

No. 668,843.

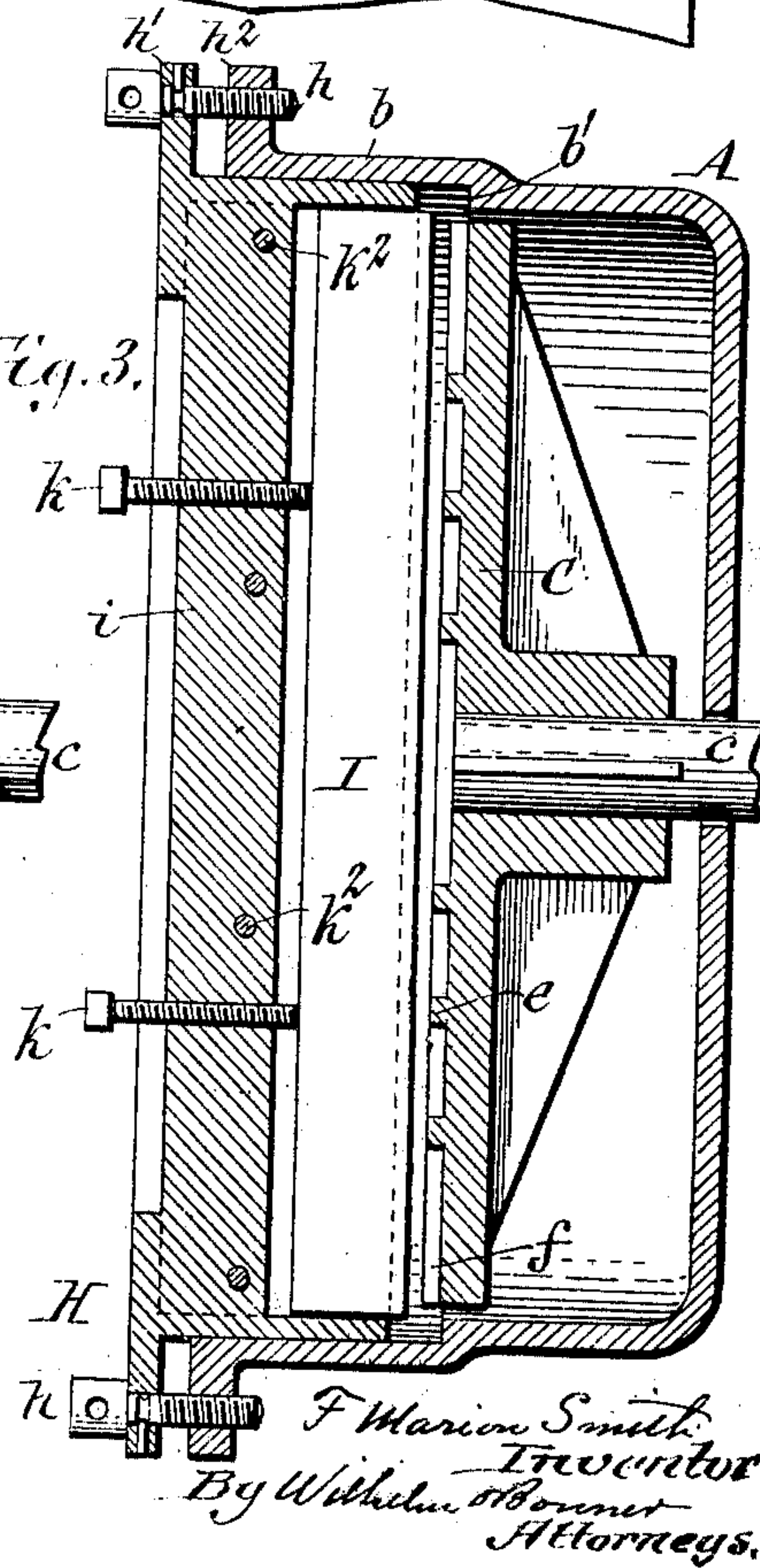
