

G. M. WEHRLE.
 DEVICE FOR JOINING PARTS OF CONDUITS.
 APPLICATION FILED FEB. 29, 1908.

940,098.

Patented Nov. 16, 1909.
 3 SHEETS—SHEET 1.

Fig. 1.

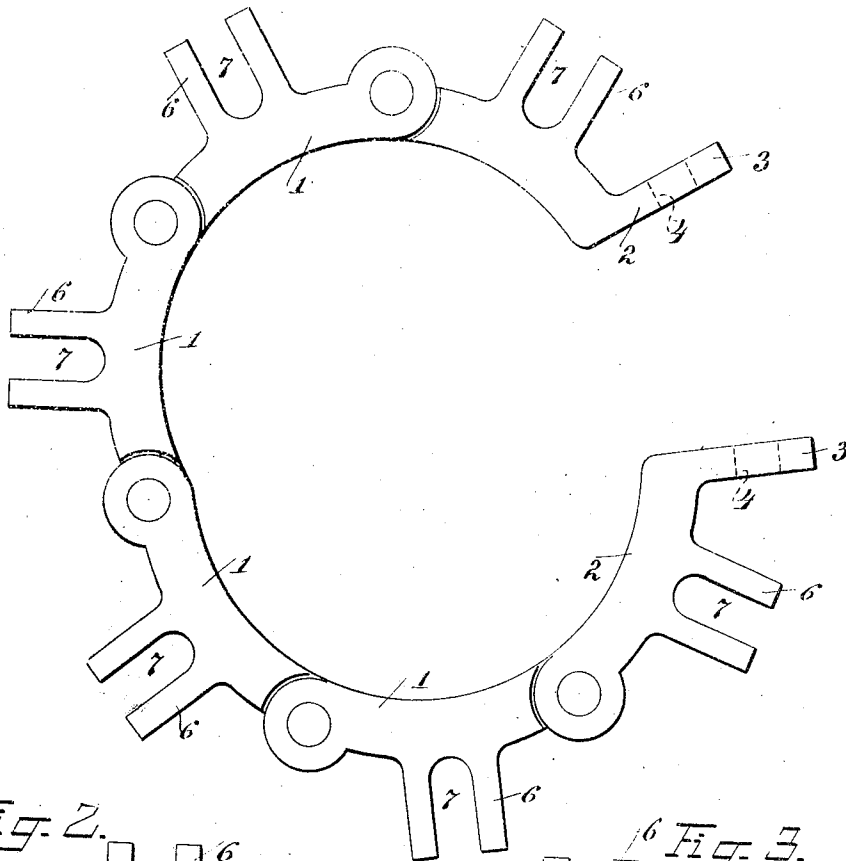


Fig. 2.

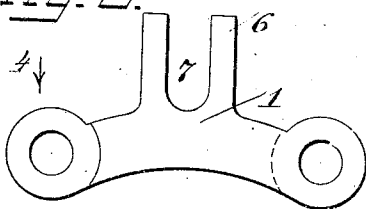


Fig. 3.

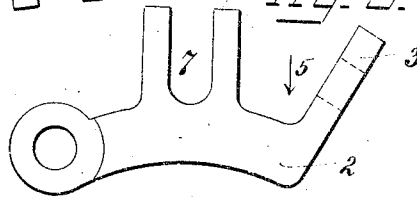
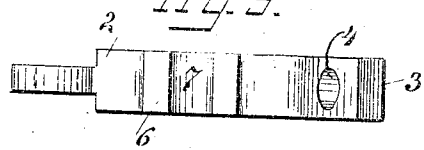


Fig. 4.



Fig. 5.



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Fig. E.

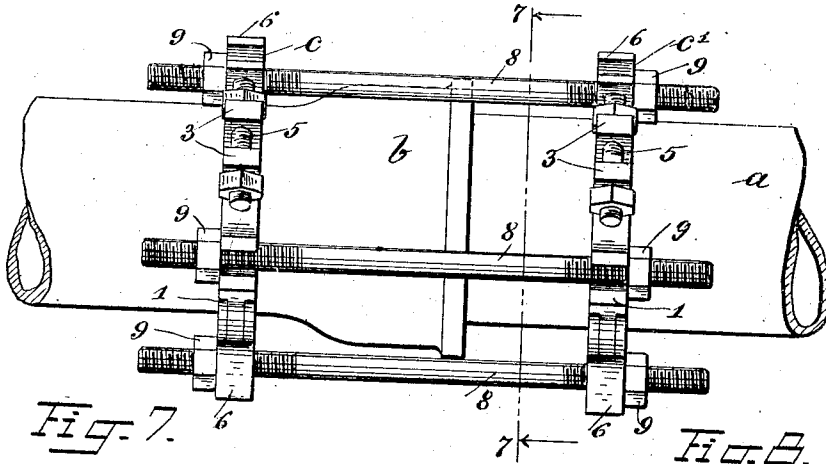


Fig. 7.

