A. HALLOWELL.

HYDRANT.

APPLICATION FILED MAY 20, 1912.

1,154,582.

Patented Sept. 21, 1915.

4 SHEETS—SHEET 1.

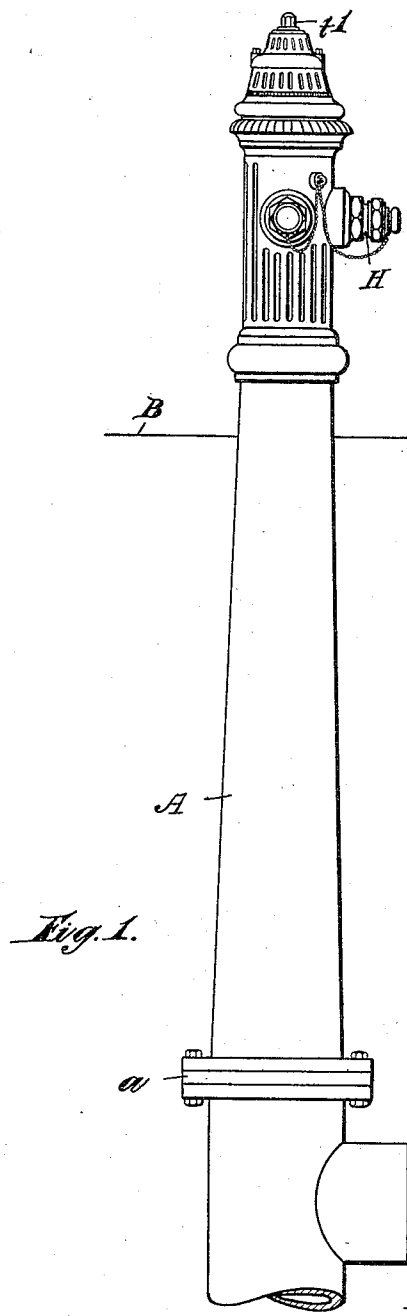


Fig. 1.

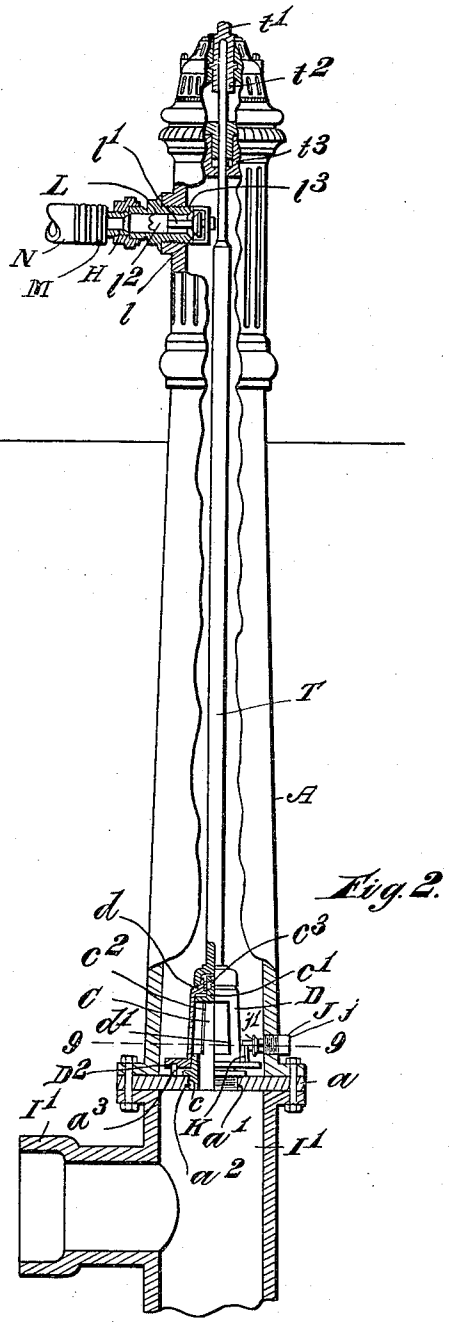


Fig. 2.

