J. MAGEE.

BLOWER FOR UPRIGHT WATER TUBE BOILERS.

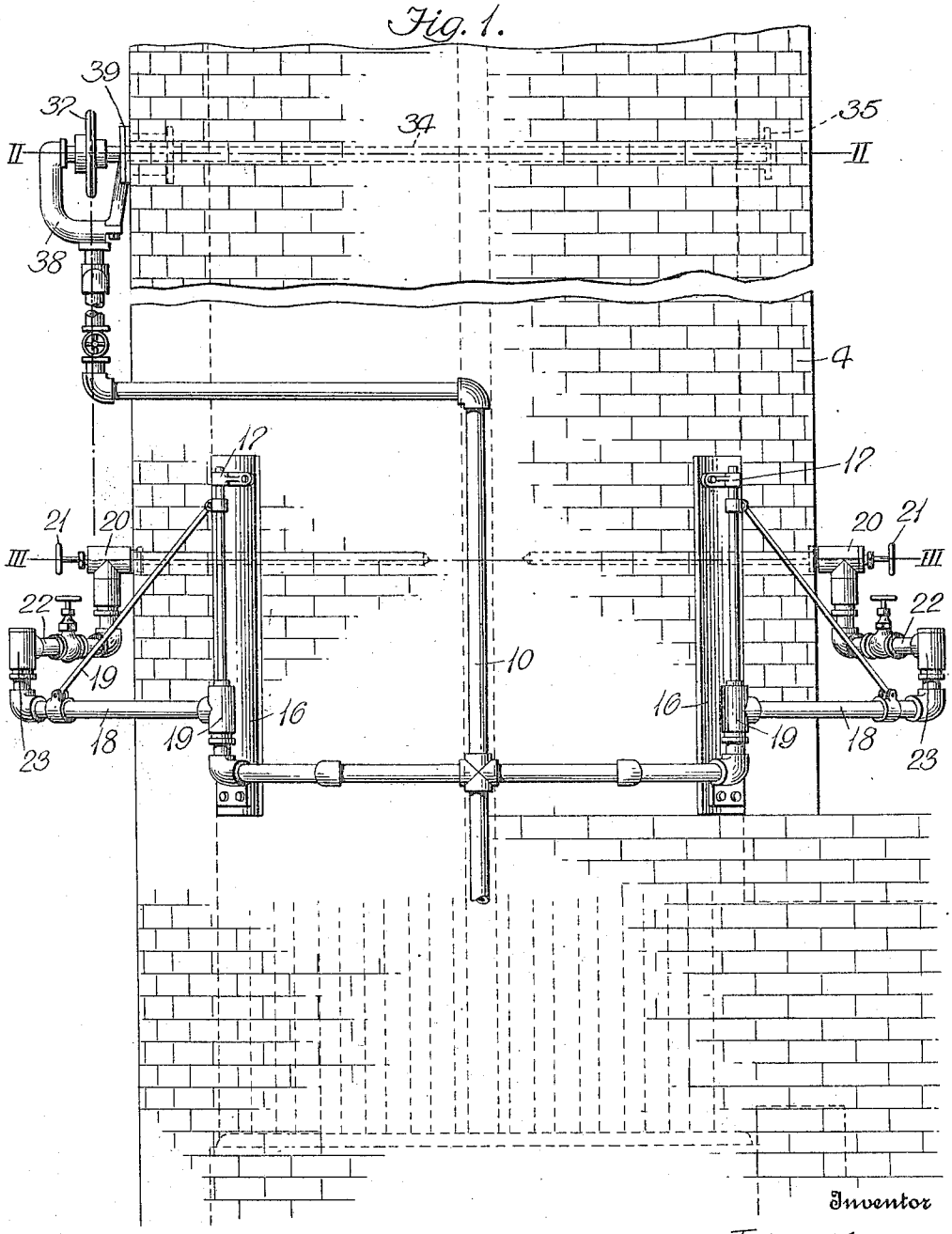
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1,187,758.

