

(No Model.)

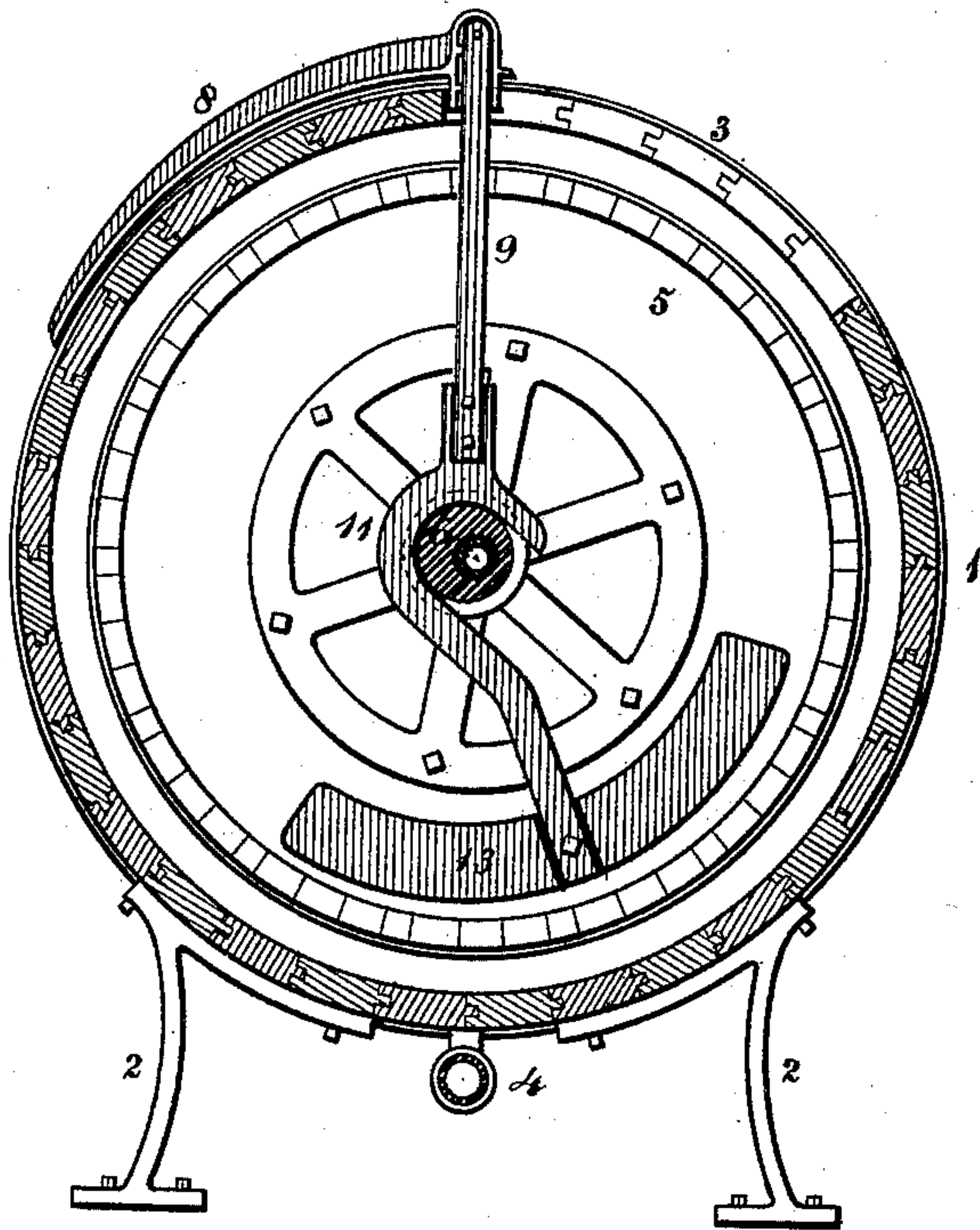
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F. M. WATKINS.  
WASHING AND STARCHING MACHINE.

