(No Model.) 3 Sheets—Sheet 1.

F. BROWN.

FOG SIGNAL.

No. 284,807. Patented Sept. 11, 1883.

Fig. 1.

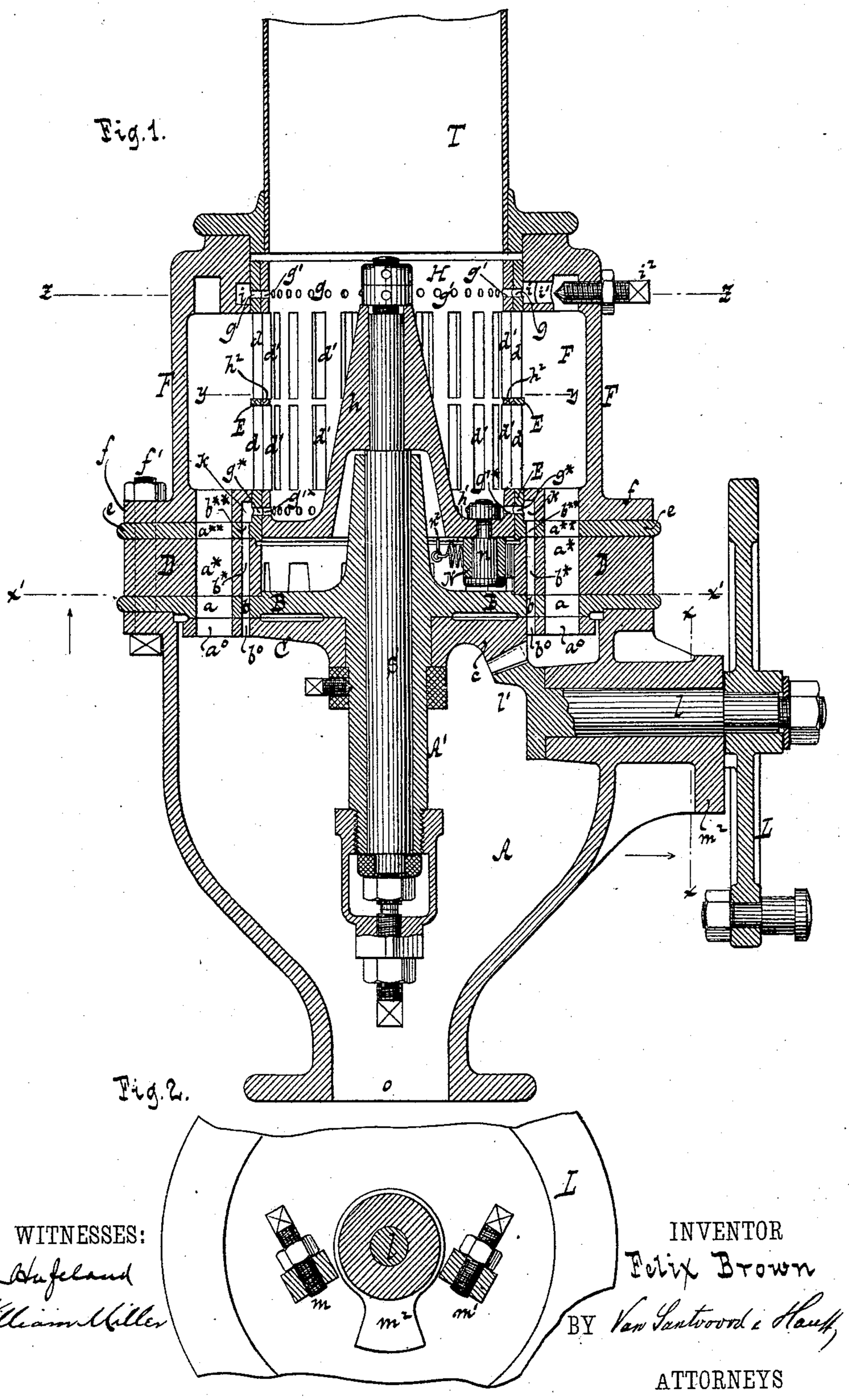


Fig. 2.

WITNESSES:

Otto Hufeland

William Miller

INVENTOR

Felix Brown

BY Van Santvoord & Hauff,

ATTORNEYS

(No Model.) 3 Sheets—Sheet 2.

