

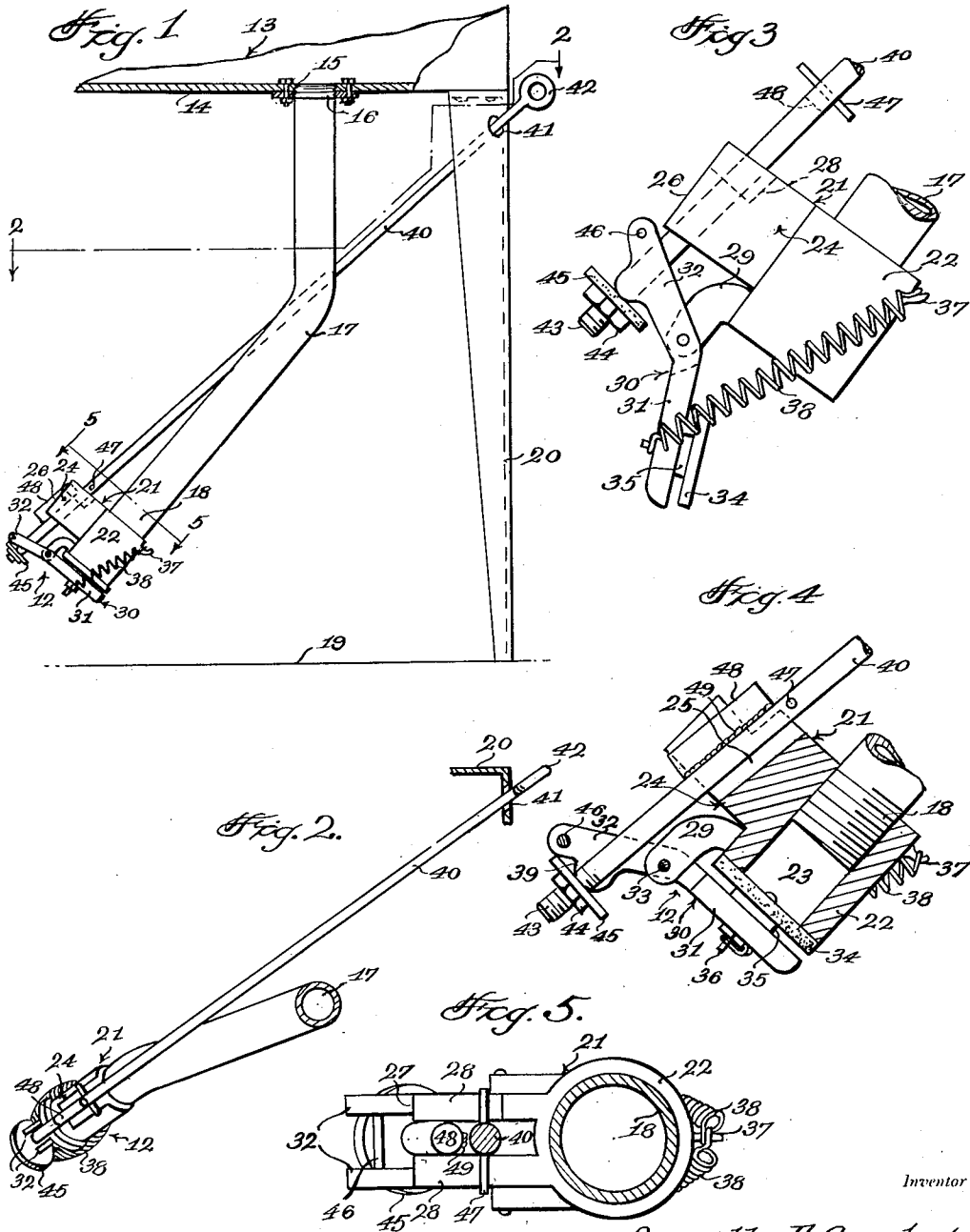
March 18, 1952

O. F. COUCHOT
DRAIN CLOSURE UNIT

2,589,540

Filed Sept. 2, 1949

2 SHEETS—SHEET 1



Inventor

Orville F. Couchot

By

John N. Randolph

Attorney

March 18, 1952

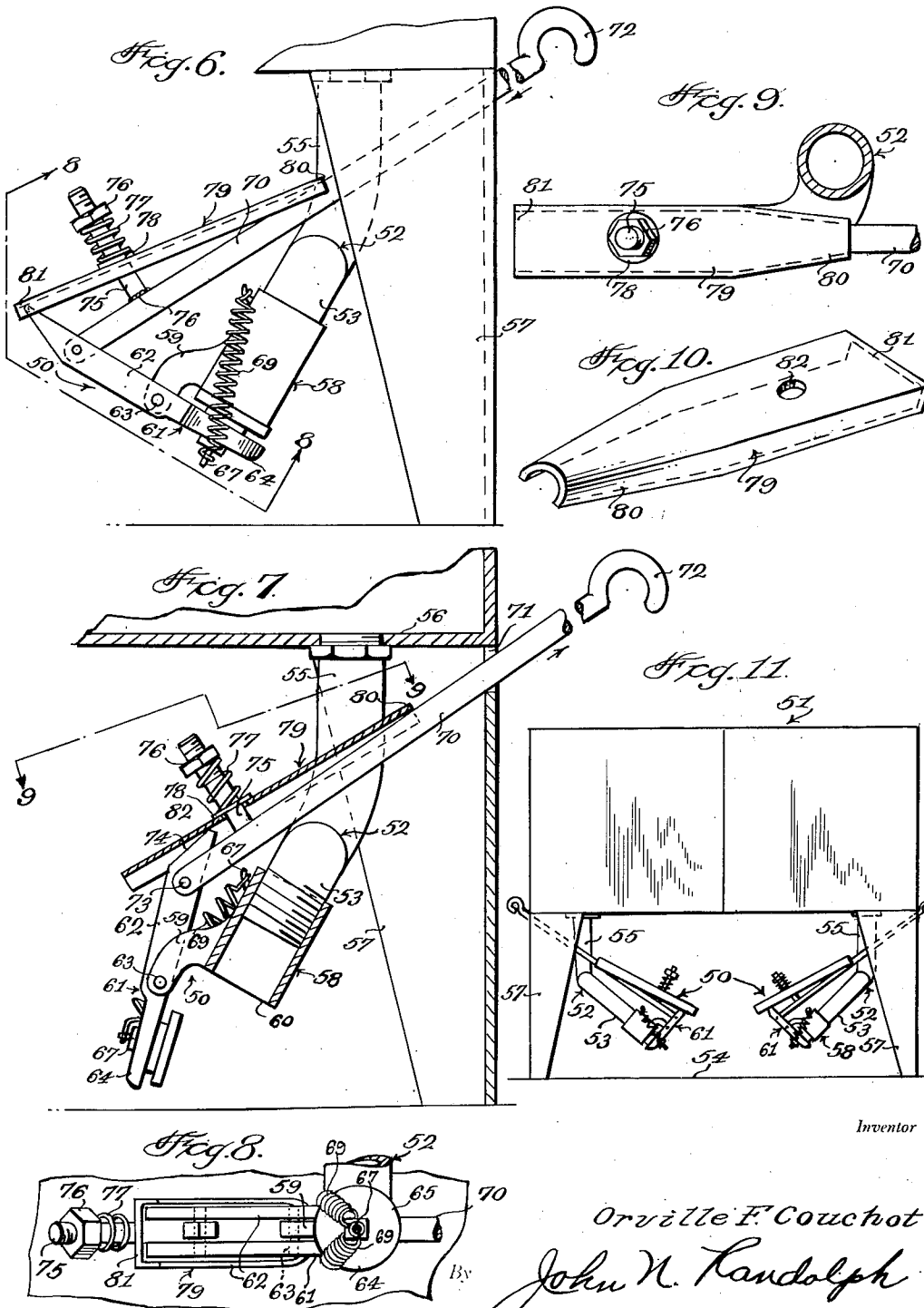
O. F. COUCHOT

2,589,540

DRAIN CLOSURE UNIT

Filed Sept. 2, 1949

2 SHEETS—SHEET 2



Inventor

Orville F. Couchot

By John N. Randolph

Attorney

UNITED STATES PATENT OFFICE

2,589,540

DRAIN CLOSURE UNIT

Orville E. Couchot, De Land, Fla.

Application September 2, 1949, Serial No. 113,802

3 Claims. (Cl. 137-34)

1

This invention relates to a novel construction of drain closure or valve for use on drain pipes of laundry tubs or washing machine tubs and which is particularly adapted for application to drain pipes having discharge ends opening above a sewer drain.

More particularly, it is a primary object of the present invention to provide a drain closure and actuator unit which may be readily applied to the outlet end of drain pipes of laundry or washing machine tubs and which is equipped with a conveniently located actuating rod for either opening or closing the unit.

