B. E. SLACK.

AIR INLET FOR TRAPS.

APPLICATION FILED OCT. 12, 1910.

1,001,779.

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Fig. 1.

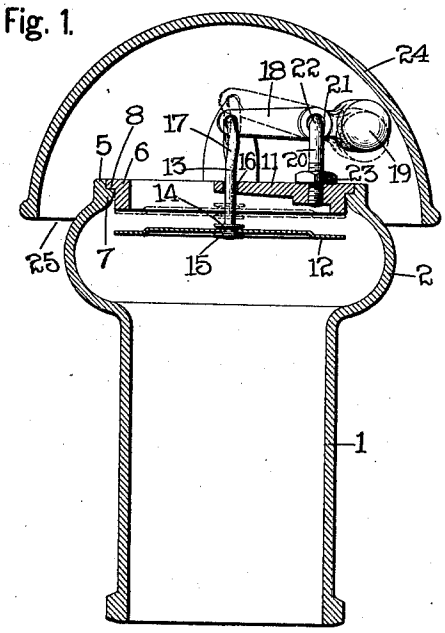


Fig. 2.

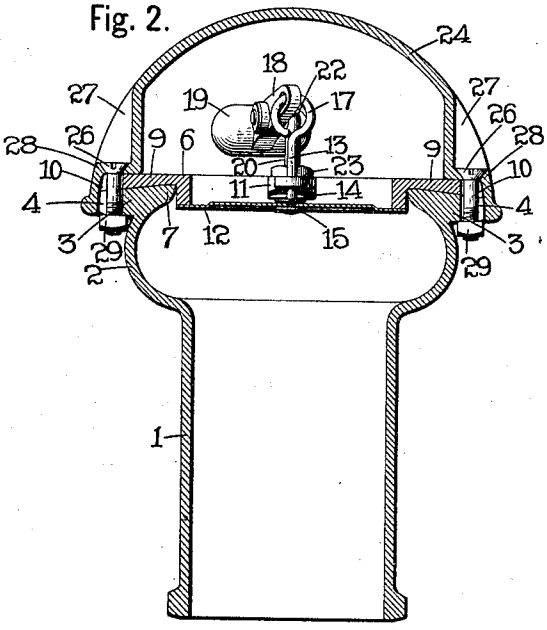


Fig. 3.

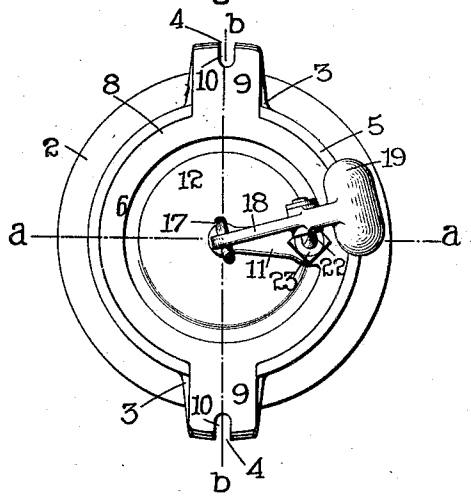
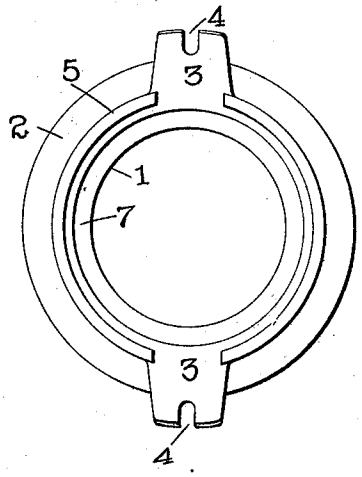


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

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AIR-INLET FOR TRAPS.

1,001,779. Specification of Letters Patent. **Patented Aug. 29, 1911.**

Application filed October 12, 1910. Serial No. 586,801.

To all whom it may concern:

Be it known that I, BERNARD E. SLACK, a citizen of the United States, residing at Medina, in the county of Orleans and State of New York, have invented certain new and useful Improvements in Air-Inlets for Traps, of which the following is a specification.

This invention relates to improvements in air inlets for house plumbing sewers and other traps which serve to permit the passage of air and also to prevent the escape of foul air and gas, and it primarily has reference to that class of devices in which the valve is normally retained in an open position to permit the free passage of air from the exterior atmosphere down into the sewer or trap and is adapted to be closed automatically by the pressure of a slight upward current of foul air or gas and thereby prevent the escape of the same.