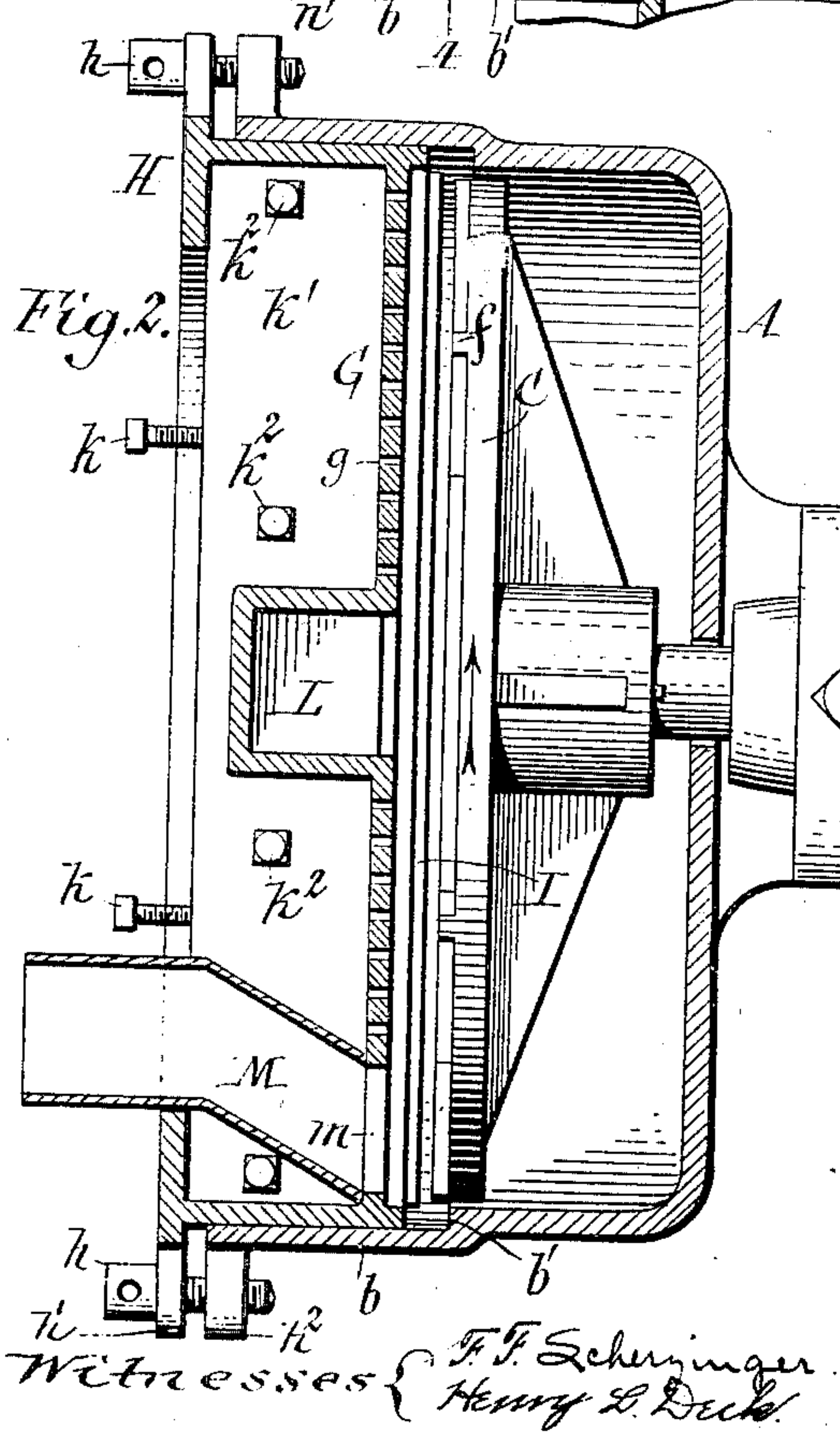