Patented June 20, 1916.

5 SHEETS—SHEET 1.

Fig. 1.



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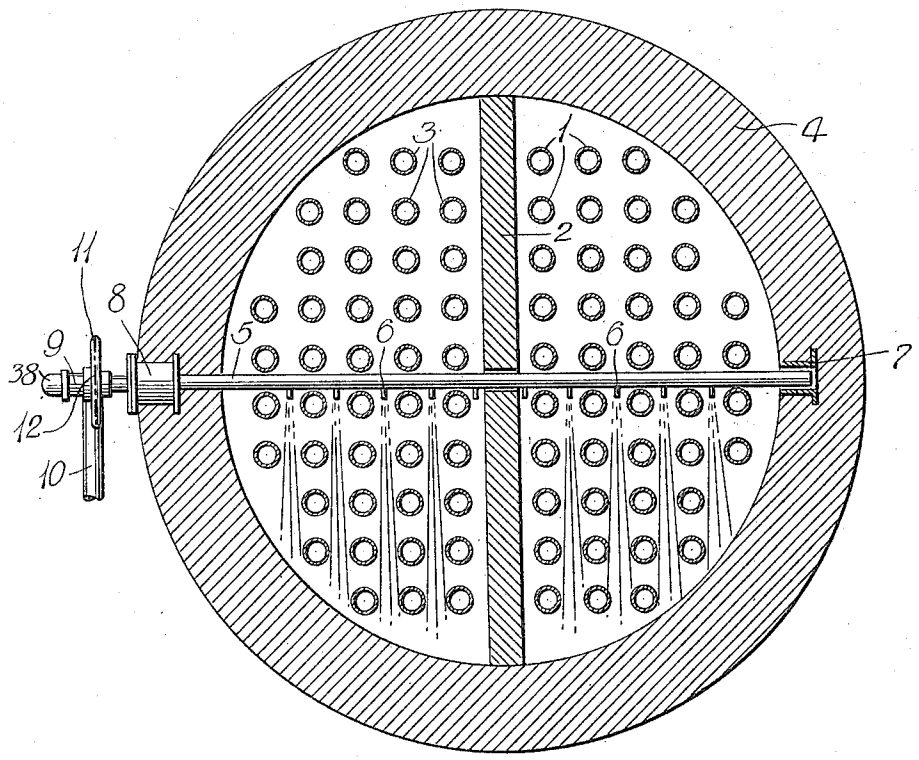
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5 SHEETS—SHEET 2.

Fig. 2.



