

R. J. McNULTY.
MANHOLE AND CATCH BASIN COVER.
APPLICATION FILED APR. 27, 1911.

1,016,081.

Patented Jan. 30, 1912.

4 SHEETS—SHEET 1.

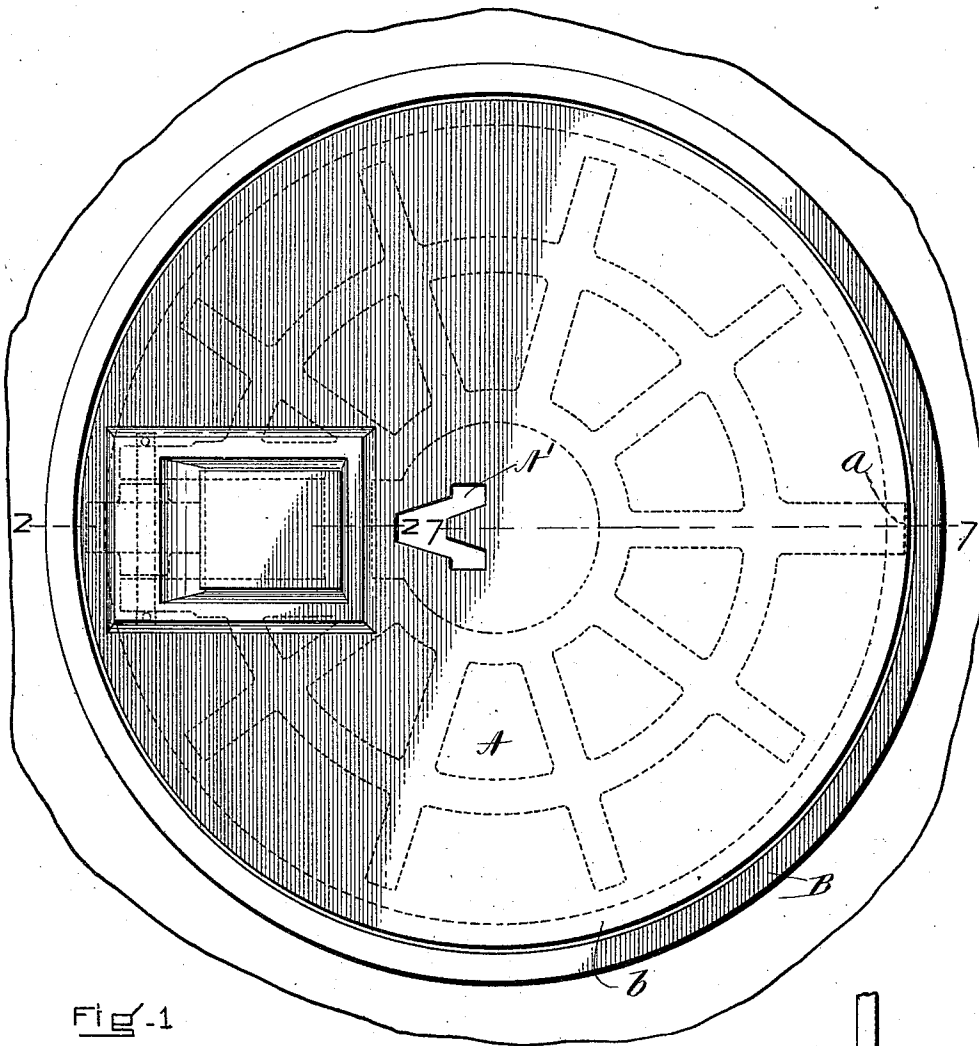