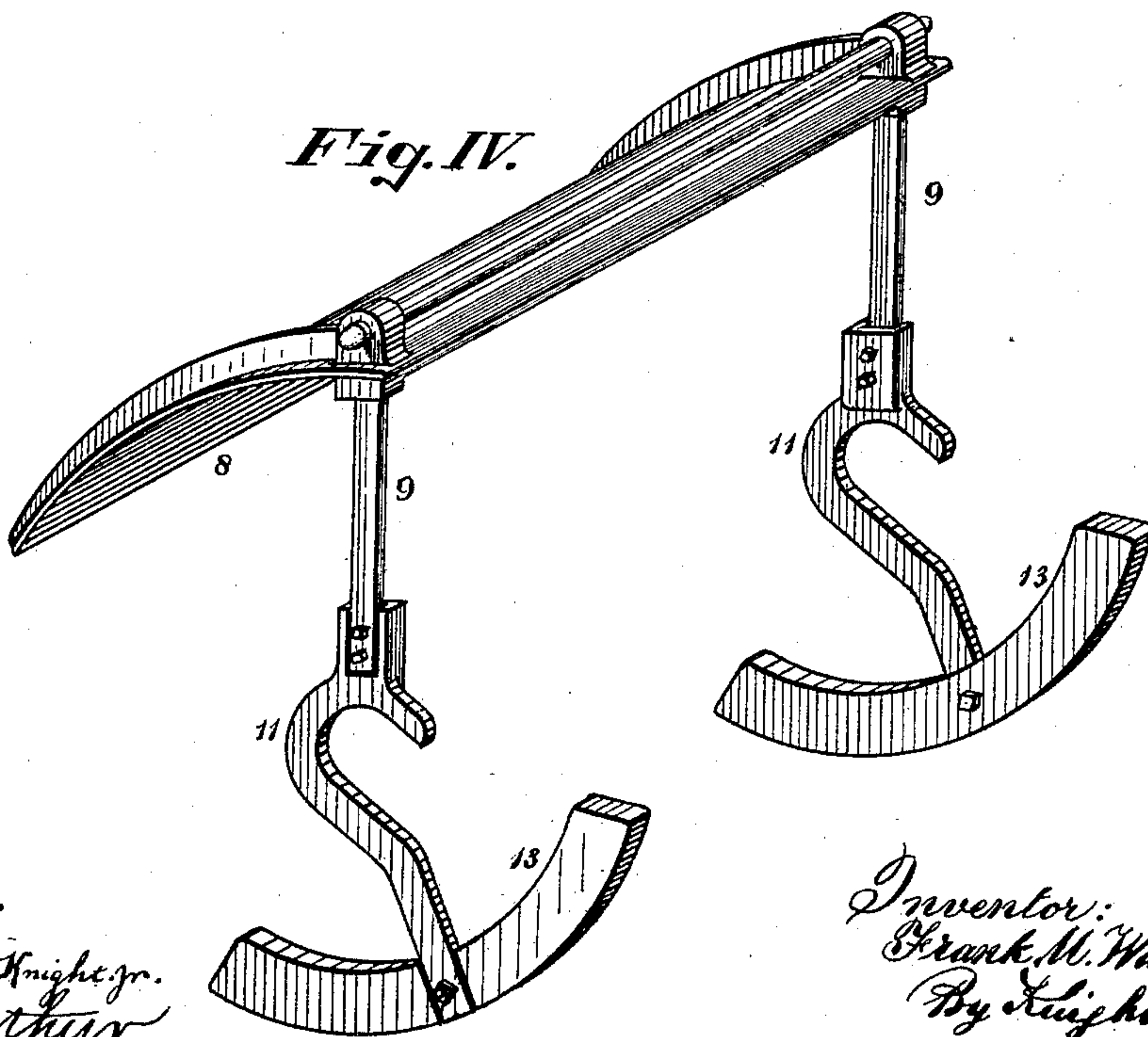
No. 409,535.

Patented Aug. 20, 1889.