Fig. B.

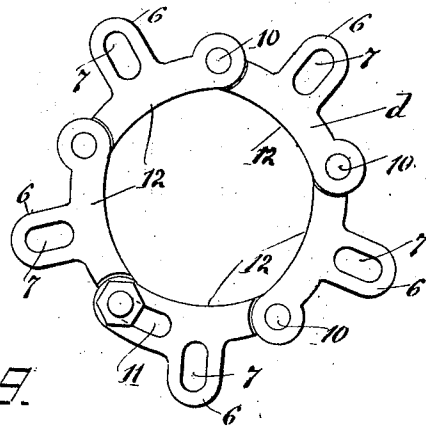
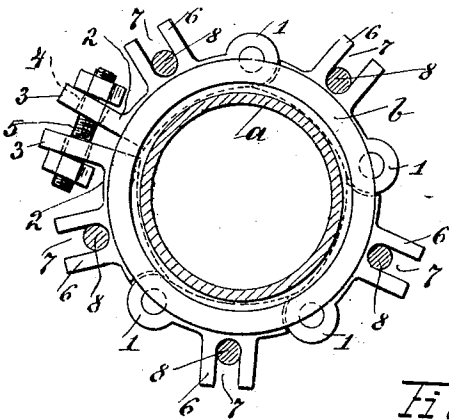
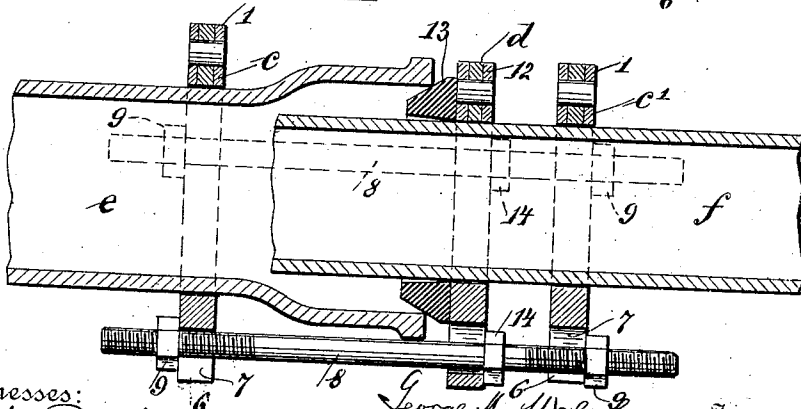


Fig. 9.



