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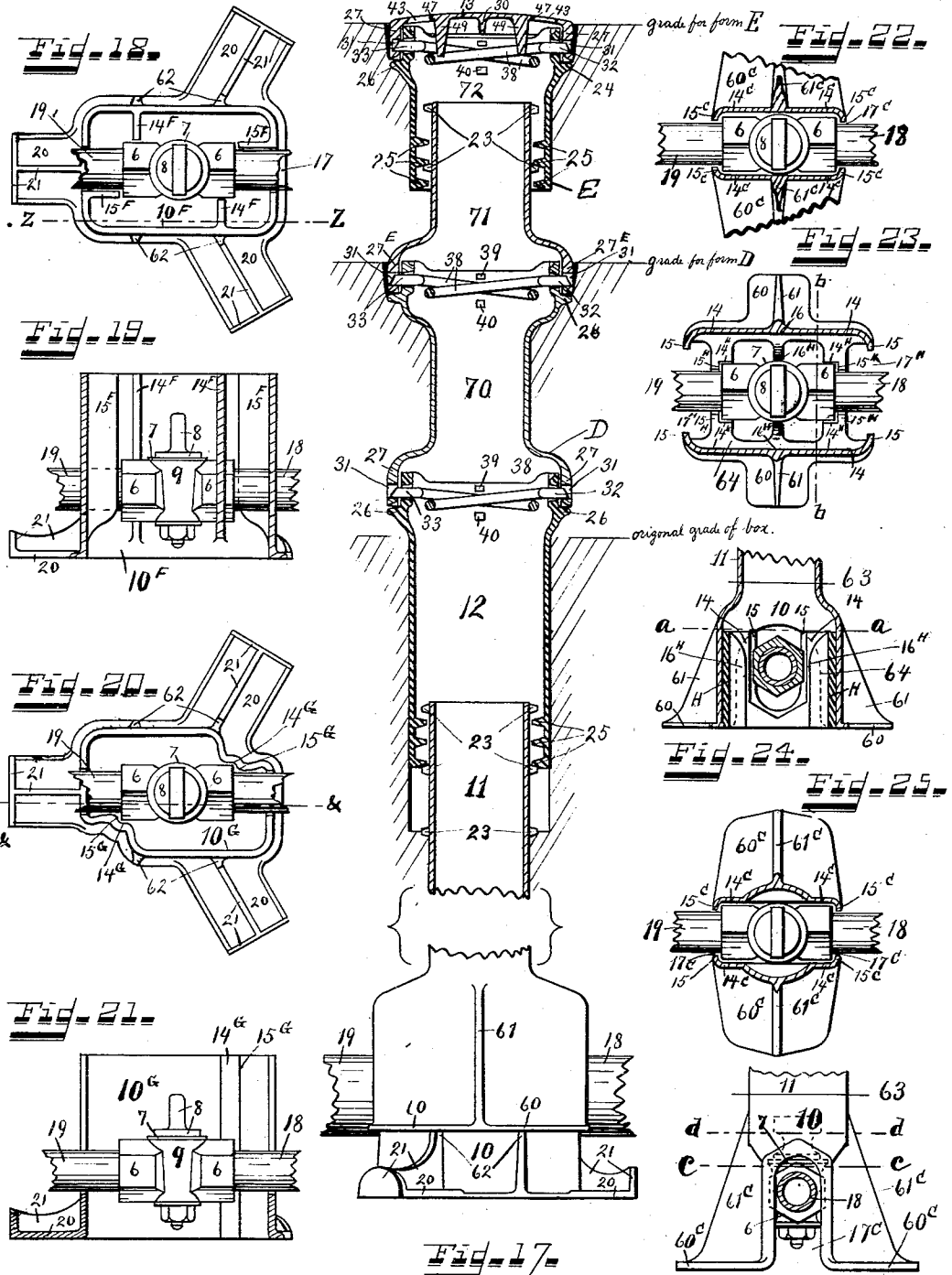
Patented Dec. 27, 1898.

I. C. KOEHNE.
SERVICE BOX.

(Application filed Sept. 5, 1894.)

(No Model.)