The principal objects of the invention are to form an enlarged chamber in the body of the device in which the disk valve is arranged, so as to provide a passage for air of considerable size around the disk valve, to so balance the disk valve by a counterweight that while it will be normally maintained in an open position by its own weight a very slight upward pressure will immediately force it upward into closed position against its seat, thereby producing an exceedingly sensitive and highly efficient valve action, and to so arrange and locate the parts that the device may be easily and quickly dismounted for repair or replacement.

The invention also relates to certain details of construction which will be hereinafter described and claimed, reference being had to the accompanying drawings, in which,—

Figure 1 is a central vertical section through the improved air inlet on line *a a*, Fig. 3, the disk valve being shown in its normally open position in full lines and in closed position in dotted lines. Fig. 2 is a central vertical section on line *b b*, Fig. 3, on a section cut at right angles to Fig. 1, and showing the disk valve in a closed position. Fig. 3 is a top plan view of the air inlet with the top cap or cover removed. Fig. 4 is a detached top plan view of the tubular body of the air inlet.

In referring to the drawings in detail like numerals designate like parts.

This improved device is chiefly designed to be utilized in connection with sewers and other elements through which foul air and obnoxious or poisonous gases circulate, and it provides means for permitting pure atmospheric air to be drawn down into the sewer or other element and at the same time automatically prevent the escape of foul air and gases therefrom. The essentials required for a device of this character are great strength and cheapness of construction, ease and convenience in dismounting and assembling, and a highly efficient and exceedingly sensitive automatic valve mechanism. Besides, it is advisable to provide a passageway of considerable area around the valve when opened and to so balance and counterpoise the valve disk that it will normally be held open by its own weight to permit the passage of atmospheric air down into the sewer, and will be closed by the slightest upward current against the bottom surface thereof.

The body 1, of the device is of a tubular form and is adapted to be attached at its lower end to a conducting pipe leading from a sewer or other element. The upper end of the body 1 is enlarged, as shown at 2 in Figs. 1 and 2, to form an enlarged valve chamber. Two oppositely outwardly extending lugs 3 extend from the upper end of the body 1, projecting laterally outward in approximately horizontal direction, as shown in Figs. 3 and 4. Each of these lugs is provided with a short longitudinally extending central slot 4 at its outer end, as shown in Fig. 4. An upwardly extending segmental flange 5 is formed on each side of the two lugs 3. It will be noted by referring to Fig. 4 that two of these segmental flanges are provided, each of which extends between the lugs on one side thereof.

A metal ring 6 is removably fitted on the upper end of the body 1, as shown in Figs. 1, 2 and 3, the body being provided with an inwardly extending annular flange 7 on which an outwardly extending flange 8 of the ring seats, as shown in Fig. 1. The segmental flanges 5 surround the edge of the flange 8 when the ring is in place on the body, and thus maintain the ring firmly in

place against lateral displacement. The outwardly extending flange 8 of the ring is narrower than the body of said ring and extends from the upper or top portion only of said body, as shown in Fig. 1, the greater portion of the ring or that portion below the flange 8 being sufficiently small in diameter to fit snugly within the flange 7 of the body 1, as shown in Figs. 1 and 2.

The ring 6 is provided with oppositely extending lugs 9 which are similar to the lugs 3 and are adapted to be fitted in superimposed position on said lugs 3, as shown in Figs. 2 and 3. These lugs 9 are also provided with short longitudinally extending slots 10, which register vertically with the slots 4 when the ring is in place on the body 1. It will be noted by referring to Fig. 2 that the top surfaces of the lugs 3 are slightly beveled or inclined outward and downward and that the bottom surfaces of the lugs 9 are correspondingly beveled so as to fit perfectly thereon. The object of this is to provide a slight wedging effect and thereby additionally strengthen the attachment of the ring to the body of the device. The ring is also provided with an inwardly extending radial arm 11 which extends from approximately the center point of the ring outwardly to the body of the ring, as shown in Figs. 1 and 3. The purpose of this radial arm is to provide means for supporting a disk valve and its counterweight.