*Fig. I.*



*Fig. IV.*



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Geo. H. Knight, Jr.  
E. Arthur,

Inventor:  
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By Knight Bros.  
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(No Model.)

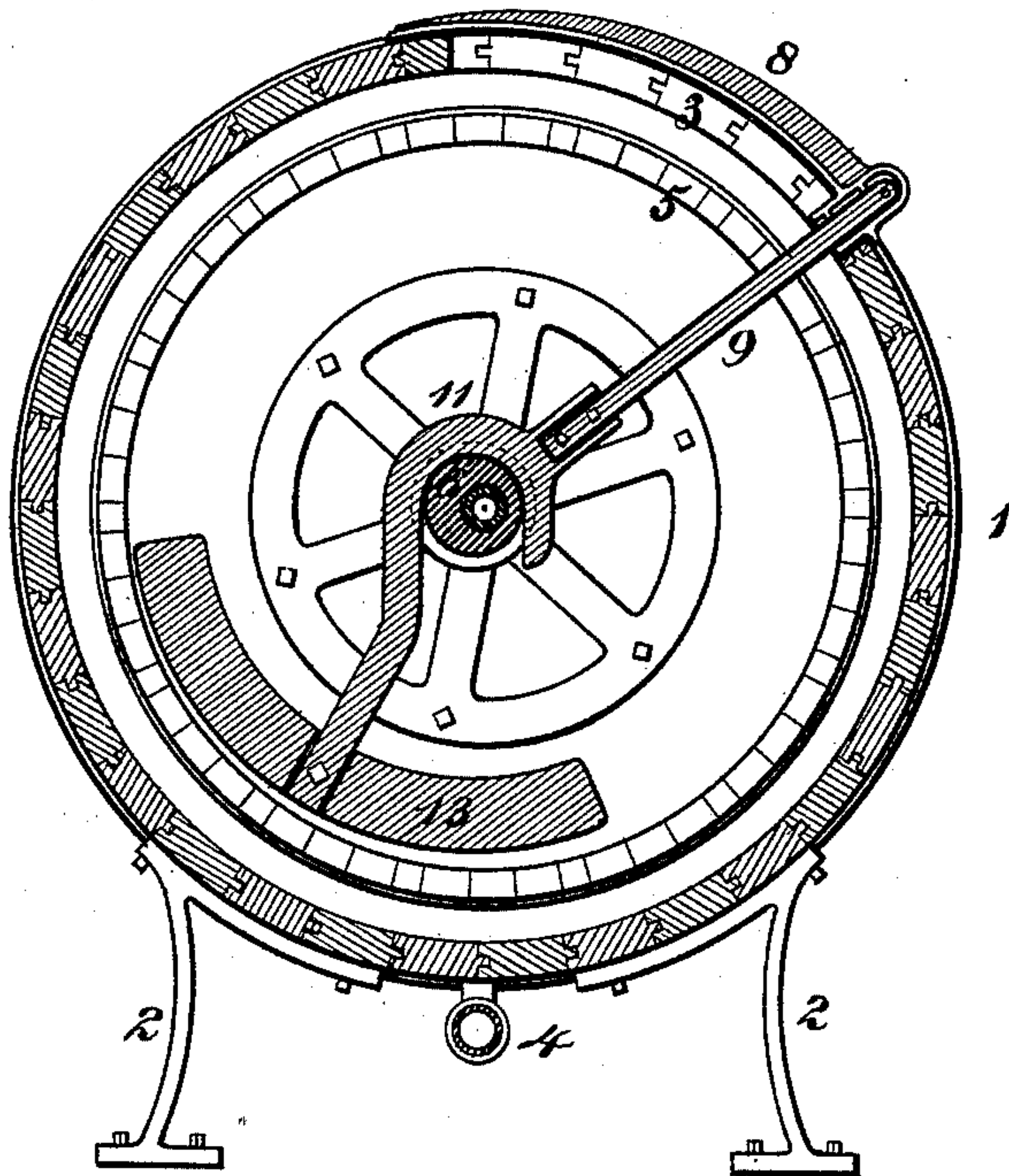
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