F. BROWN.

FOG SIGNAL.

No. 284,807. Patented Sept. 11, 1883.

Fig. 3

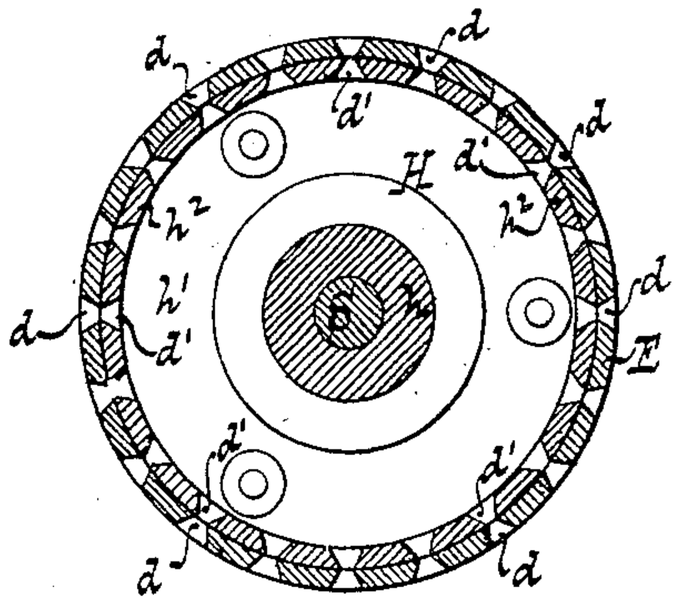
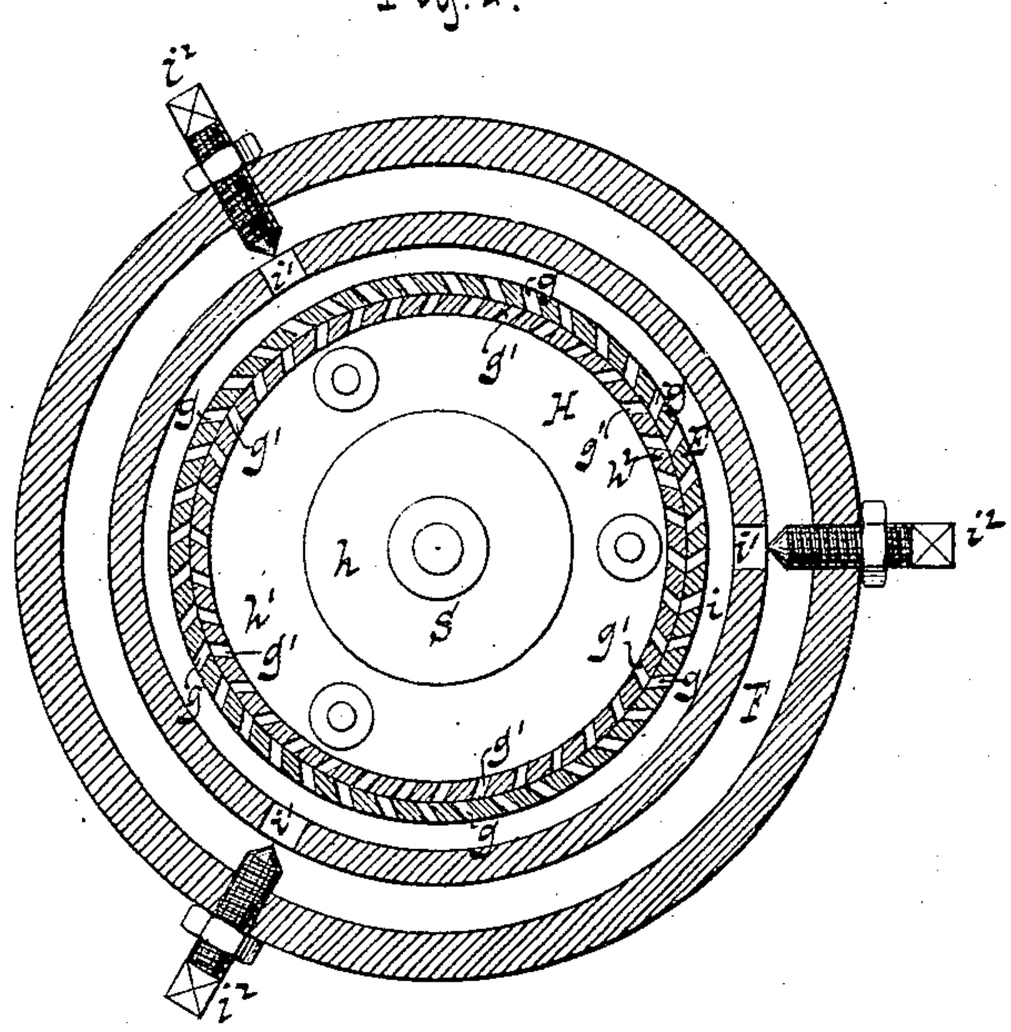