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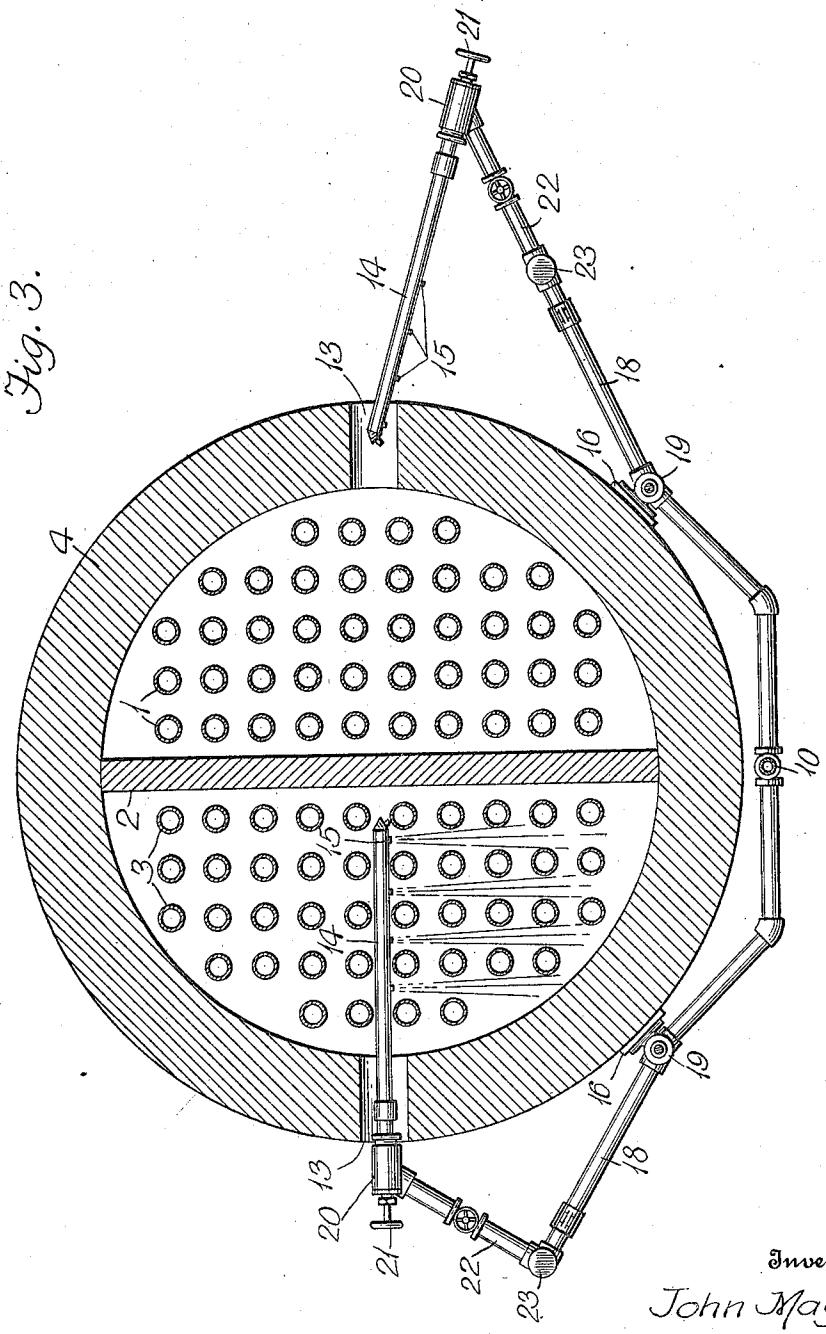
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5 SHEETS—SHEET 3.

Fig. 3.