3 Sheets—Sheet 2.



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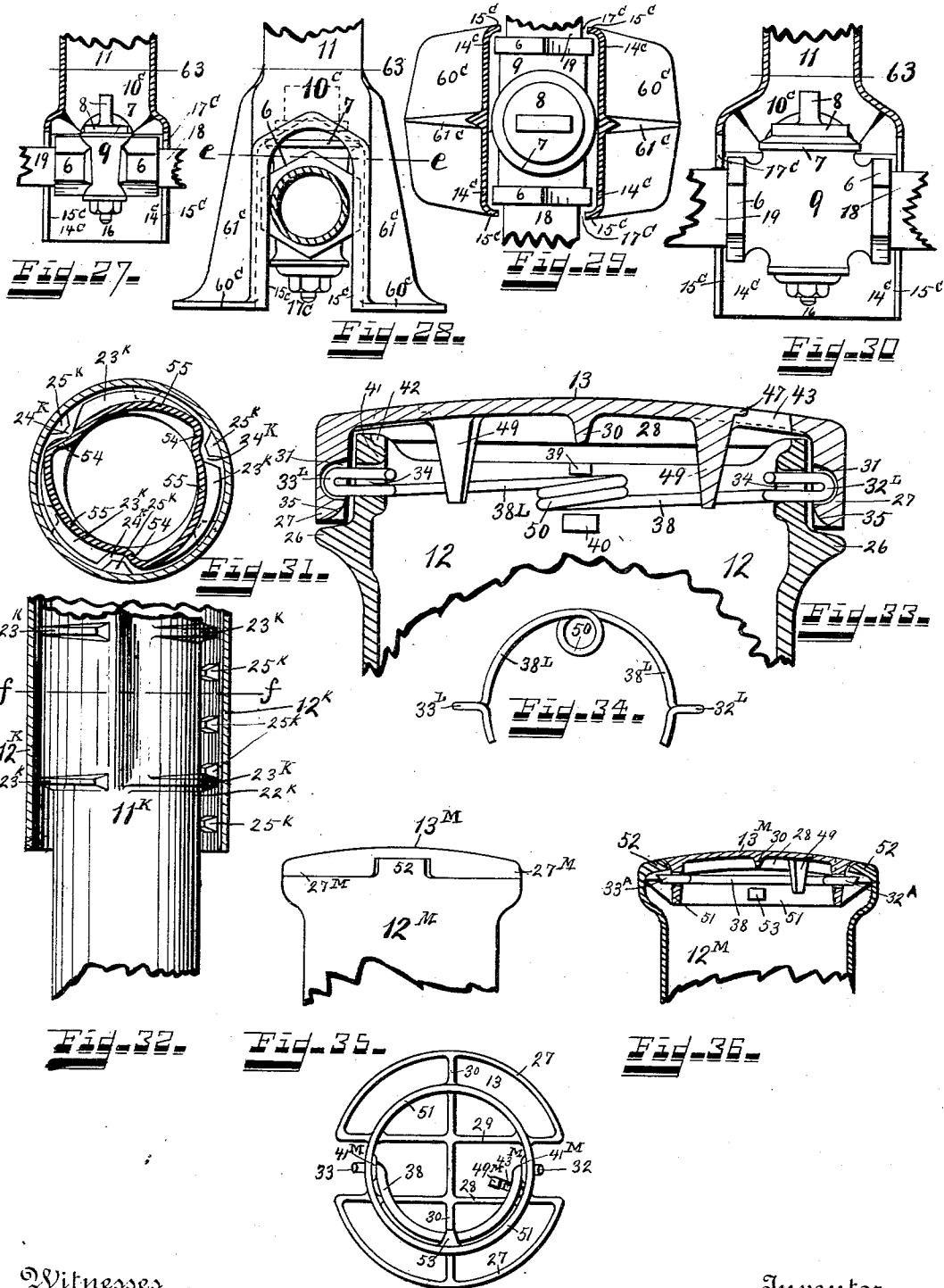
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UNITED STATES PATENT OFFICE.

IRA C. KOEHNE, OF COLUMBUS, OHIO, ASSIGNOR TO FRANK KOEHNE AND
ADAM H. MCALPINE, OF SAME PLACE.

SERVICE-BOX.

SPECIFICATION forming part of Letters Patent No. 616,542, dated December 27, 1898.

Application filed September 5, 1894. Serial No. 522,176. (No model.)

To all whom it may concern:

Be it known that I, IRA C. KOEHNE, a citizen of the United States, residing at Columbus, county of Franklin, and State of Ohio, have invented an Improvement in Service-Boxes, of which the following is a specification.

My present invention consists in the details of construction, new method of extension, and novel arrangement of the extension parts of a service-box, as hereinafter described, and mentioned in the claims, to wit: first, to a base construction for service-boxes adapted to keep the service-box and the stop-cock in such a relative position that the latter can always be operated through the opening in the top of the box; second, to a novel construction of the stem and sleeve with reference to the adjustment of the one upon the other; third, in an extension for service-boxes adapted to be secured in the place of the lid of the box to be extended, whereas the former manner of extending the length of the service-box was to attach an extension-piece to the top of the stem of the box, (where the grade is raised after the box has been set the former manner of extension necessitates the digging up of the box, removing the sleeve, and then applying the proper extension-piece to the top of the stem,) and, fourth, to provide new and novel means for securing the lid and suitable extension-pieces to the top of the box, as well as to provide and so adapt the several parts as to expedite the operation of the service-box, increase its practical utility and durability, and to cheapen its production. These objects are accomplished in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the box, showing the sleeve and the lid in section. Fig. 2 is a side elevation of Fig. 1, showing the upper part of box in section. Fig. 3 is a plan view of the lid, and Fig. 4 is a bottom view thereof. Fig. 5 is a plan view of the sleeve with the lid removed. Fig. 6 is a view similar to Fig. 5, but showing a modified form of lid-securing device, which modification will hereinafter be referred to for convenience as "form A." Fig. 7 is a sectional view