Fig. 4.



WITNESSES:

Otto Hupfeld

William Miller

INVENTOR

Felix Brown

BY Van Santvoord & Hauff

ATTORNEYS

(No Model.)

3 Sheets—Sheet 3.

F. BROWN.

FOG SIGNAL.

No. 284,807. Patented Sept. 11, 1883.

Fig. 5.

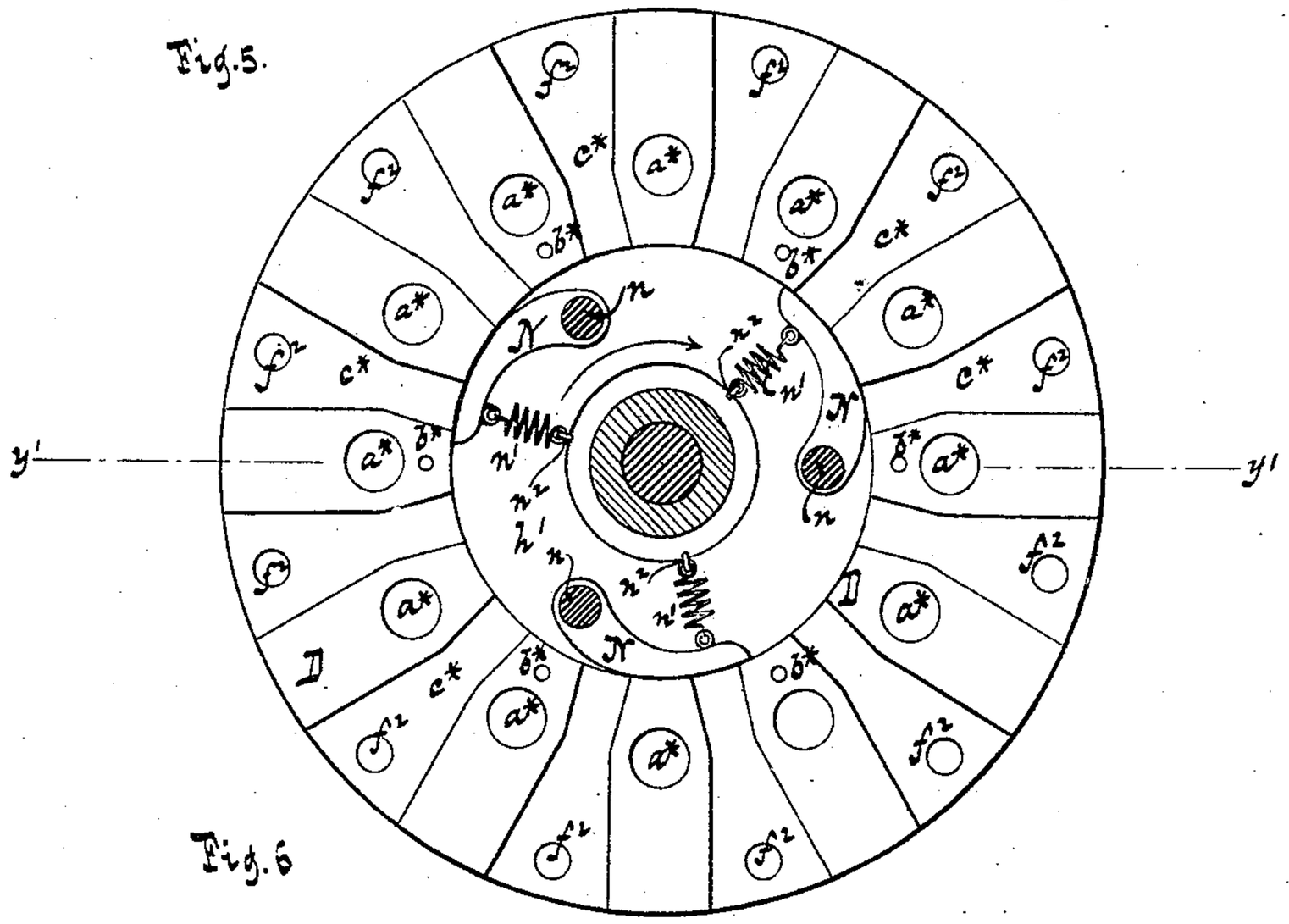


Fig. 6

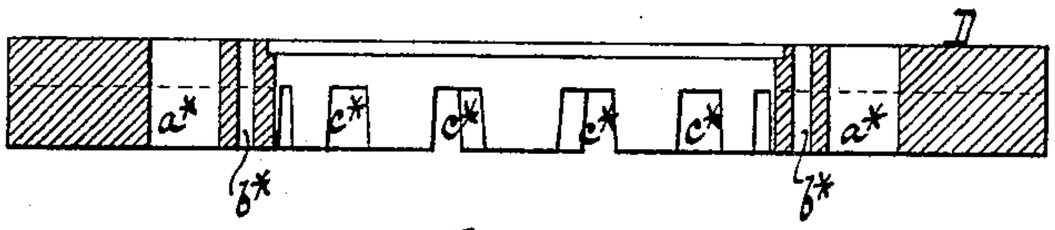
