J. H. KINSMAN.

Bath-Tubs, Basin-Sinks, Water-Closet, &c.

No. 210,334. Patented Nov. 26, 1878.

Fig. 1.

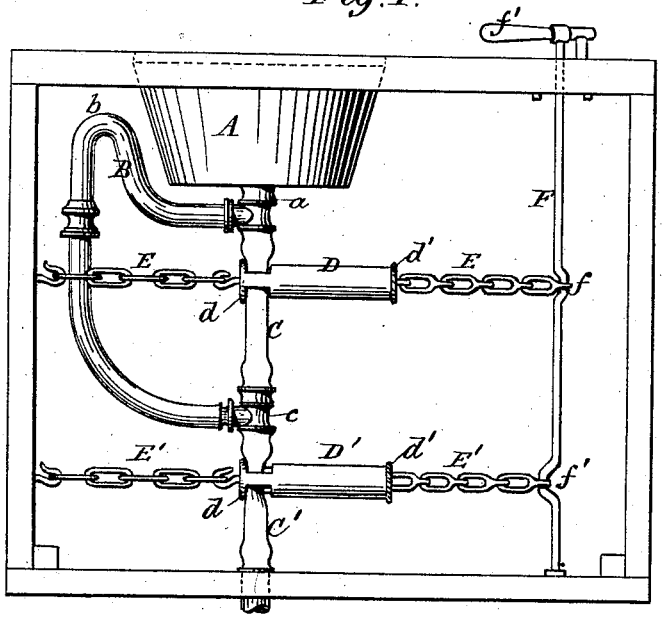


Fig. 2.

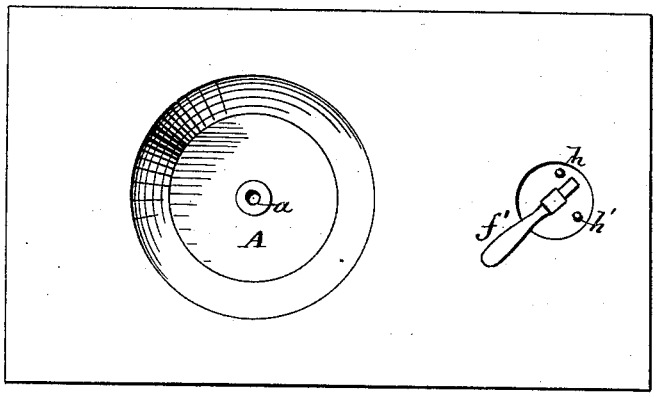


Fig. 3

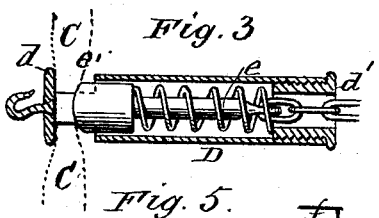


Fig. 4

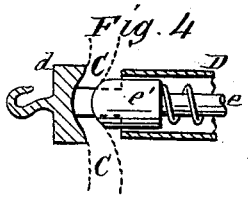
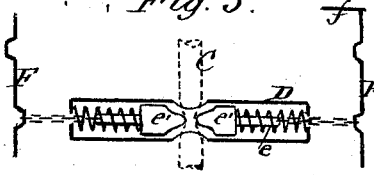


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. KINSMAN, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN BATH-TUBS, BASINS, SINKS, WATER-CLOSETS, &c.

Specification forming part of Letters Patent No. **210,334**, dated November 26, 1878; application filed August 8, 1878.

To all whom it may concern:

Be it known that I, JOHN H. KINSMAN, of Salem, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Bath-Tubs, Basins, Sinks, Water-Closets, and like devices, of which the following is a specification:

Figure 1 is a side elevation, showing the present invention. Fig. 2 is a top-plan view of Fig. 1. Fig. 3 is a detail, in section, showing the spring which acts on the cut-off or compressors.

