No. 765,437. PATENTED JULY 19, 1904.

T. H. MILSON.

CONSTRUCTION OF PIPE JOINTS.

APPLICATION FILED MAR. 7, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

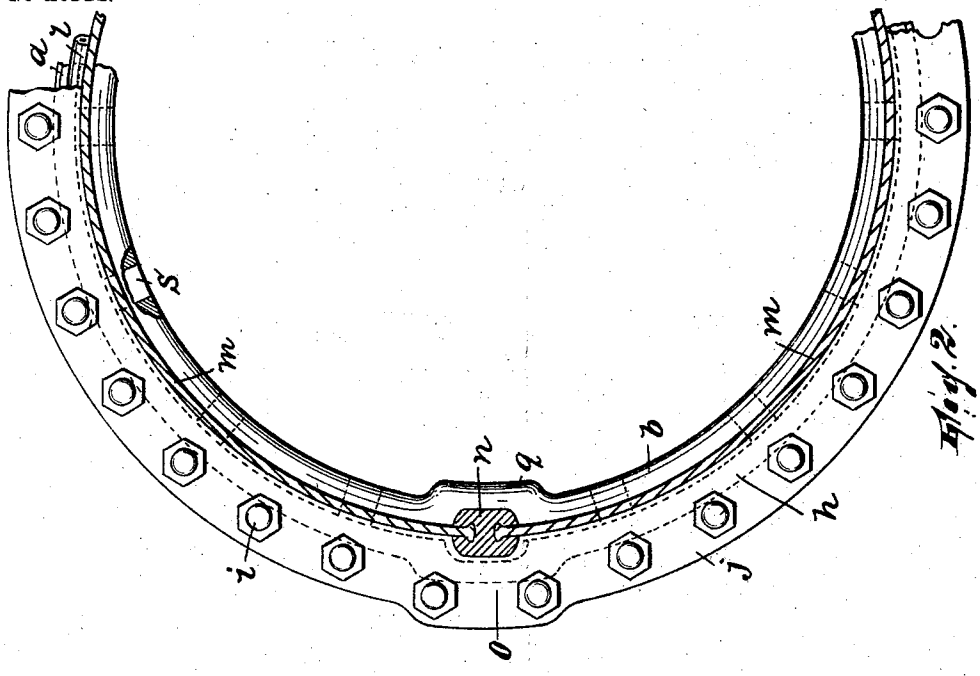


Fig. 2.

