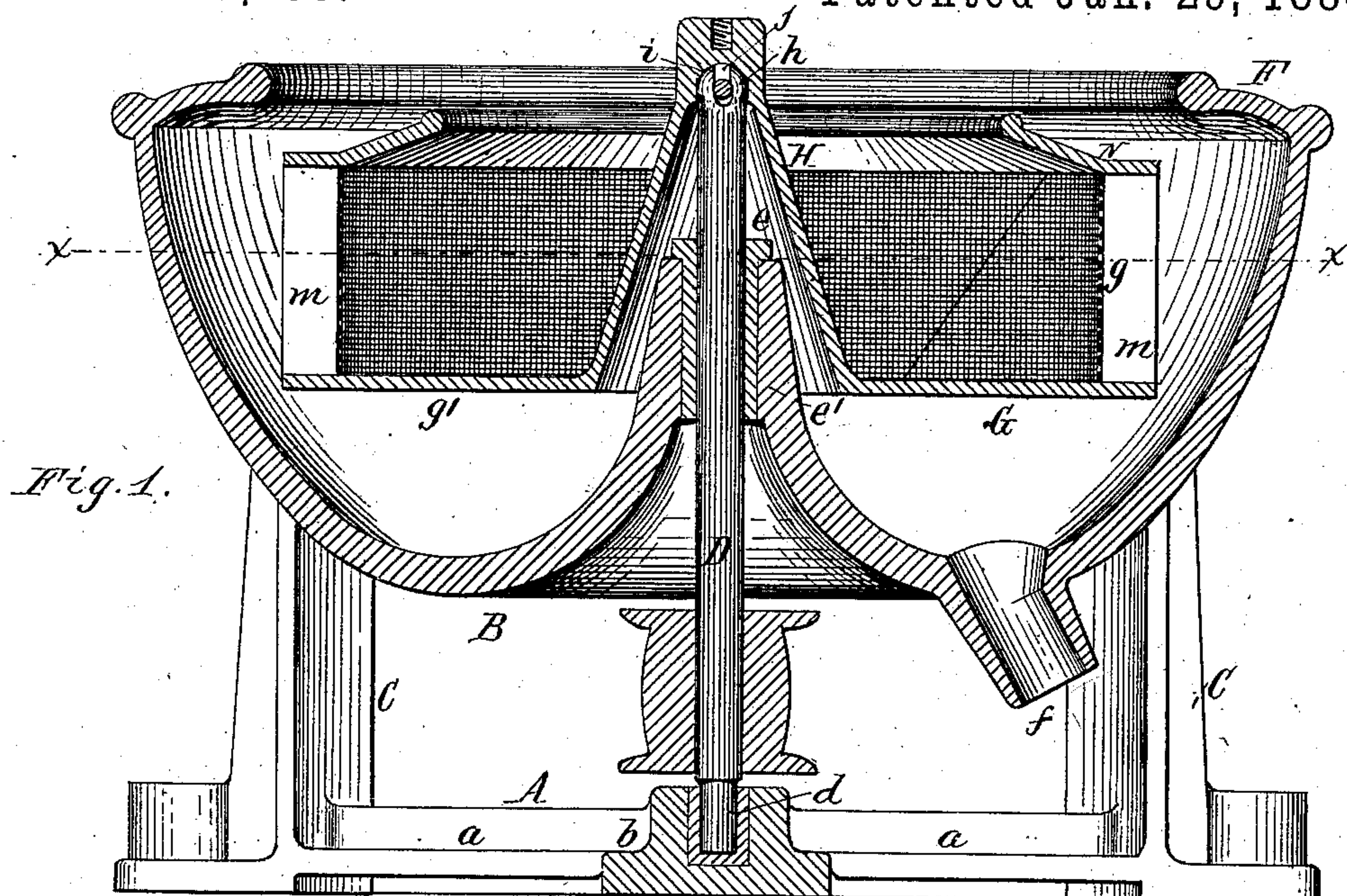
(No Model.)

2 Sheets—Sheet 1.

H. B. STEVENS.
CENTRIFUGAL MACHINE.

No. 292,705.