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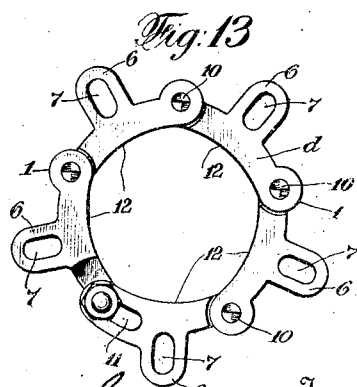
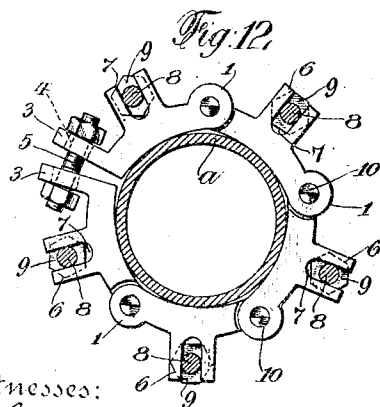
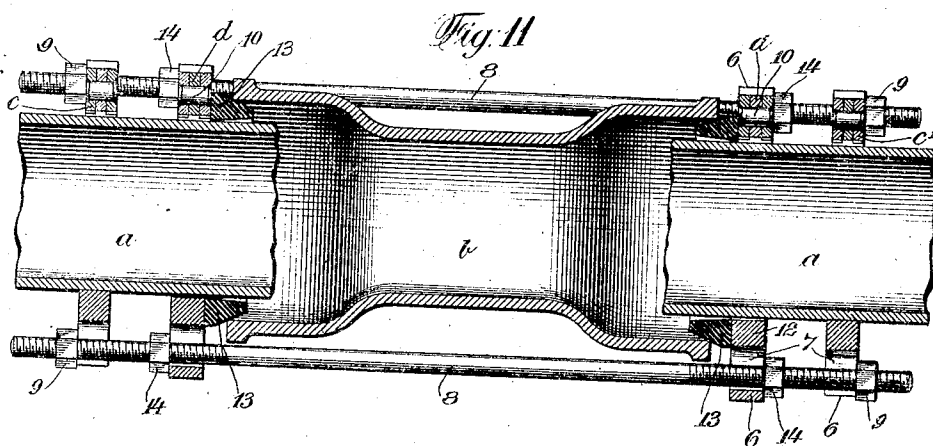
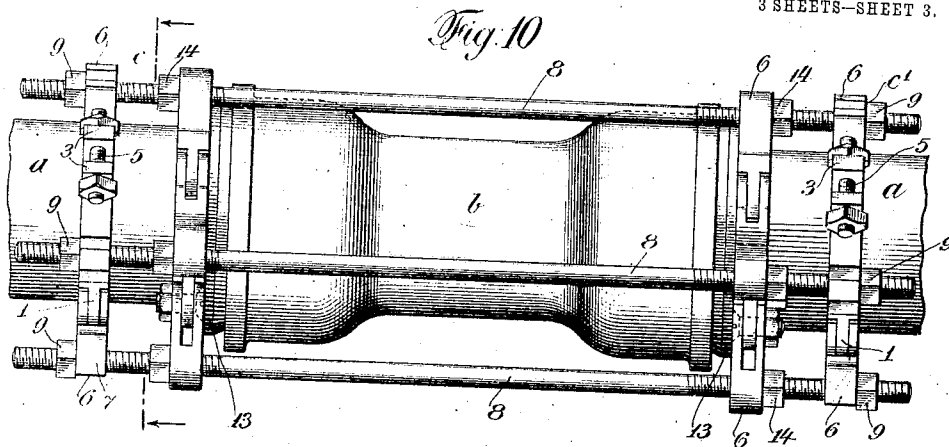
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GEORGE M. WEHRLE, OF NEW YORK, N. Y., ASSIGNOR TO NATIONAL WATER MAIN
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DEVICE FOR JOINING PARTS OF CONDUITS.

940,098.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed February 29, 1908. Serial No. 418,521.

To all whom it may concern:

Be it known that I, GEORGE M. WEHRLE, of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Devices for Joining Parts of Conduits, the following being a full, clear, and exact specification of the improvements, reference being had to the accompanying drawings, wherein—

Figure 1 is an elevation of the flange forming part of my improved device; Figs. 2 and 3 are similar views, and Figs. 4 and 5 plan views, of an intermediate and of an end-link respectively, composing such a flange as shown in Fig. 1; Fig. 6 is an elevation of two sections of a conduit held together by a device constructed according to my invention; Fig. 7 is a sectional view thereof, on line 7—7 indicated in Fig. 6; Fig. 8 is an elevation of a movable flange to be used in connection with a compressible packing—and Fig. 9 is a sectional view of a joint as is made to repair, temporarily, a broken conduit, by means of my improved device. Fig. 10 is another form of two sections of a conduit held together by means of my invention. Fig. 11 is a sectional view of Fig. 10. Fig. 12 is a sectional view taken through the line at the left of Fig. 10. Fig. 13 is another view of the movable flange.

My improvement relates to devices employed in constructing repairing and cleaning of water-, gas-, steam- and other hollow conduits and consists of devising the parts and their combinations for connecting and securing together sections and parts of such conduits.

