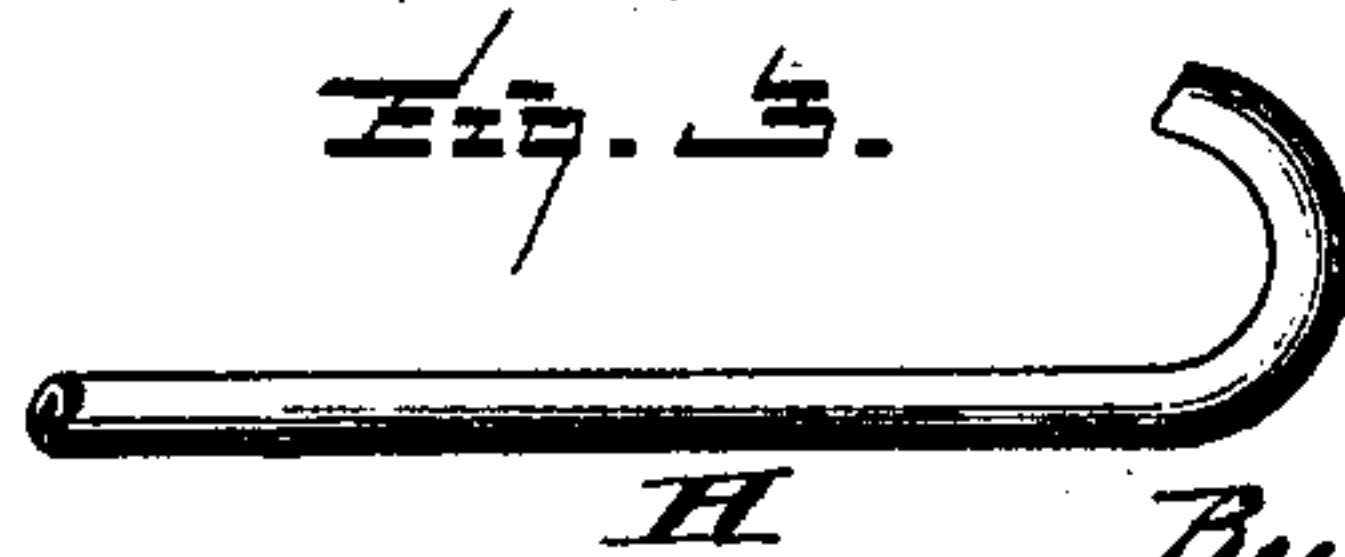
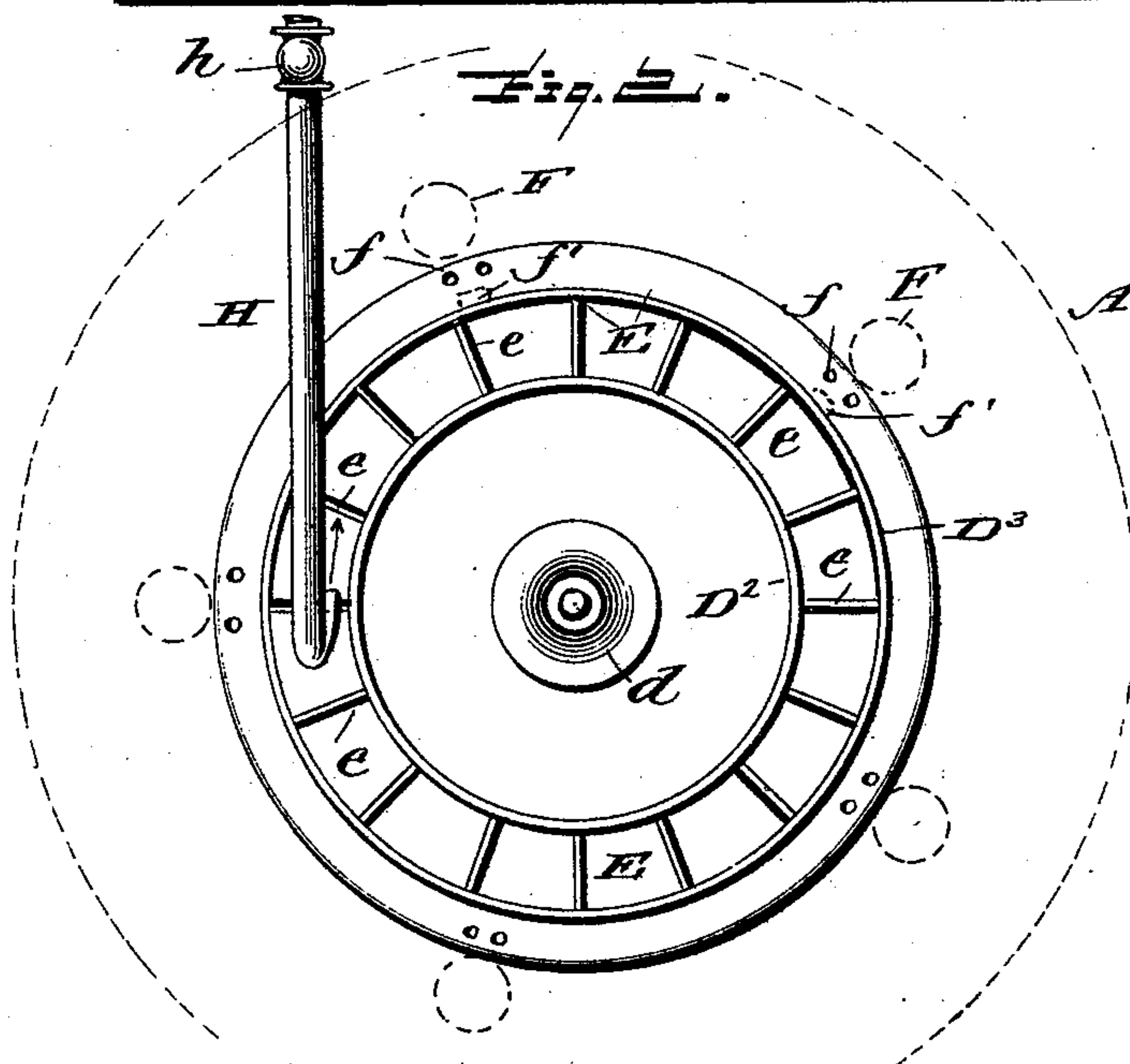