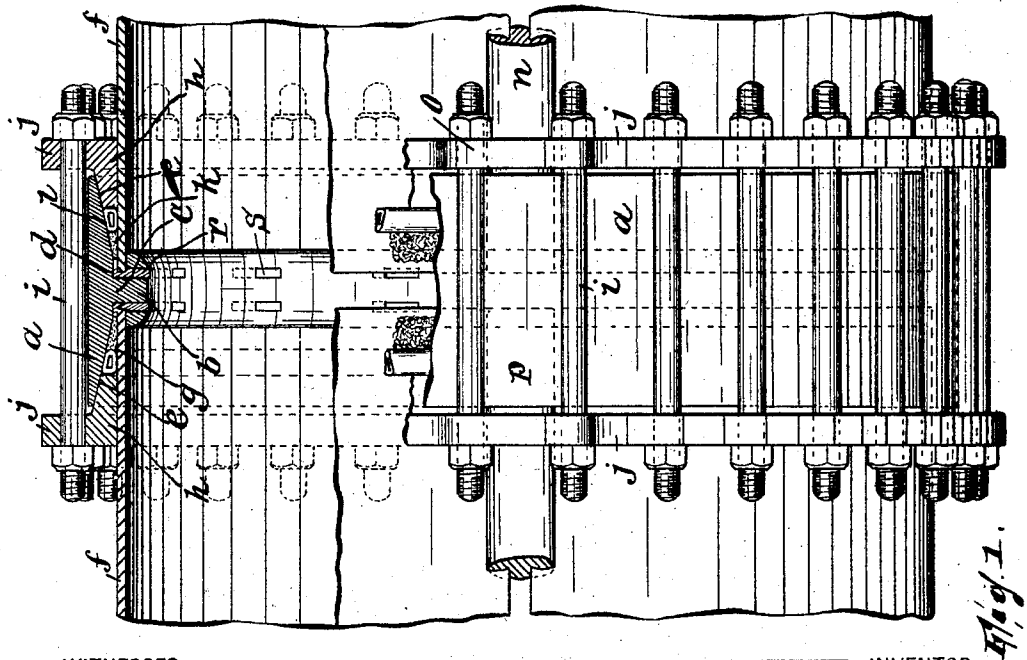


Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

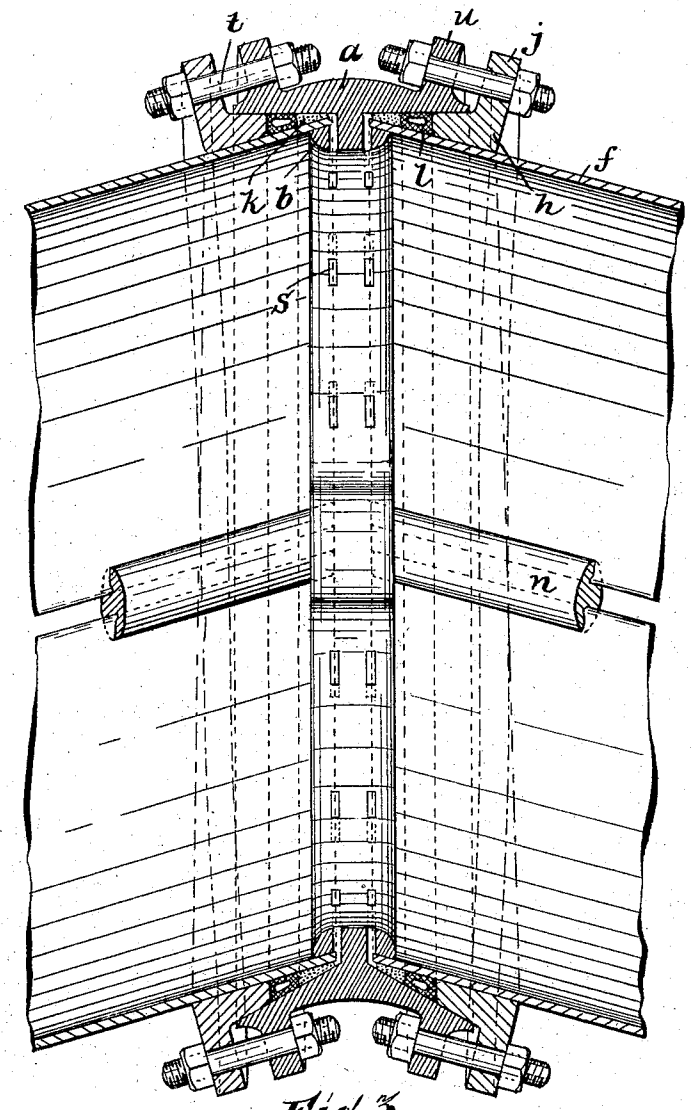


Fig. 3.

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No. 765,437. Patented July 19, 1904.

UNITED STATES PATENT OFFICE.

THOMAS H. MILSON, OF PATERSON, NEW JERSEY.

CONSTRUCTION OF PIPE-JOINTS.

SPECIFICATION forming part of Letters Patent No. 765,437, dated July 19, 1904.

Application filed March 7, 1904. Serial No. 196,891. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. MILSON, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in the Construction of Pipe-Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to the construction of pipe systems, and it has reference particularly to the formation of joints between sections of especially sheet-steel or iron piping of relatively large diameter.