Fig. 1

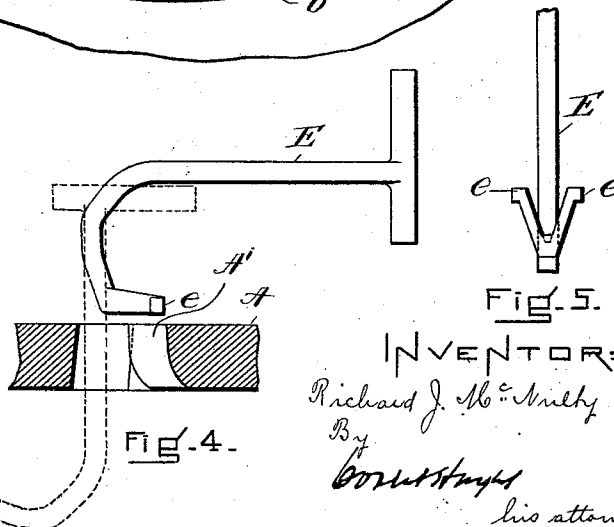


FIG. 5.

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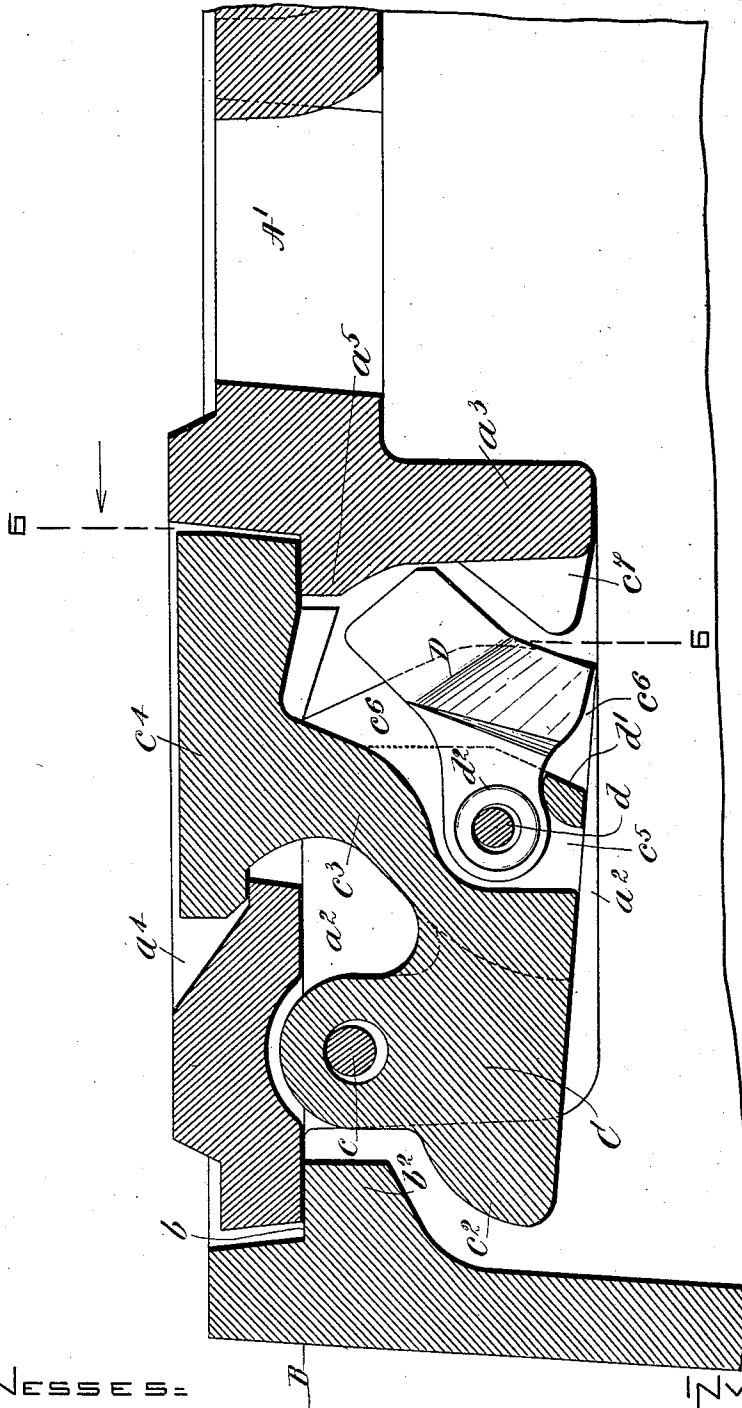


FIG. 2.