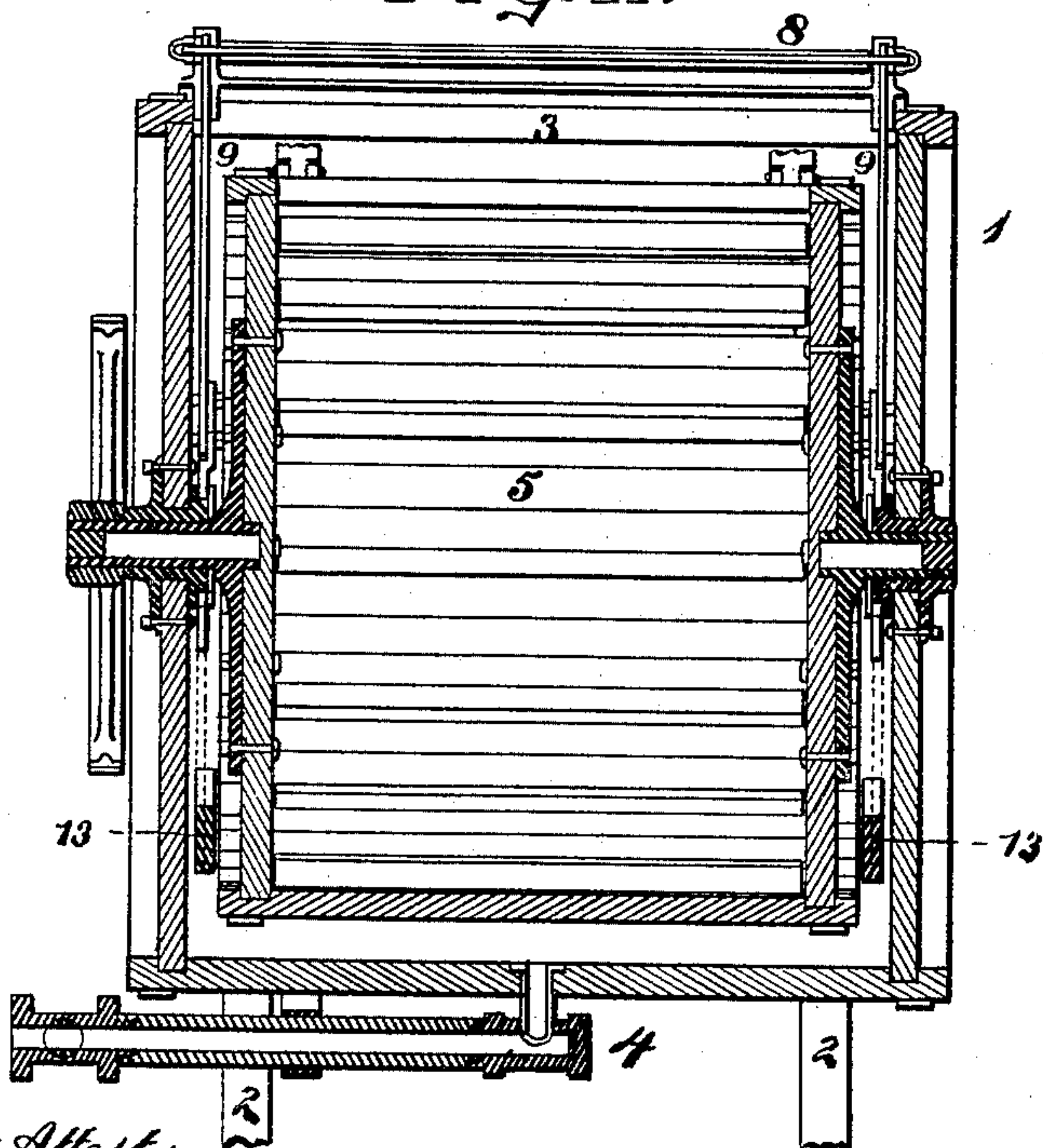
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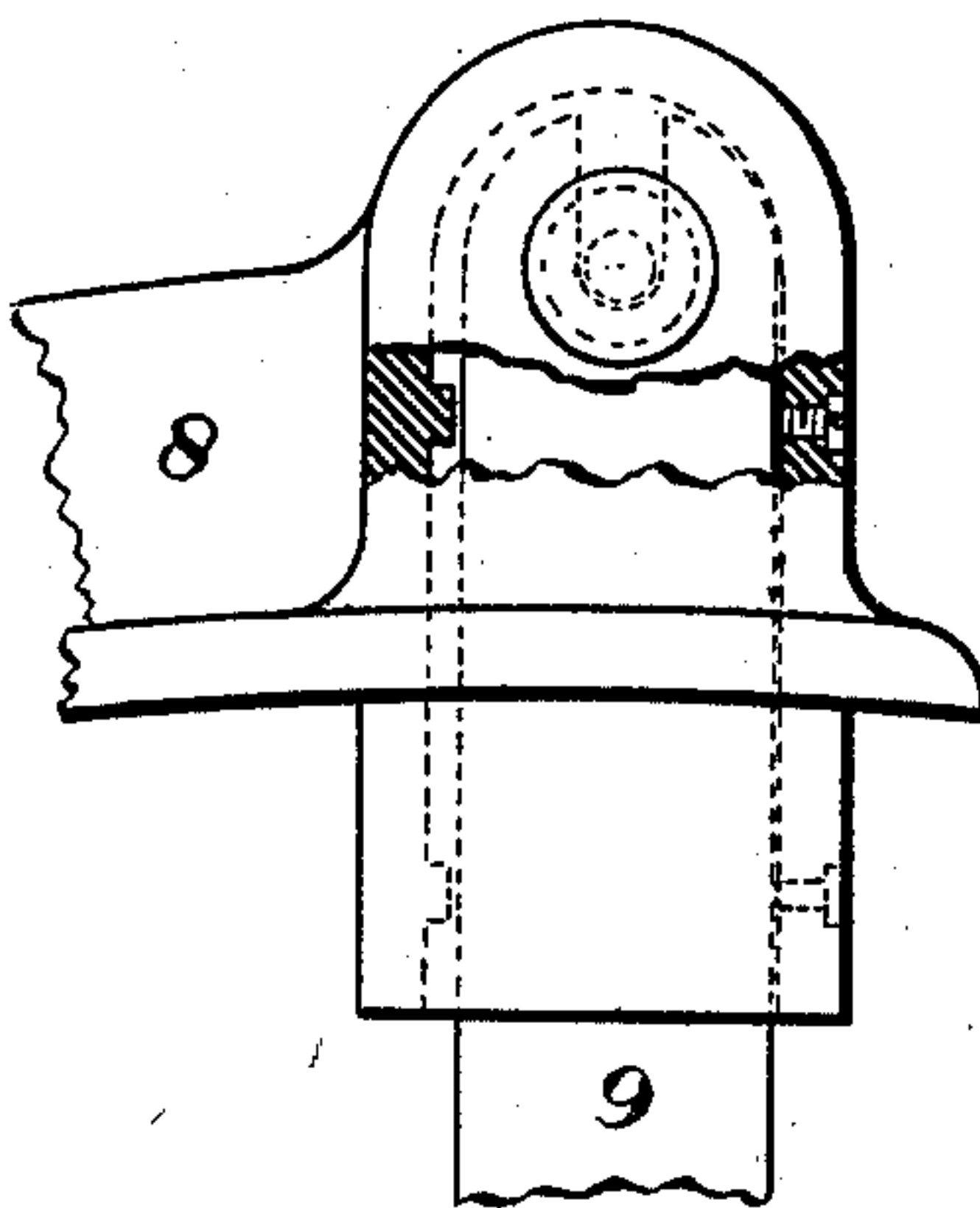
*Fig. III.*