The present invention is generally designed to provide an essential means for preventing the escape of gas from the pipes of bath-tubs, wash-basins, sinks, or water-closets, or any like device; and it consists, more particularly, in the use, in connection with the overflow-pipe of such a tub, basin, sink, or other like device, of a tube or pipe of flexible or elastic or compressible and expansible material, placed either in the continuation of the overflow-pipe or in that of the outlet-pipe, beyond the point of entrance of the overflow-pipe, and fitted and adapted so that it can be closed by pressure, and thus prevent the passage of liquid or gas through said overflow-pipe, and, by removing said pressure, will become permeable for the flow of liquids or fluids; and also, in an overflow-pipe for such a tub, basin, sink, or like device, having the form of a siphon, the short leg of which arises nearer the bottom than the top of said tub or other device, while in the continuity of the long leg, or at some convenient point in the continuity of the outlet-pipe, into which it leads, is placed a section of flexible or elastic or compressible and expansible material, which can be closed by pressure, and prevent the passage of the gas or fluids, and on the removal of said pressure will open for the flow of liquids or fluids; also, in an outlet or escape pipe for a tub, sink, basin, or similar device, having at some convenient point or place a section of pipe of flexible, elastic, or compressible and expansible material, which can be closed by pressure or become permeable when the pressure is removed; also, in combination with a basin, tub, sink, or like device, of an outlet-pipe and an overflow-pipe, a portion of one or both of which is composed of some flexible, elastic, or compressible and expansible material, and can be closed by pressure, and will be permeable when said pressure is removed; also, in combination with a tube of some flexible, elastic, or compressible and expansible material, forming a part or portion of the outlet or overflow pipe of a basin, tub, sink, or like device, of a spring fitted and adapted to produce the pressure for closing said tube and preventing the flow of liquid or gas, and which, on being withdrawn, will allow said tube to open; and in the special construction and combination of said spring with said tube, and with the means by which it is operated; also, in such means for closing said pipe, that this operation can be accomplished through the agency of springs or by direct pressure by means of cranks or any usual mechanical force; and in the combination of such a pipe with a rod operating the springs and cut-off, said rod having two cranks or eccentrics, not in the same plane, but at such suitable angle that said cut-offs will be made to balance each other, and can be caused to hold any desired position relative to said pipe for closing same or allowing it to open; and in the general combination and arrangement of the several parts of my said invention, all as will now be more in detail set out and explained.

In the accompanying drawings, A denotes any usual sink, basin, tub, or other like device, for use in the kitchen, chamber, bath-room, water-closet, or for any similar purpose, having in its bottom an exit-pipe, *a*. To this exit-pipe *a* is attached at one side the siphon overflow-pipe B. The bend *b* of this siphon arises a little above the horizontal line at which water is usually required to stand in the said basin A. At the other end the said siphon connects with the outlet-pipe C at the point *c*. This siphon is usually made of metal. The said pipe C may be made of elastic, flexible, or compressible and expansible material, such as rubber, hempen cloth, leather, or any other material suitable for such purposes. It is connected at its upper end to the lower end of the exit-pipe *a*. Along its length it has a joint, *c*, to take the end of the overflow-pipe B, and continuing thence for a suitable distance is

another section, C′, of like flexible or other material, as has been above described.

In order to shut or close the upper section, C, there is provided a compressor, D, which is now shown as suspended by chains E, and so constructed that said pipe C passes through a slot in one end. In the body D is a spring, *e*, which is adapted to press its solid head *e′* upon the said pipe, and such action will cause the pipe to be forced against the head *d* of the compressor and become entirely closed, so that there will be no vent for gas or fluid to pass by this point. This spring can be retracted from said pipe, and thus caused to withdraw its head therefrom, by turning the shaft F, to a crank-arm, *f*, on which is secured one end of the chain E. The outer end of the spring *e* is fixed in or operated against the outer end, *d′*, of the compressor D. To the lower section, C, of said pipe is connected and applied in like manner the spring D′, suspended by chains E′, and operated by means of the crank-arm *f* on the shaft F. The movements of said shaft are made by a handle, *f′*, placed at any convenient point near A. Its movements may be limited by stops *h h′*, so that the said shaft shall not be turned too far either way.

In this device, as thus generally made and operated, the siphon B will act as the only overflow-pipe. This will be accomplished by merely filling A above the level of *b;* and, by the peculiar form and position of B, there will be afforded no chance for the settlement of any residuum or anything that would be likely to clog the pipe or create any offensive or injurious gas.

It will be seen that, while other traps are in principle inverted siphons, the bend being at the base, so that foreign matter in the water collects at that point, and finally interferes with the action, besides giving rise to offensive gas from decomposition, in my invention the bend is at the highest point, it being, in fact, a true siphon, so that no foreign matter can collect at the curve, while the only point at which anything could collect is at the entrance to the siphon, and this is kept clear by the opening, which will often take place, of the direct discharge-pipe C.