The disk valve employed in this improved device is preferably made of exceedingly thin very light material, such as sheet brass, and is of a circular form being sufficiently large to fit perfectly against the bottom edge of the ring 6, which thereby constitutes a valve seat. A disk valve of this character is capable of changing its shape in an infinitesimal manner under pressure, so as to conform more perfectly to its valve seat, owing to the fact that the thin sheet of which it is made is capable of bending or springing under pressure. The disk valve is indicated in the accompanying drawing by the numeral 12, and is shown in its open position in full lines in Fig. 1, and in its closed position in full lines in Fig. 2, and also in dotted lines in Fig. 1. The disk valve is suspended in substantially a central horizontal position beneath the ring 6 by means of a vertical rod 13, the lower end of which passes through a central opening in the disk 12. The central opening in the disk valve is made slightly larger than the rod 13, so that it will fit loosely on said rod and it is held in place on the lower end of said rod by means of two washers 14 and 15 which are fitted on the rod respectively above and below the disk valve. The rod 13 fits loosely through an opening 16 in the inwardly extending radial arm 11, said opening 16 being sufficiently larger than the rod to permit said rod to slide easily therein. The upper end of the rod 13 is bent upon itself to form an eye 17 and a lever or beam 18 is provided with an opening in its inner end through which the bent portion 17 of the rod is loosely fitted. A counterweight 19 is mounted at the outer end of the lever or beam 18. The lever or beam 18 is pivoted above the ring 6 by means of an upright standard 20, which has its lower end screw threaded and screwed into an opening in the radial arm 11, and its upper end bent to extend horizontally and fitted loosely through an opening 21 in the lever or beam 18, as shown in Fig. 1. The horizontal portion 22 of the upright standard 20 is preferably of a triangular shape in cross section, thereby presenting a sharp top edge on which the lever or beam rocks. A lock nut 23 is screwed on the lower screw threaded end of the standard 20 against the surface of the radial arm 11 to lock the standard to said arm against unscrewing.

A top cover or cap 24 which is formed nearly to the shape of a hollow hemisphere, as shown in Fig. 1, is mounted over the upper end of the body 1 and is sufficiently larger in diameter than said body 1 to provide an annular space 25 which forms an air passage between said body 1 and the lower edge of the top cover or cap, as shown in Fig. 4. The annular space 25 extends almost completely around the top edge of the body 1 being interrupted only at those points where the lugs 3 project. The concavo-convex cover or cap 24 is fastened to the oppositely extending lugs 3 by means of two bolts 26 which pass through the cap and the slots in the lugs 9 and 3, thereby securing both the ring and the top cover or cap to the body of the device. This construction will be more easily understood by referring to Fig. 3 in which it will be noted that the top cover or cap is provided with oppositely located recesses 27 having substantially horizontal bottom walls 28 and that the bolts 26 pass through openings in the walls 28, the slots 10 in the lugs 9, and the slots 4 in the lugs 3, and are secured in place therein by nuts 29 screwed on the lower projecting end thereof. From this it will be noted that but two bolts are necessary to secure the component parts of this improved device firmly together in operating position, and that said device may be quickly and conveniently dismounted by loosening and removing said bolts.

The principal advantages of this improved device reside in the great simplicity and strength of its construction, in its comparative cheapness of manufacture, and in the exceedingly efficient character of its valve.

I claim—

1. In a device of the class described, a

tubular body having oppositely extending lugs at its upper end, a ring removably mounted on said body and also having oppositely extending lugs fitted on the lugs of said body, a beam rockably mounted above said ring and carrying a counterweight, a disk valve operatively arranged below the ring, and a vertical arm loosely hung from the beam and connected at its lower end to the disk valve.

2. In a device of the class described, a tubular body having oppositely extending lugs at its upper end and vertical segmental flanges extending between the lugs, a ring removably mounted on said body between the segmental flanges, said ring also having oppositely extending lugs fitting on the lugs of said body, a beam rockably mounted above said ring and carrying a counterweight, a disk valve operatively arranged below the ring and a vertical arm loosely hung from the beam and connected at its lower end to the disk valve.

3. In a device of the class described, a tubular body, a ring removably fitted on said body, a counterweighted valve supported from and carried by said ring, and a top cap mounted above said body; said top cap and ring being secured to the body by the same bolts.

4. In a device of the class described, a tubular body, a ring removably fitted on said body, a counterweighted valve supported from and carried by said ring, a top cap mounted above said body; said body and said ring having superimposed lugs and bolts passing through the top cap and the lugs of the ring and body.

5. In a device of the class described, a tubular body, a ring removably fitted on said body, a counterweighted valve supported from and carried by said ring, a top cap mounted above said body; said top cap having oppositely located recesses and said body and said ring having oppositely extending lugs arranged in superimposed position and vertically below the recesses in the top cap and two bolts passing through the bottom walls of the recesses of the top cap and the lugs of the ring and body.

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