The flange shown in elevation in Fig. 1 is what I term the stationary flange to distinguish it from the flange shown in Fig. 8, which I designate as the movable flange. The stationary flange is composed of a series of links 1, shown independently in Figs. 2 and 4 in elevation and in plan view and hereafter referred to as the "intermediate links", and of two "end" links, designated by numeral 2 in the drawings. One such "end" link is shown independently in Figs. 3 and 5, in elevation and plan view. The intermediate links 1 have both ends recessed and perforated, to enable them to be hinged together by bolts. The end-links 2 have each one end fitted to hinge with the intermediate links and their other end is offset and

formed into a transverse flange 3, provided with a bore 4 for inserting therein a screw-bolt 5 to secure the flange upon the conduit where my improved device is used. The links of both kinds are arched to conform, approximately, to the circumference of a conduit; it is, however, not necessary that they should fit exactly. One great advantage of composing the flanges of such links, lies in the fact, that it facilitates the construction of such flanges of almost any size of units easily packed or carried and readily put together as required.

The number of the intermediate links 1 to be used, is determined by their size and the size of the conduit whereon the flange is to be affixed, but there must always be used two end-links 2, as otherwise the flange could not be rigidly secured to the conduit. Each of the links is provided with a lug 6, which is set approximately midway between its ends and projects diagonally from, and approximately at right angles to, the conduit when the flange is affixed thereto. These lugs are slotted, the slots 7 serving for inserting therein of the stay-bolts 8. The stay-bolts serve, jointly with the flanges, for holding together of the parts of the conduit, as shown in Figs. 6 and 9. These stay-bolts are correspondingly long, screw-threaded rods, and screw-nuts 9 are fitted thereon to be screwed on their ends when the device is put in position. These slots 7 may be open, as shown in Figs. 1 to 5, or closed, as shown in Fig. 8. The advantage of making the slots open, is that the stay-bolts 8 may be slid in more rapidly, not requiring the nuts 9 to be removed therefrom. The advantage of having the slots 7 closed, as shown in Figs. 7 and 8, is that they retain the stay-bolts more securely when for any reason the flanges cannot be set exactly at right angle to the axis of the conduit, as it sometimes happens. When flanges with closed slots are used, one of the nuts 9 is removed from each stay-bolt, to enable the same to be inserted therein.

The use of a device constructed according to my invention is shown in Figs. 6 and 7, applied for holding together of two parts of a conduit, as it is required when laying or repairing such conduit or when such conduit is shifted. In this form the device consists of two such (stationary) flanges as shown in Fig. 1, and of a corresponding

number of stay-bolts 8. The drawing shows the joint of two sections of a conduit pipe, the spigot-end of the section *a* being inserted in the bell-end of the section *b*. To secure the joint of the two sections, one such "stationary" flange as shown in Fig. 1 is applied to each section of the conduit pipe and affixed thereon rigidly by the bolt 5, drawing together the flanges 3 of the end-links 2. These flanges, designated *c* and *c'* in Fig. 6, are set in such position relatively to each other as to bring the lugs 6 thereof in an approximate alinement, so the stay-bolts 8, inserted therein, lie approximately parallel to the line or axis of the conduit. Then the screw-nuts 9 on the stay-bolts are screwed on tight. It is not necessary to use more than four or five of such stay-bolts and three will be found sufficient for most purposes; but no less than three should be used and the stay-bolts should be always distributed, so as to be approximately equidistant from each other. This device holds the sections of the pipes safely in alinement with each other and facilitates their setting and adjusting. It is also very handy and useful for holding the sections together while the packing or filling of their joints is done, and for other purposes.

When the conduit is broken, as it sometimes happens in excavations, or when a section thereof must be taken out, it is often necessary to insert a temporary connection. For this purpose heretofore expensive so-called "special fittings" were used. This temporary joint may be effected very speedily and cheaply, by the use of any section of pipe, as may be handy on the site, by another form of my improved device consisting of one "stationary" flange combined with the "movable" flange shown in elevation in Fig. 8 and a compressible packing, in the manner shown in sectional view, Fig. 9 of the drawing. The "movable" flange *d*, as used for this purpose is composed of a series of links 12, similar in construction to links 1 shown in Fig. 2, and fitted to be hinged together by bolts. Some of these links 12, two or more, as may be, are provided with slots 11 in place of the round bores 10 for joining the links together and around the section *f* of the conduit. The object of this arrangement is to make this flange fit loosely around the section of the conduit and to enable it to be drawn by screwing on the nuts 9 on the end of the stay-bolts projecting beyond the other side of the fixed flange *c*, set on the bell-end of the section *e*, serving as the temporary substitute of the broken part of the conduit. The packing 13 (see Fig. 9) is made of a suitably shaped packing material, preferably twilled rubber gasket or the like, cut to fit around the sections to be joined, and must be, of course, sufficiently dimensioned

