

(No Model.)

3 Sheets—Sheet 1.

W. J. WHITE.

MACHINE FOR MANUFACTURING CHEWING GUM.

No. 378,637.

Patented Feb. 28, 1888.

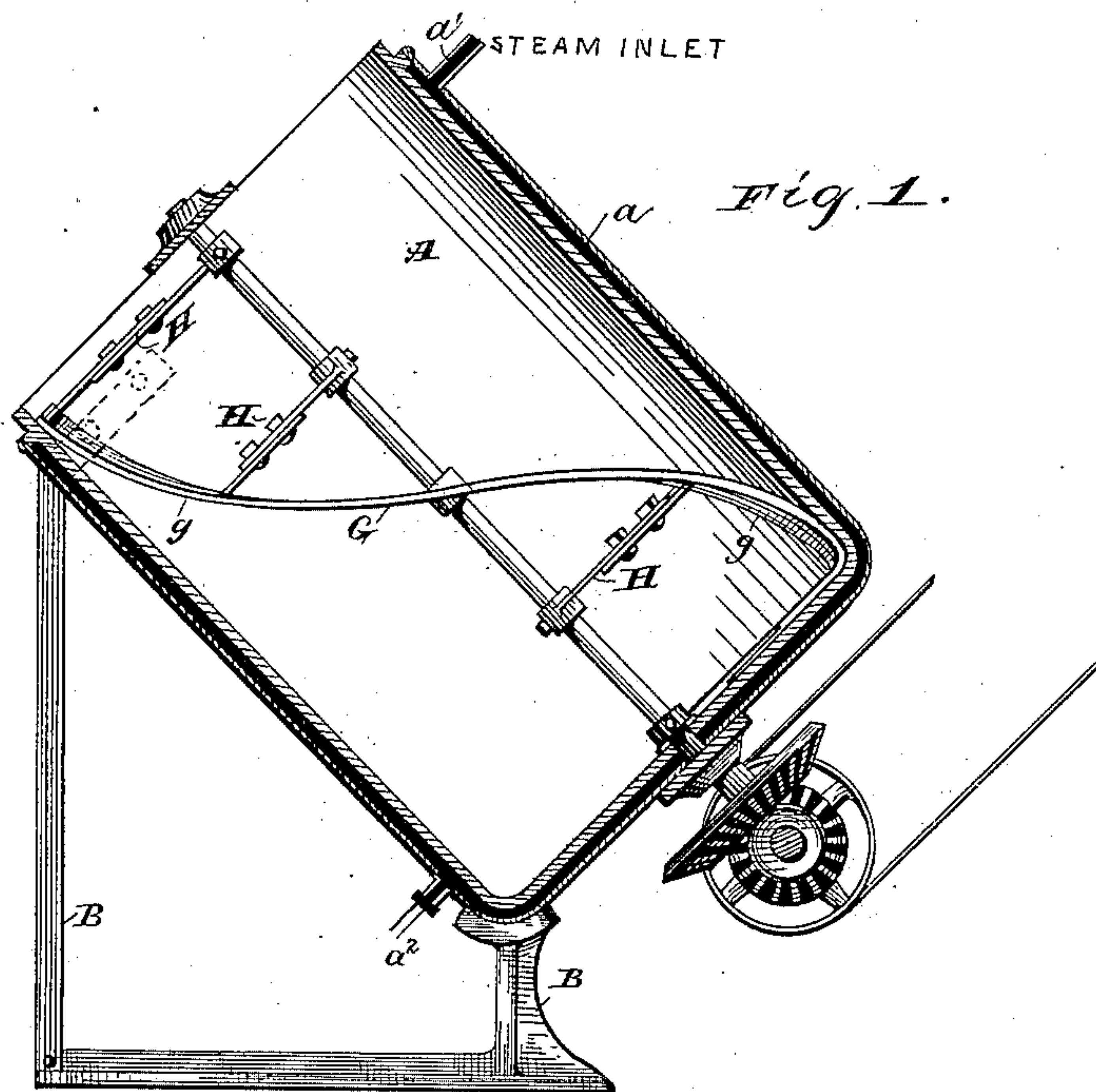
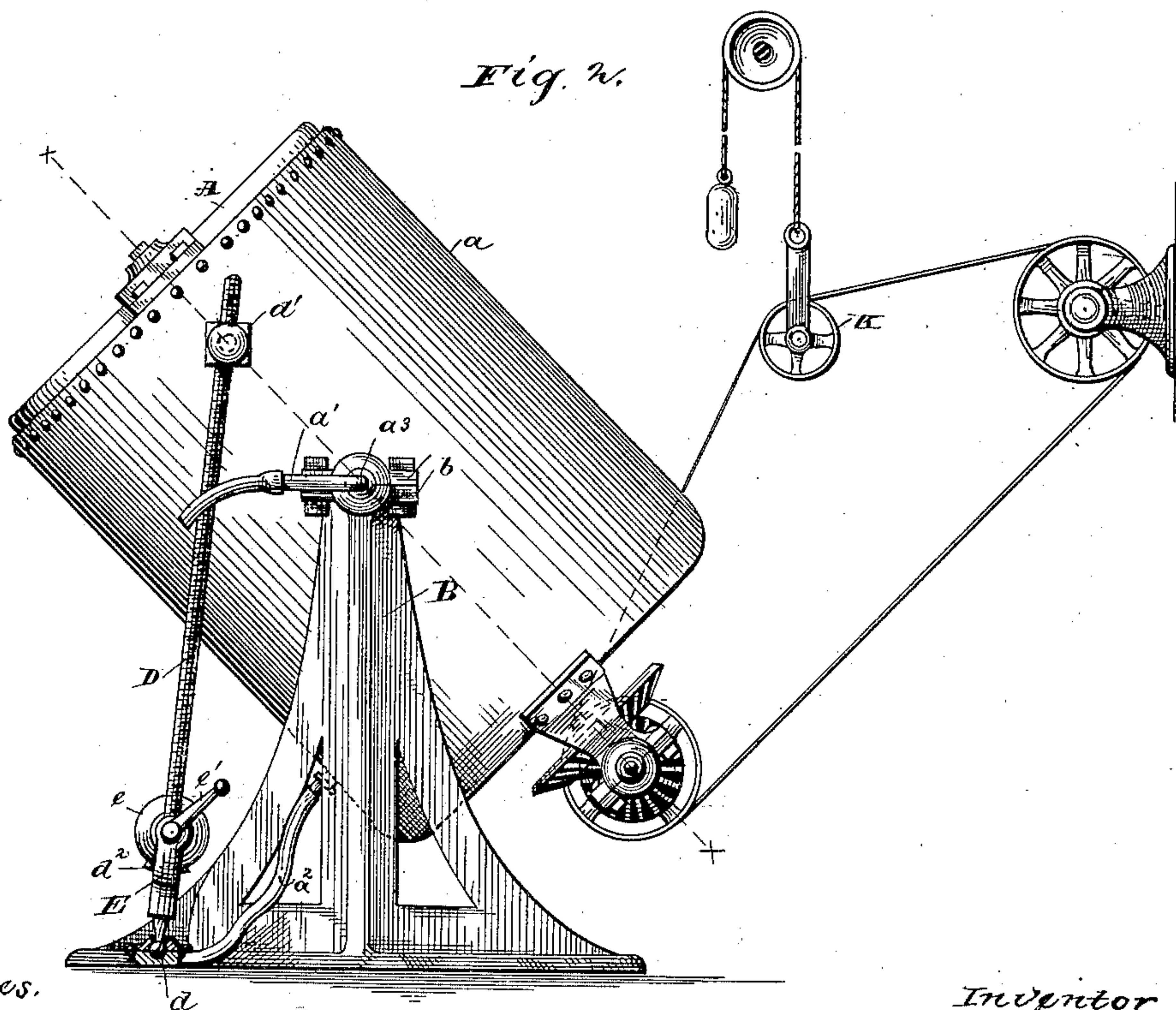