on lines X X of Figs. 5 and 6, omitting the lid-securing device. Fig. 8 is a view similar to Fig. 5, but showing a modified form of lid-securing device, which modification will hereinafter be referred to for convenience as "form B." Fig. 9 is a sectional view on line Y Y of Fig. 8. Fig. 10 is a plan view of Fig. 2 with the lid and sleeve removed. Fig. 11 is a central vertical section of the bottom of the box shown in Fig. 2, and Fig. 12 is a similar view of the bottom of the box shown in Fig. 1. Fig. 13 is a bottom view showing a modified form of the base of stem to directly fit the stop-cock, which modification will hereinafter be referred to for convenience as "form C." Figs. 14, 15, and 16 are sectional elevations and a plan view of the blank number-strip. Fig. 17 is a view of the box similar to Fig. 2 and showing the different forms D and E of extension-pieces in section. Fig. 18 is a plan view of a modified form F of base-piece. Fig. 19 is a sectional elevation on line Z Z of Fig. 18. Fig. 20 is a plan view of a modified form G of base-piece. Fig. 21 is a sectional elevation on line & & of Fig. 20. Fig. 22 is a plan view of form C of the base of the stem shown in Fig. 13, but fitting a smaller size of stop-cock and having the upper part broken away to line C C of Fig. 26. Fig. 23 is a sectional plan view on line A A of Fig. 24 and showing a modified form of device for securing the small sizes of stop-cocks, which modification will hereinafter be referred to as "form H." Fig. 24 is a sectional elevation on line b b of Fig. 23. Fig. 25 is a sectional plan view on line d d of Fig. 26, showing the modified form C of the base of stem. Fig. 26 is a front elevation of the base of stem in Figs. 22 and 25. Fig. 27 is a central vertical section of Fig. 26. Fig. 28 is a front elevation of the style of the base of stem termed "form C" and fitting a larger size of stop-cock than that shown in Fig. 26. Fig. 29 is a sectional plan view on line e e of Fig. 28. Fig. 30 is a central vertical section of Fig. 28. Fig. 31 is a sectional plan view on line f f of Fig. 32. Fig. 32 is an elevation of a part of the stem and sleeve, the sleeve being in section, to illustrate a modified form of adjusting mechanism, which modification

will hereinafter be referred to for convenience as "form K." Fig. 33 is a central vertical section of the top of sleeve and its lid, showing the modified form L of securing-spring; and Fig. 34 is a plan view of said spring. Fig. 35 is an elevation of a part of the top of sleeve, showing a modified form M of lid. Fig. 36 is a central vertical section of Fig. 35, and Fig. 37 is a bottom view of said lid or cover.

Like characters of reference are employed to designate identical parts throughout the drawings and descriptions.

This device is used for various purposes, and the varied experience, and consequently different ideas, of users requires the exposition of a variety of forms to meet the approval of their peculiar views.

To this end the present device consists, essentially, of a base holding therein the stop-cock by a series of projections or engaging faces adapted to engage the sides and ends of said stop-cock to prevent its moving laterally or endwise and to retain said stop-cock in operative position. In the preferred form said base 10 is formed separate from stem 11, while the projections which engage the opposite ends of said stop-cock and prevent its moving endwise have faces at substantially right angles to the engaging faces of the projections which prevent the lateral movement of said stop-cock.

The elevating device consists, essentially, of a stem and a sleeve vertically adjustable thereon, said adjustment being preferably accomplished by providing said stem with a series of cam or wedge shaped projections separated by depressed vertical ways, said projections being each provided with a vertical row of horizontal ribs, while said sleeve is provided with a corresponding series of vertical rows of inwardly-projecting lugs adapted to move in said depressed vertical ways for vertical adjustment, to maintain which said sleeve is rotated sufficiently to cause said lugs to lock on said wedge-shaped projections and to be supported against heavy loads by the said ribs.

The lid and its securing device consists, essentially, of a lid fitting the top of the box and a spring-pressed latch carried by one part and engaging with recess in the other part to secure said lid to the top of said box.

The extension device consists, essentially, of an extension member or members adapted to be attached to the top of the box in place of the lid which opens and closes the opening to said box. To this end the box and its lid are provided with means for securing said parts together, while the bottom of said extension is provided with securing devices similar to said lid, and the top of said extension is provided with securing devices similar to the top of said box, whereby in extending the height of service-boxes to accommodate a change of grade the lid is removed from the box, the extension secured in place there-

of, and said lid secured to the top of said extension.

In the annexed drawings I have exhibited a variety of forms, arrangements, and shapes of the parts, and all are believed to be within the scope and spirit of this invention.

Each of the various sizes of stop-cocks employed with this device is of the usual size and form, with valve-stem 8 fitted into the vertical opening through the stop-cock. At the top of this opening said stop-cock is provided with a raised ring 7, while the contour of each of the ends 6 of said stop-cock is hexagon.

The essential elements common to the various forms of base 10 (shown in Figs. 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, and 30) are the engaging faces 14, embracing the flat opposite sides of the hexagon ends 6 of stop-cock 9 to prevent either said stop-cock or the service-box from turning or moving laterally, and the engaging faces 15, embracing the opposite ends of said stop-cock 9 to prevent any endwise movement of either said stop-cock or the service-box, while Figs. 11, 12, 13, 22, 23, 24, 25, and 29 also illustrate the engaging faces 16, embracing the central ring 7 of stop-cock 9 on opposite sides to aid said faces 14 in the performance of their office, since in the stop-cocks for water-service the hexagon ends 6 are usually slightly less in diameter than those of the stop-cocks for natural or artificial gas service, while their rings 7 correspond in diameter. A vertical slot 17 is formed in opposite sides of base 10, slightly wider than the diameter of and to accommodate service-pipes 18 and 19, leading to and from the stop-cock 9, said slots being also an element common to all said bases.