*Fig. II.*



*Fig. V.*



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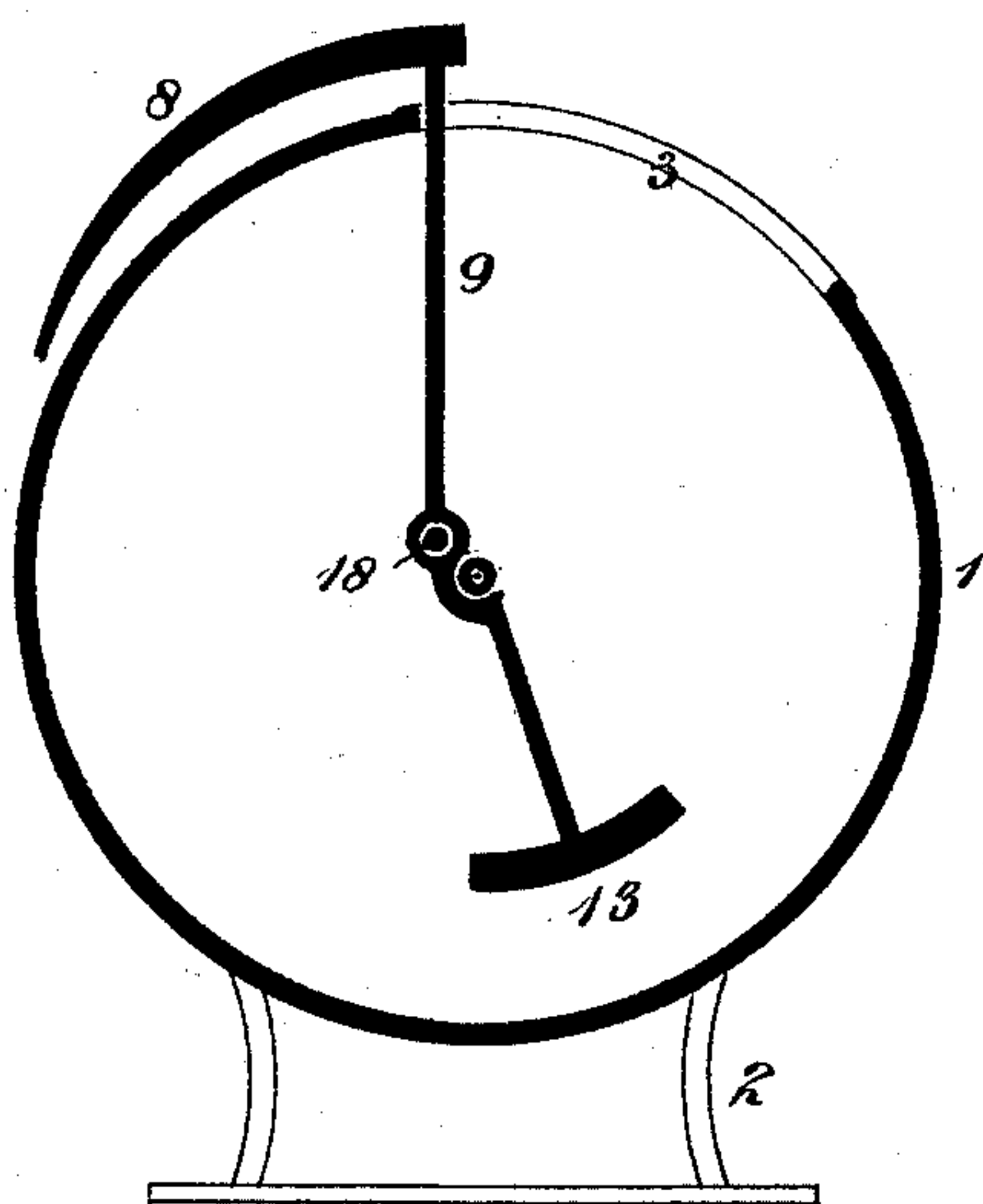