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4 SHEETS—SHEET 3.

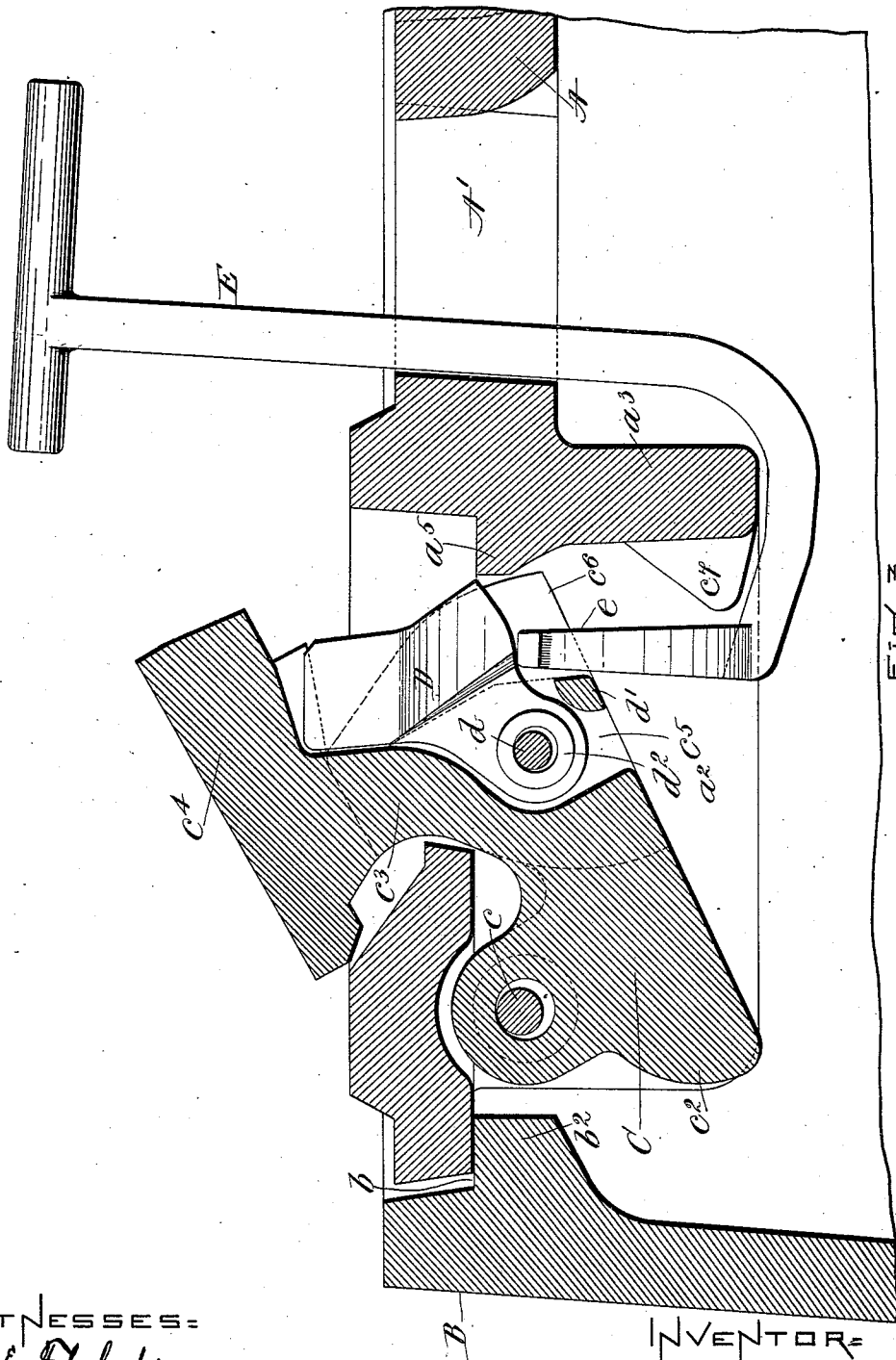


FIG. 3

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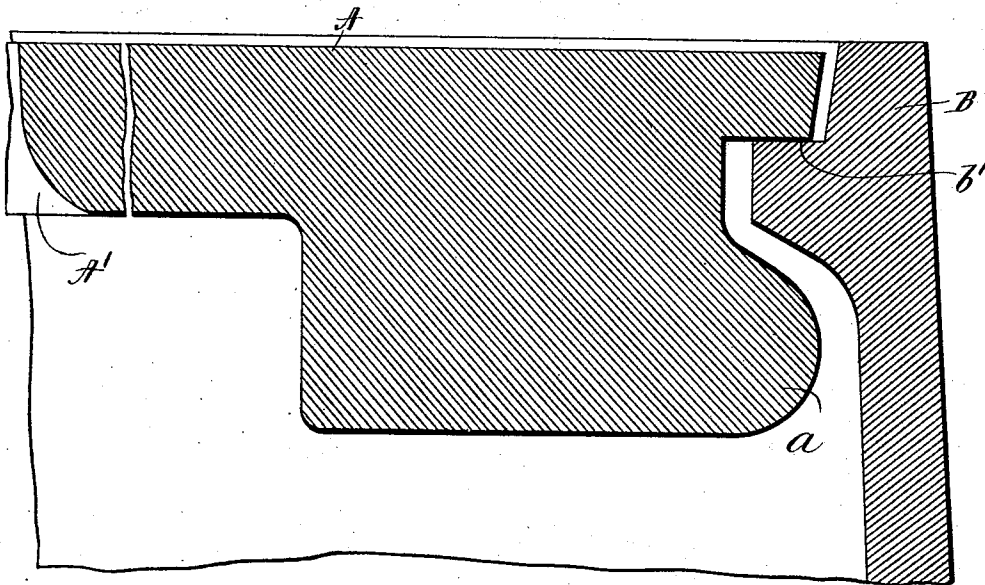
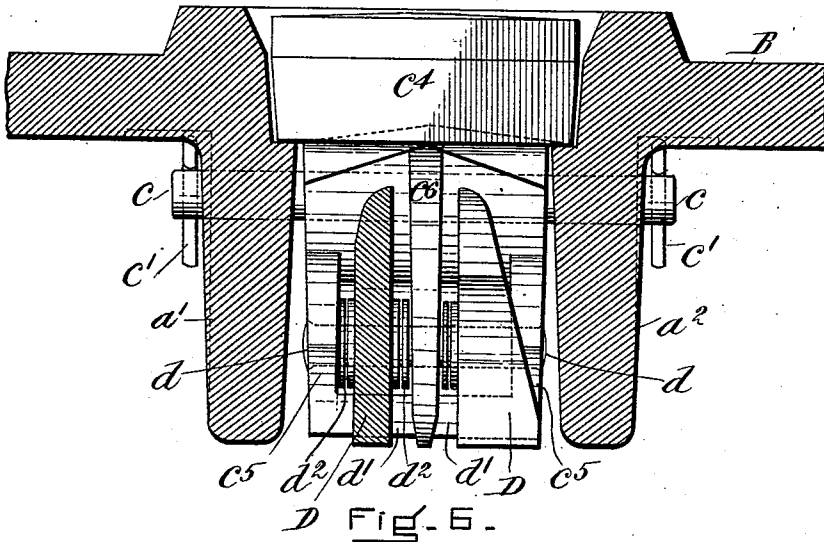
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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MANHOLE AND CATCH-BASIN COVER.

1,016,081.

Specification of Letters Patent.

Patented Jan. 30, 1912.

Application filed April 27, 1911. Serial No. 623,619.

To all whom it may concern:

Be it known that I, RICHARD J. McNULTY, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Manhole and Catch-Basin Covers, of which the following is a specification.

It is desirable that a manhole cover be locked so that it will not be jarred off its seat by teams running over it, and it is also desirable that it shall not be easily unlocked.