Fig. 2.



Witnesses.
Wm. M. Monroe
M. L. Combs

Inventor.
William J. White.
By
H. T. Fisher,
Attorney

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Fig. 3.

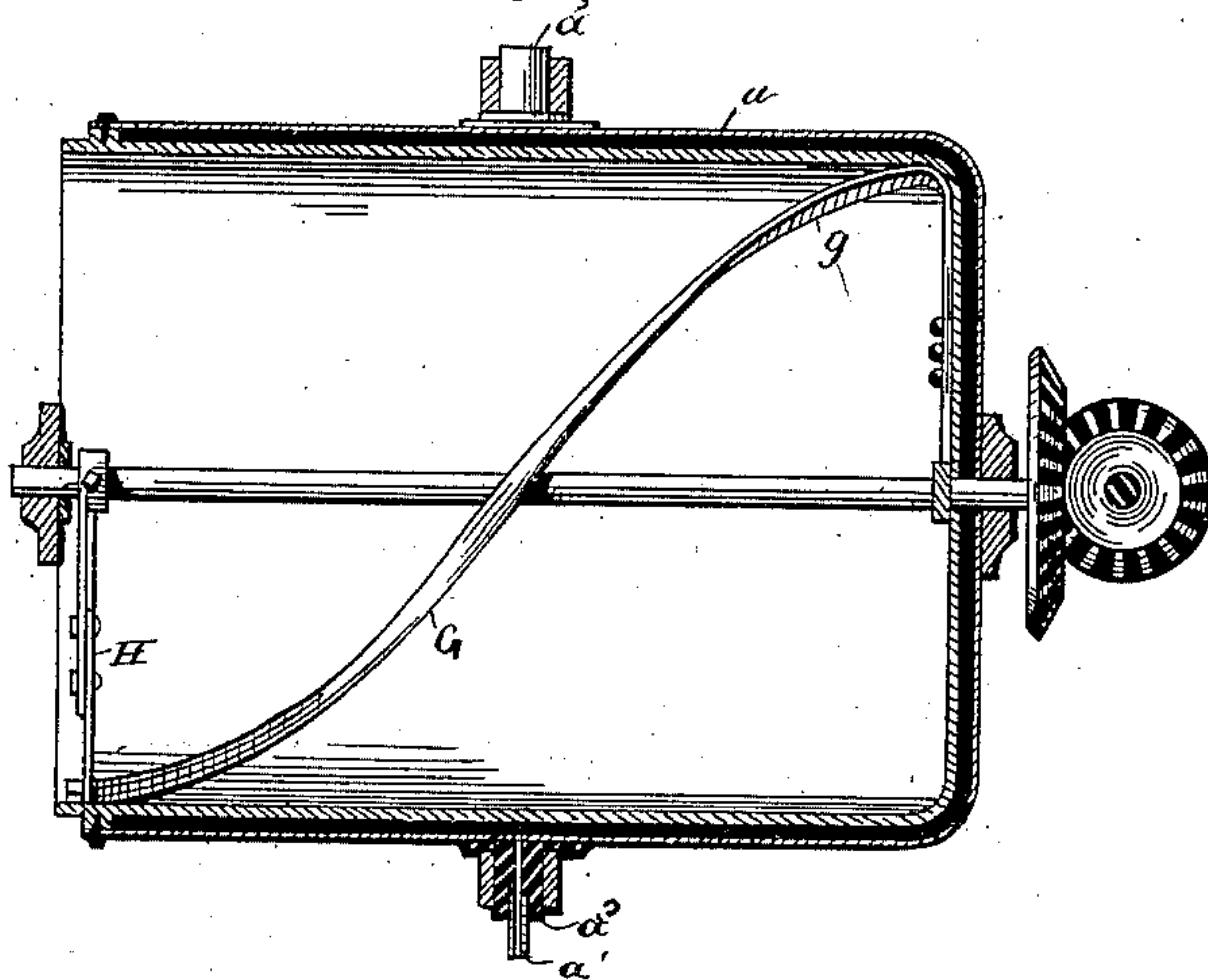


Fig. 4.

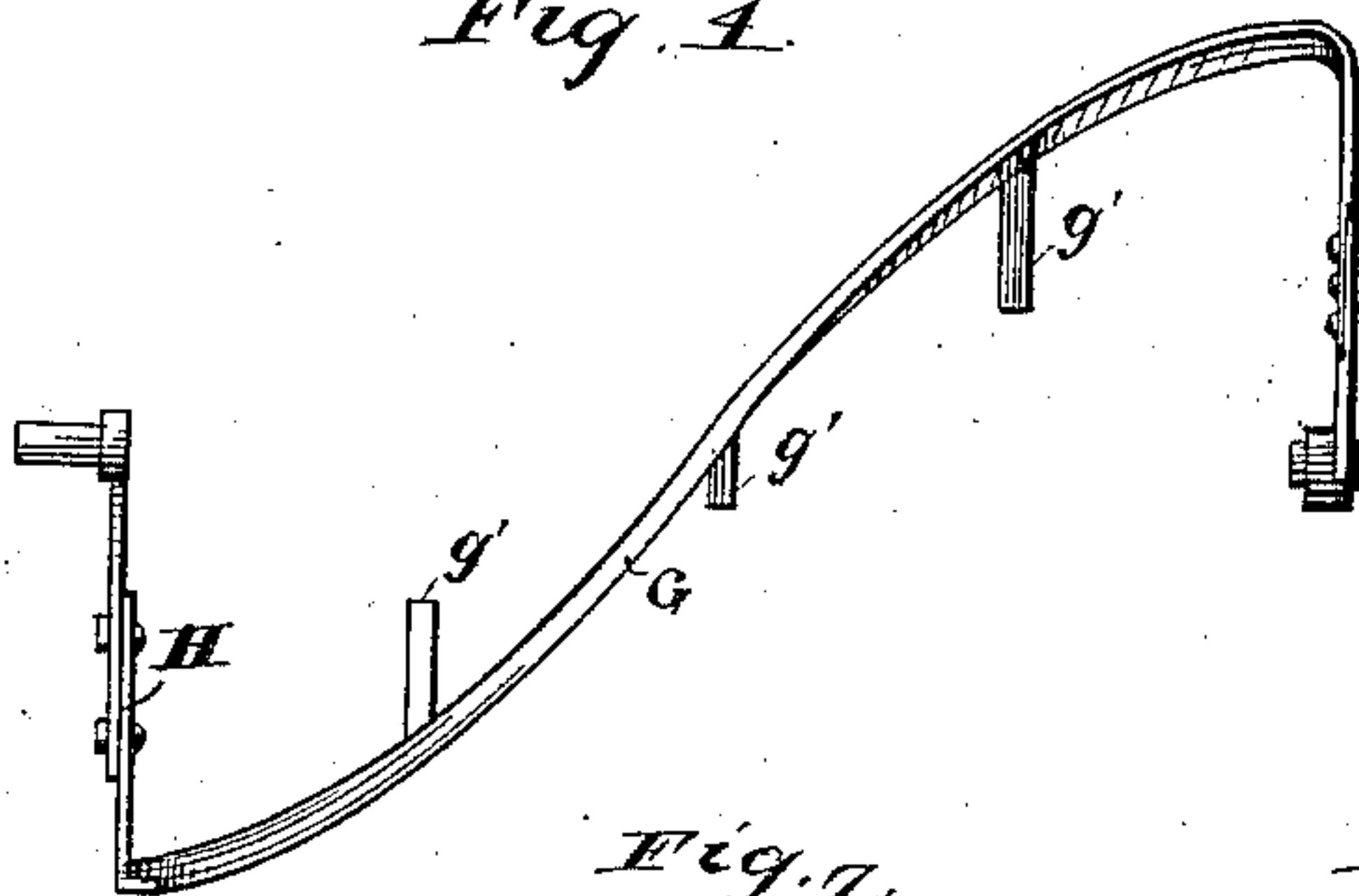


Fig. 5.

