A suction system which comprises an extractor element which is functionally connected in input to a flushing pipe of a flusher of a toilet bowl and in output to a space located outside the room in which the bowl is provided. The extractor element comprises a box-like container, which is provided with an inspection cover and inside which there is a compartment for accommodating an extractor in which the intake port is connected to the flushing pipe of the flusher and the discharge port is connected to a pipe for connection to the space outside the room or other vents; electrical and electronic means for supplying power and managing the system are provided within the box-like container.
SUCTION SYSTEM FOR BATHROOMS

[0001] The present invention relates to an odor and humid air suction system for bathrooms.

BACKGROUND OF THE INVENTION

[0002] As is known, one of the livability problems of bathrooms is linked to their ventilation.

[0003] In rooms used as bathrooms, there is in fact the need to ventilate the room often, in order to eliminate both the bad odors related to body functions and to eliminate the humidity that forms when using hot water for showers, bathtubs, whirlpool pools, etcetera.

[0004] These rooms are generally either provided with windows or are windowless.

[0005] Typically, in order to ventilate rooms provided with windows it is necessary to open the windows and the door for the time required for ventilation, which is generally rather long.

[0006] It is evident that this operation is scarcely useful, since it is usually performed after the user has already experienced the negative effects of the bad odors or humidity that have already saturated the room.

[0007] Further, opening the windows and the door leads to a decrease in winter and an increase in summer of the temperature of the rooms, with obvious physical discomfort, such as drafts, colds and others, and with obvious economic waste.

[0008] Windowless rooms are generally provided with an extractor which is arranged on the ceiling or on a wall of the room and is usually controlled manually by means of the light switch.

[0009] Such extractor draws air from the room and sends it outside through pipes specifically designed and preset beforehand.

[0010] The use of this extractor is not ideal for solving the problems of bad odors.

[0011] The user, while performing body functions, is in fact inevitably affected by the organic bad odors that the user is producing; further, the time needed to extract the amount of air useful for replacement is considerable.

[0012] The organic odors that originate from the toilet bowl require rapid aspiration to prevent them from being inhaled by the user who is performing other activities after performing body function, but the time for which the user remains inside the room is shorter than the time needed to change the air.

[0013] In order to obviate these drawbacks and solve these problems, an attempt has often been made to devise different solutions, and various systems have been conceived and studied but have never been provided at the production level except as prototypes.

[0014] Among these solutions, mention is to be made of those studied to extract odors through channels or holes formed in the appropriately provided lids of toilet bowls.

[0015] Other solutions provide toilet bowls studied specifically for the purpose, with shapes and dimensions which are strange and difficult to provide.

[0016] An attempt has also been made to extract the stale air, filter it, fragrance it and then return it into the room.

[0017] Other solutions are to extract the odors directly from inside the bowl and expel them through pipes, but considerable problems are encountered due mainly to the various types and constructive shapes of toilet bowls, problems created by the stagnation of water inside the lower part of the flushing pipe (said water blocks completely or partially the cross-section of the end part of the flushing pipe, limiting or eliminating extraction; this problem is caused by the difference in level between the outlet of the water in the end part of the flushing pipe and the inlet of said water into the toilet bowl).

[0018] All these solutions and systems have had extremely limited possibilities for use, also due to problems related to their structural invasiveness, poor aesthetics, problems in assembly in building yards, and economy in general.

SUMMARY OF THE INVENTION

[0019] The aim of the present invention is to solve the problems linked to suction systems for bathrooms of the known type.

[0020] Within this aim, an object of the present invention is to provide a suction system for bathrooms which allows to aspirate, if needed, both from the flushing pipe of the flusher of the toilet bowl and in the room where the toilet bowl is arranged.

[0021] Another object of the present invention is to provide a suction system for bathrooms which is cheap, silent and tough and operates in an automated manner.

[0022] Another object of the present invention is to provide a suction system for bathrooms which is cheap, silent and tough and operates in an automated manner.