The base 10 in all its various forms shown is substantially rectangular in shape and is provided at or near its bottom edge with a series of three feet 20, projecting at an angle from each other and having integral strengthening-ribs 21, while in the figures illustrating form C said feet and ribs are designated, respectively, as 60° and 61°. Rising above the base 10 is a hollow stem 11, cylindrical in form up to the point 22, Figs. 1, 2, and 17, from which point upward said stem is formed elliptical (see Fig. 10) and having a series of oppositely-arranged integral ribs 23 extending from the opposite sides, representing the shortest diameter of said ellipse. The outer edges of said ribs 23 form a circle of substantially the same diameter as the largest diameter of the elliptical part of said stem 11. At diametrically opposite points in the shortest diameter of the elliptical part of stem 11 said ribs 23 are removed sufficiently to form a vertical passage-way 24, Figs. 1 and 10, to accommodate a series of inwardly-projecting lugs 25, oppositely arranged near the lower end of and within a cylindrical sleeve 12, which loosely telescopes over said stem 11 in adjusting said sleeve to different heights on said stem.

The spacing of lugs 23 is such that the distance between the ribs 23 is divided into a series of intermediate spaces (see Figs. 1, 2, 17, and 32) to give a wide range of adjustment with the least number of ribs 23 and lugs 25. This arrangement of ribs and lugs accomplishes quite a saving of metal, and consequently reduces the item of cost, which is of considerable importance in these days of close competition in devices of this particular class. In locking sleeve 12 to stem 11 the lugs 25 are turned by their sleeve 12 out of the way 24 in either direction to rest on the ribs 23 of stem 11, and the parts may be retained in this position by the wedge-like action caused by said lugs 25 riding upon the constantly-increasing diameter of the stem 11, which movement, up to the wedge-like locking of said parts, gives practically a quarter-turn of sleeve 12 on stem 11. To provide for a half-turn of sleeve 12 on stem 11 in either direction, the cylindrical portion of stem 11 below point 22 is of a diameter equal to the shortest diameter of the elliptical part of said stem and connects the respective ways 24 (see Figs. 1 and 2) to permit the lugs 25 on stem 11 coming down one way 24 to or below point 22 and then be turned half-way around and raised into the opposite way 24 to the desired height and relocked.

The sleeve 12 is of slightly increased diameter near its upper end and is provided with an outwardly-projecting ring 26, upon which rests the flange 27 of the slightly-arched covering or lid 13. This lid 13 is provided on its inner side with parallel strengthening-ribs 28 and 29, intersected at right angles by a strengthening-rib 30, Figs. 1, 2, 3, and 4.

In a flange 27 between ribs 28 and 29 internal recesses 31 are formed on opposite sides, Figs. 2, 17, and 33, for receiving projections 32 and 33 of the sleeve 12. Either or both of these projections 32 and 33 are spring projections protruding through openings 34 in the sleeve 12 to be latched into the recesses 31 by the beveled edges 35, Fig. 33, of flanges 27, directly below said recesses 31. However, should the equivalent projection 33^B be integral with sleeve 12^B, as shown in Figs. 8 and 9, (modified form B, hereinafter described,) said projection 33^B will first be entered into its respective recess 31 and then the opposite edge of lid 13 lowered to cause the spring projection or yielding latch 32^B to be latched into its recess 31, as before described. To prevent the lid 13 from being placed the wrong way upon the sleeve 12, said flange 27 is provided with a slot or notch 36, adapted to fit over a lug 37, projecting from ring 26 of sleeve 12.

In Figs. 1, 2, 5, and 17 the projections 32 and 33 are shown as connected to or integral with an intervening coil and a half of brass or galvanized spring-wire 38, or said wire may be otherwise prepared to prevent corrosion. The spring 38 thus formed lies adjacent to the inside diameter of sleeve 12, resting be-

tween projections 39 and 40, formed upon said sleeve 12 at points diametrically intermediate to the openings 34. The spring 38 forces the projections 32 and 33 outward with a yielding pressure, and the parts of its coil adjacent to the openings 34 are prevented from contacting with the inside diameter of sleeve 12 by an inwardly-projecting ridge 41, formed around each opening 34, which ridge 41 is provided with an upward extension 42 for the purpose hereinafter specified. The lid 13 is provided with one or more openings 43, adapted to receive a key 44, whose lower beveled edge 45 (shown in Fig. 2) is inserted adjacent to and parallel with the straight side of projection 42, Fig. 7, for the purpose of withdrawing the spring projection 32 from recess 31. This key 44 is provided with a recess 46 to engage a projection 47 in opening 43 for the purpose of raising lid 13 when projection 32 is withdrawn from its recess 31, while said key 44 is provided with projections 48 near its top to prevent the complete passage of key 44 through opening 43. The projection 42 extends upward from the ridge 41 to prevent key 44 from being entered at an angle and striking ridge 41, which ridge 41 permits the beveled edge 45 of key 44 to enter between the wire 38 and the side of sleeve 12. A projection 49, formed adjacent to the inside edge of opening 43, extends downward a short distance to prevent projection 32 from being withdrawn from opening 34 by key 44 or any other instrument while lid 13 is in position.