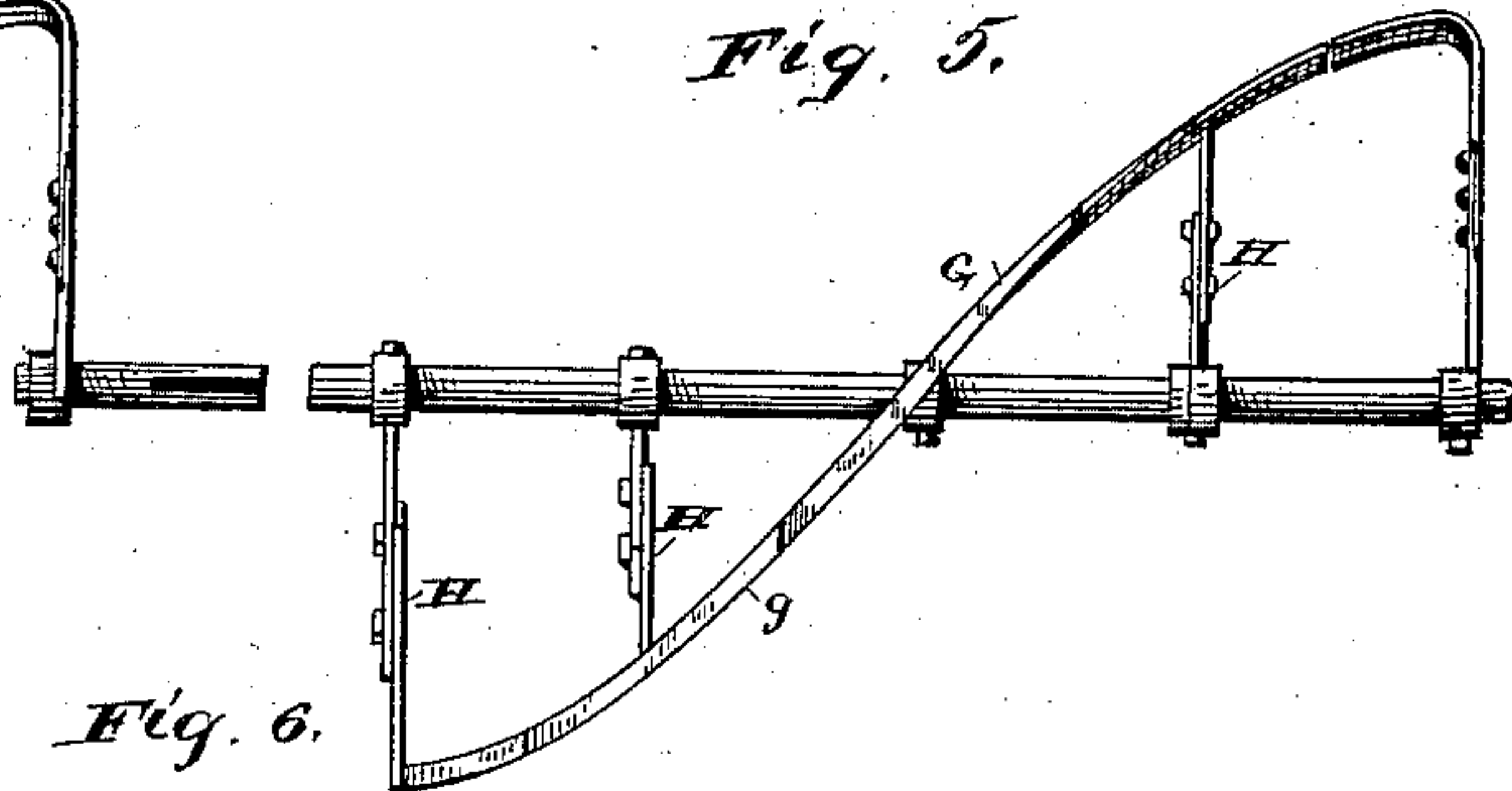


Fig. 7.