[0023] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a suction system for bathrooms, which comprises extractor means which are functionally connected in input to a flushing pipe of a flusher of a toilet bowl and in output to a space located outside the room in which the bowl is provided, characterized in that said extractor means comprise a box-like container, which is provided with an inspection cover and inside which there is a compartment for accommodating an extractor which is connected at its inlet and outlet respectively to the flushing pipe of the flusher and to a pipe for connection to the space outside the room, electrical and electronic means for supplying power and managing said system being provided within said box-like container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

[0025] FIG. 1 is a schematic front view of a suction system according to the invention with an external flusher cistern and a floor-mounted toilet bowl;

[0026] FIG. 2 is a partially sectional schematic side view of the system of FIG. 1;

[0027] FIG. 3 is a schematic front view of the box-like container which contains the extractor means of a system according to the invention;

[0028] FIG. 4 is a sectional side view of the box-like container which contains the extractor means of a system according to the invention;

[0029] FIG. 5 is a schematic front view of a suction system according to the invention, with the flusher cistern recessed in the wall and the toilet bowl hung from the wall;
FIG. 6 is a partially sectional schematic side view of the system of FIG. 5; FIG. 7 is a transverse sectional view, taken along the line VII-VII of FIG. 5, of a pipe of the system according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to FIGS. 1 to 3, a suction system for bathrooms, according to the invention, is generally designated by the reference numeral 10.

The system 10 is constituted by extractor means 11 (described hereinafter), which are functionally connected in input to a flushing pipe 12 of a flusher cistern 13 of a toilet bowl 14 (of the floor-mounted type) and in output to a pipe for connection to the space outside a room 15, which in this embodiment is connected to a duct 15a for discharging the wastewater of the toilet bowl 14.

In particular, in this embodiment the flushing pipe 12 of the flusher cistern 13 is formed by a first substantially vertical portion 16, which connects the bottom of the cistern 13, and a second substantially horizontal transverse portion 17, which connects the first substantially vertical portion 16 to the inside of the toilet bowl 14.

In this example, the cistern 13 is of the type which is external to the wall against which the toilet bowl is placed, and the first substantially vertical portion 16 and the second transverse portion 17 of the flushing pipe 12 are external as well.

A duct 18 extends from the second transverse portion 17 of the flushing pipe 12, is internal to the wall, and connects the extractor means 11 to the inlet.

Means 19 for draining the water accumulated in the flushing pipe 12 after discharging the flusher are associated with the flushing pipe 12 of the flusher of the toilet bowl 14.

The draining means 19 are constituted for example by a narrow pipe 20 which is connected, from the bottom of the second transverse portion 17 of the flushing pipe 12, to a point, at a lower hydraulic height than the bottom of the second transverse portion 17, of the pipe 15 for connection to the space outside the room (in this embodiment, the discharge duct 15a for the wastewater of the toilet bowl 14).

In this manner, any water which may remain in the flushing pipe 12 is eliminated directly in the wastewater and the extraction section provided by the cross-section of said discharge pipe is always the largest, thus allowing optimum extraction.

The narrow tube 20 is advantageously shaped like a siphon so as to avoid the rise of bad odors from the pipe 15 for connection to the space outside the room.

It is evident that in other embodiments, the pipe 15 for connection to the space outside the room might not be connected to the duct for the wastewater of the toilet bowl but to other water drains or also to stacks for ventilating outside the building in which the bathroom is provided (in this case, the draining means must in any case be connected to a drain at a hydraulic height which is equal to, or lower than, the discharge pipe of the flusher).

The extractor means 11 comprise a box-like container 21 (clearly visible from the outside in FIG. 3 and from the inside in FIG. 4), which is provided with an inspection cover 22 (not shown in FIG. 1) and inside which there is a compartment 23 for accommodating an extractor 24 of the centrifugal type, the intake port 25 of which opens onto the compartment 23, while the discharge port 26 is connected directly to the pipe 15 for connection to the space outside the room.

The compartment 23 is connected directly to the flushing pipe 12 of the flusher by means of the duct 18.

