

UNITED STATES PATENT OFFICE.

THOMAS HAMILTON, OF NEW BRUNSWICK, NEW JERSEY.

LOW-WATER ALARM FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 246,007, dated August 23, 1881.

Application filed June 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HAMILTON, a citizen of the United States, residing at New Brunswick, in the State of New Jersey, have
5 invented a new and useful Improvement in Low-Water Alarms for Steam-Boilers, of which the following is a specification.

This invention relates to that class of water-alarms in which the movement of an external
10 alarm-starter in the form of a hollow ball, or a like vessel of any shape adapted to contain steam and water, is controlled by the level of the water in the boiler through the agency simply of pipe-connections with the water and
15 steam-space above and below the mean water-line.

The present invention consists, first, in the combination, in a water-alarm of this description, of a pair of stationary bearings supported
20 by the respective pipe-connections with the boiler, a horizontal double-ended spigot or recessed hub, working water and steam tight in said bearings, and a pair of tubes forming, with said hub, a lever, and connected therethrough
25 with the water and steam spaces, respectively, as means for connecting a hollow ball or the like both with the water-space and with the steam-space in a simple and efficient way, so that it may instantaneously empty itself and
30 rise and start the alarm when the water falls below a given level without the aid of flexible tubes.

This invention consists, secondly, in the aforesaid combination of parts in connection
35 with a steam-whistle attached to the said bearing, which communicates with the steam-space, the steam end of the said spigot being constructed so as to turn the steam into the whistle when the emptied ball rises.

This invention consists, thirdly, in a combined lifting-spring and bell support, in connection with a rising and falling ball or the like adapted to empty itself as aforesaid, and
40 with a tappet on a power-driven shaft for lifting the emptied ball or its equivalent, and ringing the bell to call attention to the condition of the boiler without complication of parts,
45 as hereinafter more fully set forth.

Figure 1 of the accompanying drawings is

a perspective view of the upper part of the
50 front of a steam-boiler provided with my low-water alarm, showing the latter as in the act of sounding an alarm. Fig. 2 is a half-elevation of the same, showing the parts at rest with the ball down. Fig. 3 represents a horizontal
55 section on the line 3 3, Fig. 2; Fig. 4, a vertical section at 4 4, Fig. 1; and Fig. 5 a vertical section on the line 5 5, Fig. 2.

Like letters of reference indicate corresponding parts in the several figures. 60

A represents an illustrative steam-boiler set in brick-work, and B an alarm-starter in the form of a hollow copper ball, for which I may substitute a like vessel of any shape and material, containing a chamber of a capacity of
65 four quarts, more or less, and adapted to sustain alternately steam and atmospheric pressure.

S and W represent steam and water pipe connections of five-eighths inch iron or brass tubing, screwed into the front of the boiler A,
70 above and below the mean water-line respectively, and provided with stop-cocks.

B^s and B^w represent sleeve-bearings, supported respectively by the steam and water
75 connections; H, a double-ended spigot or recessed hub working water and steam tight in said bearings; and T^s T^w, a pair of rigid pipes or tubes screwed into said hub, so as to communicate with the recesses in its respective
80 ends, and connected therethrough respectively with the steam and water spaces of the boiler, said tubes T^s T^w forming, with said hub H, a lever or swinging arm, to the outer end of which the ball B is coupled, as illustrated more particularly by Fig. 5. As shown in this figure, the bottom of the ball is provided with a
85 cast saddle or coupling-piece, c, which may be soldered thereto, and which has a pair of necks to receive respectively the extremity of the
90 steam-tube T^s, and a suitable union at the extremity of the water-tube T^w, providing for the attachment of a pet-cock, p. An extension, t^s, of the steam-tube is screwed into the top of the coupling-piece c and reaches to the top of
95 the chamber within the ball. When the ball B is down, as illustrated by Figs. 2 and 3, and by the line 2, Fig. 4, the steam-space of the

(No Model.)

