

A. E. NICKERSON.
CLEANING SYSTEM.
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Patented Sept. 10, 1912.
2 SHEETS—SHEET 1.

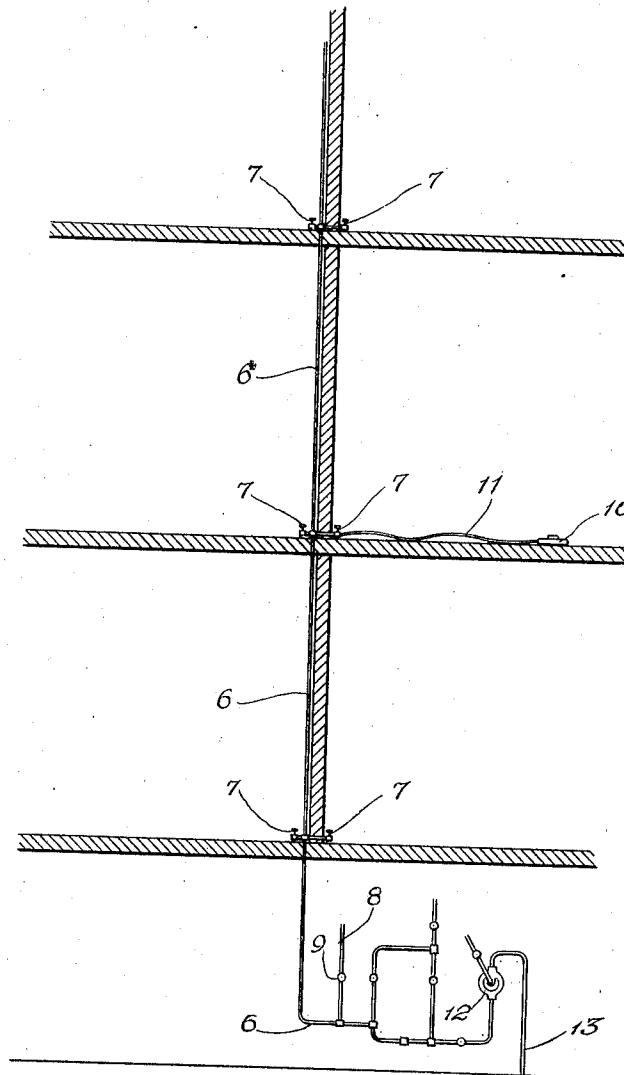


Fig. 1.

Witnesses:

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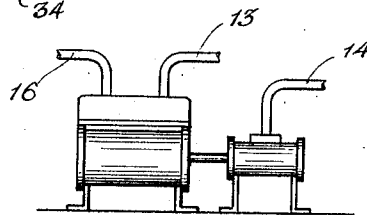
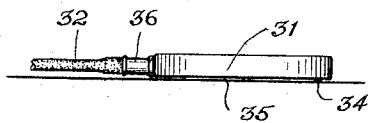
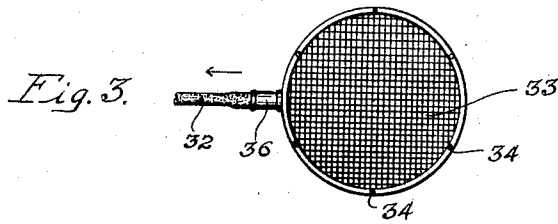
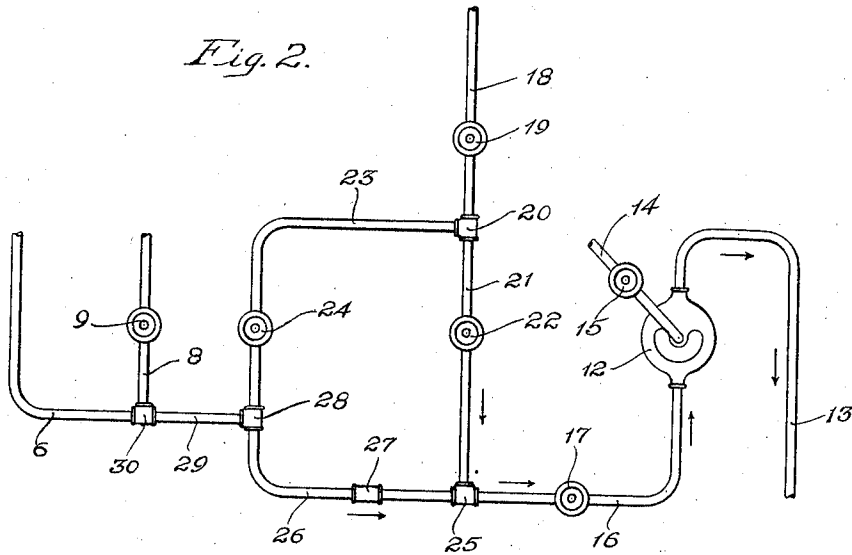
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2 SHEETS—SHEET 2.