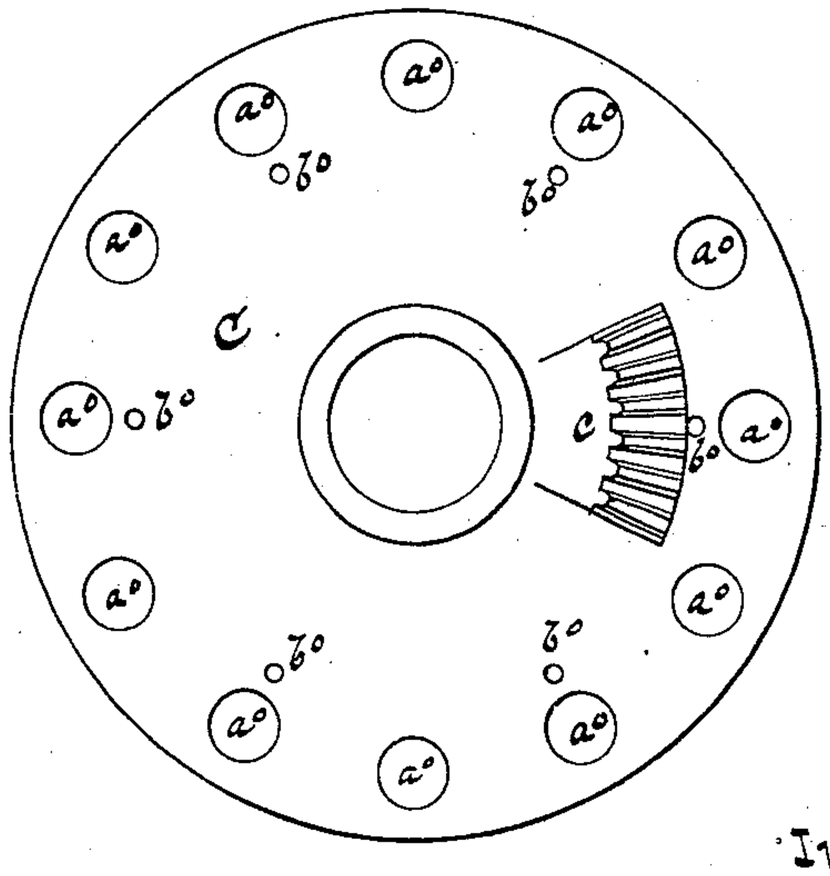


Fig. 7.



Witnesses
Otto Hupfeld
William Miller

Inventor
Felix Brown
by Van Santvoord & Hauff
his attys

UNITED STATES PATENT OFFICE.

FELIX BROWN, OF NEW YORK, N. Y.

FOG-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 284,807, dated September 11, 1883.