In Fig. 6 the modified form A consists in substituting half a coil of spring 38^A for the coil and a half, Fig. 5, and having corresponding projections 32^A and 33^A, which half-coil 38^A may be employed where a stiff spring is desirable to maintain the projections 32^A and 33^A in position.

In Figs. 8 and 9 the modified form B consists in forming a projection 33^B integral with a sleeve 12^B, otherwise formed similar to sleeve 12, heretofore described, (the same letters of reference being employed in the drawings, with an exponent B,) and providing a projection 32^B with three-fourths of a coil of spring 38^B, the free end of which is hooked over the lug 40^B, as shown.

In Figs. 33 and 34 the modified form L consists only in the special formation of spring 38^L and projections 32^L and 33^L, in which a wire 38^L is provided with one or more small coils 50, resting between lugs 39 and 40 of sleeve 12, from which coils said wire 38^L is curved inward to the openings 34, through which said wire protrudes double to form the projections 32^L and 33^L, while the free ends of said wire 38^L project slightly past the openings 34 to enable the key 44 to withdraw either or both projections 32^L and 33^L whether the coils 50 rest between the lugs 39 and 40 on one side of sleeve 12 or those opposite. In Figs. 35, 36, and 37 the modification M consists in the special formation of lid 13^M and upper part of sleeve 12^M.

Instead of mounting the spring projections or yielding latches 32 and 33 to project through openings 34 in sleeve 12, as heretofore shown, the present modification contemplates their mounting in lid 13^M to project through openings similar to 34 of Fig. 7, formed in a flange 51, projecting downward from lid 13^M at a short distance within flange 27^M, which in this instance is short and rests upon the top edge of sleeve 12^M. The flange 27^M and a portion of lid 13^M are removed from the opposite sides to accommodate lugs 52, projecting upward and inward from sleeve 12^M, which lugs are beveled on their inner edge to permit either or both projections 32^A and 33^A to be latched under said lugs 52 to secure lid 13^M. A lug 53, formed on flange 51, is adapted to retain in position the wire 38 of either of the heretofore-described forms of lid-securing devices, while a ridge 41^M is formed on the inside of flange 51 around each of the openings similar to 34 of Fig. 33 and serving the same purpose as ridges 41, heretofore described. Form A, Fig. 6, has been shown in this instance for clearness, and the lid 13^M is provided, as in the other forms, with one or more openings 43^M, adjacent to which stands the lug 49^M.

In Figs. 31 and 32 the form K consists in a modification of the adjusting mechanism for stem 11^K and sleeve 12^K.

Instead of forming the depressed ways 24 on opposite sides of stem 11 and sloping the metal on both sides of said ways 24 up to meet the full diameter of stem 11 at points opposite said ways 24, which construction gives stem 11 an elliptical shape, the present modification contemplates forming three depressed vertical ways 24^K at equidistant points around stem 11^K, which ways 24^K are blended into a cylindrical shape at point 22^K, as and for the purpose heretofore described in the elliptical form of stem 11. To the left of each of the ways rises a wall 54, of metal, extending outward to the full diameter of stem 11^K, while joined to the inner edge of wall 54 and the bottom of ways 24^K is a wall 55, of metal, sloping outward to the right of each way 24^K to unite with the outer edge of the next wall 54. At intervals throughout the extent of these walls 55 are formed the ribs 23^K, which extend horizontally and end at the right edge of each way 24^K. The ribs 23^K on one wall 55 occupy the same plane as those ribs upon the remaining walls 55, while the outside diameter of ribs 23^K forms a circle equal in diameter with the outer edges of wall 54, and said circle is interrupted only by the depressed ways 24^K. The lugs 25^K in this instance project from three equidistant points about the interior of sleeve 12^K, (see Fig. 31,) and are arranged vertically one above the other at each of these three points. (See Fig. 32.) These lugs 25^K are also arranged to divide the vertical distance between the ribs 23^K into a series of intermediate spaces, as heretofore described in connection with Figs. 1, 2, and 17, which figures show three

lugs 25 dividing said distance into as many intermediate steps, while Fig. 32 shows four lugs 25^K dividing the said distance into three intermediate steps. This extra set of lugs (shown in Fig. 32) is provided in case one set of lugs is broken by an excessive strain.

I desire to claim in generic terms the elliptical formation of stem 11 with its oppositely-arranged ribs 23, having vertical ways 24 therethrough, while the arrangement I elect to specifically claim is that form of adjusting mechanism shown in Figs. 31 and 32 and described as "form K."

The various forms of base 10 will now be described in detail.

In the various forms of base 10 (illustrated in Figs. 1, 2, 10, 11, 12, 18, 19, 20, and 21) said base is provided with three feet 20, as shown. To accommodate these forms of bases, the bottom part of stem 11 is enlarged into a rectangular shape, in this instance longer on one diameter than on the other, and in the ends corresponding with its largest diameter are formed slots to admit the service-pipes 18 and 19, while the sides representing said shortest diameter are provided with strengthening-ribs 60 and 61, Figs. 1, 2, 10, and 11. The bottom part of stem 11 fits down over base-piece 10 (see Figs. 11 and 12) and rests upon the supporting-lugs 62, as shown in Figs. 1, 2, and 11.

