C. A. B. HALVORSON, Jr.

ARC LAMP.

APPLICATION FILED JAN. 16, 1907.

**910,670.** **Patented Jan. 26, 1909.**

Fig. 1.

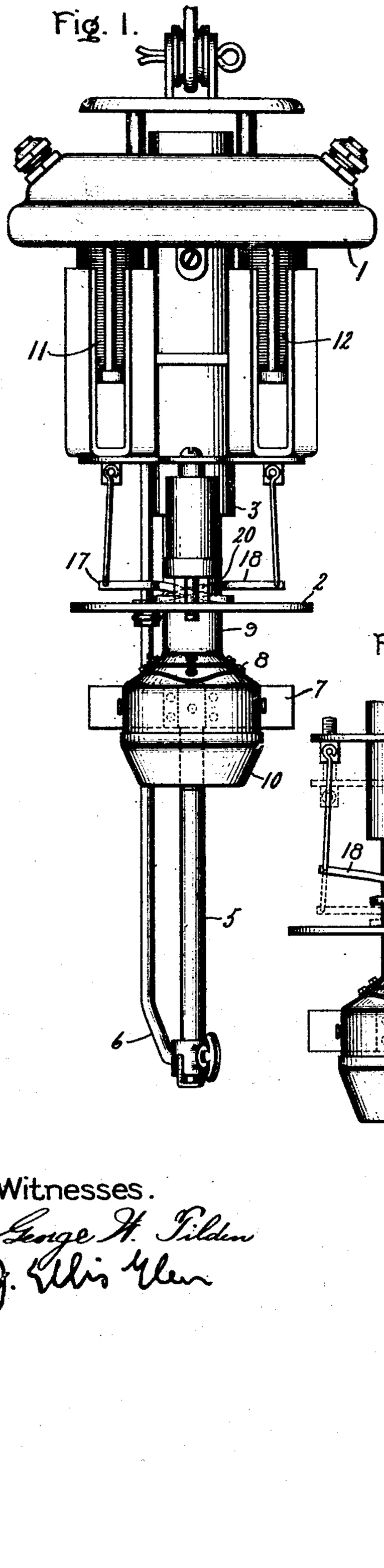



Fig. 2.

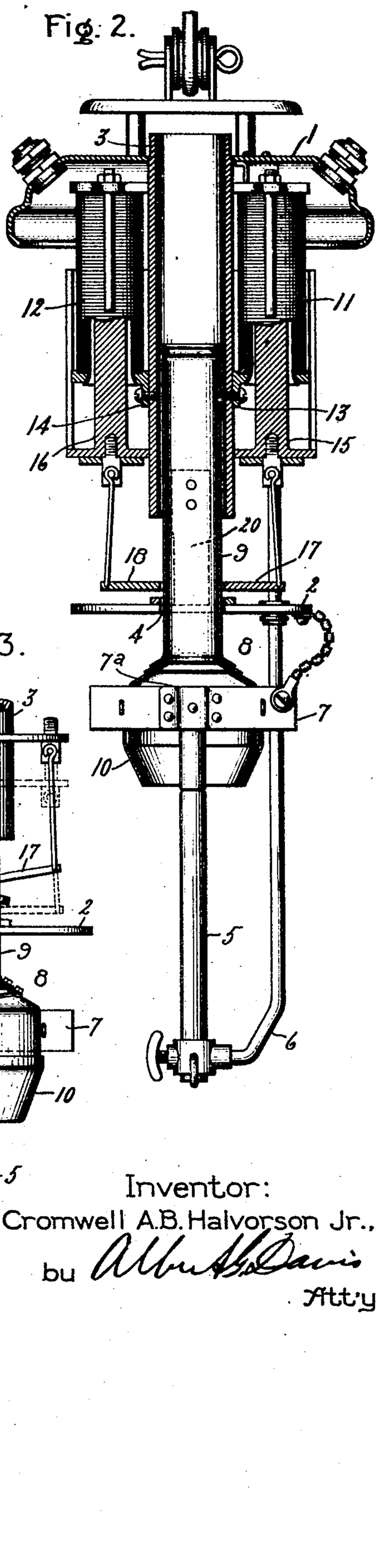
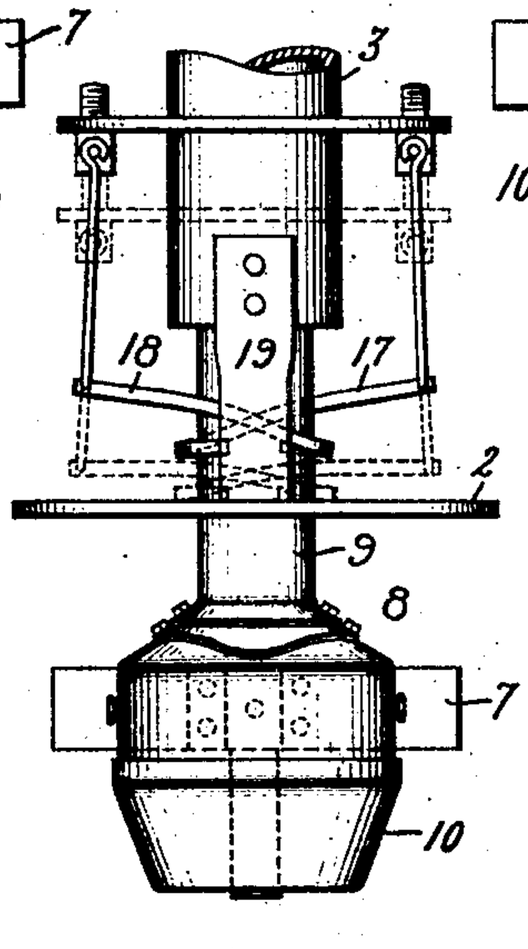



Fig. 3.