Patented Jan. 29, 1884.



Witnesses:

Chas. J. Buchheit.
Edw. J. Brady

Inventor

H. B. Stevens

By Wilhelm Rönner

Attorneys

(No Model.)

2 Sheets—Sheet 2.

H. B. STEVENS.
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Fig. 3.

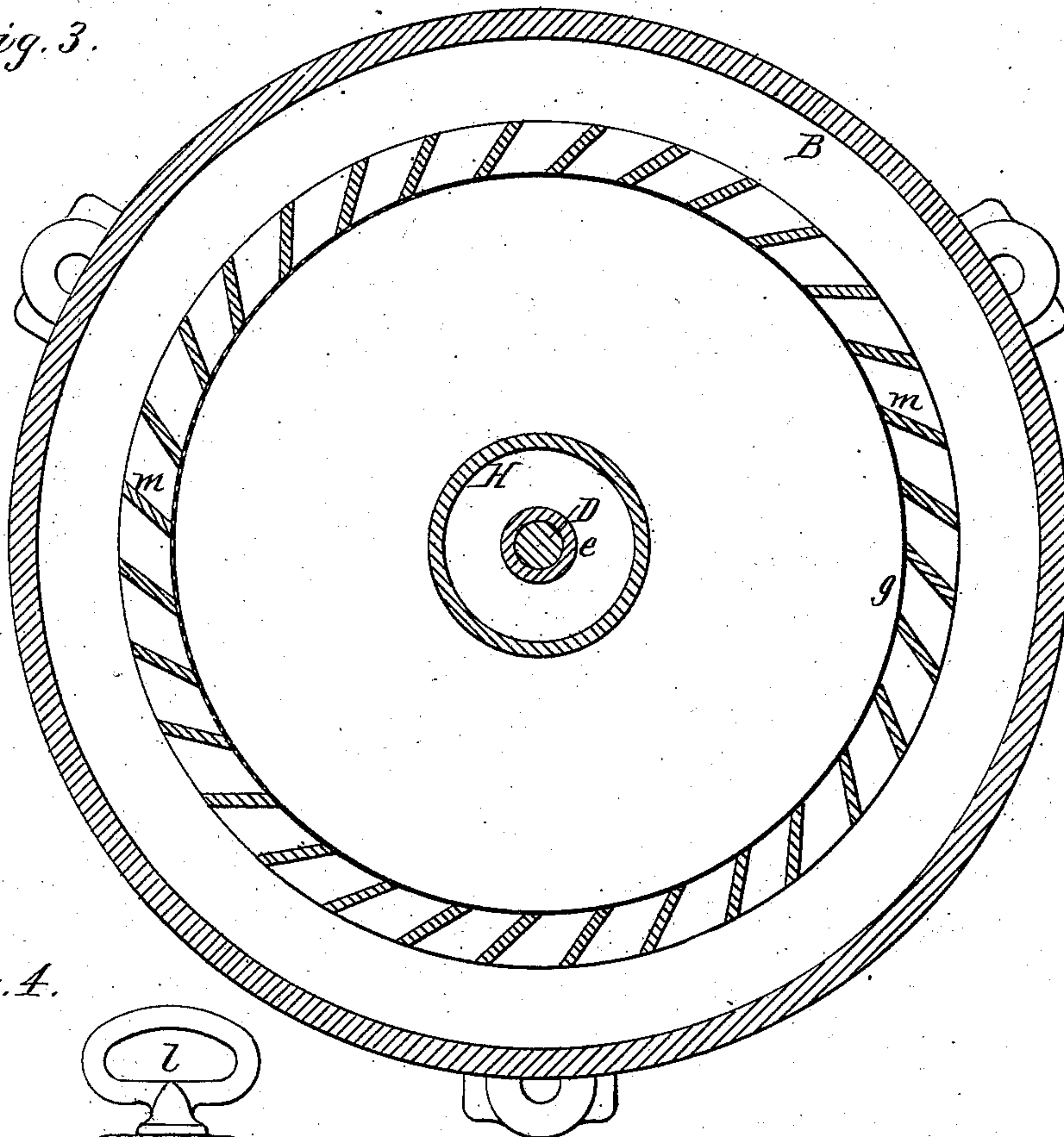


Fig. 4.

