

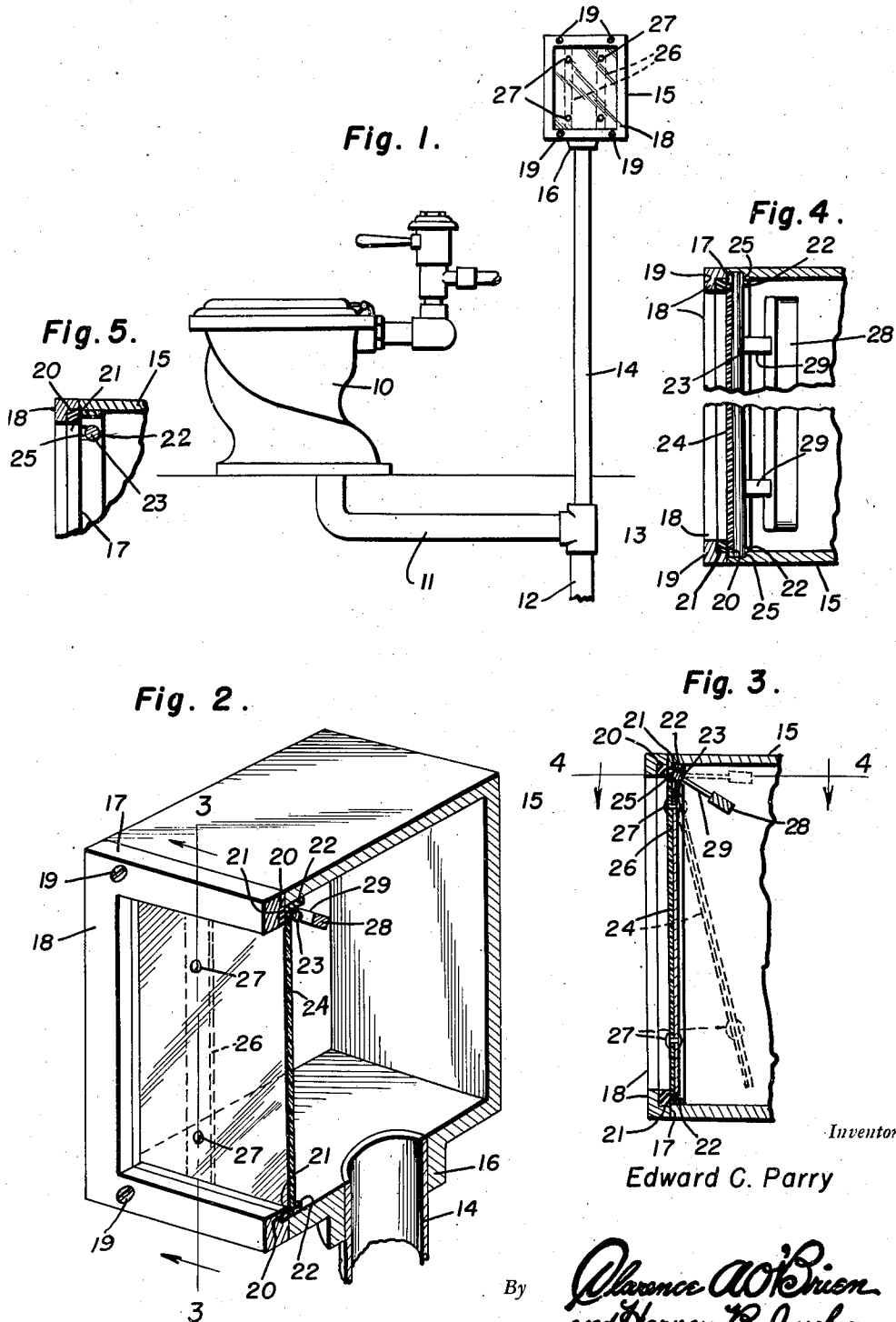
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AUTOMATIC VENT

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AUTOMATIC VENT

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1 Claim. (Cl. 4—211)