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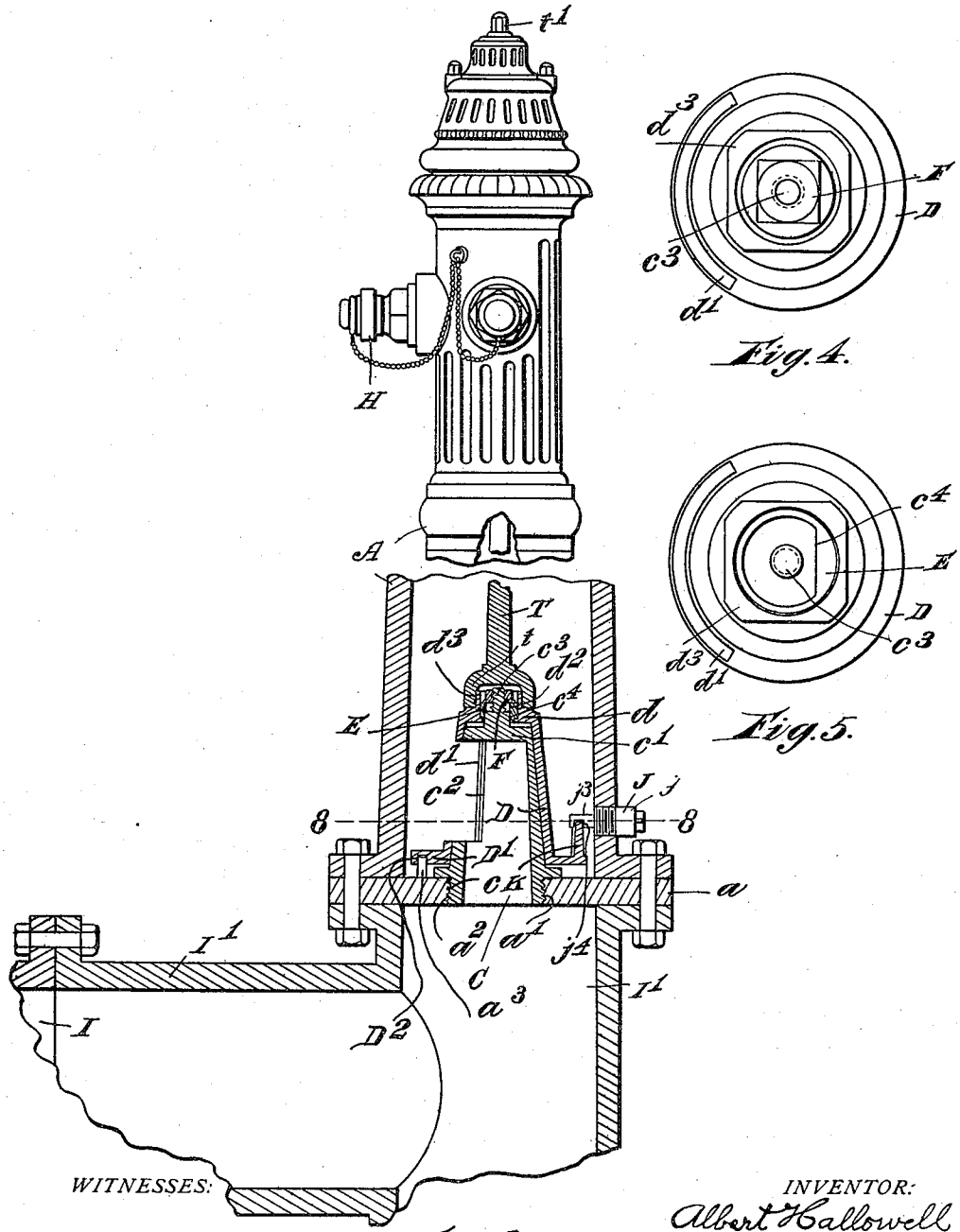


Fig. 3.

Fig. 4.

Fig. 5.