in cross-section to fill the space between the outer circumference of the end section of the conduit at the leak or break, and the interior of the pipe-section used to temporarily restore the broken conduit. The arrangement of the device in such use is shown in Fig. 9. A fixed flange *c* is set upon the section *e*, to be temporarily inserted in the conduit, and another fixed flange *c'* on the last section *f* of the broken conduit. The movable flange *d* is set in place between the stationary flange *c'* and the end of the broken conduit adjoining the packing ring 13, set in the space between the interior of the section *e* and the exterior of the section *f*. Then stay-bolts 8 are inserted in the lugs of all three flanges and the screw-nuts on their ends screwed on to hold the sections *e* and *f* relatively to each other. Then the screw-nuts 14, set on the stay-bolts beyond the movable flange *d*, and the screw-nuts on their ends beyond the stationary flange secured to section *e*, are screwed on to press the packing 13 (by moving the flange *d*) into the space between the interior of the section *e* and the exterior of section *f*, to make the joint tight. When that is done, the screw-nuts 9 on the stay-bolts 8 beyond the other fixed flange, secured to section *f*, may be screwed on more tightly to hold the joint more rigidly together, if necessary. The joint on the other end of the temporary section *e* must, of course, be made in the same manner.

In many instances it will not be necessary to use the fixed flange on the ends of the broken conduit. This will often be the case when repairing broken conduits in excavations, when the sections of the conduit are firmly embedded in the earth and amply able to support the weight of the section to be temporarily inserted. The use of the fixed flanges on the ends of the broken conduit may also be omitted, when it is feasible to support the temporary connecting section otherwise. When only one stationary flange is used, it is affixed upon the section to be inserted in the conduit and the movable flange is set on the end section of the broken conduit. Then when the packing is put in place, the bolts are inserted in the slots of the flanges and by screwing on the nuts on their ends the packing is pressed into the space between the interior of the section joining the broken ends and their exterior circumference.

This improved device, constructed according to my invention, permits the using for such purposes of almost any piece of pipe as may be handy at the site. As shown in Fig. 9 of the drawings, the section *e* representing such chance section found for repairing the break, is of considerably larger diameter than the section *f* of the conduit. It is advantageous to use for such temporary

joint, a section of pipe of larger diameter, because the capacity of the conduit is thereby not diminished. In cases of emergency, however, if no section of pipe, larger in diameter than the conduit, should be on hand, a section of pipe of smaller diameter could be used to connect the ends for such temporary repair of the conduit with my improved device. Such a connecting section would be slid into instead of over the broken ends of the conduit and the arrangement of the packing, the movable and the stationary flange would be reversed.

By the combination of the parts of my improved device as hereinbefore explained, such material as is almost invariably on hand for ordinary purposes, may be made to serve for such temporary repairs and expedients, for which heretofore only special fittings corresponding in size to the conduits, and particular implements had to be employed, and which, of course, are not and cannot well be, carried on hand, to have ready for such emergencies.

I claim as my invention:—

1. A device for temporarily connecting the ends of broken gas-, water-, sewer- and other hollow conduits, the device comprising a section of pipe, two stationary flanges, composed of a series of links hinged one to another and provided with slotted lugs

and of means for drawing and securing together the ends of its terminal links, the flanges being set upon the section of pipe one near each of its ends; compressible packings, one at each end of the broken conduit; movable flanges, provided with slotted lugs, one set beyond each packing; and means for drawing the movable flanges toward, and securing them to, the stationary flanges, substantially as herein shown and described.

2. A device for temporarily connecting the ends of broken gas-, water-, sewer- and other hollow conduits, the device comprising a section of pipe, stationary flanges, composed of a series of links hinged one to another and provided with slotted lugs, and of means for drawing and securing together the ends of its terminal links, the flanges being set, one near each end, upon the section of pipe; compressible packings, one at each end of the broken conduit; movable flanges, provided with slotted lugs, one set beyond each packing; screw-threaded bolts, inserted in the lugs and screw-nuts on the ends of the bolts, substantially as herein shown and described.

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