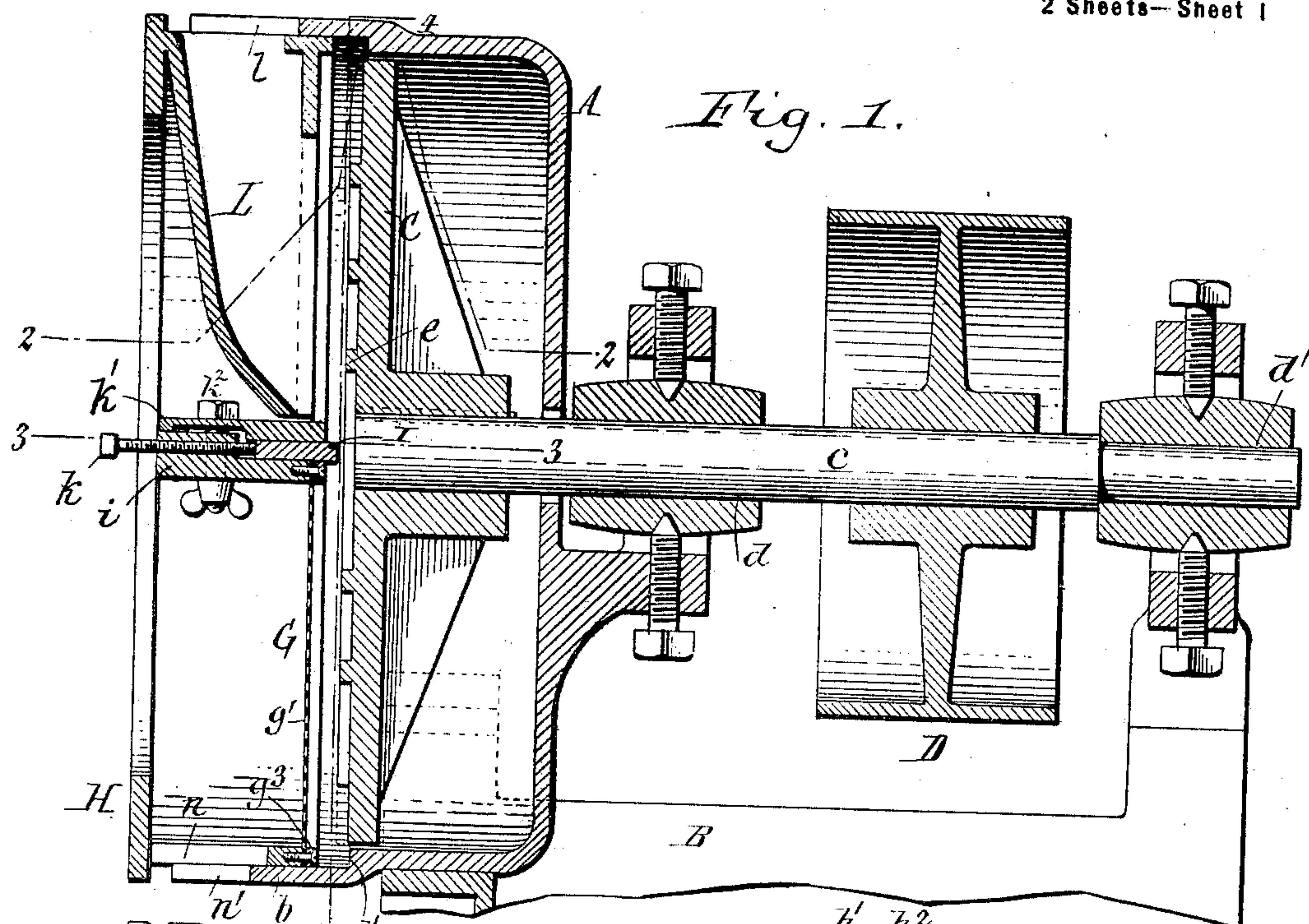
Patented Feb. 26, 1901.