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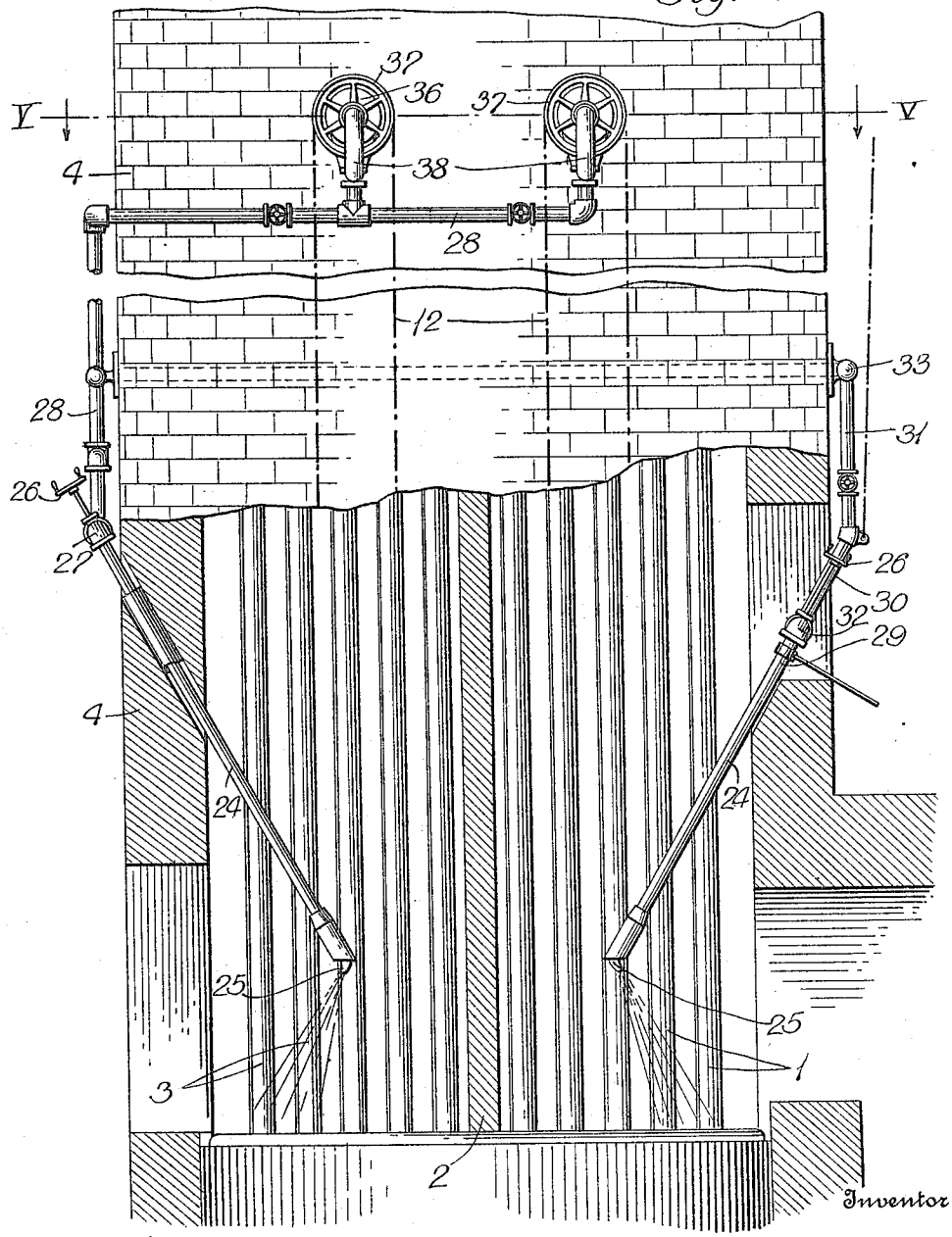
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5 SHEETS—SHEET 4.

Fig. 4.



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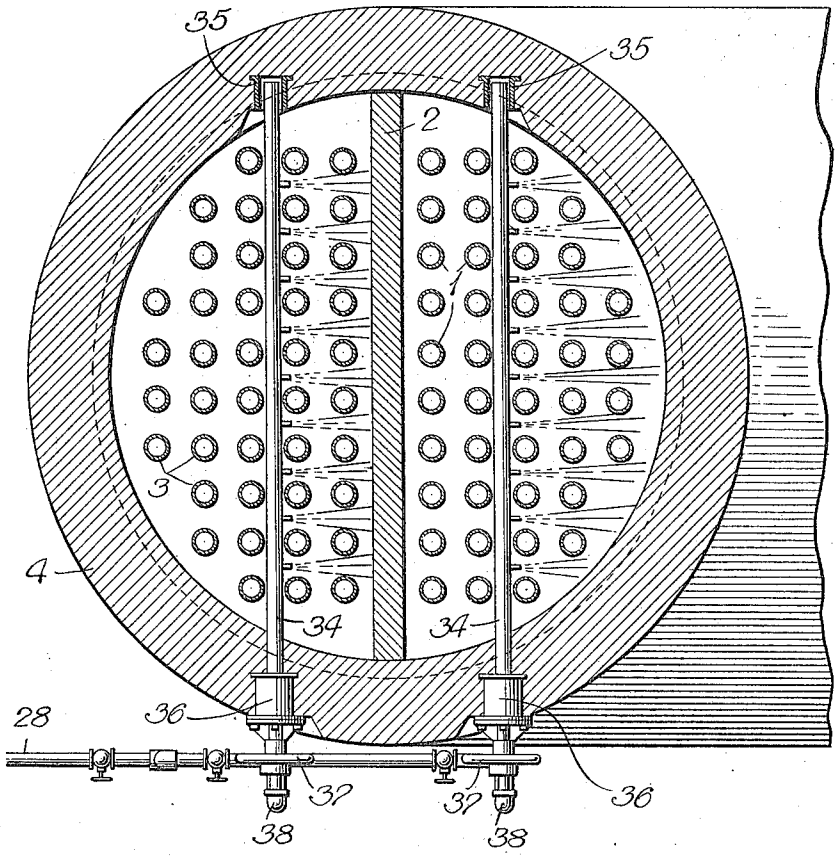
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5 SHEETS—SHEET 5.

Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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BLOWER FOR UPRIGHT WATER-TUBE BOILERS.

1,187,758. Specification of Letters Patent. Patented June 20, 1916.

Application filed July 23, 1914. Serial No. 852,763.

To all whom it may concern:

Be it known that I, JOHN MAGEE, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Blowers for Upright Water-Tube Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

In boilers of the upright water tube type having the usual exterior setting and baffling means whereby the products of combustion are returned after passing over one section of the tubes along another section, such for example as boilers known as the Wickes type, it is difficult to properly clean or blow soot from the water tubes because of the height to which the boilers are carried and because of the inaccessibility of the tubes to an ordinary hand blower.

This invention relates to a system for blowing boilers of the upright water tube type whereby all portions of the water tubes are readily cleaned and swept and whereby the operator can control the cleaning process regardless of whether the boilers are disposed single or in batteries or are close to walls of adjoining structures.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in elevation, partially broken away, of a boiler of the upright tube type equipped with a blower system that embodies features of the invention; Fig. 2 is a view in transverse section taken on or about line II—II of Fig. 1; Fig. 3 is a view in section taken on or about line III—III of Fig. 1 with one of the blower elements withdrawn; Fig. 4 is a view, partially in elevation and partially in section, of a modification of the system that may be used preferably where the boiler is one of a battery or is adjacent other structures; and Fig. 5 is a view in cross section taken on line V—V of Fig. 4, the modification shown herein being also applicable to part of the system in corresponding position in Fig. 1.

Referring to the drawings, a boiler of the Wickes type is provided with a series of water tubes 1 in upright spaced relation on one side of a central baffle 2 and a corresponding set 3 on the other side of the baffle, the whole being inclosed in a suitable setting 4 that is, usually cylindrical. In the usual form of construction shown in Figs. 2 and 3 with a boiler that has plenty of working space around it, a blower unit is provided near the upper part of the boiler that consists of a header 5 passing transversely through one side of the setting and the baffle 2 and having jet nozzles 6 that are arranged to direct jets across and between the banks of water tubes. This header is rotatably secured in an end fitting 7 and an outer journal 8 and is provided with a suitable stuffing box 9 from a supply pipe 10, a wheel 11 being arranged to turn the header in the fittings. If the header is at considerable height the wheel may take the form of a sprocket or chain pulley with a pendant endless flexible member 12 whereby it may be manipulated. This header may likewise be jacketed by refractory material such as asbestos or the like or may be arranged with a water jacket for circulation of a cooling medium therethrough.