A primary object of the present invention is to provide a closure and closure actuating unit primarily intended for use with laundry equipment of self laundry establishments and which will enable customers thereof to readily drain a laundry tub or washing machine tub without being required to reach beneath the tub to open or close the drain valve or closure and which is provided with means for positively maintaining the closure in either an open or a closed position.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating preferred embodiments thereof, and wherein:

Figure 1 is a fragmentary elevational view, partly in section of a portion of a laundry tub or washing machine tub and showing one form of the drain closure and closure actuating unit applied thereto and in a closed position;

Figure 2 is a horizontal sectional view taken substantially along a plane as indicated by the line 2-2 of Figure 1;

Figure 3 is a fragmentary side elevational view showing the unit in an open position;

Figure 4 is a fragmentary side elevational view, partly in vertical section showing the unit in a closed position;

Figure 5 is a cross sectional view taken substantially along a plane as indicated by the line 5-5 of Figure 1;

Figure 6 is a fragmentary side elevational view similar to Figure 1 but illustrating another form of the drain closure and actuating unit;

Figure 7 is a vertical sectional view thereof showing the unit in an open position;

Figure 8 is an end elevational view taken substantially along a plane as indicated by the line 8-8 of Figure 6;

Figure 9 is a horizontal sectional view taken substantially along a plane as indicated by the line 9-9 of Figure 7;

2

Figure 10 is a perspective view of one element of the unit, and

Figure 11 is a side elevational view of a multi-section laundry tub showing two of the units applied to one of each of two drain pipes of the laundry tub.

Referring more specifically to the drawings, and first with reference to the form of the invention as illustrated in Figures 1 to 5, for the purpose of illustrating a preferred application and use of the drain pipe closure and closure actuator, designated generally 12 and comprising the invention, a portion of a laundry tub or washing machine tub is illustrated in Figure 1 and designated generally 13 including a portion of the bottom 14 thereof which is provided with a drain opening 15. The opening 15 is internally threaded to receive one externally threaded end 16 of a drain pipe, designated generally 17 which is bent so that its lower, discharge end 18 is offset with respect to its inlet end 16 and is disposed to open downwardly at an angle. The discharge end 18, which is likewise externally threaded, as seen in Figure 4, is normally adapted to open above a sewer drain, not shown, and is disposed above a supporting surface 19 on which the supporting legs of the tub 13 rests, one of which legs 20 is illustrated in Figures 1 and 2. The parts 13 to 20, inclusive, form no part of the present invention but have merely been illustrated and briefly described to afford a better understanding of the drain pipe closure and closure actuator unit 12 which comprises the invention.

Said unit 12 includes a body member, designated generally 21 having a sleeve portion 22 provided with a bore 23 which extends longitudinally therethrough and which is internally threaded at one end thereof to receive the externally threaded discharge end 18 of the drain pipe 17 for detachably mounting the unit 12 thereon. The body member 21 is provided with an integral laterally projecting extension 24 which is disposed contiguous with the upper internally threaded end of the bore 23, which is engaged by the pipe end 18. Said extension 24 projects generally upwardly with respect to the pipe end 18 and has a longitudinally slotted outer portion 25 the slot of which opens outwardly thereof and likewise extends longitudinally of the body member 21 from end-to-end of the lateral extension 24 and in a direction generally parallel to the bore 23. The slotted portion 25 forms spaced substantially parallel walls 26 and 27 and the upper edge portion of the wall 27 is provided with a notch 28. The body member 21 is also provided with an ear 29 which projects outwardly and downwardly

3

from the sleeve portion 22. The ear 29 is disposed beneath the extension 24 and extends to below the lower end of the sleeve portion 22. An arm, designated generally 30 has ends 31 and 32 which are disposed substantially at an oblique angle to one another. The inner portion of the end 32, which is located adjacent the bight portion of the arm 30 is bifurcated to receive the free end of the ear 29 and pivotally supported thereby on a pin 33 which extends through said ear and through the arm portion 32.