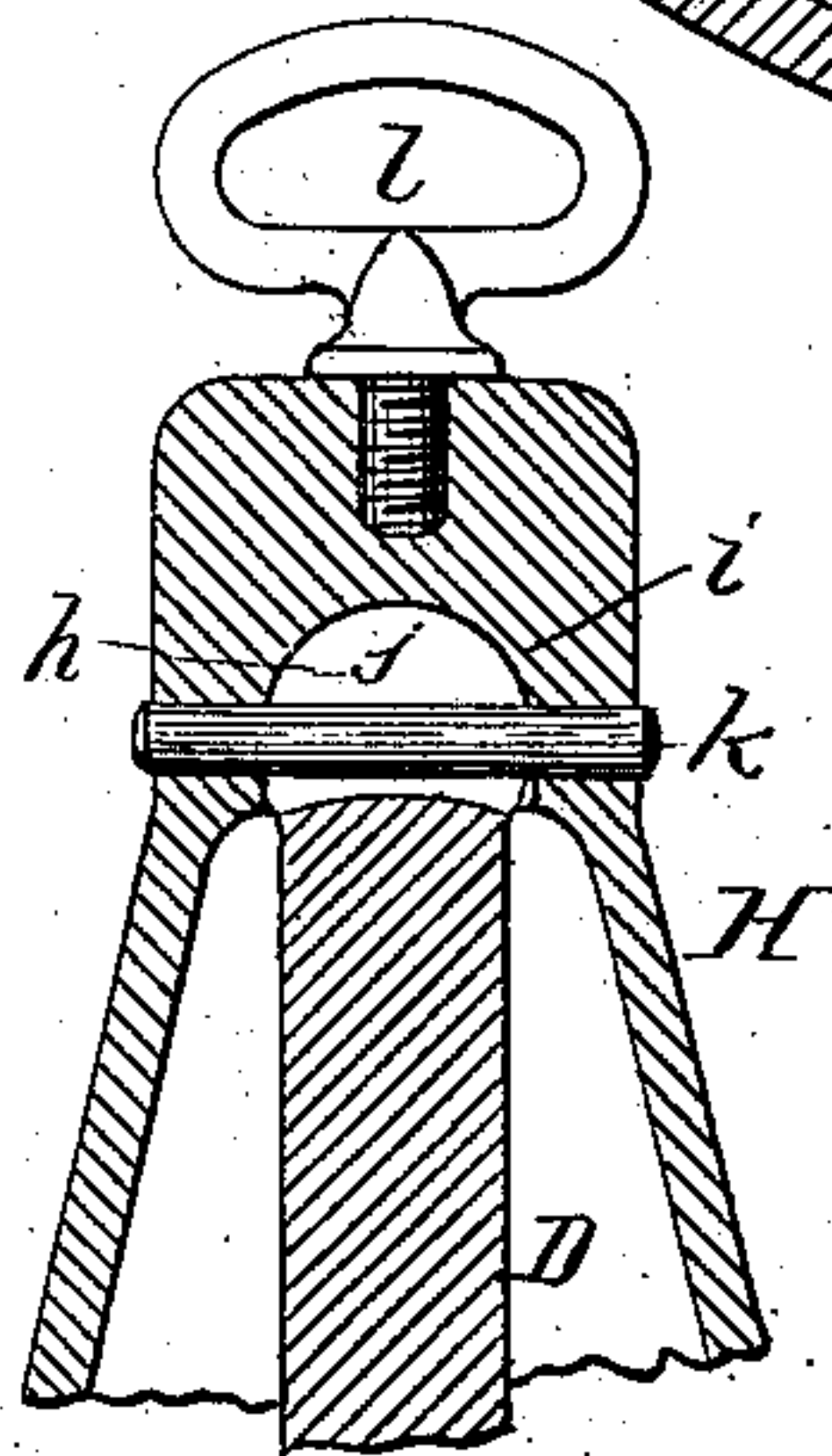


Fig. 5.