This example, the box-like container 21 is of the type for recessed wall mounting, but it can be arranged equivalently completely outside the wall.

The suction system further comprises one-way means 27 (clearly shown in FIG. 4) for the backflow from the drain of said system, which are constituted by a valve which consists of an oscillating plate 28 which is arranged in an upper region in abutment against the edges 29 of an opening located at the discharge port 26 of the extractor.

The oscillating plate 28 is raised by the air pressure when the extractor is on and moves downward, blocking the discharge port of the extractor, when said extractor is off, thus avoiding the return of the air.

Advantageously, in this embodiment the extractor means 11 comprise a flow diverter 30, which can be actuated and is adapted to alternately connect the inlet of the extractor means 11 to the flushing pipe 12 of the flusher or to the room in which the toilet bowl 14 is arranged.

The flow diverter 30 allows to extract air either directly from the toilet bowl, thus eliminating bad odors, or directly from the room.

In this manner it is possible, by means of a single extractor, to allow to extract either bad odors or the humid air that forms in the room during a shower and personal hygiene in general (this can occur automatically, as described better hereinafter).

As is evident, this concept is independent of the specific embodiment of the extractor means that is exemplified here, but can be applied to different embodiments.

With reference to the structure of the described extractor means, in the compartment 23 formed in the box-like container 21 in which the extractor 24 is accommodated there is a first port 32, which is connected directly to the flushing pipe 12 of the flusher, and there is a second port 33, which is connected to the room in which the toilet bowl 14 is provided; the flow diverter 30 allows to block alternately the first port 32 or the second port 33 in order to allow the extractor 24 to perform extraction from the flushing pipe 12 or from the room.

In particular, the second port 33 is formed by a plurality of openings 34 in the closure cover 22 of the box-like container 21, while the first port is formed on a plane which lies at an angle with respect to the plane on which the second port 33 is formed.

This embodiment, the flow diverter 30 is constituted by a flow control element which is formed by a first flat portion 35 and a second flat portion 36, which are mutually inclined so as to form in practice an L-shape.

The flow control element (the flow diverter 30) is pivoted to the cover 22 along the line that divides the flat portions 35 and 36; said portions are adapted to block a respective first or second port depending on the angular position assumed by the flow control element about its own hinge axis.

In order to allow movement of the flow control element, there are means 37 for the actuated movement of the flow diverter which act on said flow control element.

In this embodiment, the actuated movement means 37 comprise an electromagnet 38, which is actuated for
example by a humidity sensor 39, which, when the previously programmed percentage of humidity is reached, transmits the pulse to said electromagnet, which performs a translational motion and pushes against the second flat portion 36, with consequent rotation of the entire flow control element about its own hinge axis and with the opening of the second port 33 and closure of the first port 32.

[0057] A secondary compartment 41 is provided inside the box-like container 21, is separated from the compartment 23 by means of a thin wall 40 and is designed to accommodate electrical and electronic means 42 for supplying power and managing the system (shown schematically in broken lines in FIG. 3).

[0058] The electrical and electronic means 42 comprise for example an electronic board with a programmable microprocessor, a small low-power consumption transformer (from 230V to 12V) for supplying power to the electric motor of the extractor, an additional 0.5 VA transformer (which allows to further reduce electric power consumption) to supply power to the humidity sensor 39 (with an adjustment which can be calibrated), a potentiometer for adjusting the speed of the electric motor of the extractor, a potentiometer for varying the management times of the various electronic components, and a sensor 43 for detecting the presence of the user, as described hereinafter more clearly, which is capable of detecting the presence of the user and of establishing electronically which of the two body functions the user is performing.

[0059] In this embodiment, an additional covering element 44 is associated with the cover 22 and has mainly aesthetic finishing purposes (the container of FIG. 3 lacks such a covering element 44) and is fixed to the cover 22 for example by means of a screw, shown schematically by means of a broken line and designated by the reference numeral 45 (or by means of another reversible fixing system).