A relatively rigid disk-shaped valve or closure 34, which is preferably formed of a relatively rigid rubber or rubber composition is disposed on the inner side of the arm portion 31 and spaced therefrom by a washer 35 and is mounted by a nut and bolt fastening 36 which extends through the closure disk 34, washer 35 and outwardly through the arm portion 31. When said arm portion 31 is disposed substantially parallel to the lower end of the sleeve portion 22 or at substantially a right angle to the axis of the bore 23, as seen in Figures 1 and 4, the closure disk or valve 34 will have its outer portion seated against the lower or discharge end of the sleeve portion 22 for closing the lower, outlet end of the bore 23. The opposite, upper end of the sleeve portion 22, opposite to the extension 24 is provided with an upwardly opening hook 37 to which is connected the ends of a contractile coil spring 38 the intermediate portion of which extends around the arm portion 31 and is connected to the exposed end of the bolt of the fastening 36 so that said spring 38 will yieldably retain the arm 30 in its position of Figures 1 and 4 for holding the closure or valve 34 in a position for closing the lower, discharge end of the bore 23; said spring 38 being of sufficient strength to maintain the valve or closure 34 in sealing engagement with the lower end of the sleeve portion 22.

The arm portion 32 is bifurcated to its outer end and the furcations thereof are provided with complementary downwardly extending enlargements 39. An actuating rod 40 extends loosely through an opening 41 in the upper portion of the leg 20 and is provided at its upper end with an eye or handle portion 42 which is disposed above and outwardly of said leg 20. The actuating rod 40 extends downwardly and inwardly from the opening 41 to one side of the upper end of the drain pipe 17 and over another angularly disposed portion thereof, as seen in Figure 2 and has a lower portion thereof extending reciprocally through the slotted portion 25 and thence through the bifurcated arm portion 32, as best seen in Figure 4. The lower end of the rod 40 is threaded as seen at 43 to receive a nut 44 which is adjustable thereon for adjustably supporting a metal washer 45 on the rod end 43 and above the nut 44. The washer 45 has its upper side bearing on the rounded enlargements 39 which form bearing surfaces for said washer. A pin 46 extends between the free ends of the furcations of the arm portion 32 to prevent the rod 40 from being displaced outwardly through the arm portion 32. A pin 47 extends transversely through the rod 40 and projects laterally therefrom and is disposed to engage the upper edge of the wall 26 when the closure 34 is in a closed position for supporting the actuating rod 40 against downward sliding movement relatively to the body member 21. A short length of rod 48 is secured in any suitable manner as by welding, as seen at 49 to the rod 40 below and adjacent the pin 47 and said rod 48 is disposed on the

4

upper side of said rod 40 and is positioned between the walls 26 and 27 when the closure 34 is in its closed position.

By grasping the eye or handle 42 and exerting a pull on the rod 40, the arm 30 will be caused to rock from its position of Figures 1 and 4 to its position of Figure 3 and with the washer 45 pivoting on the enlargements 39. The rod 40 may then be rotated a quarter of a turn for swinging the lower end of the short rod 48 into the notch 28 and so that it may rest on the bottom of said notch for positively retaining the closure 34 in its open position of Figure 3 and against the action of the expanded spring 38. However, by merely rotating the rod 40 a quarter of a turn in the opposite direction, the unit 12 will be released from its latched, opened position of Figure 3 and so that the spring 38 may return the parts to their positions of Figures 1 and 4 for resealing the lower end of the bore 23. It will be obvious that the contents of the tub 13 may be drained through the pipe 17 when the unit 12 is in an open position of Figure 3.

Figures 6 to 11 illustrate another form of the drain pipe closure and closure actuating unit, designated generally 50. In Figure 11 a laundry tub, designated generally 51 is illustrated to illustrate one application and use of the unit 50 although it will be understood that said unit could be utilized with the drain pipe of a washing machine or other receptacle. The laundry tub 51 is provided with at least two sections and is shown as having two drain pipes, each designated generally 52 extending downwardly therefrom and having lower discharge ends 53 which are disposed at an oblique angle to a supporting surface 54 and which open thereabove and which are laterally offset with respect to the upper ends 55 of the drain pipes which connect with drain openings of the tub bottom 56, as illustrated in Figure 7. The tub 51 is supported by depending legs 57 which rest upon the supporting surface 54. The parts 51 to 57 likewise constitute no part of the present invention but have been illustrated and briefly described to illustrate the application and use of the drain closure and actuating unit 50.