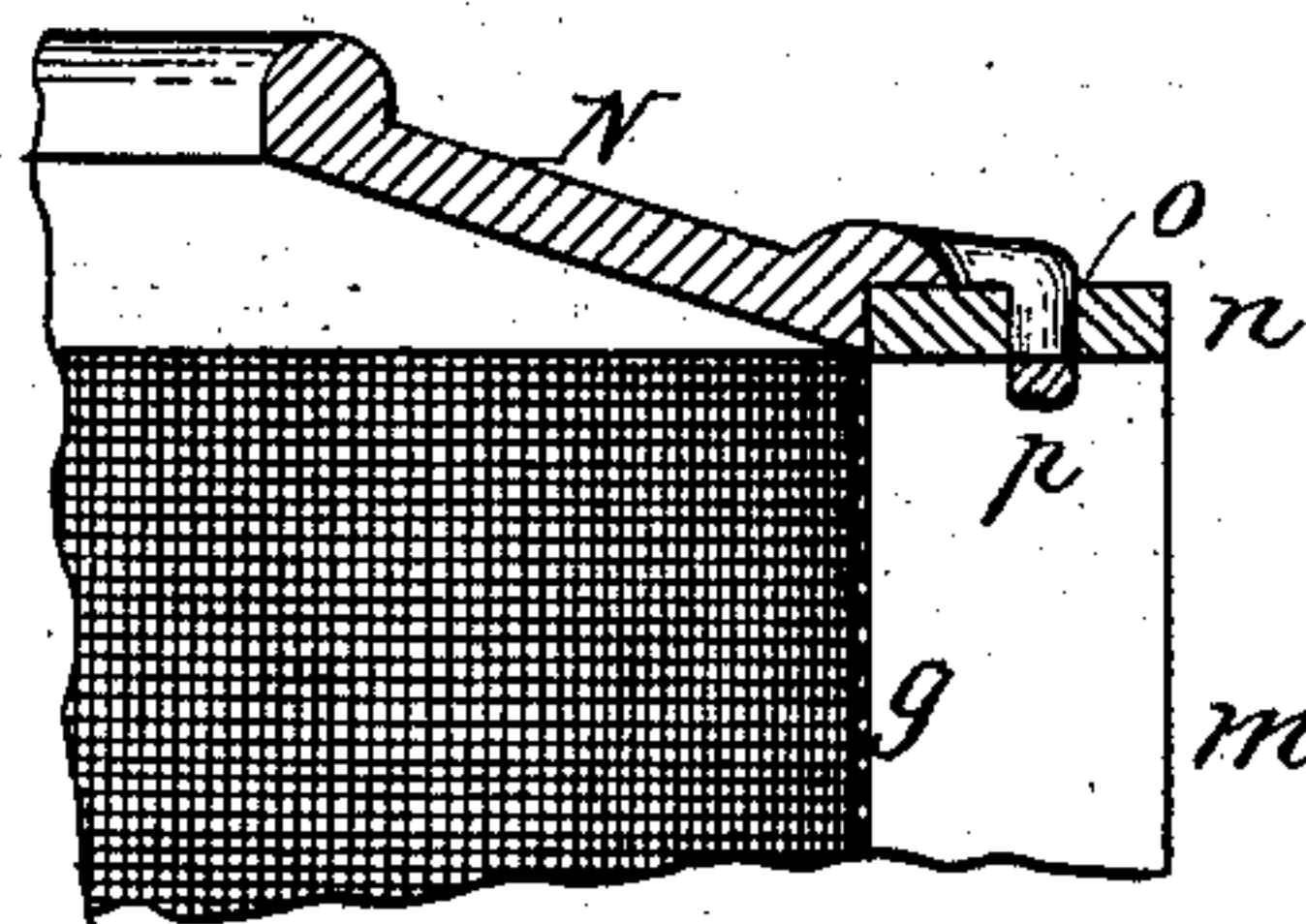


Fig. 6.