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This invention relates to an automatic vent for plumbing fixtures, the object thereof being to eliminate the necessity of employing stacks or stand pipes extending above the roof of a dwelling or building, in order to vent the plumbing system of objectionable odors, by providing an automatic vent, allowing the entrance of air into the plumbing system or pipes adjacent the fixtures, upon the creation of a partial vacuum or suction therein, thus saving considerable cost in the construction of a building or dwelling and eliminating the escape of sewer gas and other obnoxious odors from the system into a house or the surrounding air whenever through the rush of water as from a flush tank, a trap is momentarily emptied so that such a gas escapes from the system into a room or rooms thereof of a dwelling or building.

The object of the invention is to provide an automatic vent which may be applied to the plumbing system or fixture pipes interiorly or exteriorly of a building a short distance above the fixture, so that fresh air from the atmosphere is allowed to enter the same each time a suction or vacuum is created in the system, thereby providing an economical device by which the escape of disagreeable odors is avoided in a cheap and efficient manner.

Another object of the invention is to provide an automatic vent which allows the entrance of fresh air into the plumbing system upon the creation of a vacuum or suction therein as by the flushing of a tank or the like, so that the gas will not escape when the trap is momentarily emptied, thereby preventing the sewer gases from passing into a room but instead, substituting fresh air therefor, said vent automatically closing after the flushing action or the trap is again filled, breaking off the vacuum or suction action so that further escape of disagreeable odors or sewer gas into a room or building is prevented.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a front elevation of the automatic vent of the present invention applied to a plumbing fixture consisting of a toilet flush bowl and waste pipe therefrom;

Figure 2 is a sectional perspective view of the vent enlarged;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

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Figure 4 is a horizontal sectional view taken on the line 4—4 of Figure 3, and

Figure 5 is a fragmentary vertical sectional view taken inside of the vent box or cabinet at one side to show the pivotal mounting of the vent shutter.

Referring to the drawings in detail, in which like reference characters designate corresponding parts throughout the several views, the automatic vent of the present invention is shown applied to a toilet flush bowl 10 having the customary trap therein, from which leads a waste pipe 11 which may be connected to the discharge down pipe 12 through the medium of a T-joint 13 or otherwise. A stack or stand pipe 14 is provided of reduced diameter for ventilating the waste pipe of obnoxious sewer gases and other odors usually carried above the roof of a dwelling, thereby requiring an enormous amount of piping and cost in the installation thereof and in the construction of a building which the present invention is designed to eliminate. For this purpose, there is mounted upon the vent pipe 14 interiorly or exteriorly of a building, the automatic vent of the present invention, which comprises a suitable cabinet or enclosure, casing or rectangular box 15 through the medium of a suitable airtight connection or nipple 16 of any approved construction, so that the vent pipe extends into the interior chamber of the box as clearly shown in Figure 2 of the drawings. It is, of course, to be understood that the vent pipe may be applied to the plumbing fixtures at any point and to include all the fixtures in a building or bathroom required to be vented, in addition to kitchen fixtures and that the toilet bowl represented is simply by way of example and explanatory of the purpose of the invention.

The front of the casing or box 15 is open and has secured to the surrounding edge 17 thereof an open frame 18, removably secured in position in any approved way, as by means of fastening screws 19. This frame may be of right angular cross section so as to provide a recess or seat 20 at the inner edge and inner face thereof, for receiving a suitable packing or seal 21 also consisting of a frame corresponding to the shape of the open front of the box and the frame 18. The interior walls of the box are formed with a ledge, shoulder or seat 22 against which the inner sealing frame 21 of fiber, Bakelite, felt, fiber board or other suitable material is seated so as to form an effective seal at the joint when the frame 18 is secured in position over the frame 21.