The unit 50 includes a body member in the form of a sleeve 58 the upper end of which is internally threaded to threadedly engage the externally threaded discharge end 53 of one of the drain pipes 52. The sleeve 58 is provided with an ear 59 which extends outwardly and downwardly from adjacent the lower, discharge end 60 thereof and which is disposed on the upper side of the sleeve 58, when said sleeve is in a correctly applied position as illustrated in Figures 6, 7 and 11. An elongated arm, designated generally 61 has an elongated bifurcated end 62 in which the lower, free end of the ear 59 is received, adjacent the inner end of the bifurcated arm portion 62. A pin 63 extends through the bifurcated portion 62 and through the free end of the ear 59 for pivotally connecting the arm 61 to said ear. The other, shorter end 64 of the arm 61 has a closure or valve 65 mounted on the upper side thereof and spaced therefrom by a washer 66, said parts being connected to the arm portion 64 by a nut and bolt fastening 67. The parts 65, 66 and 67 correspond to the parts 34, 35 and 36, respectively, of the unit 12. Further, the valve or closure 65 engages the lower end 60 of the sleeve 58 in the same manner as the valve 34 engages the lower end of the sleeve portion 22 for closing the discharge end of the

5

bore of said sleeve 58 when the arm 61 is in its position of Figures 6 and 11. The sleeve portion 58 is provided with an integral upwardly opening hook 68 which is disposed adjacent its upper end and in substantially longitudinally alignment with the ear 59 and to which the ends of a contractile coil spring 69 are connected. The spring 69 extends downwardly around the lower portion of the sleeve 58 or ear 59 and around the arm portion 64 and is anchored intermediate of its ends to the shank end of the fastening 67, said spring normally retaining the parts in the position of Figure 6 for sealing the discharge end 60 of the sleeve 58.

An actuating rod 70 extends loosely through an opening 71 in the upper portion of the leg 57 which is located adjacent the drain pipe 52 to which the unit 50 is connected. The rod 70 is provided with a handle 72 at its upper end which is located above and outwardly of said leg 57. The rod 70 extends to one side of the upper portion 55 of said drain pipe and over an intermediate portion thereof and diagonally over its lower end 53. The lower end of the rod 70 is disposed between the furcations of the arm portion 62 and is pivotally connected thereto by a pin 73 near the outer end of said arm. The arm portion 62, beyond the pin 73 is beveled as seen at 74 along the outer edges of its furcations. A shank 75 is welded or otherwise secured as seen at 76 to the rod 70, near the arm 61 and said shank 75 projects perpendicularly from the rod 70 and generally in an upward direction and has a threaded free end to receive a nut 76 forming an adjustable stop for one end of an expansion coil spring 77 the opposite end of which bears against one side of a washer 78 which in turn rests against a portion of the upper side of an elongated, substantially rigid latch strip 79. The strip 79 is of arcuate cross section adjacent a tapered end 80 thereof and of inverted channel-shaped cross section adjacent its opposite, laterally enlarged end 81. The enlarged portion 81 is provided with an opening 82 through which the shank 75 loosely extends. The terminal portion of the restricted end 80 of the latch plate 79 engages a portion of the upper side of the rod 70, above the shank 75 and the enlarged end 81 of said strip 79, beyond the opening 82 is engaged by the terminals of the furcations of the arm portion 62.

When the closure or valve 65 is in a closed position the arm 62 is disposed substantially at a right angle to the axis of the sleeve 58 and at an acute angle to the spring pressed latch strip 79 so that the spring 77 by urging the latch strip 79 toward the rod 70 will cooperate with the spring 69 to retain the valve or closure 65 in its closed position. However, when a pull in an upward direction is exerted on the handle 72 the arm 61 will be caused to rock in a clockwise direction on its pivot 63 causing the terminals of the furcations of the arm portion 62 to slide relatively to the latch strip 79 and toward the shank 75 from the position of Figure 6 toward the position of Figure 7 and as the rod 70 reaches its position of Figure 7 in which the valve 65 is in a fully opened position, the latch strip 79 will engage the beveled surfaces 74 and the pressure of the spring 77 will be sufficient to hold the parts in their positions of Figure 7 and against the action of the spring 69 which is disposed substantially in alignment with the pivot 63 so that said spring possesses little or no tendency to return the closure 65 to its closed position until the arm 62 is rocked slightly in the opposite or counterclockwise direction by a downward and inward move-