[0060] Through openings 46 are provided in the additional covering element 44 and are adapted to allow air to access the second port 33 and consequently allow the extraction of air and vapors.

[0061] The humidity sensor 39 and the user presence sensor 43 are arranged for example on the additional covering element 44.

[0062] The user presence sensor 43 is constituted for example by a photocell (associated with an electronic program) which is capable of detecting the presence of the user and of establishing electronically which of the two body functions the user is performing. In practice, it switches on the extractor when the user approaches the toilet bowl and switches it off when the user moves away according to a programmed timing cycle.

[0063] In practice, the sensor is arranged above the toilet bowl and has a field of action which is inclined from above toward the toilet bowl, with a breadth which ranges from the wall to beyond the toilet bowl but adjacent thereto.

[0064] In this manner, the sensor can detect whether the user is sitting or standing near the toilet bowl, switching off the extractor if the presence in front of the toilet bowl does not reach a minimum programmed time; the electronic program associated with the sensor 43 allows, once the function being performed has been discriminated, to continue to keep the suction system on for a preprogrammed time.

[0065] This type of photocell, combined with the electronics, allows to reduce the operating times of the extractor and therefore reduce energy consumption and especially noise. As mentioned, this sensor has the importance of detecting the user in a very tight space and consequently avoids unnecessary startups of the extractor caused by people passing or crossing close to the toilet bowl.

[0066] FIGS. 5 and 6 illustrate a second embodiment of the system, now designated by the reference numeral 100.

[0067] In particular, in this embodiment, the system 100 has a toilet bowl 114 of the wall-mounted type and comprises a frame 150 to be embedded in the wall of the room to which the toilet bowl 114 is adjacent.

[0068] The frame 150 is constituted for example by two uprights which have a C-shaped transverse cross-section, respectively a first upright 151 and a second upright 152, inside which pipes of said system are accommodated, and by cross-members, respectively an intermediate cross-member 153, a lower cross-member 154, and an upper cross-member 155 for connecting the uprights 151 and 152.

[0069] The cistern 113 of the flusher is fixed between the intermediate cross-member 153 and the upper cross-member 155 and the uprights 151 and 152, (the cistern is therefore recessed within the wall).

[0070] Two feet 156 for supporting and fixing to the floor, which can be adjusted in height, are present at the base of the uprights 151-152.

[0071] In particular, the flushing pipe 112 of the cistern 113 of the flusher is formed by a first substantially vertical portion 116, which connects the bottom of said cistern, and a second substantially horizontal transverse portion 117, which connects the first substantially vertical portion 116 to the inside of the toilet bowl 114.

[0072] The central part of the first substantially vertical portion 116 has a branch 157 which connects the flushing pipe 112 to the duct 118, which lies inside the wall, for connection to the inlet of the extractor means 111 (for example, the extractor 124 inserted in the wall-recessed box-like container 121, as in the previous example).

[0073] The box-like container 121 is recessed within the wall above the frame 150.

[0074] In particular, the pipe 115 for connection to the space outside the room is provided with a first portion 115a, which is external to the frame 150 and protrudes from the extractor means 111, and in series thereto a second portion 115b, which lies inside the second upright 152.

[0075] The duct 118, arranged inside the wall, for connection to the inlet of the extractor means 111; has a first portion 118a, which lies inside the first upright 151 and a second portion 118b, which lies above the upright and is connected directly to the extractor means 111.

[0076] In particular, the cross-section (shown in FIG. 7 and designated by the reference letter S) of the pipes of the system above the frame 150 (first portion 115a of the pipe 115 for connection to the outside environment and second portion 118b of the duct 118 for connection to the inlet of the extractor means 111) is oval, so as to allow to accommodate it between the outermost ribs of the hollow bricks which compose the wall into which the system is to be recessed.

[0077] The cross-section of the pipes of the system inside the uprights 151 and 152 is instead circular.

[0078] Advantageously, the intermediate cross-member 153 is tubular, and the means 119 for draining the water collected in the flushing pipe 112 after discharging the flusher are arranged inside said intermediate cross-member.