The distance between D and D′ is suitably adapted to aid in the best way the ready discharge from A.

By keeping the lower flexible tube closed the water is retained in the basin, if desired; but the sewer-gas is completely excluded whether the basin is filled or empty.

If the water-cocks which supply the basin should leak, or if it is desired at night to allow the water to run to prevent freezing, the upper tube, C, may be closed, and the lower one, C′, opened. In this case the water will accumulate in A until it has reached the level of the bend in the siphon, when the surplus water will pass away as fast as it enters the basin, or with the ordinary overflow-pipe if the flow is too slight to fill the whole tube. If, on the contrary, it fills the tube, the basin will be emptied, and then refilled and emptied, and this intermitting action will continue as long as water runs into the basin. As the exposure of the lower end of the pipe when emptied of water is but momentary, the amount of gas which could possibly pass would be imperceptible.

The crank-arms which operate the springs are not in the same plane, but are placed at such a convenient angle that when, by turning the handle, the two springs are retracted from the two tubes, the cranks are both turned from the tubes, and stand in such a relative position to each other that the tendency of the springs is to balance each other, and thus retain the handle in the position in which it has been placed, and maintain the tubes open.

If the handle is so placed that either of the tubes is closed, then the cranks are turned toward the tubes, and while the crank which carries the spring which is compressing a tube stands in the same plane as the tube, the other crank stands at an angle to it. The tendency here is still for the springs to equalize each other; but this is prevented by a stop, against which the handle impinges and prevents this equilibrium of force, and, as the tendency still continues, the handle is held firmly against the stop, and thus one tube is maintained in a closed state and the other open.

In cases where the flexible portion of the pipes might be stiffer than usual, or where, as in water-closets or other cases, it may be necessary to make the pipes of a size larger than is generally used for wash-basins, bath-tubs, and apparatus of that character, the fixed points against which the pipe is compressed by the head of the spring may be curved, with its concavity turned toward the pipe, and the convex head of the spring may be made of greater dimensions, so that a greater extent of pipe will be compressed between the two, as in Fig. 4.

In cases where the pipe is so large that to allow the spring to move over the requisite distance the crank which actuates it would necessarily be larger than would be convenient, either from want of space or from the amount of force which would be necessary to overcome its leverage, instead of one fixed and one movable portion, between which the pipe is compressed, two movable portions may be used, each actuated in the same manner as one movable portion, but in contrary directions, so that each portion only moves over half the distance that a single portion would be obliged to in order to produce the same effect—namely, the closing of the tube, as in Fig. 5. In this case a second crank, or its equivalent, which may be operated by the first crank, becomes necessary for the second movable portion.

By this method of construction I produce an efficient and perfect means for cutting off sewer-gas, or other noxious exhalations, from

the plumbing devices in ordinary household use, and gain a valuable and highly-important result.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the overflow-pipe of a sink, basin, or like device, of a compressible and expansible tube that can be closed by pressure, and thus cut off all escape of gas, and on the removal of the pressure will automatically open for the flow of liquids, substantially as and for the purposes set forth.

2. The combination, with a sink, basin, or like device, of a siphon overflow-pipe, B, the short leg of which arises from near the bottom of said basin or other device, while in its opposite end, or in the exit-pipe with which it connects, is a section of compressible and expansible pipe, which can be closed to cut off the escape of gas, or, when pressure is removed, will automatically open for the escape of the contents of the basin, tub, or like device, substantially as described.

3. The combination, with a basin, sink, water-closet, or like device, of an outlet-pipe and an overflow-pipe, a portion of one or both of which is composed of some flexible, or elastic or compressible and expansible material, substantially as and for the purposes set forth.

4. The combination of a spring-compressor, adapted to be operated automatically or positively, with the elastic and compressible portion or section of the outlet or overflow pipe, or both, of a tub, sink, or like device, substantially as and for the purpose set forth.

5. The combination of compressor D, carrying spring *e*, operated by crank-arm *f*, and shaft F, with pipe C, substantially as and for the purposes set forth.

6. The combination of basin or sink A with siphon B, exit-pipe C, and spring-compressor D, substantially as and for the purposes set forth.

7. The combination of tub, sink, or basin, or like device, A, with exit-pipe C C′, overflow B, and spring-compressor D D′, with chains E and E′ and crank-rod F *f f′*, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

JOHN H. KINSMAN.

Witnesses:
E. W. CLIFT,
E. GRIFFITH.