Witnesses.

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# UNITED STATES PATENT OFFICE.

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## ARC-LAMP.

No. 910,670. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed January 16, 1907. Serial No. 352,523.

*To all whom it may concern:*

Be it known that I, CROMWELL A. B. HALVORSON, Jr., a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Arc-Lamps, of which the following is a specification.

My invention relates to electric arc lamps and has for its object to simplify and improve the construction of the same.

The various features of novelty which constitute my invention will be hereinafter particularly pointed out in the claims.

For a full understanding of my invention, however, and of its various objects and advantages reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein—

Figure 1 shows in side elevation a lamp arranged in accordance with the preferred form of my invention, the globe and casing being omitted for the sake of clearness; Fig. 2 is a longitudinal cross-section of the lamp shown in Fig. 1; and Fig. 3 shows a detail.

The lamp shown in the drawings is of the type wherein one of the electrodes is consuming and the other non-consuming, but it will of course be understood that both of the electrodes may be such that they consume during the burning of the lamp. The lamp frame comprises a hood 1, a platform 2 and a central backbone member 3 which secures the hood and platform together and constitutes the main chimney of the lamp. At its upper end the chimney projects through the hood and at its lower end it registers with an opening 4 in the platform.

5 is a stationary electrode supported beneath the platform of the lamp, in axial alinement with the chimney or draft tube, by means of a holder 6 of any usual or preferred construction. The companion electrode which, in the present instance, is shown as being in the form of a bar 7, arranged transversely to the axis of the lower electrode and having a central cylindrical portion $7^a$ axially alined with the lower electrode, is carried within the lower end of a floating draft-tube or chimney member 8 which is arranged in telescoped relation with the main chimney. This floating chimney preferably consists of a stem 9 having a bell-shaped portion 10 at its lower end. The bell-shaped portion, within which the upper electrode is mounted, is arranged beneath the platform of the lamp and the stem extends upwards through the opening 4 in the platform and into the lower end of the stationary chimney. The arc gases, it will be seen, pass up through the two chimney members and are discharged at a point above the hood.

The regulating mechanism of the lamp consists of an electromagnet comprising the members 11 and 12 which are supported from the chimney member 3 by means of brackets 13 and 14. The cores and armatures 15 and 16 of these electromagnets are connected respectively to clutches 17 and 18, which are adapted to act upon the floating chimney. In order to permit the application of the clutch mechanism, the stationary chimney is cut away adjacent the platform. This is conveniently accomplished by cutting away the whole lower end of the chimney and connecting it to the platform by means of relatively narrow brackets 19 and 20, which thus become parts of the stationary chimney.

When the lamp is not burning, the floating chimney drops down until the upper electrode rests upon the lower electrode. When the current is turned on, the regulating magnet is energized and, acting through the clutches, lifts the chimney so as to strike the arc. As the lower electrode consumes and the arc grows longer, the regulating magnet is weakened so that the cores gradually drop and feed the chimney downward, whereby a substantially normal arc is maintained. When the chimney is fed downward far enough to cause the clutches to rest upon the platform, or when the arc breaks from any cause, the hold of the clutches upon the chimney is released and the chimney is free to descend until the electrodes are again brought in engagement with each other. If current is then still being supplied to the lamp, the chimney will be picked up again in the manner described. Consequently, the upper electrode and its supporting chimney are fed downward step by step during the feeding operation of the lamp. The stem of the floating chimney is of such length that the upper end thereof does not pass beyond the lower end of the stationary chimney during normal operation.

By my invention, therefore, lamps may be formed in simple and compact form and of

but few parts without impairing the effectiveness of the draft devices or the nicety of feeding and regulation.

What I claim as new and desire to secure by Letters Patent of the United States, is,

1. In an arc lamp, a hood, a platform, a central tubular backbone member connecting the hood and platform together and constituting the main chimney of the lamp, a movable auxiliary chimney telescoped within the backbone member, an electrode carried at the lower end of the auxiliary chimney, and clutch mechanism engaging the auxiliary chimney for controlling the position of the latter and of the electrode carried thereby.

2. In an arc lamp, a hood, a platform, a central tubular backbone member connecting the hood and platform together and constituting the main chimney of the lamp, a movable auxiliary chimney telescoped within the backbone member, an electrode carried by the lower end of the auxiliary chimney, and means for engaging the outer face of the latter for controlling its position and that of the electrode.

3. In an arc lamp, a hood, a platform, a central tubular backbone member connecting the hood and platform together and constituting the main chimney of the lamp, a movable auxiliary chimney in telescoped relation with the main chimney, an electrode carried at the lower end of the auxiliary chimney, a second electrode, and clutch mechanism engaging the outer face of said auxiliary chimney for changing the relative positions of the said electrodes.

4. In an arc lamp, a hood, a platform, a central tubular backbone member connecting the hood and platform together and constituting the main chimney of the lamp, an auxiliary chimney in telescoped relation with the main chimney, an electrode carried at the lower end of the auxiliary chimney, an electromagnet mounted on said main chimney, a clutch device engaging said auxiliary chimney, and a connection between said clutch device and said electromagnet.

In witness whereof I have hereunto set my hand this fourteenth day of January 1907.

CROMWELL A. B. HALVORSON, JR.

Witnesses:

JOHN A. MCMANUS, JR.,

HENRY O. WESTENDARP.