The base 10 in Figs. 1, 2, 10, 11, and 12 embraces the large stop-cock 9 exactly as the stop-cock 9 in Fig. 13 is inclosed, while the smaller sizes of stop-cock 9 may be retained in position in the manner shown in Figs. 18 and 19, form F, or Figs. 20 and 21, form G. In form F the stop-cock 9 is retained in position by a series of ribs projecting at right angles from the inner wall of base 10^F, the said ribs of like designation being arranged diametrically opposite and substantially parallel with each other. The ribs 15^F project inward on opposite sides of the supply-pipes 18 and 19 to embrace the ends of stop-cock 9, while the ribs of 14^F project inward to embrace the diametrically opposite flat faces of the hexagon ends 6 of stop-cock 9, which constructions form a vertical opening through the center of said base of substantially the same length and width as stop-cock 9, and thus constituting in this form the holding-faces, respectively. However, in form G the diametrically opposite corners of base 10^G are indented their full length to form an L-shaped groove, the members or right-angled faces of which are designated as walls or faces 15^G and 14^G, which respectively embrace the diametrically opposite ends and sides of stop-cock 9 to retain said stop-cock in position, and these respective points of contact with said stop-cock constitute the holding-faces. These modified forms F and G are presented with respect to the employment of a standard size of stem 11, fitting the different bases 10, employed to retain the various sizes of stop-cocks 9 in position. In Figs. 13, 22, 25, 26, 27, 28, 29, and 30, illus-

trating form C, the opening through the base 10^c of stem 11 is rectangular and of such a size and shape as to directly embrace the ends and entire sides of the stop-cock 9, while the vertical slots 17^c in opposite sides are wide enough to admit only the pipes 18 and 19 passing therethrough. The stem 11, above line 63, Figs. 26, 27, 28, and 30, is similar in formation to the upper part of stem 11. (Shown in Figs. 1, 2, and 17, or as in Figs. 31 and 32.) The holding-faces 15^c are formed by the projecting edges of the slots 17^c, while the holding-faces 14^c and 16^c are formed by the sides opposite said openings, which sides may continue on a plane with or below that required for the faces 14^c and 16^c. It will thus be seen that at each corner of the base 10^c an L-shaped column is formed by the union of the right-angled walls 14^c and 15^c, which walls respectively embrace the opposite flat sides of the hexagons 6 and the ends of said stop-cock 9, while intermediate to and connected with the walls 14^c on each side of base 10^c is a wall 16^c, embracing on opposite sides the ring 7 of stop-cock 9. The walls connecting the walls 14^c and 16^c may be substantially in the same plane therewith, as shown in the figures illustrating form C, or below the plane of said walls 14^c and 16^c, as shown between walls 14^h and 16^h in Fig. 23.

Instead of the ribs 60 and 61 strengthening the bottom of stem 11 (shown in Figs. 1, 2, and 17) said ribs are in this instance extended to form, respectively, the feet 60^c and their brace-pieces 61^c. A different stem 11 is employed for each different size of stop-cock 9, since said stem is formed at its bottom of an increased or decreased size and shape, according to the standard size of stop-cocks 9 said stem 11 is adapted to fit.

In Figs. 23 and 24 the form H consists in employing the form C of base 10^c of stem 11, used in confining the larger sizes of stop-cocks 9, Figs. 13, 28, 29, and 30, and employing them to confine the various smaller sizes of stop-cocks 9 by inserting an auxiliary base-piece 64 in the bottom of said base 10^c of stem 11. This base 64 is provided with the holding faces or walls formed as shown and described heretofore. However, this base-piece 64 is formed at each of its corners to accommodate the shape of and be retained firmly by the right-angled walls 14^c and 15^c of base 10^c. Oppositely-located slots 17^h are formed in and extend almost through the transverse walls of the base-piece 64. Adjacent to each edge of these slots is formed the walls 14^h and 15^h, joined together to form an L-shaped retaining-column for stop-cock 9. Each of the side walls H of base 64 is provided near the center of its length with an inwardly-projecting wall 16^h, extending up to the ring 7 of stop-cock 9 for the purpose heretofore specified. This enables the employment of the same stem 11 to hold the various sizes of stop-cocks directly should said stop-cocks be

large, or when small said stop-cocks are held by the appropriate size of auxiliary base 64.

As seen in Fig. 3, the character of the service (whether water or gas) is shown by letters cast upon the top of lid 13, while the service-designating number will also be cast thereon when possible. Where the service-designating number is not previously known, the lids 13 are cast with a blank number-strip 65, anchored therein by the anchors 66, Figs. 14, 15, and 16. This strip 65 is of composition metal, in order to have the numbers plainly stamped therein.

Arrows 67 and 68 are formed upon the top of lid 13, which fits one way only on sleeve 12, which is adapted to be turned sufficiently to permit said arrows to indicate the general directions, respectively, of pipes 18 and 19. These arrows perform the office of indicating the direction of the service-pipes 18 and 19.