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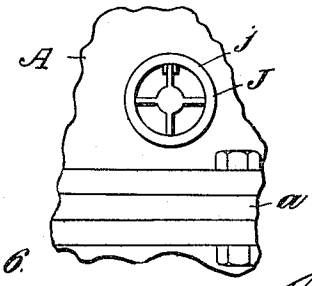


Fig. 6.

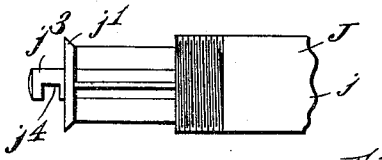


Fig. 7.

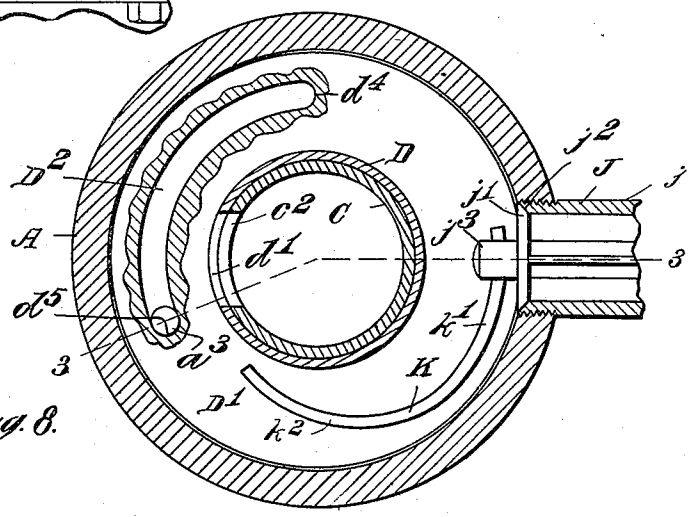


Fig. 8.

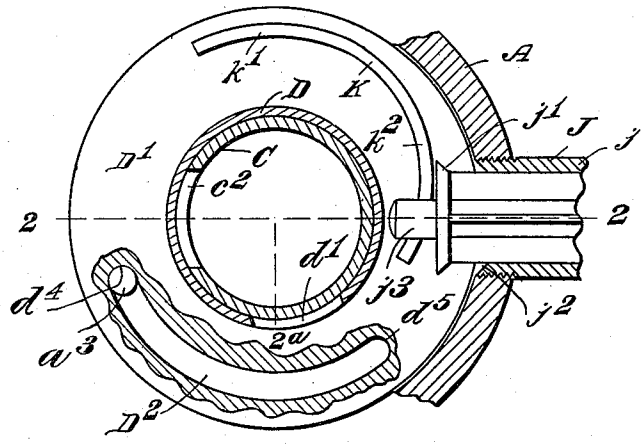


Fig. 9.

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APPLICATION FILED MAY 20, 1912.

1,154,582.

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4 SHEETS—SHEET 4

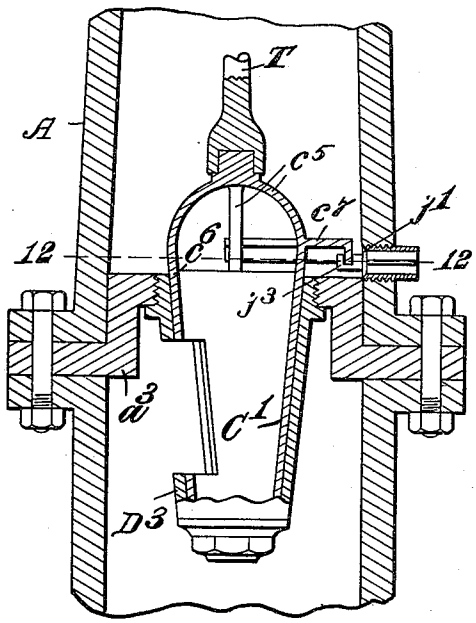


Fig. 10.