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CLEANING SYSTEM.

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Specification of Letters Patent.

Patented Sept. 10, 1912.

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To all whom it may concern:

Be it known that I, ALBERT E. NICKERSON, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Cleaning Systems, of which the following is a specification.

This invention relates to a new and improved form of system for cleaning floors of buildings or halls, and particularly to the means for applying the water to the floor and for removing it therefrom after it has been used for cleaning the floor. At the present time it is customary to wet the floor by pouring a sufficient amount of water thereon from buckets or like receptacles, after which the floor is scrubbed. The dirty water is then removed by means of mops or in other similar ways, and is collected in buckets so that it may be carried away. This process is tedious and expensive, because each time the mop is saturated with water from the floor it must be wrung out into the bucket, and the water must be carried away.

The main objects of this invention are, to provide a system and suitable mechanism therefor so that as much water as desired can be initially applied to the floor, and so that it can be withdrawn from the surface of the floor with the least amount of labor. More especially, to provide such a system and mechanism so that the water can be conveyed to, and applied to, the floor by means of the same piping as that which serves to remove it from the floor, thereby greatly reducing the cost of installation and upkeep.

Other objects of the invention are, to accomplish the aforementioned result with a minimum amount of control mechanism and piping, so that the entire system can be rendered cheap and efficient in service, and so as to minimize trouble and upkeep.

Other objects and uses will appear from a detailed description of the invention, which consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 shows diagrammatically a set of pipe connections for applying my improved system to each room of a building, the control apparatus being located in the basement; Fig. 2 shows more in detail the control apparatus of Fig. 1; Fig. 3 shows a bottom view of the preferred form of suction head; Fig. 4 shows a side view of

the suction head; and Fig. 5 shows a detail of a portion of the control apparatus in which a pump is substituted for the steam siphon hereinafter described.

In the embodiment of my invention, I provide a system of piping in the building, whereby the water may be initially conveyed to each floor or to each room of each floor should that be desired, and whereby the water may be removed through the same piping after it has served its purpose. In practice, the water might be applied to the floor of a room by means of a hose connected to an outlet of the pipe system. In order to remove the water, I provide a form of suction head which can afterward be attached to the same outlet through which the water was originally applied and which serves to remove the water from the floor by suction. Mechanism is then provided in the control system for creating a suction to remove the water in the above stated manner.

Referring now to the drawings, and particularly to Fig. 1, a main pipe 6 is shown as extending from the basement to the various floors of the building. Cocks 7 are provided at the various floors for giving connection to the main pipe 6, one cock for each room in the system illustrated. A hot water pipe 8 connects with the main pipe 6 through the medium of a valve 9, so that, as will presently appear, hot water may be drawn from any one of the cocks 7 for application to the corresponding floor. After the floor has been thoroughly wet and cleaned, the valve 9 may be closed and a suction head 10 attached to the cock 7, as by means of a flexible hose 11. A siphon 12 may then be operated to create a suction in the pipe 6, and thus remove the water from the floor by withdrawing it up into the suction head and delivering it to the sewer through a pipe 13.

An examination of the system thus far described discloses the fact that it makes provision for initially supplying the water to the floor and for removing it therefrom through the same set of piping. The preferred arrangement contemplates the use of the steam siphon 12 for creating the suction. I will now describe more in detail the preferred arrangement of pipes to effect the aforementioned results, namely, to initially deliver the water through a given pipe and afterward to remove it through

the same pipe, in the most advantageous manner.

Referring to Fig. 2, the piping connections are there shown more in detail. The steam for the siphon is supplied through a pipe 14 having a valve 15. This siphon tends to remove the water in the direction indicated by the arrows, withdrawing it from a pipe 16 having a valve 17, out to the sewer through the pipe 13. It is well understood that a steam siphon operates best when a continuous stream of water is supplied to it, so that the siphon effect is not broken at any time. It is also well understood that it operates best when sucking cold water. Cold water may be supplied through a pipe 18 having a valve 19 to a T connection 20, one arm of which connects with a pipe 21 having a valve 22, and the other arm of which connects with a pipe 23 having a valve 24. The pipe 21 connects into a T 25, one side of which connects with the pipe 16 and the other side of which connects with a pipe 26 having a check valve 27. The pipes 23 and 26 connect into a T 28, the arm of which connects by a pipe 29 to a T 30. This T 30 in turn connects with the hot water supply pipe 8 and the main 6.