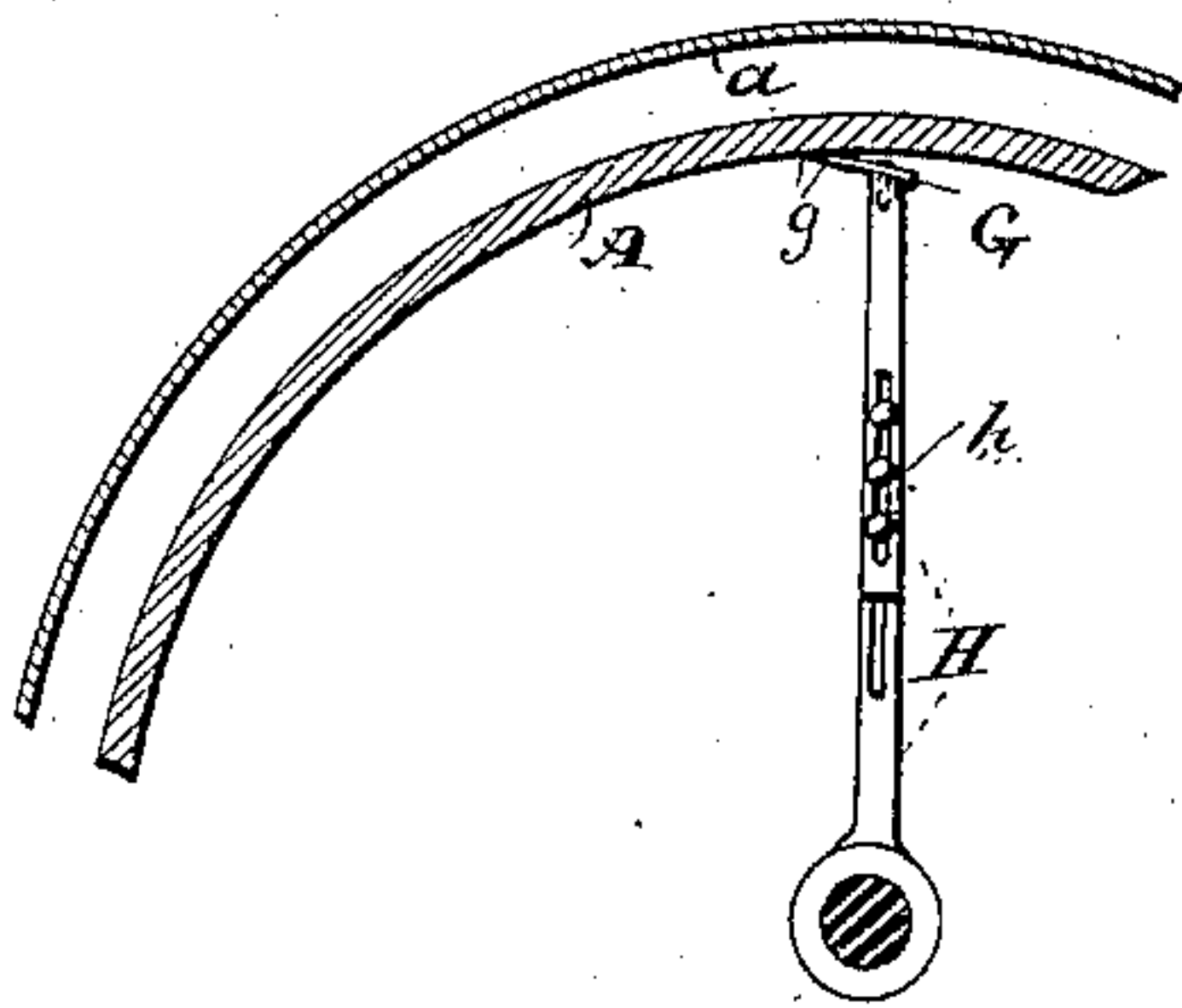
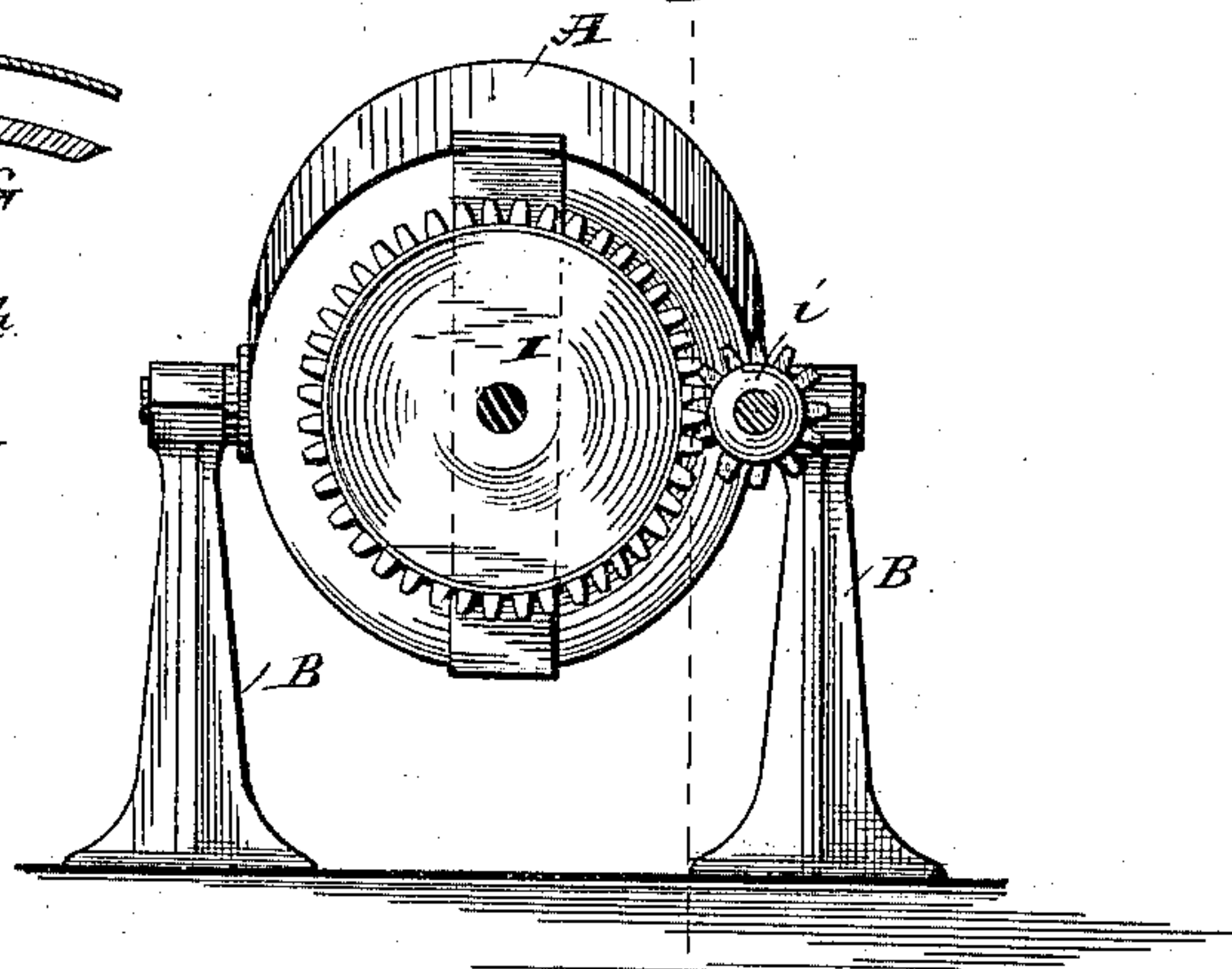


Fig. 6.