The extension devices will now be described, reference being had to Fig. 17. Form D of extension device consists of a cylindrical tube 70, enlarged at its upper end, where it is formed similar to and contains the same lid or extension securing device as the top of sleeve 12, (shown in Figs. 1, 2, 7, or 33,) while its lower end is also enlarged and formed similar to flange 27 of lid 13, (shown in Figs. 1, 2, 4, and 33,) and the same letters of reference are employed in designating these corresponding parts with the addition of an exponent D. This form D of extension is intended to be employed when the raise of grade above previously-set boxes is known and where under other conditions the ordinary lengths of boxes are not sufficient when the box is first set. Form E of extension consists in a short sleeve 72, similar to sleeve 12, adjustable upon a short stem 71, similar to stem 11, with the exception that instead of being enlarged at the bottom to fit the stop-cock 9 this latter stem is enlarged at its lower end, where it is provided with a flange 27^e, formed similar to flange 27 of lid 13. Otherwise the stem 71 and sleeve 72 are formed similar to stem 11 and sleeve 12, previously described, the same letters of reference being employed with an exponent E. This form E is adapted to be attached to the top of sleeve 12 of the box in place of lid 13 in cases where the grade has been changed after the box has been set and where said grade varies in height above said previously-set boxes.

Where a box is extended, the lid 13 is removed, the proper extension-piece applied in place thereof, and then the lid is placed upon and secured to the top of said extension-piece 70 or 72.

This new method of extending the height of service-boxes is based upon the theory that it is much cheaper to apply an extension-piece to the top of sleeve 12 (even an adjustable extension-piece) than by following the old method of digging up sleeve 12 and applying an extension-piece to the top of stem 11.

Having now so fully and clearly described my invention as to enable others skilled in the art to make and use the same after this exclusive grant shall cease to operate, what I claim, and pray to secure by Letters Patent, is—

1. The combination of a service-box and a lid for closing the opening in its top, engaging means carried by the top of said box and said lid for securing said lid to said box, and an extension for said box, having its lower end provided with engaging means similar to said lid and having its top provided with engaging means similar to the top of said box, whereby said box is extended by removing the lid, securing the extension in place thereof and then securing said lid to the top of said extension.

2. The combination of a service-box and a lid for closing the opening in its top, a latch carried by one of said parts and engaging with a lug or recess carried by the other part, means to permit releasing said latch for opening said lid, and an extension for said box, having its lower and upper ends provided respectively with engaging devices similar to the bottom of said lid and the top of said box, whereby said box is extended by removing the lid, securing the extension in place thereof, and then securing said lid to the top of said extension.

3. The combination of a service-box and a lid closing the opening in its top, engaging means carried by the top of said box and said lid for securing said lid to said box, an extension-stem having its lower end provided with engaging means similar to said lid and adapted to be secured to the top of said box in place of said lid, an extension-sleeve telescoping over said stem, means for adjusting said sleeve to different heights on said stem, the top of said sleeve being provided with engaging means similar to the top of said box and adapted to have said lid secured thereto, whereby said box may be extended to accommodate a change of grade without being dug up, substantially as specified.

4. The combination of the service-box and its lid, engaging means carried by said box and lid for securing said lid to said box; an opening in said lid for permitting the disengaging of said means preparatory to removing said lid; an extension-stem 71 having its lower end provided with engaging means similar to said lid and adapted to be secured to the top of said box in place of said lid; a sleeve 72 telescoping over said stem and provided with a series of vertical rows of lugs engaging a set of exterior ribs formed upon said stem and having vertical ways there-through; said lugs being arranged to divide the distance between said ribs into a series of intermediate steps in adjusting the height of said sleeve upon said stem; said sleeve 72 being provided on its upper end with engaging means similar to the top of said box and

adapted to have said lid secured thereto, substantially as specified.

5. In a service-box, the combination with said box and its lid of an extension-stem 71; flanges formed on the bottom of said stem and said lid; a series of recesses and a slot formed in each of said flanges; a sleeve 72 fitting over said stem; devices for retaining said sleeve at desired heights upon said stem; rings and lugs formed upon and near the top of said box and said sleeve for seating and fitting said flanges and slots; a series of projections on both said sleeve and said box for engaging the recesses in said flanges and means for withdrawing one or both projections from said recesses preparatory to removing said lid from the top of said box or sleeve 72, substantially as specified.

6. The combination of a pipe-section having a series of cam-shaped vertically-extending faces, a series of ribs on said faces, a vertical way through said ribs, and a second pipe-section provided with a series of inwardly-projecting lugs cooperating with said ways for the vertical adjustment of one pipe-section upon the other, and also with said ribs and cam-shaped faces for retaining said pipe-sections when adjusted, substantially as specified.

7. The combination of a pipe-section having cam-shaped faces of irregular curvature; a series of vertical rows of horizontal ribs on said faces, the face of said ribs forming a circle separated by vertical ways through said ribs; and an outer circular pipe-section provided with a series of rows of inwardly-projecting lugs cooperating with said ways for the vertical adjustment of one pipe-section upon the other, and also with said ribs and cam-shaped faces for retaining said pipe-sections when adjusted, substantially as specified.