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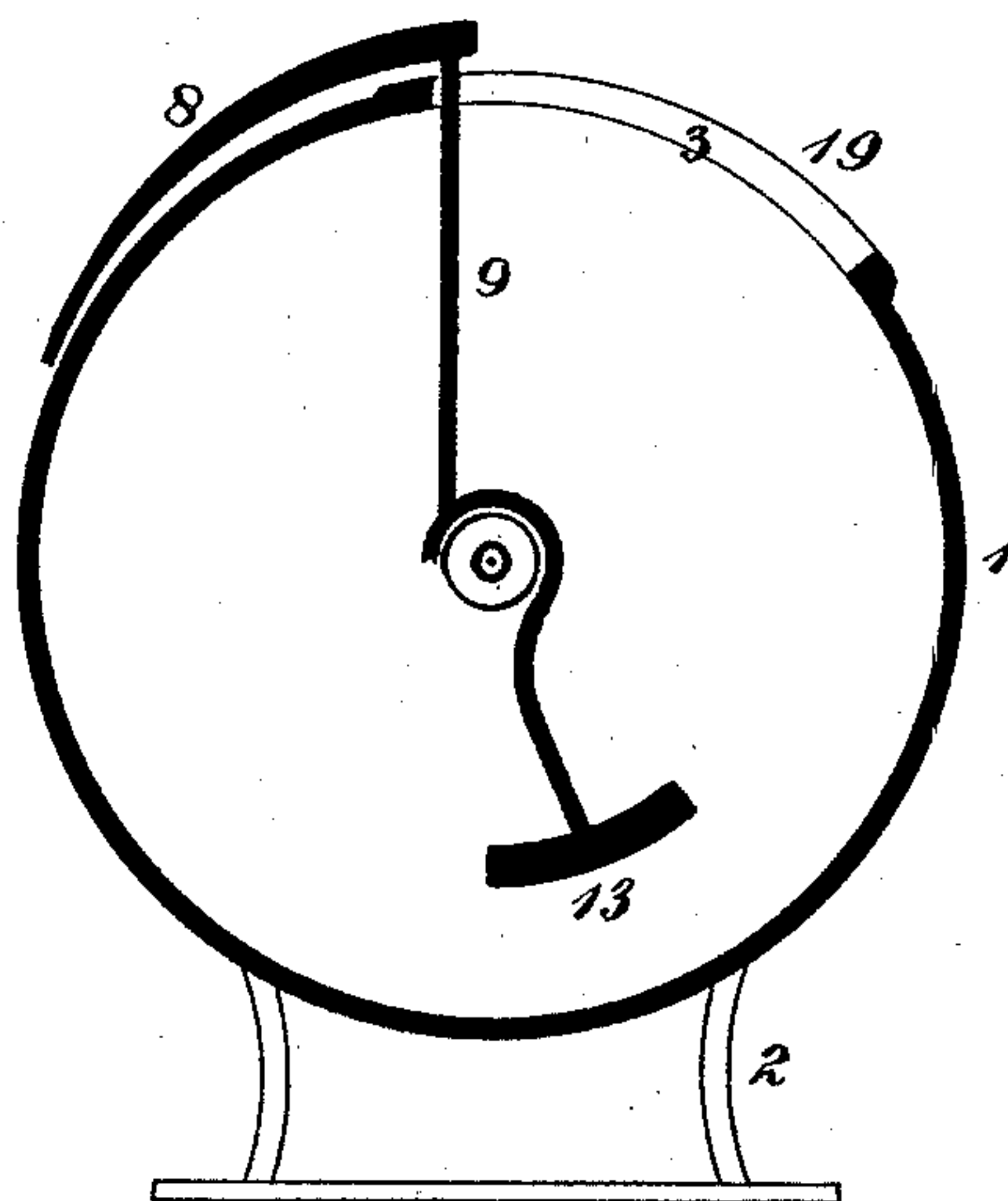
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*Fig. VI.*