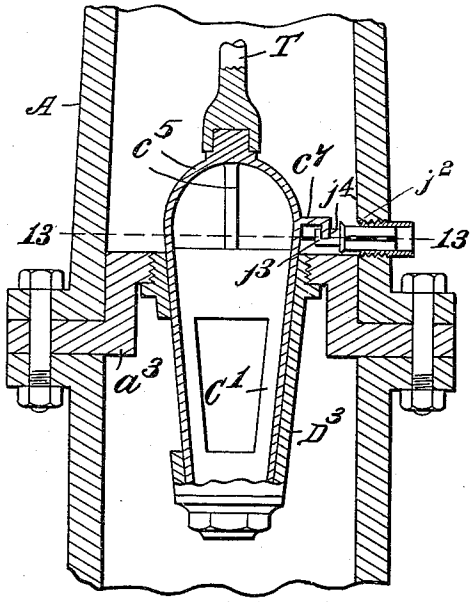


Fig. 11.

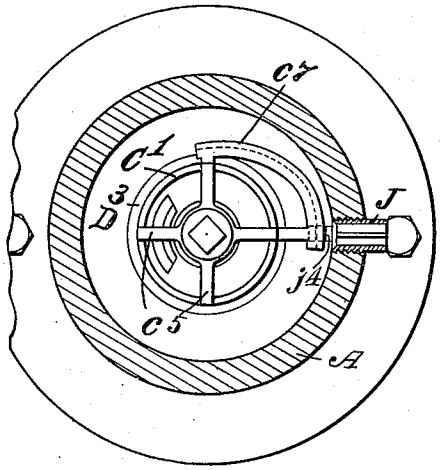


Fig. 12.

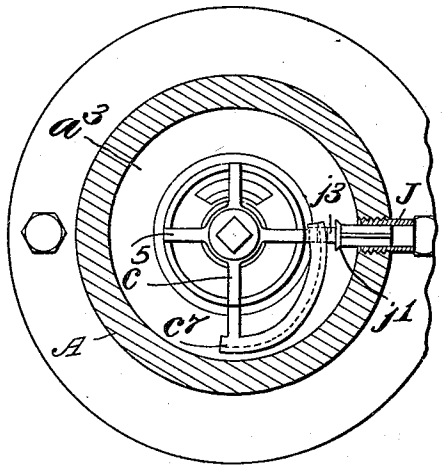


Fig. 13.

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UNITED STATES PATENT OFFICE.

ALBERT HALLOWELL, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO WILLIAM S. LAMSON, OF LOWELL, MASSACHUSETTS; MARY A. LAMSON EXECUTRIX OF SAID WILLIAM S. LAMSON, DECEASED.

HYDRANT.

1,154,582. Specification of Letters Patent. Patented Sept. 21, 1915.

Application filed May 20, 1912. Serial No. 698,407.

To all whom it may concern:

Be it known that I, ALBERT HALLOWELL, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Hydrants, of which the following is a specification.

This invention relates to hydrants for fire-extinguishing and other purposes.

The fact that many hydrants having a plurality of nozzles or outlets and but one inlet-valve, require the closing of said inlet-valve before an additional hose can be attached makes it of considerable importance to provide means for opening and closing the inlet-valve as quickly as is possible without injury by water-hammer as a fraction of a minute may allow a fire to get beyond control. In such hydrants, when some of the nozzles are open, the pressure of the water in the main with which the hydrant is connected is so great that a sudden closing of the inlet-valve of said hydrant is liable to burst the main or the connection between the main and the hydrant or to cause them to be strained and leak, owing to the water hammer or concussion caused by the sudden stoppage of the rapidly flowing water, there being usually no air-cushion in the hydrant. For this reason it is usual to provide slowly acting means for admitting the water to such hydrants and for shutting off therefrom, as a slide-gate operated by a screw of fine pitch. Some hydrants are provided with nozzles which may be opened and closed independently of each other, so that when the inlet-valve is once opened, it may remain open until after all the nozzles are closed by their individual valves or gates. Substantially all hydrants however, are provided with a waste-valve which opens simultaneously with the closing of the inlet-valve, so that the water pressure is being lessened within the hydrant above the inlet-valves before the inlet-valve is closed.

This invention is intended for use in hydrants in which an independent valve or gate is provided with each nozzle.