8. The combination of a stem of cam-shaped contour; one or more vertical rows of ribs on its exterior, separated by one or more vertical ways; and an outer sleeve provided with one or more rows of inwardly-projecting lugs arranged to divide the distance between said ribs into a series of intermediate steps; the said lugs cooperating with said ways for vertical adjustment and also with said ribs and the cam-shaped contour of said stem for retaining said sleeve when adjusted upon said stem, substantially as specified.

9. The combination of a stem provided with a series of vertical rows of ribs separated by vertical ways; a cylindrical outer sleeve having a flange on its upper end and provided with a series of vertical rows of internal lugs cooperating with said ways for vertical adjustment, and also with said ribs for retaining said sleeve when adjusted upon said stem; the said lugs being arranged to divide the distance between said ribs into a series of intermediate steps, substantially as specified.

10. The combination of a stem provided

with a series of vertical rows of ribs forming a circle about said stem and separated by vertical ways, the ribs in one row being formed in the same horizontal plane as those in the remaining rows; each of said row of ribs being formed upon a wall inclining outward from said ways; a cylindrical outer sleeve provided with a series of vertical rows of lugs cooperating with said ways for vertical adjustment and also with said ribs and the inclined wall for retaining said sleeve when adjusted upon said stem, substantially as specified.

11. The combination with the stem provided with a series of depressed vertical ways 24, formed by a corresponding series of integral walls 54 and 55; each of said walls 55 being inclined outward from the ways 24 and provided with a vertical row of ribs 23, forming a circle about said stem broken only by the intersection of said ways 24; a cylindrical outer sleeve provided with a series of vertical rows of lugs 25, cooperating with said ways 24 for vertical adjustment and with said ribs 23 and walls 55 for retaining said sleeve when adjusted upon said stem, substantially as specified.

12. In a service-box, the combination with the box and its lid, of an extension-stem 71, means for securing said stem to the top of said box; a sleeve 72 fitting over said stem; devices for adjusting said sleeve to different heights upon said stem; and means for removably securing said lid to the top of sleeve 72, substantially as specified.

13. In a service-box, the combination of a service-box having a base provided with oppositely-located slots; a subbase within said base; a stop-cock completely inclosed within said subbase; supply-pipes leading to and from said stop-cock; slots in opposite sides of said subbase and registering with the slots in said base, the slots being of sufficient width to permit only the passage of said pipes there-through; said subbase being provided with a rectangular opening whose sides are adapted to engage the flat sides of the hexagon heads of said stop-cock, and whose ends are adapted to engage the ends of said stop-cock for inclosing and confining said stop-cock in an operative position within said subbase, substantially as specified.

14. In a service-box, the combination of the base 10; a stop-cock 9 inclosed within said base; said stop-cock being provided with a ring 7 in its center and the hexagon heads 6; slots 17 in opposite sides of said base of sufficient width to accommodate only the supply-pipes; walls 14 embracing each hexagon end 6 on opposite sides; walls 16 embracing said ring 7 on opposite sides; and walls 15 embracing the opposite end faces of said stop-cock 9; substantially as and for the purpose specified.

15. In a service-box, the combination of the box provided with an opening in its upper end, a lid covering said opening, a flange on said lid, internal recesses formed in said flange on opposite sides, a slot 36 in said flange, a lug 37 on said box engaging in said slot, spring-pressed latch projections carried by said box and engaging with said recesses for securing said lid to the top of the box; one or two openings in the top of said lid, adapted to receive a key for withdrawing either or both of said latch projections preparatory to removing said lid, substantially as specified.

16. In a service-box, the combination of the sleeve of said box provided near its top with openings 24 at opposite sides; latch projections in said openings, a spring actuating said latch projections; a lid for the top of said box; recesses in said lid adapted to receive said projections to secure the lid to the top of the box; and one or more openings 43 in the top of said lid, substantially as specified.

17. In a service-box, the combination of the sleeve of said box provided with a ring 26 and openings 34 in the opposite sides, directly above said ring; latch projections in said openings; a spring actuating said latch projections; lugs for the support of said spring; a lid 13 provided with a flange 27 having recesses 31 to receive said latch projections in securing said lid to the top of said box; said flange 27 being beveled at 35, below said recesses 31; ridges 41 and 42 surrounding each opening 34; an opening 43 in the top of said lid; and lug 47 in each opening 43, substantially as specified.

18. In a service-box, the combination of said box provided near its top with a ring 26 and lug 37; lid 13 having a flange 27 provided with slot 36; openings 34 near the top of said box; projections 32^L and 33^L in said openings 34; spring 38^L connecting said projections 32^L and 33^L; coil 50 in said spring; recesses 31 in said flange 27 for accommodating said projections 32^L and 33^L in the fastening of lid 13; one or more openings 43 in said lid; lug 47 in each opening 43; and a flange 27 being provided with beveled edges 35 directly below said recesses 31, substantially as specified.

19. In a service-box, the combination of the box having stop-cock 9 in its bottom, pipes 18 and 19 connecting said stop-cock, a ring 26 and lug 37 formed near the top of said box, a removable lid 13 on the top of said box, a flange 27 on said lid and resting on ring 26, a slot 36 in flange 27 to accommodate lug 37, and arrows 67 and 68 formed upon the top of said removable lid to indicate the directions of said pipes 18 and 19, substantially as specified.

IRA C. KOEHNE.

Witnesses:

FRANK KOEHNE,
P. J. MAGLY.