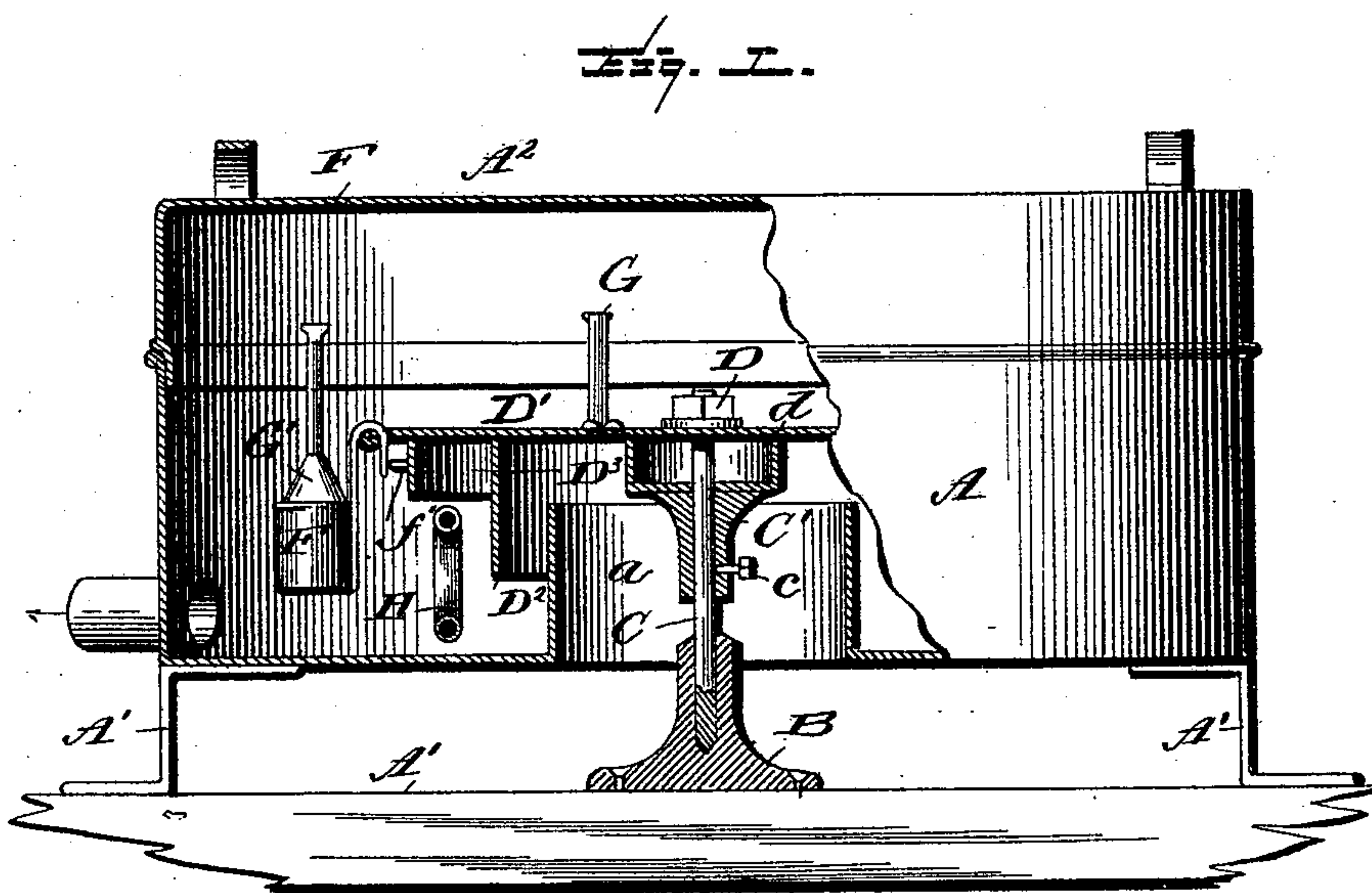