[0079] In this case also, the flushing pipe 112 of the cistern 113 of the flusher is formed by a first substantially vertical portion 116, which connects the bottom of the cistern 113.
and a second substantially horizontal transverse portion 117, which connects the first substantially vertical portion 116 to the inside of the toilet bowl 114; the substantially vertical portion 116 and the second transverse portion 117 are connected by a bend 118, which passes through the intermediate cross-member 153.

[0080] The draining means 119 are constituted for example by the narrow pipe 120, which is connected, from the bottom of the second transverse portion 117 of the flushing pipe 112, to a point, at a hydraulic height which is equal to, or lower than, the bottom of the second transverse portion 117, of the pipe 115 for connection to the space outside the room (in this embodiment, the wastewater discharge duct of the toilet bowl 114).

[0081] The narrow pipe 120, which forms a siphon, is arranged inside the cross-member 153.

[0082] As already explained above, the extractor means 11 and 111 are functionally connected in input to the flushing pipe 12 and 112 and in output to a pipe for connection to the space outside the room, 15 and 115, which comprises the drain duct 115a and 115b for the wastewater of the toilet bowl 14 and 114 or other wastewater.

[0083] The draining tube 20, 120 connects the bottom of the transverse portion 117, 117 of the flushing pipe 12, 112 to said pipe for connection to the space outside the room 15, 115.

[0084] The extractor means 11, 111 comprise the extractor 24, which is accommodated within a box-like container 21, 121 which is recessed into the wall and is provided with a cover 22 with an air intake; inside said container there are the electronic means 42 for managing the fan, and a sensor 43 for detecting the presence of the user over the toilet bowl 14, 114 is provided on the covering element 44 of the cover 22.

[0085] In practice it has been found that the invention thus described achieves its intended aim and objects.

[0086] With the present suction system it is in fact possible to extract bad odors from the toilet bowl and if necessary extract humidity from the bathroom.

[0087] The compaction of the extractor means and of the electrical and electronic power supply and management means of the system into a single small box which is designed to be recessed inside a wall and is provided externally only with a cover allowing inspection makes the system easy to install and maintain.

[0088] Further, on-site assembly difficulties and times are eliminated, because the entire system is provided already completely assembled in the smallest details, including the electrical wires.

[0089] Moreover, the integration of the system in a preassembled frame to be recessed inside a wall allows to make the installation of said system simple and quick.

[0090] It is further possible to perform extraction from the flushing pipe of the flusher in an optimum manner, since by way of the draining means, the residues of water that obstruct or limit the cross-section of said pipe have been eliminated, thus allowing to use all kinds of toilet bowl.

[0091] Moreover, it can be stressed that this system:

- [0092] can be installed in all private and public bathrooms;
- [0093] can extract stale air from the inside or outside of the flusher and send it into the drain pipes inside the floor or into other pipes or vents;
- [0094] can be inspected easily;
- [0095] has extremely low energy consumption, far lower than traditional systems;
- [0096] has an extremely low noise level;
- [0097] allows to extract odors at the source, before they can expand and saturate the environment and propagate to nearby rooms;
- [0098] allows to eliminate odors, microbes and bacteria which would form, due to the nitrogen, carbon dioxide, hydrogen, ammonia, methane and other gases, which in addition to being noxious would stagnate in the furniture, walls, clothing of the people themselves, especially in the bathrooms of public places such as bars, restaurants, hospitals et cetera, with the risk of transmitting infectious diseases;
- [0099] allows to extract and expel only the amount of stale air that is needed by means of a possible adjustment of the speed of the extractor, thus also reducing energy consumption;
- [0100] by means of the accurately designed electronic systems, the photocell allows to determine which of the two body functions of the user is in progress and accordingly to determine the time for which said extractor is to operate, and to detect said user in a very tight space, thus avoiding unnecessary startups caused by passages and crossings close to said toilet bowl;
- [0101] ensures maximum safety, because the extractor works at 12 V;
- [0102] can be installed inside 8-cm walls;
- [0103] is easy to install, reducing installation times, also by way of the use of oval pipes, which allow to provide shallow chases, thus leaving the strength of the masonry unchanged;
- [0104] does not require particular preparation of the piping, which is often expensive, because the expelled air is conveyed directly into the drains;
- [0105] allows to reduce water consumption, since in current practice it is a good habit to use water several times to reduce odors (noise is also reduced consequently);
- [0106] allows to extract vapors and reduce the humidity produced by showers, bathtubs, and uses of hot water, thus reducing the formation of moulds et cetera, by way of a sensor which detects electronically the percentage of humidity and gives clearance to an electromagnetic which actuates an angular flow diverter which is capable of opening and closing simultaneously and alternately the air passage and of them starting the extractor at the maximum speed, increasing the amount of humid air to be extracted;
- [0107] can be manufactured, due to its characteristics, in extremely small shapes so that it can be installed even in existing bathrooms both inside and outside the walls or existing flushing cisterns;
- [0108] is assembled and forms with the frame (which can be adjusted in height) a single body with the pipes and the various components, reducing considerably the time required for assembly on-site, ensuring maximum safety and precision in installation and functionality and thus avoiding any irregularities which might occur in the building yard due to lack of suitable equipment or adequate personnel;
- [0109] can be used with all commercially available toilet bowls by way of the draining system, which allows total extraction of odors directly from the flushing pipe;
- [0110] can be used to install a toilet bowl which hangs from a masonry or plasterboard wall or is floor-mounted.
The invention thus conceived is susceptible of modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions and the shape, may be any according to requirements and to the state of the art.

The disclosures in Italian Patent Applications No. P2006A000410 and No. P2006A000411 from which this application claims priority are incorporated herein by reference.

What is claimed is:

1-23. (canceled)

24. A suction system for bathrooms, comprising extractor means which are functionally connected in input to a flushing pipe of a flusher of a toilet bowl and in output to a space located outside the room in which said bowl is provided, wherein said extractor means comprises a box-like container, which is provided with an inspection cover and inside which there is a compartment for accommodating an extractor which is connected at its inlet and outlet respectively to the flushing pipe of the flusher and to a pipe for connection to the space outside the room, electrical and electronic means for supplying power and managing said system being provided within said box-like container.

25. The suction system for bathrooms according to claim 24, wherein said extractor means comprises an actutable flow diverter, which is adapted to alternately connect the inlet of said extractor means to the flushing pipe of the flusher or to the room in which the toilet bowl is arranged.

26. The suction system for bathrooms according to claim 24, wherein said compartment formed in the box-like container which accommodates said extractor there is a first port, which is connected directly to the flushing pipe of the flusher, and there is a second port, which is connected to the room where the toilet bowl is provided, said flow diverter being provided within said box-like container and being adapted to block alternately said first port or said second port in order to allow said extractor to perform extraction from the flushing pipe or from the room.

27. The suction system for bathrooms according to claim 26, wherein said second port is formed in said cover for closing said box-like container, said first port being formed on a plane which lies at an angle with respect to the plate on which said second port is formed, said flow diverter being constituted by a flow control element which is formed by a first flat portion and a second flat portion which are mutually inclined, said flow control element being pivoted to said cover along the line that divides said flat portions, said flat portions being adapted to block respective first or second port depending on the angular position assumed by said flow control element about its own hinge axis.

28. The suction system for bathrooms according to claim 25, further comprising means for the actuated movement of said flow diverter which act on said flow control element.

29. The suction system for bathrooms according to claim 28, wherein said actuated movement means comprise an electromagnet which is controlled by a humidity sensor which, when a preset percentage value of humidity is reached, transmits the activation pulse to the electromagnet, which by pushing against said flow control element makes it turn about its own hinge.

30. The suction system for bathrooms according to claim 24, further comprising one-way means for the bad odors that have been extracted or arrive from the drain of said extractor system.