WITNESSES.

Wm. M. Monroe.
M. L. Cumber.

INVENTOR.

William J. White
by
H. J. Fisher
Attorney.

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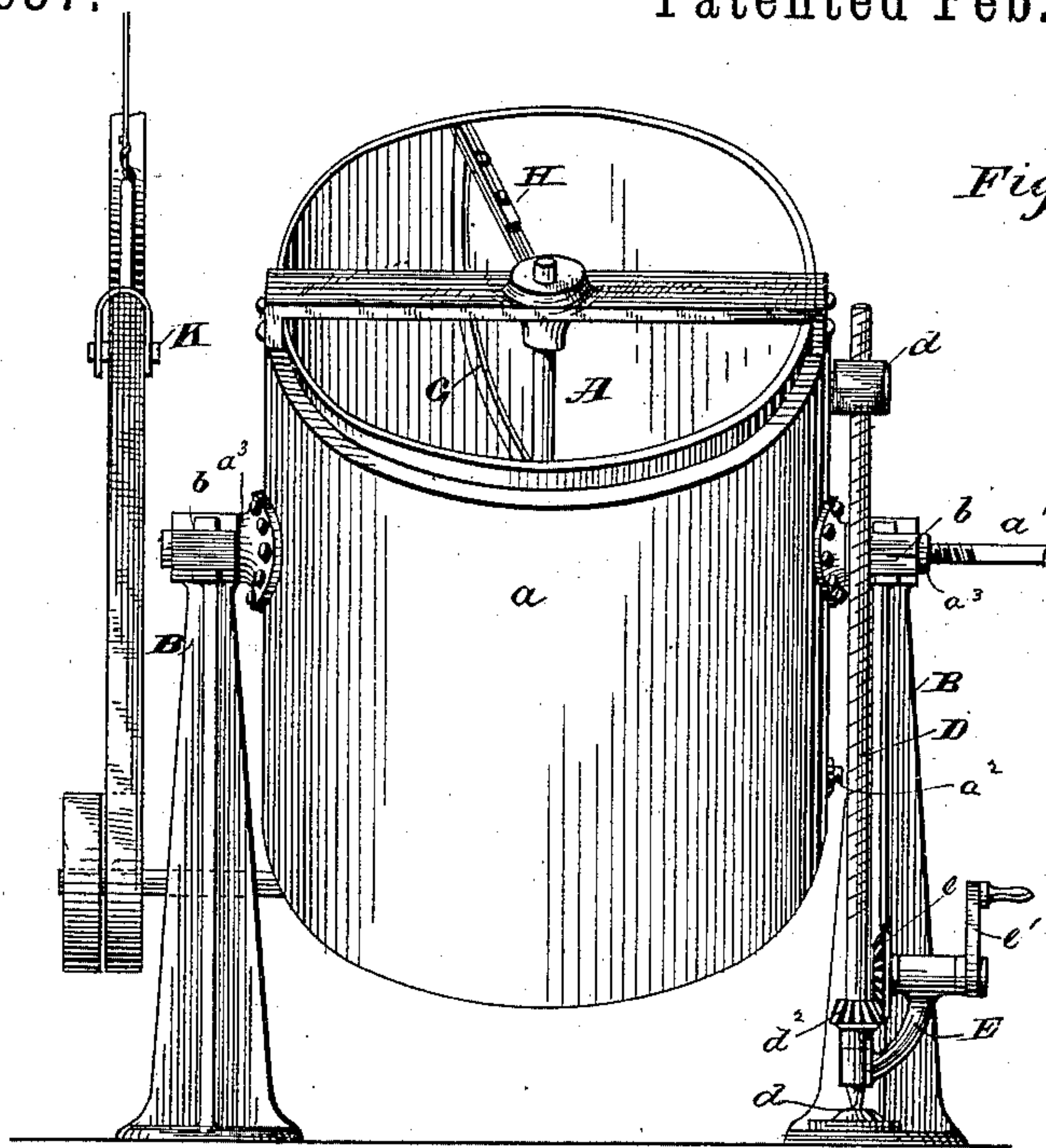


Fig. 8.