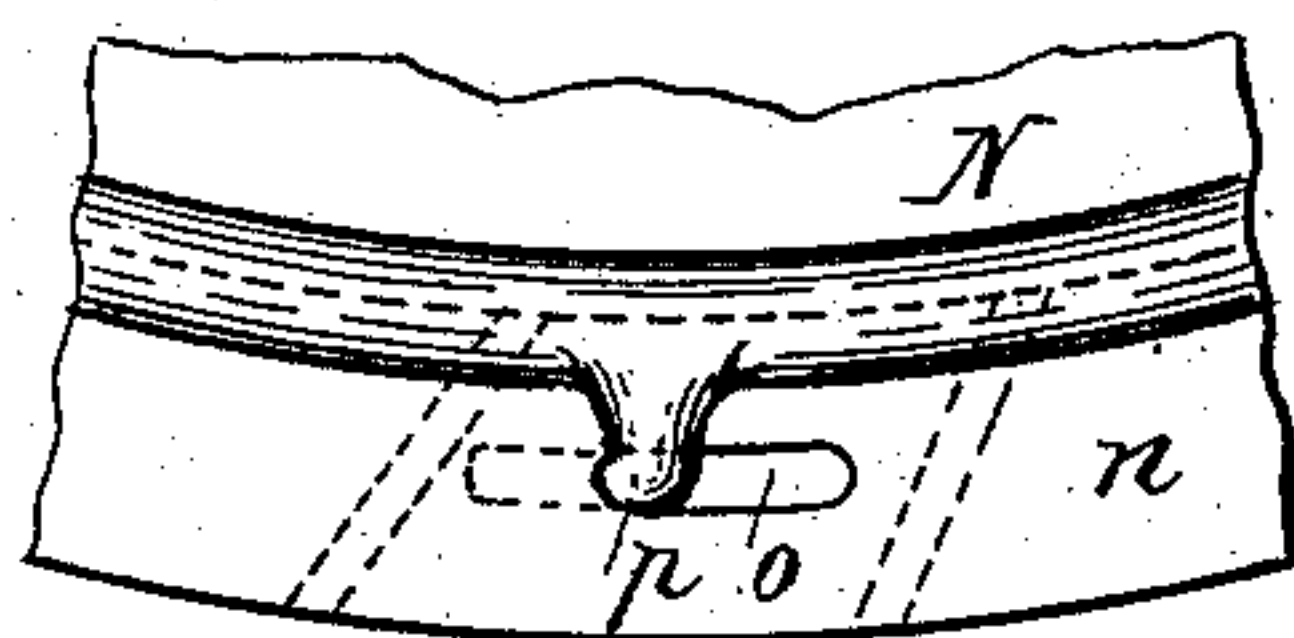
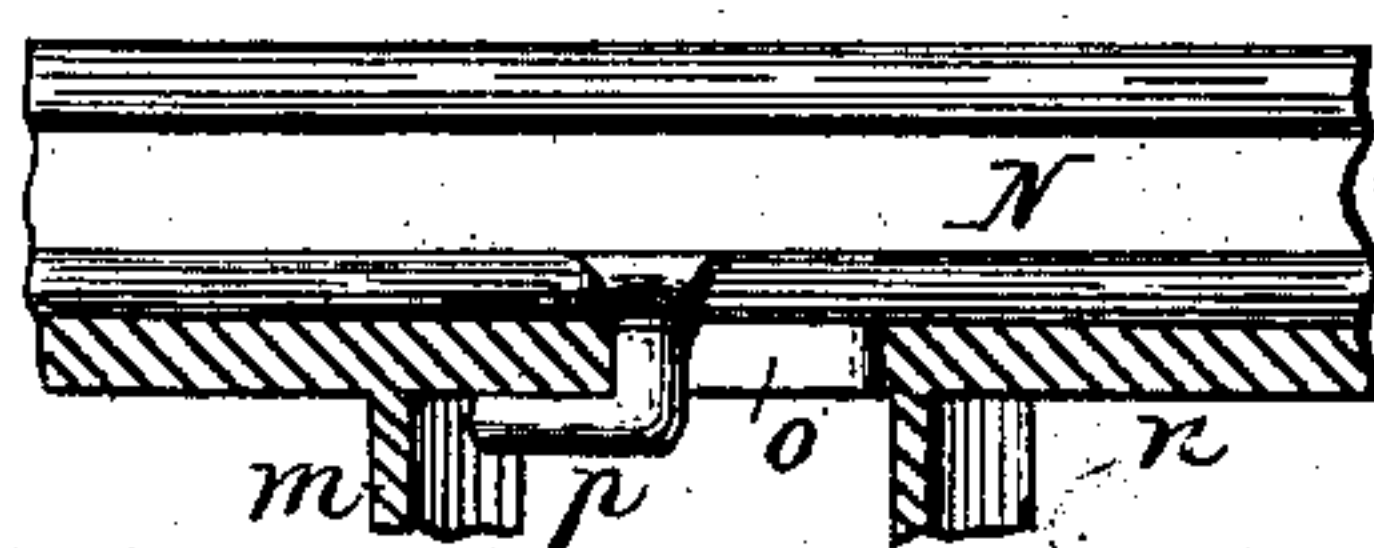