Pivotaly mounted or hinged horizontally and

transversely across the top of the interior chamber of the box or casing 15 at the ledge 22 and inwardly of the frame 21 which forms a sealing gasket or packing, is a shutter 24. The shutter has a horizontal pivot axis 23 journaled at its ends in the sides of the box 15. For this purpose, the sides of the shoulder 22 may be provided with open-front recesses 25 forming bearings for removable reception of the ends of the pivot axis 23, the fronts of which recesses are closed by sealing frame 21. Other suitable pivot bearings may be provided for the ends of the shaft, such as screw eyes, to support the shutter for swinging movement therein. The shutter is formed of isinglass, plastic or other transparency, and is secured to a pair of spaced parallel vertical arms 26 fixed or rigidly secured, soldered, brazed or otherwise rigidly connected to the shaft 23 and extending downwardly therefrom, rivets 27 being shown for securing the same in position to the arms, as more particularly illustrated in Figures 2 and 3 of the drawings. The edges of the shutter 24, which are adapted to swing inwardly, are adapted to engage the ledge 22, and in back of the frame 21, which forms a seat to seal around the edge of the shutter which, while shown rectangular, may be of any other suitable shape.

The shutter is adapted to be opened or drawn inwardly by suction or vacuum created in the plumbing fixtures at the outlet or waste pipe, so as to open inwardly and draw fresh air thereinto, whereby the vacuum or suction is broken so that when the water again stands in the trap in the fixture, a seal will be provided to prevent the escape of sewer or obnoxious gases into a room or dwelling. However, in order to normally hold the shutter closed, the same is provided with a counterbalance weight 28, which is secured to the pivot axis 23 by one or more arms 29 rigid therewith, such as between the arms 26, so as to hold the shutter closed in the manner shown in solid lines in Figure 3 of the drawings, while permitting the same to open in the manner shown in dotted lines, so that with the device placed just above the plumbing fixtures interiorly or exteriorly of a building, air will be permitted to enter, to take the place of vent pipes extending above the roof of a building but with much cheaper construction in the cost, by reason of the elimination of considerable lengths of vent piping to extend above the building, and also the cost of installation and special modification of the architecture of a building in order to install the same, which many times result in undesirable and ugly appearances within a building or room, with protuberances, to accommodate such vent pipe, where the same cannot be accommodated in the walls, or installed as the walls are constructed. And thence, when the fixtures are used, in emptying a tub, wash basin, sink or toilet, such as by flushing of the latter, the shutter or flap of the vent, will open due to the creation of a partial vacuum or suction within the vent pipe, from the vacuum or suction created in the waste or discharge pipe leading to a sewer or other outlet, or below the trap or seal in the

fixture formed by the water therein, so that air is drawn into the box and vent pipe and the fixtures or toilet bowl, to prevent the trap from under the toilet or other fixture from being siphoned out, and the same with all plumbing fixtures, so that after the waste water has been carried off the shutter will close automatically by gravity, assisted by the weight of the counterbalance and form an effective seal against further escape of sewer gases or other obnoxious odors from the waste pipe. The device will save enormous amounts in the cost to builders or in the construction of a dwelling or building, in addition to the enormous amount of material which will be saved by avoiding the necessity of using considerable lengths of vent pipe to extend above a roof of a building or in the employment of other expensive methods for this purpose, thereby facilitating the enormous demand for building construction at the present time. The device is automatic in its action, and will freely permit the entrance of fresh or atmospheric air into the pipe, to prevent the breaking of the water seal beneath the fixture at the trap, while also preventing the escape of obnoxious or sewer gases into a dwelling or room, which in many cases are not only objectionable because of the odor, but dangerous to the health of the occupants.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What I claim is:

An automatic vent for stand pipes comprising a rectangular open-front casing having a bottom nipple for connection with the upper end of a stand pipe, said casing having a continuous internal shoulder adjacent the front thereof provided with open-front bearing recesses therein at the sides and near the top of the casing, a shaft journaled at its ends in said bearing recesses, a gravity closed and rearwardly opening shutter fixed to and depending from the shaft and normally disposed within said shoulder, and a gasket carrying frame secured to the front of the casing with its gasket holding the ends of the shaft in said bearing recesses and with the inner face of its gasket normally engaging the front marginal surface portion of the shutter.

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The following references are of record in the file of this patent:

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