Application filed June 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, FELIX BROWN, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Fog-Signals, of which the following is a specification.

This invention relates to certain improvements in that class of fog-signals which are known as "sirens." The peculiar and novel construction of my siren is pointed out in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical central section. Fig. 2 is a transverse vertical section in the plane *x x*, Fig. 1. Fig. 3 is a horizontal section in the plane *y y*, Fig. 1. Fig. 4 is a similar section in the plane *z z*, Fig. 1. Fig. 5 is a similar section in the plane *x' x'*, Fig. 1. Fig. 6 is a vertical section in the plane *y' y'*, Fig. 5. Fig. 7 is an inverted plan of the circular valve detached.

Similar letter indicate corresponding parts.

In the drawings, the letter A designates the bottom part or base of my siren. In the interior of this base is firmly secured the bearing A' for the shaft S, on which is mounted the siren H. On the base A is situated the valve-seat B, which is provided with two sets of ports, *a b*, and on this valve-seat is situated an annular plate, D, an inverted plan of which is shown in Fig. 5, and which is provided with ports *a* b**, corresponding to the ports *a b* in the valve-seat. This annular plate is provided with recesses *c**, Figs. 5 and 6, to provide an escape for the condensed water. On the top of said annular plate is situated the siren-casing E, which is provided with a flange, *e*, and in this flange are ports *a** b***, corresponding to the ports *a* b** in the annular plate D. By referring to Fig. 5 it will be seen that the number of the ports *a** is twice as large as that of the ports *b**, one of the ports *b** being situated on the same radial line with every alternate port *a**. This remark also relates to the ports *a b* and *a** b***. On the flange *e* of the siren-casing is situated the steam-chamber F, which is provided with an outwardly-projecting flange, *f*, and which is held in place by a series of bolts, *f'*, passing through the flange of the siren-casing, through holes *f²* in the annular plate D, Fig. 5, and through corresponding holes in the valve-seat and in the flange of the base A, one such bolt being shown in Fig. 1; but the number and position of said bolts can be readily understood from Fig. 5.

The siren H, which is mounted on the shaft S, consists of a hub, *h*, provided with a bottom flange, *h'*, from which rises the annular cylinder *h²*, which fits nicely into the siren-casing E, so that it can freely revolve therein. The middle portion of the siren-casing E is provided with long slots *d*, Figs. 1 and 3, which communicate with the central portion of the steam-chamber F, and in the siren-cylinder *h²* are corresponding slots, *d'*, the transverse sections of the slots *d d'* being tapering in opposite directions, as shown in Fig. 3, so that if steam or compressed air is caused to pass through them a rapid revolving motion is imparted to the siren. In the upper part of the siren-casing E is a series of obliuqe openings, *g*, Figs. 1 and 4, and in the siren-cylinder *h²* is a series of oblique openings, *g'*, on the same level as the openings *g*, and in such a position that when the siren revolves the openings *g'* sweep past the openings *g*. The openings *g'* are oblique, in a direction opposite to that of the openings *g*, and their number is different from that of the openings *g*, so that whatever may be the position of the siren only a limited number of the openings *g'* will be partially or wholly opposite to some of the openings *g*, and the steam or compressed air admitted through the openings *g* will produce rapidly-succeeding tympanic shocks. In the bottom part of the siren-casing E is another series of openings, *g**, similar to the openings *g*, and on the same level with these openings are the openings *g'** in the siren-cylinder *h²*.

In the chamber F are formed two secondary chambers, *i k*, one at the top and the other at the bottom. The chamber *i* communicates directly with the openings *g g'*, and also with the main chamber F, through three (more or less) openings, *i'*, and opposite to these openings are screws *i²*, with tapering points, so that by adjusting these screws the amount of steam or air passing through said openings can be regulated. The secondary steam-chamber *k* communicates directly with the open-

ings *g g'*, but it does not communicate with the main steam-chamber F.