31. The suction system for bathrooms according to claim 30, wherein said one-way means comprise a valve which is constituted by an oscillating plate which is arranged in an upward region in abutment against edges of a discharge port of the extractor.

32. The suction system for bathrooms according to claim 24, wherein said box-like container there is a secondary compartment, which is separate from said compartment and is designed to accommodate said electrical and electronic means for system power supply and management.

33. The suction system for bathrooms according to claim 24, wherein said electrical and electronic means comprise an electronic board with a programmable microprocessor, a small transformer with low power consumption for supplying power to the electric motor of the extractor, an additional 0.5-VA transformer for supplying power to a humidity sensor, a potentiometer for adjusting the speed of the electric motor of the extractor, a potentiometer for varying the management times of the various electronic components, and a user presence sensor, which is capable of detecting the presence of the user and of establishing electronically which of the two body functions the user is performing.

34. The suction system for bathrooms according to claim 24, further comprising a user presence sensor which is associated with an electronic program, said sensor being arranged above the toilet bowl and having a field of action which is inclined from above toward the toilet bowl with a breadth which ranges from the wall to slightly above the bowl, said sensor with said associated electronic program discriminating the standing or sitting position of the user and the simple transit in front of the toilet bowl and actuating said extractor as a function of programmed operating times as a function of the analysis of the position of the user.

35. The suction system for bathrooms according to claim 26, wherein an additional covering element is associated with said cover, through openings being provided in said additional covering element and being adapted to allow access to air toward said second port and consequently allow the extraction of air by the extractor.

36. The suction system for bathrooms according to claim 24, further comprising means for draining the water that has accumulated in the flushing pipe of the toilet bowl after discharging the flusher.

37. The suction system for bathrooms according to claim 36, wherein said draining means comprise a small pipe which connects the bottom of a transverse portion of the flushing pipe that enters the toilet bowl to a point, at a hydraulic height which is equal to, or lower than, the bottom of said transverse portion, of a duct for discharging the waste water of the toilet bowl or other waste water.

38. The suction system for bathrooms according to claim 37, further comprising a frame to be incorporated in a wall of the room in which the toilet bowl is arranged, said frame being constituted by at least two uprights, in which portions of pipes of said system are integrated or arranged, and by at least two cross-members for connecting said uprights, a cistern of the flusher being fixed between two of said cross-members.
39. The suction system for bathrooms according to claim 38, further comprising, at the base of said uprights, feet for support and fixing to the ground, whose height can be adjusted.

40. The suction system for bathrooms according to claim 38, wherein one of said cross-members is tubular and the means for draining the water accumulated in the flushing pipe after discharging the flusher are arranged inside said cross-member.

41. The suction system for bathrooms according to claim 40, wherein said duct for connection to the space outside the room has a first portion, which is external to the frame and protrudes from the extractor means, and, in series thereto, a second portion, which lies inside a respective said upright, the duct arranged inside the wall for connecting said flushing pipe to the inlet of said extractor means having a first portion which lies inside a respective said upright and a second portion which lies above the upright and is connected directly to said extractor means.

42. The suction system for bathrooms according to claim 41, wherein the cross-section of the portions of the system which lie above said frame is oval in order to allow their accommodation between outermost ribs of hollow bricks that compose the wall into which the system is to be recessed.

43. The suction system for bathrooms according to claim 41, wherein said extractor means are functionally connected in input to said flushing pipe and in output to a pipe for connection to the space outside the room, which comprises the duct for the discharge of the wastewater of the toilet bowl or of other wastewater.

44. The suction system for bathrooms according to claim 43, wherein said small pipe connects the bottom of the transverse portion of said flushing pipe to said pipe for connection to the space outside the room.

45. The suction system for bathrooms according to claim 44, wherein said draining pipe is contoured so as to form a siphon.

46. The suction system for bathrooms according to claim 24, wherein said extractor means comprise an extractor which is accommodated in a box-like container which is recessed within the wall and is provided with a cover with an air intake, the electronic means for managing the fan being provided inside said container, a sensor for detecting the presence of the user on the toilet bowl being provided on said cover.