My invention relates to a lock, which while it is easy to unlock by the proper key, is so constructed that it can only be unlocked by a key of peculiar construction so that it cannot be meddled with, and the moving parts of which are protected against clogging by dirt, rust or frost. The construction shown also lends itself to the leading of surface water which may leak through the lock away from the moving parts as will be described below.

My invention will be understood by reference to the drawings in which the best form of my invention now known to me is shown.

Figure 1 is a plan of a manhole cover in place, Fig. 2 being a section on line 2—2 of Fig. 1, and Fig. 3 a similar section showing the lock in unlocked position. Fig. 4 is a detail showing the way in which the key is inserted, and Fig. 5 is a front view of the key. Fig. 6 is a section on line 6—6 of Fig. 2, showing a front view of the locking dog with one tumbler in section, and Fig. 7 is a section on line 7—7 of Fig. 1 showing the locking lug which is cast on the cover.

A is the cover or plate and B the manhole frame or support for said cover which is provided with the usual ledge b on which the cover rests, this ledge being partly in the form of a flange as shown at b^1 under which a lug a preferably in that portion of the manhole cover opposite the lock may engage as shown at b^1 or as shown at b^2 when it will be engaged by a lug c^2 on the locking dog C. In addition to the lug a which is shown in Fig. 1 in dotted lines and in Fig. 7, the cover A also has a three-sided downwardly-projecting flange a^1 , a^2 , a^3 within which the lock is hung.

The lock comprises a dog C which is pivoted by the pin c to the flanges a^1 , a^2 , the pin c being held in place by cotter pins c^1 . The dog C has a lug c^2 projecting rearward

to engage the under side of the ledge b^2 of the manhole and also has an arm c^3 projecting forwardly and upwardly and carrying at its upper end a closure c^4 for an opening a^4 in the cover. This closure c^4 rests on four ledges, one of which a^5 forms part of the flange a^3 , the others being indicated at a^6 , a^7 and a^8 , respectively. Beneath the closure c^4 and projecting from the arm c^3 are three ribs c^5 , c^6 integral with the arm and closure, and between these are pivoted by the pin d two tumblers D which are so shaped that gravity causes them normally to lie under the ledge a^5 , they being supported by the cross-bar d^1 . It is thus rendered impossible to unlock the cover merely by the lifting of the closure piece because the tumblers D will engage the ledge a^5 and prevent the lug c^2 from being moved out of register with the flange b^2 . The unlocking can only be accomplished by first moving the tumblers. For this purpose I provide a key E adapted to engage both tumblers from the under side and lift them simultaneously and thereafter lift the closure end of the dog C and so disengage its other end or lug c^2 from the flange b^2 . The key as shown is forked as at e (see Fig. 5) and the cover has an opening A^1 through which the key, which is hook-shaped, may be inserted in the cover. As shown this opening is in reversed position so that the key must be first inserted horizontally as shown in full lines in Fig. 4 and then turned into a vertical position as indicated by dotted lines in Fig. 4 so that its prongs e will come under the two tumblers D. The key is then lifted and with it the tumblers, this act bringing them out of registration with the ledge a^5 and allowing them, swinging around their pivot, to move upwardly and carry with them the dog C so that its lug c^2 is likewise disengaged from the flange b^2 (see Fig. 3). The cover is locked by a reversal of these movements though the use of the key is not necessary. In replacing the cover it is only necessary to hold the dog in the position shown in Fig. 3 by any means until the cover is in place when the dog may be released and will then take its locking position automatically.

In the form of my invention shown the dog and tumblers are loosely mounted, washers preferably of bronze, d^2 , being used to keep the tumblers from sliding unduly on their pivots, and from coming into con-

tact with the ribs c^5 , c^6 , but not to give them a tight fit. The pivots should also be made of bronze to prevent rusting.

I have shown two tumblers, but I do not mean to limit myself to that number. The key and keyhole, however, should be shaped according to the number of tumblers used and the arrangement of wards.

As shown in the drawings the closure piece c^4 is slightly wedge-shaped so that it may easily be lifted away from any silt which may become packed around its sides. The lower parts of the dog and its moving parts are also so shaped and placed as to free themselves from silt, etc., which may work by the closure piece.