Near the lower portion of the boiler and at a slight distance from the fire arch a pair of cleaning openings 13 in the casing permit the entrance of jet pipes 14 that are adapted to be moved inwardly into transverse relation to the water tubes so that jet nozzles 15 may project steam brushes or jets between and across the water tubes and effectively clean them when the headers 14 are turned. The headers may be supported by any suitable connection leading from the pipe 10 that supplies the upper headers 5 or from other suitable steam connection with the boiler. As herein indicated bracket plates 16 have bearing members 17 in which bracket arms 18 with suitable brace rods 19 swing in substantially horizontal planes, the bracket arms being tubular and being connected through suitable swivel joints 19 and other fittings, branches and T's with the steam pipe 10. Swivel joints and stuffing boxes 20 from which the arms 14 project in such manner as to be rotated by a hand wheel 21 are supported by arms 22 whose inner ends are hinged by swing joints 23 with the bracket arms 18. As a result of this disposition the arms 14 may be drawn in and out of the boiler and manipulated readily to clean the entire surface of the water tubes.

Where the space necessary for the withdrawal of the arm 14 is lacking, the construction indicated in Fig. 4 is used in which an obliquely disposed pipe 24 carries a ro-

tatable and deflectable jet nozzle 25 at its end that is manipulated by means of a suitable hand wheel 26. The upper end of the pipe is connected by a suitable fitting 27 with a steam line 28. If desired to have this pipe completely withdrawable from the boiler it may be formed of swinging sections 29 and 30 with a deflectable nozzle 25 thereon as in the other construction. In such instances a swing arm 31 with swivel joints 32 and 33 connects the arm with the main line 28 and permits the upward withdrawal of the header from the tube space, the cleaning opening being arranged to give the proper clearance for this maneuver. As also indicated in Fig. 4 the system may have at the upper portion of the boiler a pair of parallel headers 34 suitably journaled in fittings 35 and 36 on opposite sides of the boiler baffle 2, each being suitably connected to the steam line and each having a hand wheel 37 with chain connection if desired whereby they may be manipulated.

It is to be understood that the fittings whereby the connections are made may be of standard type or may be of special construction, as for example, the hollow bracket 38 used to support the hand wheel end of the rotatable blower. Such bracket has a suitable bearing plate 39 that is readily secured to the boiler. While the handwheel or chain pulley lies between the hollow arm and the bearing plate and thereby does not bring any strain upon the header that tends to shift it in position when it is being manipulated.

As a result of this construction a blower system is obtained that sweeps the entire surface of the water tubes in both the up and down passes of the boiler and which at the lower hotter end has members that may be withdrawn from the setting and thereby be protected from the furnace gases when they are not in operation. The jackets of the upper fixed rotatable headers are sufficient to avoid any trouble where the gases are cooler. As the outer connections may be arranged to occupy little space the system is particularly effective for use on batteries of boilers or on a boiler that stands in a restricted place.

Obviously, changes in the details of construction may be made without departing from the spirit of my invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim is:—

1. In a boiler having upright water tubes, the tube space being divided into passes, a blower system comprising rotatable jetting means extending across the tube spaces remote from the furnace, means for rotating the jetting means whereby the jets sweep the adjacent tubes, angularly adjustable jetting headers rotatably mounted on the boiler and adapted to be moved bodily in and out of the passes nearer the furnace, and connections for supplying fluid under pressure to the several jetting members.

2. In a boiler having upright water tubes, a setting inclosing the tubes, and a baffle dividing the tube space into passes, a blower system comprising rotatable headers provided with jet openings, means for mounting the headers in the setting, transversely to the tubes and across the passes, means for supplying fluid under pressure thereto, means for turning the headers, extensible connections articulated to the fluid supply means, rotatable jetting headers secured to the connections and adapted to be moved in and out of the tube spaces and means for manipulatig the jetting headers.

3. In a boiler having upright water tubes and a baffle extending in the direction of the tubes and forming gas passes on each side of the baffle, rotatable headers provided with jet openings, means for mounting the headers transversely across the passes at points where they are not affected deleteriously by the gases of combustion from the furnace, means for supplying fluid under pressure to the headers, extensible connections articulated to the fluid supply means, rotatable jetting headers secured to the connections and adapted to be moved in and out of the tube spaces in the hotter zones of the boiler, and means for operating the several headers.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN MAGEE.

Witnesses:
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ANNA M. DORR.

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