(No Model.)

N. G. WILLIAMS.
CENTRIFUGAL MILK TESTER.

No. 500,312.

Patented June 27, 1893.



Witnesses
L. C. Mills.
E. A. Bond

Inventor
Nathan G. Williams
By E. B. Stocking
Attorney

UNITED STATES PATENT OFFICE.

NATHAN G. WILLIAMS, OF BELLOWS FALLS, VERMONT.

CENTRIFUGAL MILK-TESTER.

SPECIFICATION forming part of Letters Patent No. 500,312, dated June 27, 1893.

Application filed November 22, 1892. Serial No. 452,791. (No model.)

To all whom it may concern:

Be it known that I, NATHAN G. WILLIAMS, a citizen of the United States, residing at Bel-
lows Falls, in the county of Windham, State
5 of Vermont, have invented certain new and
useful Improvements in Centrifugal Milk-
Testers, of which the following is a specifica-
tion, reference being had therein to the ac-
companying drawings.

10 This invention relates to certain new and
useful improvements in centrifugal milk test-
ers of that class in which the test-bottles are
pivotally supported about a rotary disk or
wheel and which latter is caused to revolve by
15 means of a steam jet impinging thereagainst.

The present invention has for its objects
among others to so construct the rotary wheel
with its buckets that the heat from the steam
will be retained and utilized to warm the
20 milk in the test bottles and at the same time
simplify and cheapen the manufacture of the
machine. I mount the rotary wheel on a
spindle and provide it with a depending flange
upon the inner wall of which are arranged
25 the buckets against which a jet of steam is
caused to impinge to revolve the wheel, which
has a top or cover to prevent escape of the
steam upward. The pipe for conveying the
jet of steam against the buckets may be ar-
30 ranged in any suitable location and the buck-
ets may be of any desirable form upon the
inner wall of the flange. By this construc-
tion of wheel the same is materially cheap-
ened as the bottles can be supported on the
35 same rim or flange to which the buckets are
secured, thus saving the employment of a
separate flange or rim for that purpose.

Other objects and advantages of the inven-
tion will hereinafter appear and the novel fea-
40 tures thereof will be specifically defined by
the appended claims.