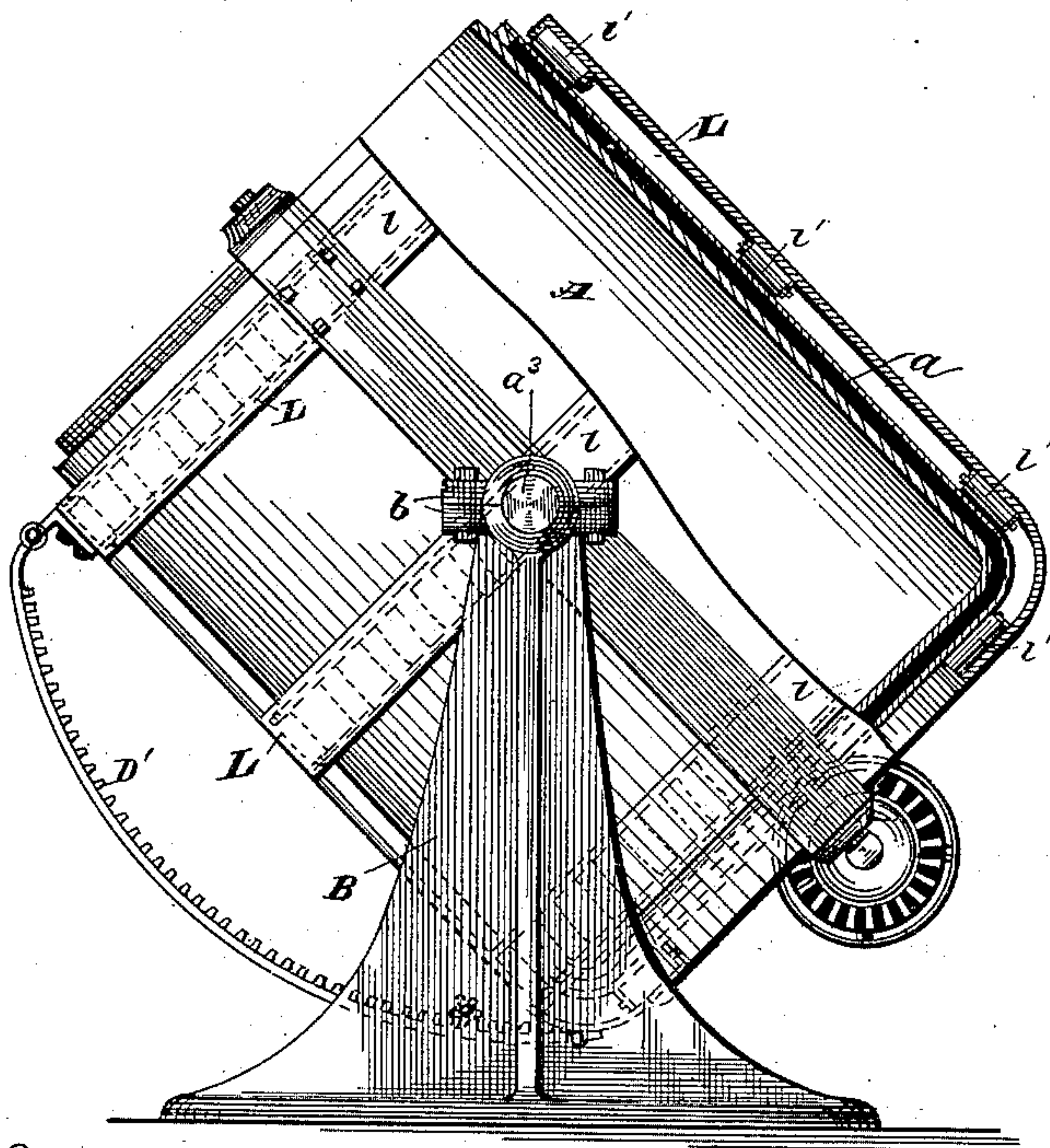


Fig. 9.

WITNESSES.

Wm. Monroe.

M. L. Combs.

INVENTOR

William J. White

H. T. Fisher,
ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM J. WHITE, OF CLEVELAND, OHIO.

MACHINE FOR MANUFACTURING CHEWING-GUM.

SPECIFICATION forming part of Letters Patent No. 378,637, dated February 28, 1888.

Application filed May 17, 1887. Serial No. 238,487. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. WHITE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Manufacturing Chewing-Gum; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to machines for manufacturing chewing-gum, and the object is to substitute machine-work for hand-labor in the mixing and preparation of the material.

In the manufacture of chewing-gum as heretofore practiced small individual vessels of a few gallons' capacity and having hot-water jackets have been employed to do the work performed by my machine. Each of these individual kettles or mixers required a separate furnace or heating apparatus and an attendant to stand by and stir the material and do generally what I now do entirely by machinery. In an establishment doing any considerable business a great number of those individual kettles necessarily were employed, requiring a considerable force to attend them and entailing much expense upon the business. A single machine of the character herein shown and described can be made to do the work of a large corps of men. Its economic advantages are therefore very considerable, and it represents a decided and valuable improvement in the art.

In the accompanying drawings, Figure 1 is a sectional elevation of the machine fixed upon a supporting-frame. Fig. 2 is a side elevation of the machine pivoted on trunnions. Fig. 3 is a horizontal section of Fig. 2, taken on line *x x*. Fig. 4 is a detached view of a scraper or mixer without a longitudinal shaft extending through the kettle. Fig. 5 shows a cutter or mixer formed in sections and supported on a central axle. Fig. 6 is a rear end view of a machine with a different style of actuating-gear. Fig. 7 is a partial section of the kettle, showing the scraper or knife in contact with the inner surface and one of the adjustable supports therefor. Fig. 8 is a front elevation of the form of machine shown in Figs. 2 and 3. Fig. 9 is a side elevation of a modified form in

which the cylinder or kettle is revolved and the scraper is stationary.

A represents the receptacle or kettle, preferably mortar-shaped, as shown, and provided with a steam-jacket, *a*, extending about its sides and lower end. Steam is supplied to this jacket through inlet *a'* and exhausted therefrom through outlet *a''*. These inlets and outlets may be located wherever they are found most convenient.