C is the valve, which is mounted on the bearing A' of the shaft S, and which is provided with ports a^0 b^0, Figs. 1 and 7, the ports a^0 corresponding in number and position to the ports *a* in the valve-seat B, while the ports b^0 correspond in number and position to the ports *b* in the valve-seat. By turning the valve, therefore, all the ports can be closed; or the ports a^0 may be brought opposite the ports *a* in the valve-seat, so as to open all these ports while the ports *b* remain closed, or all the ports may be opened. The valve is adjusted by a hand-wheel, L, which is mounted on a shaft, *l*, (see Fig. 1,) and on the inner end of this shaft is mounted a segmental gear, *l'*, which engages with a segmental gear, *c*, secured to or formed on the valve C, Figs. 1 and 7. Steam or compressed air is admitted through the opening *o* in the base A. The shaft *l* has its bearing in the side of the base A, and on the inner surface of the hand-wheeel L are secured two screws, *m m'*, Fig. 2, in such a position that if the hand-wheel is turned either one of these screws strikes a stop, m^2, projecting from the base A. If the hand-wheel is turned to the position shown in Fig. 2, all the ports are closed; if it is turned so that the screw *m* strikes the stop m^2, the ports *a* only are opened, and if it is turned so that the screw *m'* strikes the stop m^2 all the ports *a b* are opened. When the ports *a* are opened, the ports *g g'* in the siren only are brought in action; but if all the ports *a b* are opened the openings *g' g'**, as well as the openings *g g'*, are brought into action, and the volume of the sound produced by the siren is correspondingly increased.

On the flange *h'* of the siren, Figs. 1 and 5, are secured self-acting brake-shoes N, which swing on pivots N, secured in the flange *h'*, and from the outer ends of which extend springs *n'*, the inner ends of which are hitched to hooks n^2, fastened in the hub *h*. These springs have sufficient power to draw the brake-shoes N back out of contact with the inner surface of the annular plate D; but if the siren revolves the brake-shoes are thrown out by the centrifugal force, so that they bear against the inner surface of the annular plate, thereby preventing the siren from revolving with an undue velocity. These brake-shoes are self-acting, and the friction produced by them increases with the velocity of the siren, so that they are sure to confine the speed with which the siren revolves within certain limits. By increasing the weight of the brake-shoes their retarding action can be increased.

On the top of the steam-chamber F is secured the trumpet T.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the base A, having the valve-seat B, provided with ports *a b*, the valve C, arranged on said valve-seat and provided with the ports a^0 b^0, means for rotating the valve on its seat, the shaft S, supported by the base, the siren H, having a hub arranged on the shaft and provided with the slots *d'* and top and bottom radial openings, *g' g'**, the siren-casing E, supported on the base and having the slots *d*, the casing F, having the top and bottom secondary chambers, *i k*, the whole arranged for operation substantially as described.

2. The combination of the base A, having the valve-seat B, provided with a port, *a*, the valve C, arranged on said valve-seat and provided with a port, a^0, means for rotating the valve on its seat, the shaft S, supported by the base, the siren H, having the slots *d'* and top radial openings *g'*, the siren-casing E, having the slots *d* and top radial openings *g*, the chamber F, having the top secondary chamber, *i*, and openings *i'* leading thereto, and the screws i^2, extending into the openings *i'*, the whole arranged for operation substantially as described.

3. The combination of the base A, having the valve-seat B, provided with ports *a b*, the valve C, arranged on said valve-seat, and having the ports a^0 b^0, means for rotating the valve on its seat, the annular plate D, arranged on the valve-seat, and having the ports *a* b** and radial recesses *c**, the shaft S, supported by the base, the siren H, arranged on the shaft and having the slots *d'* and top and bottom radial openings, *g'* and *g'**, the siren-casing E, having the slots *d* and top and bottom radial openings, *g g**, and the chamber F, having the top and bottom secondary chambers, *i k*, the whole arranged for operation substantially as described.

4. The combination of the base A, having the stop m^2, the vertical shaft S, supported thereby, the siren H, and the siren-casing, with the valve-seat B, supported on the base, the valve C, arranged on the valve-seat, and having the gear *c* on its under side, the horizontal shaft *l*, the gear *l'*, and the hand-wheel L, mounted on the horizontal shaft, and having on its inner face the adjusting-screws *m m'*, the whole arranged to operate substantially as described.

5. The combination, substantially as herein-before described, of the siren mounted on the shaft S, the annular plate D, situated beneath the siren, the brake-shoes N, mounted on pivots secured in the flange *h'* of the siren and acting on the inner surface of the ring-plate, and the retracting-springs *n'*.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

FELIX BROWN. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.