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY B. STEVENS, OF BUFFALO, NEW YORK, ASSIGNOR TO GEORGE L. SQUIER, OF SAME PLACE.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 292,705, dated January 29, 1884.

Application filed June 28, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. STEVENS, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Centrifugal Machines, of which the following is a specification.

This invention relates to an improvement in that class of centrifugal machines which are employed for separating molasses from sugar and for similar purposes, and which consist, essentially, of a perforated basket, which is attached to a vertical spindle and rotated at a high speed in a casing, by which the liquid is collected which is ejected through the perforations of the casing by the centrifugal force.

The object of my invention is to produce a simple, strong, and durable machine of this kind, which can be operated with safety at a high speed, and in which the basket will balance itself on the revolving spindle, and which can be manipulated with ease and convenience.

My invention consists to these ends of the improvements in the construction of the machine, which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a sectional elevation of a centrifugal machine provided with my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a horizontal section in line $x x$, Fig. 1. Fig. 4 is a vertical section on an enlarged scale of the upper end of the spindle and the central portion of the basket hung on the same. Fig. 5 is a cross-section on an enlarged scale, showing the fastening whereby the rim is secured to the upper edge of the basket. Fig. 6 is a top plan view thereof, and Fig. 7 is a vertical section at right angles to Fig. 5.

Like letters of reference refer to like parts in the several figures.

A represents the base-frame of the machine, composed of a suitable number of horizontal radial arms, a , three being shown, and provided at the center with a step-bearing, b .

B represents the casing supported by standards C, cast on the arms of the base-frame.

D represents the vertical spindle, provided at its lower end with a step, d , turning in the

bearing b , and near its upper end with a journal, e , which turns in a bearing, e' , formed on the inner portion of the casing B. The latter is curved first downwardly and outwardly from the journal e , and then upwardly and outwardly to the inwardly-projecting top rim, F. This dished form of the casing imparts great strength to the same and facilitates the draining of the liquid through the discharge-spout f .

G represents the basket, having a peripheral wall, g , constructed of wire-gauze or perforated sheet metal.

g' represents the bottom plate of the basket, and H a hollow conical hub formed centrally on the bottom plate and extending over the upper end of the spindle D. The latter terminates in a spherical knuckle, h , and the upper portion of the conical hub H is constructed with a spherical socket, i , whereby the hub H rests on the knuckle h . The cavity of the hub H is made so large that it will permit the oscillating movement of the basket on the spindle, which occurs when the machine is set in motion as the basket balances itself. The knuckle h is provided in its upper side with a slot, j , in which engages a bolt or pin, k , extending horizontally through the socket i , so that the rotation of the spindle D will cause the basket to rotate, while the latter is at the same time free to oscillate on the upper end of the spindle in balancing itself. The hub H is provided with a ring, l , by means of which the basket can be lifted from the spindle when another basket is to be substituted for the same.