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HULLING AND POLISHING MACHINE.

(No Model.)

(Application filed Feb. 8, 1900.)

2 Sheets—Sheet 1



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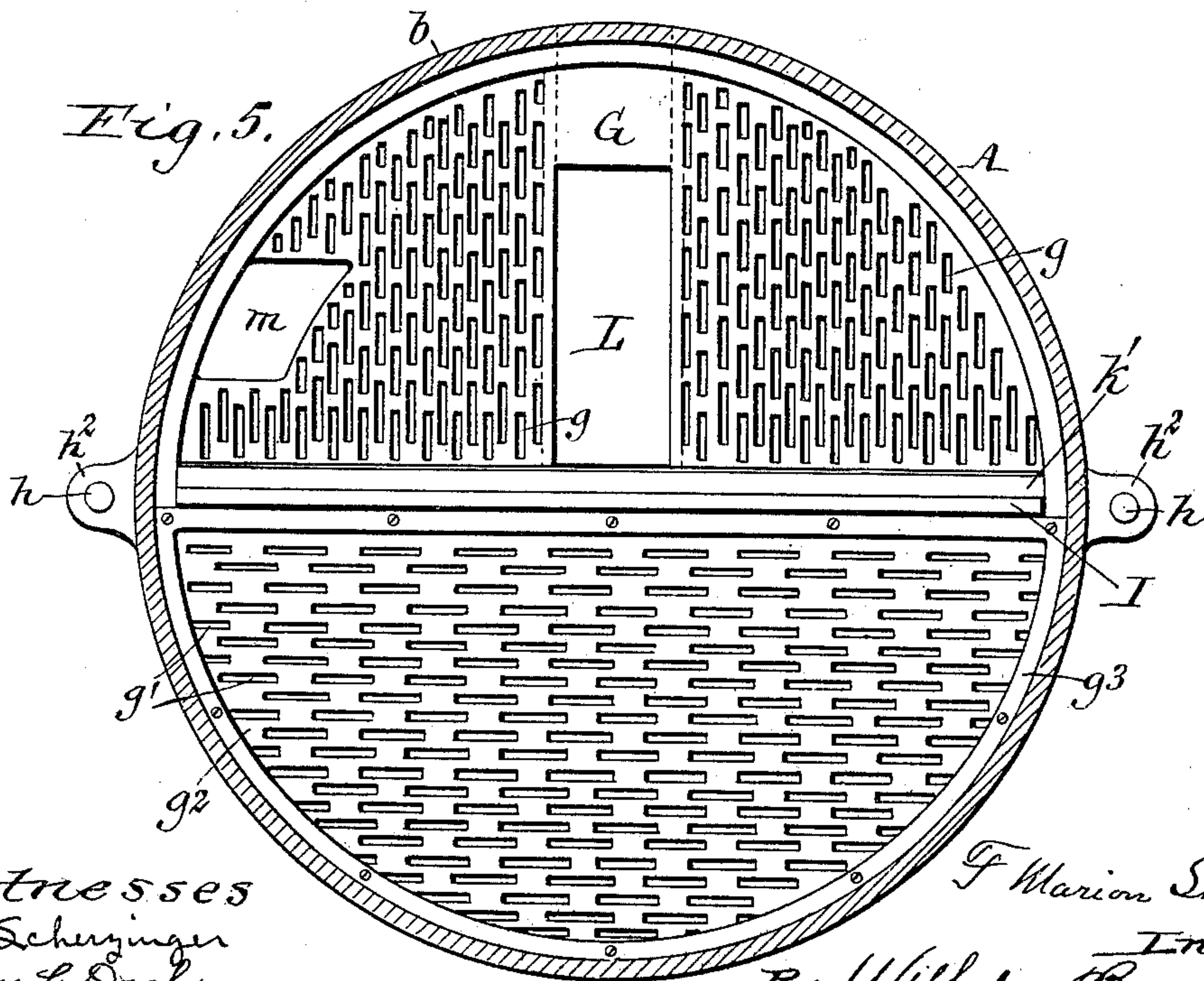
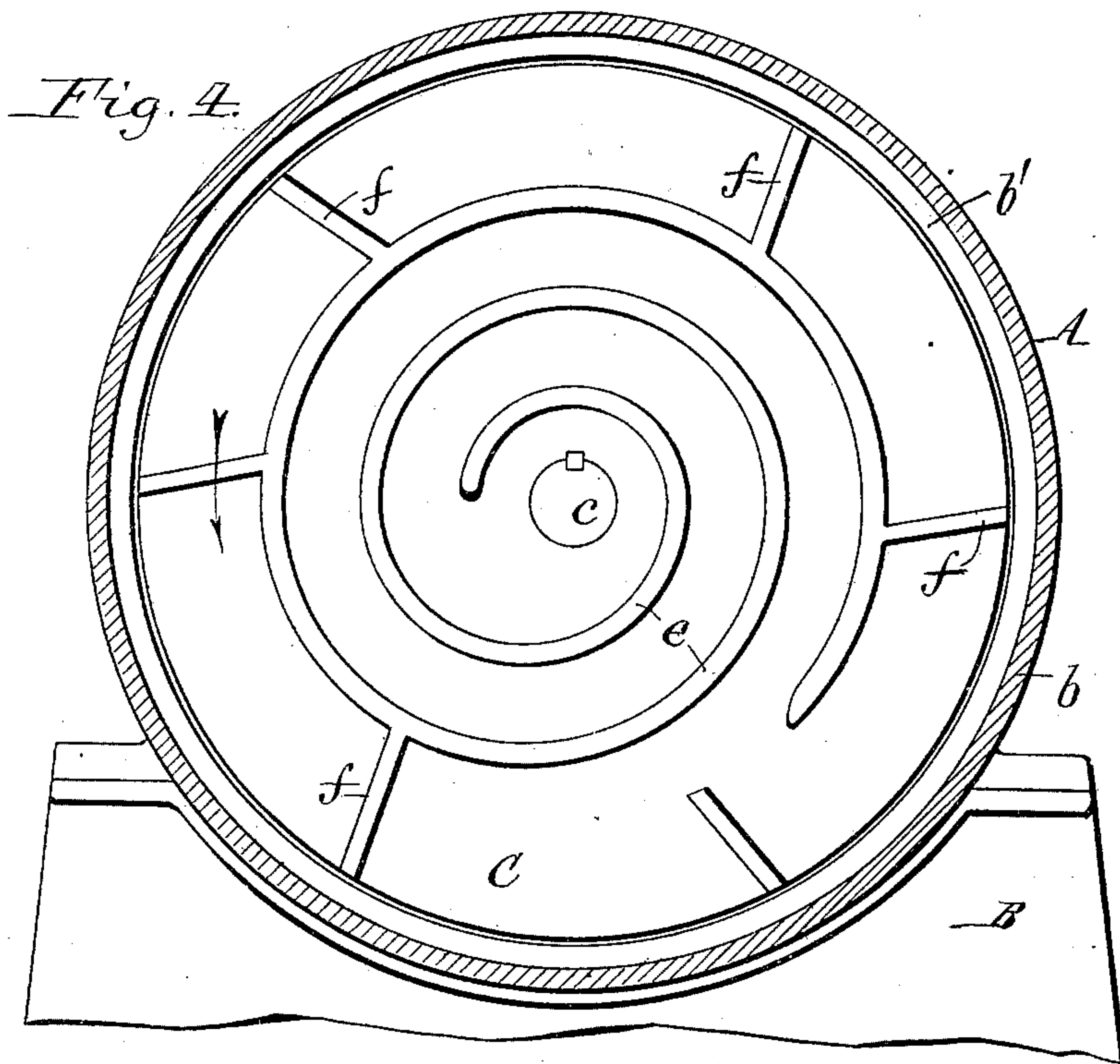
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2 Sheets—Sheet 2.