The object of the invention is to provide a joint for pipe-sections of the kind particularly above mentioned which will afford advantages over that form of the joint where the jointed pipe ends are telescoped and riveted together and others, in one or more of the following particulars—*i. e.*, that it is less expensive, simpler, and more durable in construction, avoids the use of rivets, permits free lengthwise expansion and contraction in the system, is capable of assemblage with the minimum of inconvenience and labor, and can be adapted to bends or curves in the system as well as to the straight lengths thereof.

I have illustrated the preferred form of the invention in the accompanying drawings, wherein—

Figure 1 is a view in front elevation, partly in section, showing the improved joint. Fig. 2 is a transverse sectional view through the pipe system, showing the joint in end elevation; and Fig. 3 shows the joint as adapted to a curve or bend in the system, the view being a longitudinal central sectional view of the parts taken in a plane parallel with the plane in which the line of bend stands.

In said drawings, *a* and *b* are two rings integrally joined by a web *c* and forming with said web an annular body provided with a concentric channel or groove *d* in each side thereof. The outer ring *a* is considerably wider than the ring *b* and has its inner surface on each side of the web *c* beveled or chamfered, as indicated at *e*.

Each groove *d* is adapted to receive the end of one of the pipe-sections *f* to be joined, as shown in Fig. 1. Therefore when the pipe-sections and the annular body above described have been thus assembled continuous recesses *g* will be left around said pipe-sections between the latter and the chamfered faces *e* of ring *a*.

h represents relatively reversed wedge-rings, each surrounding one of the pipe-sections and shown in the drawings as drawn toward each other into the recesses *g* and there held by bolts *i*. In this position the wedge-rings not only themselves exert great pressure on the pipe-sections, thus maintaining close contact therewith on the outside, but press the edge portions of the sections closely against ring *b*, with the consequence that a snug fit, particularly between the pipe-sections on the one hand and ring *b* and wedge-rings *h* on the other hand, is obtained. This effect is moreover enhanced, as will be seen in Fig. 1, on account of the fact that each wedge-ring takes against the outer face of the corresponding pipe-section at a point farther removed from its edge than the ring *b* takes against its inner face. It will be obviously advantageous to form the ring *b* with its acting surface as true to the sectional configuration of the pipe system as possible and to employ bolts *i* like those shown in the drawings, where nuts are provided at both ends thereof, so that the finest adjustment on both wedge-rings may be effected.

In the preferred construction of the wedge-rings they are formed with outwardly-projecting flanges *j*, which directly receive the bolts *i*. These flanges not only give strength to the wedge-rings, but act to support the pipe.

Before introducing the wedge-rings into the recesses *g* a filling or calking of oakum, yarn, or the like *k* may be first inserted and then a continuous strip *l* of some yieldable substance, such as soft tubular lead or tubular rubber. Upon introducing the wedge-rings and draw-

ing them together by means of the bolts this packing or calking will be compressed, and thus seal any leak-interstice that might otherwise exist.

It is preferred that the pipe-sections be of that kind wherein two semicylindrical shells *m* are secured in cylindrical disposition by locking-bars *n*, since overlapping being avoided the surfaces of the pipe-sections will then take squarely at all points against the surfaces of the ring *b* and wedge-rings *h*. The locking-bar is preferably substantially coincident in length with the length of each section, and in order that the wedge-rings, the ring *a*, and the ring *b* may accommodate the locking-bar these parts are made to swell out, as at *o*, *p*, and *q*, respectively, though being fitted snugly to the surface of the locking-bar when finally set in place.

A joint constructed as above described while effectually preventing leakage will permit longitudinal expansion and contraction of the pipe-sections, provided the ends of the pipe-sections are not set up in abutment with the web *c* at a time when they are not at their maximum length, in which case of course expansion would not be permitted. In order to prevent the workmen under such circumstances from setting the ends of the pipe-sections in abutment with the web *c*, soft wooden spacers *r* may be driven into holes *s* in ring *b* far enough to traverse the grooves *d*.