The invention is clearly illustrated in the
accompanying drawings, which, with the let-
ters of reference marked thereon, form a part
45 of this specification, and in which—

Figure 1 is a side elevation with parts
broken away and portions in section, of my
improved milk tester. Fig. 2 is a bottom
plan of the rotary wheel with the steam sup-
ply pipe shown in position. Fig. 3 is a side
50 elevation of a portion of the steam pipe.

Like letters of reference indicate like parts

throughout the several views in which they
appear.

Referring now to the details of the draw- 55
ings by letter, A designates a suitable case
supported upon a suitable support as A' and
provided with a central flanged opening *a* in
its bottom and a cover A² as seen in Fig. 1.
Upon the support A' is secured a step B 60
which is located beneath and may extend up
into the opening *a* of the bottom of the case,
and in this step is supported the spindle C
upon which is a collar C' adjustably held
thereon as by a set screw *c*, and this collar is 65
designed to be arranged beneath and in a
measure support the wheel, through the hub
d of which the spindle passes, and is provided
with a nut D which bears upon the upper
face of the said hub as seen in Fig. 1. The 70
rotary wheel consists of a central hub portion
d as seen in Fig. 1, which is preferably hol-
low as shown and a disk-like top or cover D'
from which depends the annular flange or rim
D² which preferably extends down below the 75
upper edge of the flange of the opening *a* as
seen in Fig. 1 and in somewhat close prox-
imity thereto to guard against the steam es-
caping directly through the opening *a*, and
near the outer edge this top has another de- 80
pending flange D³ between which and the
flange D² are formed the buckets E as seen
best in Fig. 2; these buckets may assume any
desired shape or form and may be as many
in number as may be deemed best. They are 85
shown as formed by the radial vertical par-
titions or ribs *e* joining the two flanges.

The bottle-holders F are of known construc-
tion, having hooks F' by which they are piv-
otally and detachably supported upon the 90
outer edge of the top D' of the wheel as seen
in Fig. 1, the said hooks fitting in holes *f* in
the rim or outer projecting portion of the
said top, and in order to normally keep the
holders in a vertical position I provide the 95
ribs, lugs or projections *f'* upon the outer
face of the flange D³ against which the ends
of the hooks engage as seen in Fig. 1. The
test-bottles G may be of any well-known or
preferred form of construction. 100

H is a pipe arranged to deliver steam
against the buckets so as to revolve the wheel;
it is designed to be connected with any suit-
able source of steam and provided with a

suitable valve *h* by which the passage of steam therethrough may be controlled. This pipe may be arranged in any convenient manner to deliver the steam in proper relation to the buckets to rotate the wheel; it is shown with its delivery end bent upon itself and turned to direct the steam against the partitions of the buckets, but the manner of arranging the steam pipe is a matter which will have to be determined when the machine is set up and will be varied under varying circumstances, and I therefore do not limit myself to any particular arrangement of said pipe.

The operation will be readily understood from the foregoing description when taken in connection with the annexed drawings, and a further detailed description thereof is not deemed necessary.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. A centrifugal milk-tester, comprising a rotatably-mounted-bottle-holder-supporting-wheel having a flange with buckets upon its inner wall, bottle holders mounted upon the outer edge of said wheel and a pipe located and arranged to deliver steam against said buckets, substantially as specified.

2. In a centrifugal milk tester, the combination of a case having a central flanged opening, a step located beneath said opening,

the spindle supported in said step, the wheel through the hub of which the spindle passes, a nut on the spindle above the hub and a collar on the spindle below the hub, a flange provided with interior buckets depending from the hub and bottle holders pivotally supported upon the outer edge of said wheel, and a steam supply pipe for delivering steam against said buckets, substantially as specified.

3. A centrifugal milk tester, comprising a wheel having depending flange with buckets upon its inner wall and a surrounding portion beyond the flange of the wheel, bottle holders having hooks detachably engaged with said surrounding portion and a steam pipe arranged to deliver steam against said buckets, substantially as specified.

4. A centrifugal milk tester, comprising a rotatably-mounted wheel with closed top and depending flange with buckets upon its inner wall, bottle-holders pivotally mounted upon the outer periphery of the wheel and a pipe located and arranged to deliver steam within the flange and against the buckets, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

NATHAN G. WILLIAMS.

Witnesses:

A. J. HOLLEY,
FRANK G. DAY.