The object of this invention is to enable the inlet-valve to be closed rapidly and to maintain an equal pressure on both sides of the valve until the valve is closed and to operate the waste-valve by the same manipulation used in closing the inlet-valve, but postponing the opening of the waste-valve until the closing of the inlet-valve is completed.

In the accompanying drawing on four sheets, Figure 1 is a side elevation of a hydrant provided with my improvement with a part of the inlet-connection; Fig. 2, an elevation of the other side of the same with hose attached, parts of said hydrant and inlet-connection being broken away and the lower portion of the hydrant and inlet-connection and the (open) outlet-valve being in central cross-section on the line 2 2 in Fig. 9, and the inlet-valve being in vertical section at the left of said Fig. 9 on the line 2 2^a; Fig. 3, shows the upper part of the hydrant in side elevation and the lower part of the hydrant including the (opened) inlet-valve and the waste-valve in vertical section on the line 3 3 in Fig. 8, and also the inlet-connection in central vertical section; Fig. 4, a plan of the inlet-valve and its operating stem; Fig. 5, a plan of the same, omitting the stem; Fig. 6, an outside elevation of the waste-valve and adjacent parts of the hydrant; Fig. 7, a side elevation of the waste valve detached; Fig. 8, is a horizontal section on the line 8 8 in Fig. 3; Fig. 9, a horizontal section on the 9 9 in Fig. 2. The remaining figures show a modification in which the inlet-valve projects below the body of the hydrant and the inner shell of said valve turns, instead of the outer as shown in the preceding Figs. 10 and 11 being central vertical sections of the hydrant-body, the inlet-valve and the waste-valve on the axis of the latter, the inlet-valve being open and the waste-valve being closed in Fig. 10 and the relative positions of said valves being reversed in Fig. 11; Figs. 12 and 13, respectively, horizontal sections on the lines 12 12 in Fig. 10 and 13 13 in Fig. 11.

The post-hydrant provided with independently controlled nozzles, Figs. 1, 2 and 3, may be of usual construction, except as hereinafter stated, having a tubular body A which extends upward from below the ground level B (Figs. 1 and 2) and is connected below the frost-line with the water main I by an inlet-connection I^1, in substantially the usual manner. The lower end of the hydrant-body is closed by a plate *a* having a

central opening a^1, internally screw-threaded at a^2 to receive the externally-threaded lower end-portion c of the inner stationary member C of the inlet-valve, which stationary member is represented as a hollow cone having a closed upper end c^1 and a lateral opening c^2. The upper member D is also represented as a hollow cone of the same pitch internally as the inner member has externally and having a nearly closed upper end d and a lateral opening d^1 which may be brought into or out of registed with the opening c^2 by turning said outer member.

The inner member C is represented as provided on top with a central externally screw-threaded stud c^3 which projects upward through a central opening d^2 in the top of said outer valve-member and has a flattened side c^4 (Fig. 5) to prevent a washer E (which surrounds and fits said stud) from turning thereon. A nut F (Figs. 3 and 4) turning on said stud crowds the outer member D down upon the inner member C and prevents leakage. When the openings c^2 d^1 register with each other, the water passes freely from the water main I and connection I^1 to the discharge nozzles H which may be of any usual construction which will allow of their being opened and closed independently of each other.

The inlet-valve is operated by a long stem T or rod which is provided at its lower end with a square or many-sided socket t which engages a corresponding projection d^3 on the top of the member D, and said stem at its upper end is provided with a head t^1 which projects through the top of the hydrant-body and above said body is adapted to be engaged and turned by a wrench, in an obvious manner. The stem T passes vertically through one or more centrally arranged stuffing-boxes t^2 t^3, to prevent leakage.

The lower part of the outer member D of the inlet-valve is provided with stops d^4 d^5, which are represented as the ends of a slot D^2 formed concentrically with said member in a flange D^1 which projects horizontally therefrom, which stops as the stem and member D are turned strike against a stud a^3 which projects upward through said slot D^2 and is rigidly secured to the plate a, in such a manner that when said stud a^3 is against the end d^5 of said slot D^2 (Fig. 8) the openings c^2 d^1 register with each other but when said stud a^3 is against the other end d^4 of said slot, said openings are out of register and the opening d^1 has moved farther from the opening c^2 than is necessary to shut off the water, the excess movement being for the purpose of operating the waste-valve J.