In the construction shown in Fig. 3 the parts remain substantially the same in function and form as those shown in Figs. 1 and 2. only differing therefrom in that the angles of their respective acting surfaces are changed to correspond to the angle of bend in the pipe. It is preferable, however, as shown in this figure, to employ two sets of bolts *t*, each set engaging a flange *j* on the one hand and one of two additional flanges *u* on the ring *a* on the other hand, so that thus the bolts may be made to have a thrust which is parallel with that of the wedge-rings and the pipe-sections.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a joining structure for pipe-sections, the combination of a substantially annular body having a substantially annular groove formed therein on each side thereof, said grooves being each adapted to receive a pipe-section end, and means, engaging one curved surface of each pipe-section, for pressing the edge portion of the other curved surface thereof against the side of said groove adjacent said other surface, the lines of engagement between said means and the pipe-sections being more remote from the edges of the pipe-sections than the lines of engagement between said pipe-sections and said sides of said grooves, substantially as described.

2. In a joining structure for pipe-sections, the combination of a substantially annular body having a substantially annular groove formed therein on each side thereof, said grooves being each adapted to receive a pipe-section end, and means, engaging one side of said groove and acting against the pipe-section toward the other side of said groove, for pressing the edge portion of said pipe-section against the other side of said groove, the lines of engagement between said means and the pipe-sections being more remote from the edges of the pipe-sections than the lines of engagement between said pipe-sections and said other sides of said grooves, substantially as described.

3. In a joining structure for pipe-sections, the combination of a substantially annular body having a substantially annular groove formed therein on each side thereof, said grooves being each adapted to receive a pipe-section end, and means, consisting of rings adapted to stand concentrically each with reference to a pipe-section and in between one curved surface of the latter and one side of the corresponding groove, for pressing the other curved surface at the edge portion of each pipe-section against the other side of the corresponding groove, the lines of engagement between said rings and the respective pipe-sections being more remote from the edges of the pipe-sections than the lines of engagement between said pipe-sections and said other sides of said grooves, substantially as described.

4. In a joining structure for pipe-sections, the combination of a substantially annular body having a substantially annular groove formed therein on each side thereof, said grooves being each adapted to receive a pipe-section end, and means, consisting of wedge-rings adapted to stand concentrically each with reference to a pipe-section and in between one surface of the latter and one side of the corresponding grooves, for pressing the other curved surface at the edge portion of each pipe-section against the other side of the corresponding groove, the lines of engagement between said wedge-rings and the respective pipe-sections being more remote from the edges of the pipe-sections than the lines of engagement between said pipe-sections and said other sides of said grooves, substantially as described.

5. The combination of lock-bar pipe-sections to be joined, the same having their lock-bars extending close to the ends thereof, a substantially annular body having a substantially annular groove formed therein on each side thereof, each groove receiving one of the pipe-section ends, means for pressing one curved surface of the edge portion of each pipe-section against one side of the corresponding groove consisting of a ring adapted to stand concentrically with reference to the pipe-section and in between the latter and the

other side of said groove, said annular body and said rings having swells receiving the ends of the lock-bars, and means for drawing, and maintaining a pull on, said rings toward each other, substantially as described.

6. The combination of the pipe-sections arranged end to end, a ring arranged concentrically with reference to said pipe-sections and within the same at the juncture therebetween, said ring having its outer curved surface conforming to the inner curved surfaces of the adjoining edge portions of said pipe-sections, and means for maintaining a pressure toward said ring on the edge portions of said pipe-sections whereby to form a continuous closing contact between said edge portions and the ring, the lines of engagement between said means and the pipe-sections being more remote from the edges of the pipe-sections than the lines of engagement between said ring and the pipe-sections, substantially as described.

7. The combination of the pipe-sections arranged end to end, a joining structure having a part thereof interposed between the adjacent ends of said pipe-sections, and a spacing means formed of a compressible substance interposed between said end of each pipe-section and said part, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of February, 1904.

THOMAS H. MILSON.

Witnesses:

JOHN W. STEWARD,

ROBERT J. POLLITT.