Witnesses
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UNITED STATES PATENT OFFICE.

F MARION SMITH, OF NASHVILLE, MICHIGAN, ASSIGNOR TO HUNTLEY MANUFACTURING COMPANY, OF SILVER CREEK, NEW YORK.

HULLING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 668,843, dated February 26, 1901.

Application filed February 8, 1900. Serial No. 4,504. (No model.)

To all whom it may concern:

Be it known that I, F MARION SMITH, a citizen of the United States, and a resident of Nashville, in the county of Barry and State of Michigan, have invented new and useful Improvements in Hulling and Polishing Machines, of which the following is a specification.

This invention relates to that class of machines which are used more particularly for hulling and polishing coffee and rice, and has the object to produce a machine for this purpose which is simple in construction, capable of being rapidly adjusted for the required work, and well adapted for performing the powerful hulling action which is necessary for removing the bran or hull from this class of berries and grains.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical longitudinal section of my improved hulling and polishing machine. Fig. 2 is a horizontal section approximately in line 2 2, Fig. 1. Fig. 3 is a horizontal section in line 3 3, Fig. 1. Fig. 4 is a vertical cross-section in line 4 4, Fig. 1, looking toward the rotary hulling-disk. Fig. 5 is a vertical cross-section in line 4 4, Fig. 1, looking toward the stationary hulling-disk.

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

The machine consists in its main working parts of two vertical hulling-disks, a stationary disk, which is provided with a feed-spout near its center and with a discharge-spout at its periphery, and a rotary disk or runner, which is provided on its face with a spiral rib by which the material is conveyed from the center toward the peripheries of the disks.

A represents the stationary casing or curb, which is secured to a base-frame B.

C represents the rotary hulling disk or runner, which is arranged in the casing A and secured to the end of a horizontal shaft *e*, which is journaled in suitable bearings—for instance, as shown, in a bearing *d*, secured to the casing A, and a bearing *d'*, secured to

the frame B. Power is applied to this shaft in any suitable manner—for instance, as shown, by a pulley D, arranged between these bearings.

The rotary disk C is provided on its face with a spiral or scroll shaped rib *e*, which is so shaped with reference to the direction in which the disk rotates (indicated by the arrow in Fig. 4) that it propels the material under treatment from the center toward the periphery of the disk. *f* represents delivery wings or ribs which are arranged on the peripheral portion of the face of this disk outside of the spiral rib and approximately in a radial position to drive the material outwardly and forwardly after it has passed beyond the control of the spiral rib.

The casing or curb A, in which the rotary disk is arranged, incloses the back and the periphery of this disk and extends forwardly beyond the face of the disk. The front part *b* of the casing, which extends beyond the face of the runner, is somewhat larger in diameter than the main part which incloses the runner and is connected with the main part by an annular shoulder *b'*, which is arranged in line with the face of the runner.

G represents the stationary disk, which is formed at the inner end of an annular frame H, arranged in the front part *b* of the casing A. The frame H is made adjustable in the part *b* of the casing toward and from the runner, so that the space between the disks can be adjusted as the nature of the work may require. This adjustment is preferably effected by set-screws *h*, which connect ears *h'* *h''*, formed, respectively, on the frame H and the front part *b* of the casing A.

I represents a hulling bar or knife which is arranged transversely and diametrically, or nearly so, in the face of the stationary disk. This plate or bar is arranged edgewise in a pocket formed in the frame H and is backed by set-screws *k*, by which it can be adjusted so as to project more or less beyond the face of the stationary disk. The pocket in which this hulling-bar is arranged is preferably com-

posed of a lower cross-bar i , which is cast with the annular frame H, and an upper cap k' , which is clamped to the lower bar by bolts k^2 .

L represents the feed-spout, which is arranged in the upper half of the stationary disk and which opens at its lower end near the middle thereof. This spout extends downwardly from an opening in the uppermost part of the annular frame H and is preferably cast in one piece with this frame. The front part b of the casing A is provided in its uppermost portion with an opening l , which coincides with the top of the feed-spout for receiving the external feed-spout or feed-hopper (not shown) which delivers the material to the internal feed-spout L.

M represents the discharge-spout for the hulled material, which communicates with a discharge-opening m , arranged near the periphery of the stationary disk, on one side of the latter, above the hulling-bar I.