m are vertical wings or blades, which surround the perforated wall g of the basket, and serve to sustain said wall against the outward pressure of the material contained in the basket. These wings are cast in one piece with the bottom g' of the basket, so that the body of the basket can be cast in one piece and be turned off on a lathe, thereby producing a strong and true basket in a very simple manner and at comparatively small expense. The wings m are arranged at an angle to the radial line, so as to give an outward draft to the air and liquid passing from the basket through the spaces between the wings, where-

by the centrifugal effect of the basket is considerably increased. The joints between the several sections or plates of which the basket is composed are made diagonal or oblique, as represented in Fig. 1, so that the edge of the perforated plate or section intersects the vertical plane in which the centrifugal force works, whereby the pressure is applied gradually to each joint, and the liability of bursting greatly reduced. Each oblique joint is secured to several wings, *m*, whereby a strong connection of the perforated wall with the cast body is secured.

n represents a ring, which connects the upper ends of the wings *m*, and is cast in one piece with the same.

N represents an inwardly-projecting rim, which is removably secured to the ring *n*, so that it can be taken off for the purpose of facilitating the removal of the solid material from the basket. As shown in Figs. 5, 6, and 7, the ring *n* is provided with elongated openings *o*, made concentric with the basket, and the rim *N* is constructed on its underside with hooks *p*, adapted to pass through the openings *o*, and opening backwardly with reference to the direction in which the basket rotates, so that upon passing the hooks *p* through the openings *o* and turning the rim *N* backwardly on the ring *n* the hooks *p* will engage under the solid portion of the ring *n* and lock the rim *N* on the latter. By a movement of the rim *N* in the opposite direction it is disconnected from the ring *n*. The basket is suspended on the upper end of the spindle and has the requisite freedom of movement to oscillate on the spindle when the machine is started until the basket has balanced itself, when the oscillations of the basket cease. The basket is thereby enabled to balance itself with reference to any unequal distribution of the material of which the basket is composed, and also with reference to any unequal distribution of the charge placed in the basket. When the charge has been freed from the liquid, the basket is readily lifted from the spindle and another basket previously charged with material to be drained is placed on the spindle. The strong construction of the basket and its capability of balancing itself permit the basket to be rotated at very high speed with safety.

A universal joint composed of two pivoted connections arranged at right angles to each other may be substituted for the ball-and-socket joint at the upper end of the spindle, if desired.

I claim as my invention—

1. The combination, with a vertical spindle,

of a basket supported loosely upon the upper end of the spindle and adapted to balance itself upon the same, substantially as set forth.

2. The combination, with a vertical spindle, of a basket constructed with a central hollow cone or chamber, *H*, supported loosely upon the upper end of the spindle, substantially as set forth.

3. The combination, with a vertical spindle, of a basket and a ball-and-socket joint whereby the basket is supported on the upper end of the spindle, substantially as set forth.

4. The combination, with a vertical spindle having a slotted spherical knuckle, *h*, of a basket constructed with a spherical socket, *i*, and a bolt, *k*, extending through said socket, substantially as set forth.

5. The combination, with a vertical spindle having a spherical knuckle, *h*, of a basket constructed with a central hollow cone, *H*, a spherical socket, *i*, formed in the upper end of the cone, and means whereby the basket is rotated from the spindle, substantially as set forth.

6. A basket constructed with a perforated or foraminous cylindrical wall, and supporting wings or blades arranged on the outer side of said wall, substantially as set forth.

7. In a basket, the combination of a bottom plate, *g'*, and upright wings or blades *m*, cast on said bottom plate, with a perforated or foraminous cylindrical wall resting against the inner edges of said wings, substantially as set forth.

8. The combination, in a basket, of upright wings or blades *m*, and a cylindrical perforated or foraminous wall composed of sections having oblique edges each secured to a number of said wings or blades, substantially as set forth.

9. The combination, with a basket having a top ring, *n*, provided with elongated openings *o*, of a detachable rim, *N*, constructed with hooks *p*, substantially as set forth.

10. The combination, with a revolving basket, of a casing, *B*, having a raised inner wall surrounding the spindle, and a raised outer wall surrounding the basket, standards *C*, and a base frame, *A*, provided with a central step for the spindle, all cast in one piece, substantially as described.

11. In a centrifugal machine, a basket having the joint in its perforated wall formed diagonally or obliquely, substantially as and for the purpose set forth.

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Witnesses:

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THEO. L. POPP.