6

ment of the rod 70. As the arm 62 swings clockwise and the terminals of the arm 61 swings clockwise and the terminals of its portion 62 move out of engagement with the latch strip 79 the spring 77 will force said strip inwardly toward a position nearly parallel to the rod 70 from its angular position of Figure 6 and said strip 79 in so moving will pivot on the rod 70 at its upper restricted end 80. Conversely, when the closure 65 is in a closed position and the arm 61 is disposed at an acute angle to the latch strip 79 the spring 77 will cooperate with the spring 69 to retain the parts in their positions of Figure 1.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A drain pipe closure and actuating unit comprising a body member having a sleeve portion provided with a bore extending through the sleeve portion from end-to-end thereof, one end of the bore of said sleeve portion being adapted to detachably engage the outlet end of a drain pipe, an ear projecting from the body member adjacent the opposite, discharge end of the sleeve portion, an arm pivotally mounted intermediate of its ends on said ear, a closure member carried by one end of said arm for engaging against the discharge end of the sleeve portion for closing the bore thereof, spring means anchored to said body member and connected to said end of the arm for urging said arm to rock in a direction for retaining the closure member in sealing engagement with the discharge end of the sleeve portion, an actuating rod pivotally connected at one of its ends to said arm adjacent its opposite end, a shank projecting perpendicularly from the actuating rod adjacent said arm, a latch strip of channel-shaped cross section having an opening adjacent one end thereof for loosely engaging said shank, the end of said latch strip, remote from said opening thereof, being disposed to fulcrum and slide on the actuating rod, the terminal portion of the last mentioned end of said arm being disposed to fulcrum and slide in the channel of the opposite end of the latch strip, an adjustable stop carried by the outer end of said shank, and an expansion spring bearing on the stop and latch strip and carried by said shank for releasably retaining the arm at an acute angle relatively to the actuating rod and latch strip and with the closure in a closed position or at an obtuse angle to the actuating rod and latch strip and with the closure in an open position, said actuating rod being longitudinally movable in one direction for rocking the arm to swing the closure to a closed position and being movable in the opposite direction for rocking the arm to swing the closure to an open position.

2. A drain pipe closure and actuating unit comprising a body member having a sleeve portion provided with a bore extending through the sleeve portion from end-to-end thereof, one end of the bore of said sleeve portion being adapted to detachably engage the outlet end of a drain pipe, an ear projecting from the body member adjacent the opposite, discharge end of the sleeve portion, an arm pivotally mounted intermediate of its ends on said ear, a closure member carried by one end of said arm for engaging against the discharge end of the sleeve portion for closing the bore thereof, spring means anchored to said body member and connected to said end of the

7

arm for urging said arm to rock in a direction for retaining the closure member in sealing engagement with the discharge end of the sleeve portion, an actuating rod pivotally connected at one of its ends to said arm adjacent its opposite end, a shank projecting perpendicularly from the actuating rod adjacent said arm, a latch strip of channel-shaped cross section having an opening adjacent one end thereof for loosely engaging said shank, the end of said latch strip, remote from said opening thereof, being disposed to fulcrum and slide on the actuating rod, the terminal portion of the last mentioned end of said arm being disposed to fulcrum and slide in the channel of the opposite end of the latch strip, an adjustable stop carried by the outer end of said shank, and an expansion spring bearing on the stop and latch strip and carried by said shank for releasably retaining the arm at an acute angle relatively to the actuating rod and latch strip and with the closure in a closed position or at an obtuse angle to the actuating rod and latch strip and with the closure in an open position, said actuating rod being longitudinally movable in one direction for rocking the arm to swing the closure to a closed position and being movable in the opposite direction for rocking the arm to swing the closure to an open position, said expansion spring cooperating with the first mentioned spring for releasably retaining the arm in either of said positions.

3. A closure and closure actuator for drain pipes comprising a sleeve member having one end adapted to be detachably fastened to the outlet end of a drain pipe and having a bore extending longitudinally therethrough and forming an extension of the discharge end of the drain pipe,

8

an ear projecting from said sleeve and extending beyond the opposite discharge end of said sleeve, an arm pivoted intermediate of its ends on said ear, a valve carried by one end of said arm for seating against the discharge end of the sleeve for closing the bore thereof in one position of said arm, an actuating rod pivotally connected at one of its ends to said arm adjacent its opposite end, a latch plate having one end fulcrumed on the actuating rod, the terminal of the last mentioned end of said arm slidably and pivotally engaging the latch plate adjacent its opposite end, the first mentioned end of said arm being disposed at an acute angle to the actuating rod and latch plate when the valve is in a closed position and at an obtuse angle to the actuating rod and latch plate when the valve is in an open position, and spring means yieldably urging said latch plate to rock on its first mentioned end toward the actuating rod for releasably retaining said arm against rocking movement relatively to the ear for retaining the valve in either an open or a closed position.

ORVILLE F. COUCHOT.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,400,325	Smurr	Dec. 13, 1921
1,438,016	Bourke	Dec. 5, 1922
1,638,954	Pereira	Aug. 16, 1927
1,733,672	Ross	Oct. 29, 1929
2,454,077	McEwen	Nov. 16, 1948