The waste-valve J is represented as having a tubular body j or shell which leads radially out of the hydrant-body and is closed by a conical valve proper j^1 which fits a corresponding seat j^2 in the inner end of said shell. The valve proper is provided with a central stem j^3 having a transverse notch j^4 on its under side which straddles and has a sliding fit on a cam K, cast or otherwise secured on the flange D^1 of the movable member D of the inlet-valve. The cam K is represented as an upwardly projecting rib with parallel sides, said cam having a rest k^1 or portion concentric with the flange D^1 which holds the waste-valve closed when the inlet-valve is open (Fig. 8) and until said inlet-valve is entirely closed and having an eccentric portion k^2 which curves inward from the rest k^1 and begins to draw the valve-proper j^1 away from its seat after the inlet-valve is fully closed and continues to open the waste-valve until the outer member D of the inlet-valve comes to rest as shown in Fig. 9. Obviously the first effect of the turning of the member D of the inlet-valve from the position shown in Fig. 9 to that shown in Fig. 8 will be to close the waste-valve before the openings c^2 d^1 of the inlet valve begin to lap over each other, so that no water will run through the waste-valve and the full pressure will be at once secured within the hydrant. When the outer member of the inlet-valve is turned in the opposite direction from that just described the pressure within the hydrant is the same as in the main so there can be no water-hammer, assuming of course, that the nozzles are then closed, and the waste-valve does not begin to open until the inlet-valve is still closed.

The nozzle represented in Fig. 2 is provided with a valve l having a stem l^1, the outer end of which is connected by arms l^2 to a hollow cylinder arranged to slide in the body L of the nozzle, so that when the hose coupling M is screwed into the end of the nozzle, said valve l, which is represented as a frustum of a cone is crowded off from its seat l^3 and allows the water to pass out through the nozzle to the hose N. When the hose is removed from the nozzle the valve l is forced to its seat by the pressure of the water in the hydrant or by a spring.

In the modification shown in Figs. 10–13, the inlet-valve is inverted and the outer member D^3 is rigidly secured in a plate a^3 which serves the same purpose as the plate a and different from the latter only in having its central portion within the hydrant-body raised as near as possible to the waste-valve to diminish the amount of water which may be left in the hydrant below the bottom of the waste-valve to lessen the possibility of the freezing up of the hydrant. In these last-named figures the inner valve member C^1 is turned by the connection of the stem T to arc-shaped bars c^5 which extend upward from the larger end as shown

at c^6 to one or more of which bars c^5 is connected a hook c^7 which engages the notch j^4 in the stem j^3 of the waste-valve, said stem being inverted from the position shown in Fig. 7. The other parts shown in Figs. 10–13 are like those herein previously indicated by similar letters of reference.

I claim as my invention:—

1. In a hydrant, a casing, an inlet valve therein having ported stationary and rotary members, a flange formed concentrically on the rotary member and having stop shoulders, a projection on the casing engageable with said shoulders, a cam on one side of the flange and having an operative part and a rest part, a waste valve in the casing and having movement radially with respect to the axis of said inlet valve and being engaged with said rest part of the cam when the inlet valve is open and by said operative part of said cam when the inlet valve is closed.

2. In a fire hydrant the combination with a casing of means for conducting water to said casing, an inlet valve for controlling the flow of water through said casing, said valve having ported stationary and movable members, means for limiting the movement of said movable member, a cam carried by said movable member and comprising a part eccentric thereto and a part concentric therewith, said casing having a waste passage formed therein and a valve for said passage, said valve comprising a plunger projecting within said casing, said plunger having a transverse groove thereacross with which the edge of said cam engages in such manner that the valve is held in its closed position by the concentric part of the cam when the inlet valve is open and is held in its open position by the eccentric part of the cam when said inlet valve is closed.

In witness whereof, I have affixed my signature in presence of two witnesses.

ALBERT HALLOWELL.

Witnesses:

ALBERT M. MOORE,

GRACE CROWLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."