The stationary disk is provided with openings through which the detached dust, fragments of hulls and skins, and other fine matter passes through the disk into the space within the annular frame H, from which this separated matter escapes through openings $n n'$, formed in the lower portions of the annular frame H and the front portion b of the casing A. These openings are preferably elongated and arranged vertically in the upper part of the stationary disk on both sides of the feed-spout, as shown at g , and are formed by casting these openings in this part of the disk, while in the lower part of this disk they are preferably arranged horizontally, as shown at g' , and formed by punching in a plate g^2 , of sheet-steel or other suitable sheet metal, which forms the lower portion of the face of the disk and is secured to the annular frame H. This perforated plate is preferably secured in place by a marginal clamping-frame g^3 .

The coffee, rice, or other material to be hulled enters between the disks and is worked by the spiral rib on the face of the runner from the center to the peripheries of the disks. During this travel of the material the berries or grains are repeatedly moved over the face of the hulling-bar which projects from the stationary disk, whereby the berries or grains are brought in forcible contact with the edges of this bar or knife, which may be more or less angular or rounded, as the nature of the material may require. The hull, bran, parchment, or other envelop of the berries or kernels is by this means detached, and the fragments and dust escape through the perforations of the stationary disk. When the material has finally reached the outer end of the spiral rib, it is seized by the delivery-wings and driven outwardly and finally through the discharge-opening in the stationary disk. The delivery-wings also force the material over the face of the hulling-bar, whereby the hulling and polishing action is completed. The

hulling action is mainly performed by forcing the material over the hulling-bar, and the polishing action is mainly performed by rubbing the material over the perforated stationary disk and by the attrition of the berries or kernels against each other.

The spiral or scroll shaped rib on the face of the runner is preferably made continuous, as shown; but other forms of ribs may be employed which propel the material from the inlet-opening to the outlet-opening and in doing so work the material repeatedly over the projecting hulling-bar of the stationary disk.

The abrading action of the hulling-bar can be nicely regulated by adjusting the bar in the stationary disk and also by adjusting the stationary disk with the bar toward and from the runner. The slots in the stationary disk also assist in performing the desired abrading operation.

While this machine is principally designed for hulling and polishing coffee and rice, it is also useful for treating other grains and seeds.

I claim as my invention—

1. The combination with an upright rotary disk having on its face a spiral rib, of an upright stationary disk having on its face a transverse projecting hulling-bar over which the material is forced by the rotary disk and the spiral rib thereof, a feed-spout opening centrally in the stationary disk, and a peripheral discharge, substantially as set forth.

2. The combination with an upright stationary disk having on its face a transverse projecting hulling-bar and a feed-spout opening centrally in said disk, of an upright rotary disk having on the main portion of its face a spiral rib and on the marginal portion of its face, outside of said spiral rib, outwardly-projecting delivery-wings which sweep the material to the periphery of the disk, substantially as set forth.

3. The combination with an upright stationary disk having on its face a transverse projecting hulling-bar, and having also a feed-spout opening centrally in said disk above said hulling-bar and a peripheral discharge-opening also arranged above said hulling-bar, of an upright rotary disk having on its face a spiral rib, substantially as set forth.

4. The combination with an upright stationary disk provided in its face with a transverse pocket, of a hulling-bar arranged in said pocket, means for adjusting the projection of said hulling-bar from said pocket, and an upright rotary disk provided on its face with a spiral rib, substantially as set forth.

5. The combination with an upright rotary disk having on its face a spiral rib, of an upright stationary disk provided in its face with a transverse pocket, a hulling-bar arranged in said pocket, means for adjusting the projection of said hulling-bar from said pocket, a frame in which said stationary disk is movably supported, and means for adjusting said

stationary disk in said frame toward and from said rotary disk, substantially as set forth.

6. The combination with an upright rotary disk having on its face a spiral rib, of an up-
5 right stationary disk having on its face a transverse projecting hulling-bar, a frame in which said stationary disk is movably mounted, means whereby said stationary disk is adjust-
10 ed in said frame toward and from said rotary disk, a descending feed-spout attached to said

stationary disk and opening centrally in the same, and a peripheral discharge, substantially as set forth.

Witness my hand this 31st day of January, 1900.

F MARION SMITH.

Witnesses:

GEO. W. COBB,
E. P. CALDWELL.