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Fig: 1.

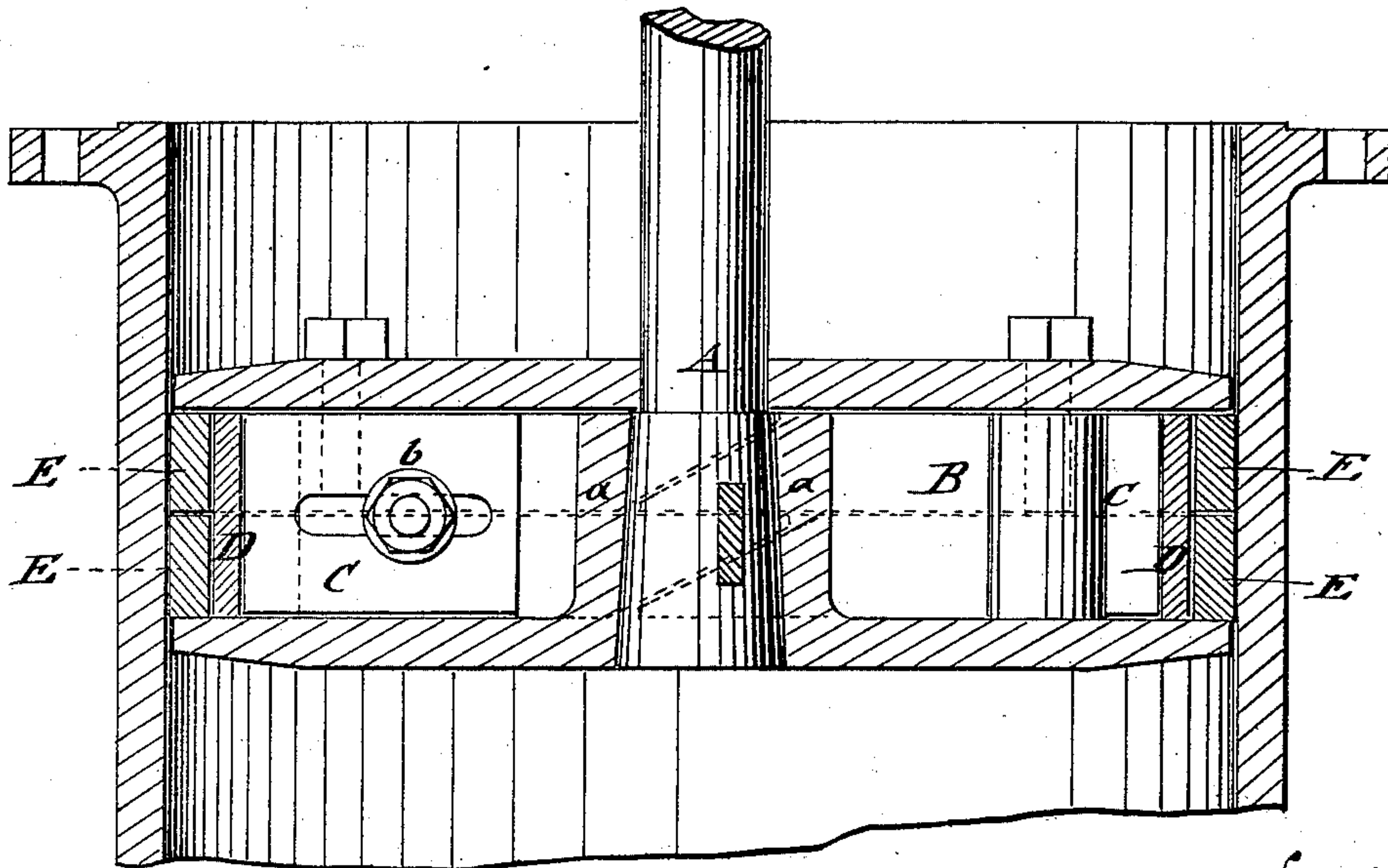