It may here be stated that in the drawings means are shown for initially supplying either hot or cold water to the main 6. When it is desired to supply hot water to the main, the valve 9 may be opened, the valves 17, 22 and 24 being closed. After the hot water has been applied to the floor and when it is desired to remove the water, the valve 9 may be closed and the valves 19, 22, 17 and 15 may be opened. This will allow a stream of cold water to pass through the siphon, so that the steam therein will "take hold" and create the desired suction in the pipe 16. The check valve 27 permits a flow of water in the direction shown by the arrow, so that a suction will then be created in the pipe 6 to remove the water from the floor but the check valve 27 will prevent a backward flow of cold water into the pipe 6 while the siphon is "taking hold." As soon as the siphon "takes hold" it will create a suction back through the pipe 29 into the main and will start to remove water through the suction head from the floor. The operator may move the suction head from point to point on the floor in order to thoroughly remove the water, or he may place the suction head at some convenient point and then sweep the water up to it. Probably the latter will be the most efficient way in which to remove the water. In any event, the stream of cold water flowing down through the pipes 18 and 21 will insure a steady supply to the siphon so that the sucking action of the same will be continuous re-

gardless of any intermittency in the supply of water to the suction head. Furthermore, such stream of cold water will insure a more perfect action of the steam siphon than otherwise.

As before stated, the arrangement of piping herein shown and described is such that cold water may be initially applied to the floor should that be desirable. To this end the valves 9, 22 and 17 may be closed while the valves 19 and 24 are opened. In order to afterward remove this cold water from the floor it is only necessary to open the valves 17 and 15 and to close the valve 24, when the siphon will commence to act and withdraw water from the main.

The preferred form of the suction head is shown more in detail in Figs. 3 and 4. It comprises essentially an inverted pan having a hose connection in one side and provided on its lower face with a screen 33 to prevent large particles from entering the pipe system. A series of knobs or lugs 34 placed around the lower edge of the suction head serve to space the same away from the floor a slight distance 35 as shown in Fig. 4. The extent of this spacing will be largely determined by the size of the suction head and the comparative smoothness of the floor on which it is to be used, but it may, for example, be a sixteenth or a thirty-second of an inch or any other amount desirable. A check valve 36 will serve to prevent a backward movement of water from the main, thereby insuring a flow in the direction illustrated by the arrow of Fig. 3.

It will be understood that when the water is initially applied to the floor this may be done through the hose 32, the suction head being removed at such time and a suitable nozzle applied. I wish it to be distinctly understood, however, that my system is one in which the water or other cleansing liquid may be applied to the floor through the same system of piping as is afterward used in its removal.

As heretofore stated, the system contemplates the use of means for withdrawing liquid from the floor by a sucking process. The particular mechanism thus far illustrated contemplates the use of a steam siphon 12. In Fig. 5 I show a modified detail in which a pump takes the place of the siphon, the same being attached to the pipes 16 and 13 in place of the steam siphon.

It is found in practice that the system and mechanism herein shown and described serve very efficiently to remove the water from the floor. It is possible to construct the sucker head so that only a very small clearance is left between its lower edge and the floor, and by gathering the water together, as by sweeping it against the sucker head, it will be very completely removed from the floor. I wish also to call particu-

lar attention to the fact that I have provided means for initially applying the water to the floor, and for ultimately removing it therefrom, through one and the same system of piping, thus greatly reducing the first cost of the apparatus and the cost of its upkeep.

I claim:

1. In a system of the class described, the combination of a main pipe, a water supply pipe, a suction mechanism, a connection from the main pipe to the suction mechanism, a check valve in said connection, a connection from the water supply pipe to the suction mechanism beyond said check valve, a connection from the water supply pipe to the main pipe in advance of the check valve, and means for controlling the admission of water through the last mentioned connection, substantially as described.

2. In a cleansing system, the combination of a main pipe, a water supply, and a suction mechanism, a connection from the main pipe to the suction mechanism, a check device in said connection, a connection from

the water supply to the suction mechanism beyond said check device, a valve for controlling the admission of water from the water supply to the suction device, a connection from the water supply to the main pipe at a point in advance of the check device, and means for controlling the admission of water therethrough, substantially as described.

3. In a cleansing system, the combination of a main pipe, a water supply and suction mechanism, a connection from the main pipe to the suction mechanism, a check valve in said connection, a connection from the water supply to the suction mechanism at a point beyond the check valve, a valve in said connection, a connection from the water supply to the main pipe at a point in advance of the check valve, and a valve in said last mentioned connection, substantially as described.

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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."