B is a supporting-frame, shown in Fig. 1 as having the kettle fixed rigidly thereon at an angle of about forty-five degrees. More or less inclination may be given, according as it is desired to run heavily or lightly loaded; but ordinarily less angle with a smaller quantity of material in the kettle would be preferable. In Figs. 2, 6, 8, and 9 the supporting-frame has standards, upon which the kettle is pivoted by means of trunnions *a''*, resting in bearings *b* in the supports B. When the trunnions are used, it is convenient to connect the inlet steam-pipes thereto, the trunnions being made hollow and opening communication with the steam-jacket for that purpose. When the kettle is thus pivoted, there should be convenient means provided for tilting it, which is necessary when the kettle is to be relieved of its contents. Such means I have shown in Figs. 2 and 8, where D represents a screw-rod socketed at *d* in the supporting-frame and running through a nut, *d'*, on the side of the kettle. This rod is provided with a bevel-gear, *d''*, fixed thereon and operated by a gear, *e*, and crank *e'*, supported on an arm, E, sleeved on the rod D. Another way is shown in Fig. 9, where a curved rack, D', pivoted centrally beneath the kettle, is adjustable by rod and pinion on the supporting-frame. Obviously these are only a few of many equivalent ways that may be adopted, and in some instances it may be desirable to tilt exclusively by hand, which can be done. In any case suitable stops might be provided to prevent the kettle from tilting beyond certain points in either direction, and, if desired, the means of tilting, as here shown, or their equivalents, may be placed on either or both sides of the kettle and located at any convenient place—on the side, at the bottom, or on the rear or front of the structure.

G represents the knife or mixer, shown in the several views as spiral, and provided with

a sharp cutting-edge, *g*, arranged to travel at an angle about as shown in Fig. 7 in relation to the surface of the kettle, and to be in such contact therewith at all points as to effectually scrape the surface and keep it clean. The spiral form of scraper is preferred, because it appears to do better work than any other; but the knife is not limited in function to merely scraping the kettle, as it serves also as a mixer and stirrer for the compound. The spiral form with a kettle inclined, as here shown, constantly carries the material up from the bottom to the top, so that all parts are subjected to like treatment and become thoroughly mixed and worked into a uniform mass. Then when the kettle is tilted and is to be emptied this upward working of the spiral is of advantage, in that it works the material from the rear or bottom of the kettle to the mouth and so facilitates the discharge that I can empty the kettle entirely of its contents in less than half a minute. The advantage of this will be appreciated when it is known that to remove a similar batch by hand would require fully half an hour.

Here braces or bars by which the cutter is supported, and these braces are slotted, as shown at *h*, Fig. 7, so as to provide adjustment and insure the proper contact with the kettle and take up such wear of the knife as may occur. In Fig. 4 a cutter is shown that is supported only at its ends, the central axle being omitted and short arms *g'* provided along its back at intervals to more effectually stir and mix the compound.

I find it convenient and desirable to keep the cutter rotating while the kettle is being emptied of its contents, for the reason, before stated, that the cutter assists materially in carrying the compound to the mouth of the kettle. This may be done by using a large wheel, *I*, on the shaft of the cutter, as seen in Fig. 6, and a pinion, *i*, to drive it, or a belt and pulleys with a weighted tightener, *K*, as shown in Fig. 2. Any other form of gearing that will accomplish this purpose may be adopted, the manner of making the connection not being material.

In Fig. 9 I show a modification of my machine, in which the kettle revolves in a skeleton frame, *L*, having annular bands *l*, with a series of rollers, *l'*, fixed thereon, and similar rollers and supports at the lower end of the frame. This skeleton frame may be fashioned in any way that will provide bearing-points for small rollers about its side and lower end, which will enable the kettle to rotate freely and without friction thereon. In Fig. 9 I show such a frame having longitudinal bars or plates at intervals, which extend around the bottom, to which the annular bands *l*, carrying rollers for supporting the kettle, are secured. The rollers are fixed to rotate in suit-

able bearings at both the side and bottom of the frame. The gearing in this case is connected with the kettle directly and the cutter is stationary and supported in cross-pieces on the ends of the skeleton frame. Suitable doors or shutters can be used to close the open end of the kettle.

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

1. In a chewing-gum machine, a mixing-kettle provided with pivot-supports at its sides, near its center, whereby it may be inclined at any desired angle and tilted, in combination with a spiral mixing and scraping blade working in contact with the inside of the kettle and a mixing and scraping blade working over the bottom of the kettle, substantially as set forth.

2. In a chewing-gum machine, a kettle provided with a heating-jacket about its side and bottom and a frame on which the kettle is pivoted to be tilted, in combination with a spiral scraper-blade, a shaft on which the scraper is mounted, and a scraper at the bottom of the kettle, substantially as set forth.

3. In a chewing-gum machine, a cylindrical kettle having a heating-jacket surrounding it and trunnions on its sides opening into said jacket, in combination with a combined scraper and stirrer in said kettle, substantially as set forth.

4. In a chewing-gum machine, a kettle, a frame on which the kettle is pivoted, and an adjusting device to hold the kettle at any desired inclination, in combination with a scraper in the kettle, a shaft, and a gear to operate the shaft at any angle of the kettle, substantially as set forth.

5. In a chewing-gum machine, a kettle and a support on which the kettle is pivoted and tilted, said kettle being open at one end to introduce and remove the material, in combination with a shaft provided with bearings at the ends of the kettle, a cutter and mixer on the shaft, and gearing to drive the same, attached to the kettle and tilted therewith, substantially as set forth.

6. In a machine for mixing chewing-gum, a kettle and a support for holding the kettle in an inclined position, said kettle being provided with a heating-jacket at its sides and lower end, in combination with a shaft supported in bearings at the ends of the kettle, a spiral scraping and mixing blade attached to the shaft and working in contact with the sides of the kettle, and a scraper at the bottom of the kettle, substantially as set forth.

WILLIAM J. WHITE.

Witnesses:

H. T. FISHER,
WM. M. MONROE.