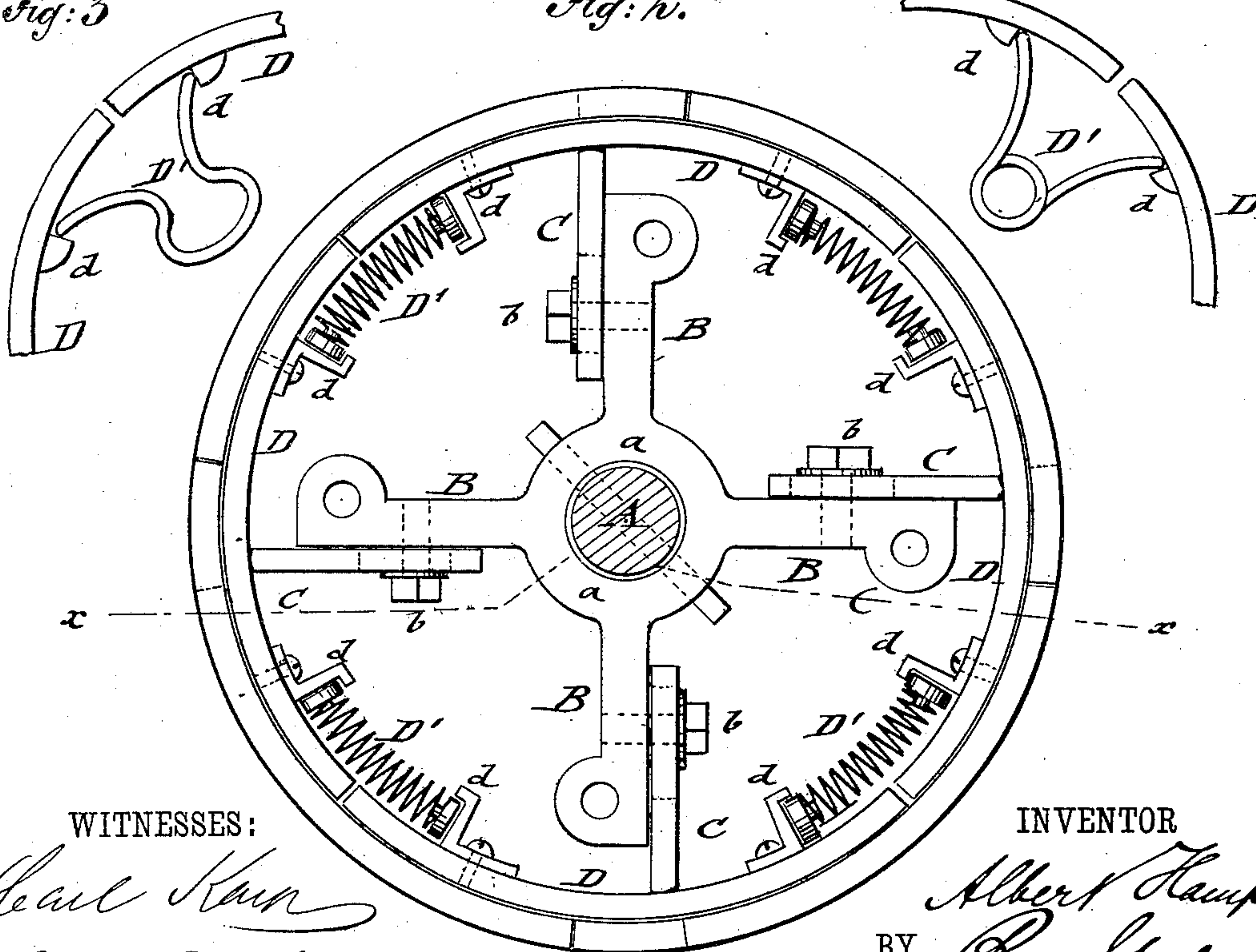


Fig: 3

Fig: n.

Fig: 4.



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