*Fig. VII.*



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# UNITED STATES PATENT OFFICE.

FRANK M. WATKINS, OF CINCINNATI, OHIO.

## WASHING AND STARCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 409,535, dated August 20, 1889.

Application filed July 20, 1888. Serial No. 280,487. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK M. WATKINS, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Washing and Starching Machines, of which the following is a specification.

My invention relates to an improved lid or cover for closure of the opening of those washing-machines and starching-machines in which a cylindrical cage containing the wash is revolved within a cylindrical shell that holds the suds.

Figure I is a section in the plane of rotation of a machine embodying my improvements, the lid being shown open. Fig. II is a section in the vertical plane of the axis. Fig. III is a section in plane of rotation with the lid closed. Fig. IV is a detached view of the lid or cover. Fig. V represents a portion of the cover and of one of its centering-arms. Figs. 6 and 7 are diagrams representing modifications of my invention.

1 is a cylindrical shell or tank, that is supported at convenient height upon a stand 2. An opening 3 in the upper side of said shell permits insertion and removal of the wash and the introduction of hot water, soap, &c. A fauceted outlet 4 permits discharge of the spent suds or liquor.

5 is the customary rotatable cage for holding the wash. The interiorly-projecting portions of the journal-bearings of said cage are formed into bosses 6, which are eccentric to the cage-journals and which constitute the centers of oscillation of the exterior lid or cover 8, whose represented concavo-convex form adapts it to fit snugly upon and close the opening 3 when brought to the position shown in Fig. III. When moved from said closed position toward the open one, (shown in Fig. I,) the action of the eccentric bosses 6 is to slightly lift and ease the said cover from contact with the shell and to enable it to be easily shifted to such open position. With these objects in view arms 9, attached to the concave side of the cover near its front edge and being bent around the ends of the cage, so as to occupy without contact the interstices between the heads of the shell and

cage, extend radially inward to the bosses 6, which they partially encircle by their yoke-formed portions 11, and thence radially from the center outward, and carry counterpoises 13, which, nearly but not quite balancing the parts above the center, enable easy movement of the cover in either direction and ease it gently to either the closed or open position, or, in other words, the above-mentioned tendency of the lid to retain either the open or the closed position when so placed is secured by such disposition of weight in the vibrating member as to place its center of gravity a little above the axis of oscillation, to which its slight excess of weight above the center of oscillation then retains it. To accomplish these results, the parts are so proportioned that when the oscillating member is at mid-stroke its center of gravity is immediately over its center of oscillation.

The above-described preferred embodiment of my invention is susceptible of many obvious modifications. For example, the cover may be centered on studs 18, that project inwardly from the shell a little to one side of its axis, as shown in Fig. VI, or the cover may be pivoted axially in relation to the shell and effectual closure of the orifice be obtained by giving the seat or margin of both the cover and opening the eccentric form shown at 19 in Fig. VII.

I claim as new and of my invention—

1. The combination, with a horizontal cylindrical shell or tank having an opening near its top and containing a rotary cage, of an oscillating cover 8, curved interiorly to fit the margin of said opening and pivoted eccentrically to said margin by means of a frame which occupies the interior of the shell outside of the cage, as and for the purposes set forth.

2. The concavo-convex lid or cover 8, whose arms 9 are journaled on bosses 6, eccentric to and within the shell 1, as and for the purpose set forth.

3. The combination, with cylindrical shell 1, having opening 3, of cover 8, guided to a path nearly concentric with the shell by arms 9, journaled on eccentric bosses 6, and equipped

with counterpoises 13, which ease the cover to either the closed or the open position, as set forth.

4. The combination, with cylindrical shell  
5 1 of a washing or starching machine and with opening 3 of the same, of concavo-convex lid or cover 8, whose arms 9 extend inwardly between said shell and rotatable cage 5, are journaled upon eccentric bosses 6, and extend be-

yond the same to form counterpoises 13, as 10 and for the object explained.

In testimony of which invention I hereunto set my hand.

FRANK M. WATKINS.

Attest:

GEO. H. KNIGHT,  
L. C. BLACK.