The middle rib c^6 serves as a ward which a key must straddle in order to lift the tumblers D sufficiently to allow the lifting of the dog C and a corresponding ward c^7 on flange a^3 serves as an additional obstruction which a key must straddle in order to reach the tumblers to move them in the first instance. Of course this is only desirable where a plurality of tumblers is used.

The reversing of the keyhole is desirable because it allows the shank of the key to be brought close to the dog and hence allows the key to be made smaller.

Other changes in detail will occur to those skilled in the art, my invention broadly speaking, relating to a lock for a manhole cover comprising a bolt or dog proper and means such as tumblers which must be manipulated to unlock the dog.

While I have described my invention as a manhole cover lock, it is evident that it may be used for other similar purposes, the cover being in fact a plate to be locked in place on its support by said lock.

What I claim as my invention is:

1. A plate, a dog pivotally mounted on said plate, one or more tumblers pivotally mounted on said dog, in combination with a support for said plate, said dog being adapted to engage said support and said tumblers being adapted to engage said plate, as described.

2. A plate, a dog pivotally mounted on said plate, one or more tumblers pivotally mounted on said dog, in combination with a support for said plate, said dog having means to engage said support and said tumblers having means adapted to engage said plate, as described.

3. A plate, a dog pivotally mounted on said plate, one or more tumblers pivotally mounted on said dog, in combination with a support for said plate, said dog having means to engage said support and said tumblers having means adapted to engage said plate and said tumblers having a disengaging movement independent of said dog whereby they may be disengaged from

said plate and allow said dog to be disengaged from said support.

4. A manhole frame having a flange adapted to support a manhole cover, in combination with said cover, said cover having a lug to engage said flange, said cover also having a lock comprising a dog adapted to engage said flange and a ledge on said cover, and means whereby said dog will normally be held in engaging position and means mounted on said dog and also engaging said ledge to hold said dog from disengagement from said flange and movable to release said dog and allow it to be disengaged from said flange.

5. A manhole frame having a flange adapted to support a manhole cover, in combination with said cover, said cover having a lug to engage said flange, said cover also having a lock comprising a dog adapted to engage said flange, and means movable with relation to said dog and with said dog adapted when in normal position to prevent said dog from disengagement with said flange.

6. A manhole frame comprising a flange adapted to support a manhole cover, in combination with said cover, said cover having a dog pivotally mounted therein and adapted to engage said flange and having one or more tumblers pivotally mounted on said dog and movable therewith and adapted to engage said cover when moved with said dog, and adapted also to have a movement independent of said dog into position whereby said dog may be disengaged from said cover.

7. A manhole cover comprising a flange adapted to support a manhole cover, in combination with said cover, said cover having a dog pivotally mounted therein and adapted to engage said flange and having one or more tumblers pivotally mounted on said dog and movable from below and adapted to engage said cover when moved with said dog, and adapted also to have a movement independent of said dog into position whereby said dog may swing upon its pivotal center and become disengaged from said flange.

8. A manhole frame having a flange adapted to support a manhole cover, in combination with said cover, said cover having a dog pivotally mounted therein and adapted to engage said flange and having a plurality of tumblers pivotally mounted on said dog and movable from below, said dog having one or more wards located between said tumblers and extending substantially in line with them when in their locking position, as described.

9. A manhole frame having a flange adapted to support a manhole cover, in combination with said cover, said cover having a dog pivotally mounted therein and adapted to engage said flange and having a plu-

ality of tumblers pivotally mounted on said dog and movable from below, said cover having a depending flange having one or more wards mounted thereon as set forth.

5 10. A plate, a dog pivotally mounted on said plate, one or more tumblers pivotally mounted on said dog, in combination with a support for said plate, said dog having means to engage said support and said
10 tumblers having means adapted to engage said plate and said tumblers having a dis-

engaging movement independent of said dog whereby they may be disengaged from said plate, said tumblers being adapted to have a disengaging movement independent 15 of said dog whereby they may be disengaged from said plate and allow said dog to swing upon its pivotal center.

RICHARD J. McNULTY.

Witnesses:

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