No. 765,436. PATENTED JULY 19, 1904.

T. H. MILSON.

PIPE JOINT AND METHOD OF FORMING SAME.

APPLICATION FILED MAY 5, 1904.

NO MODEL.

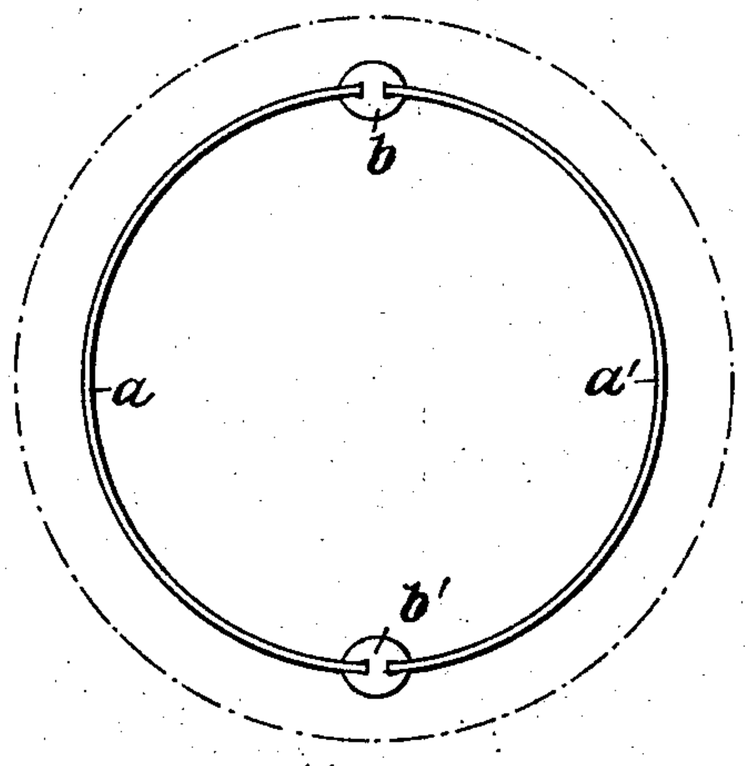

Fig. 1.

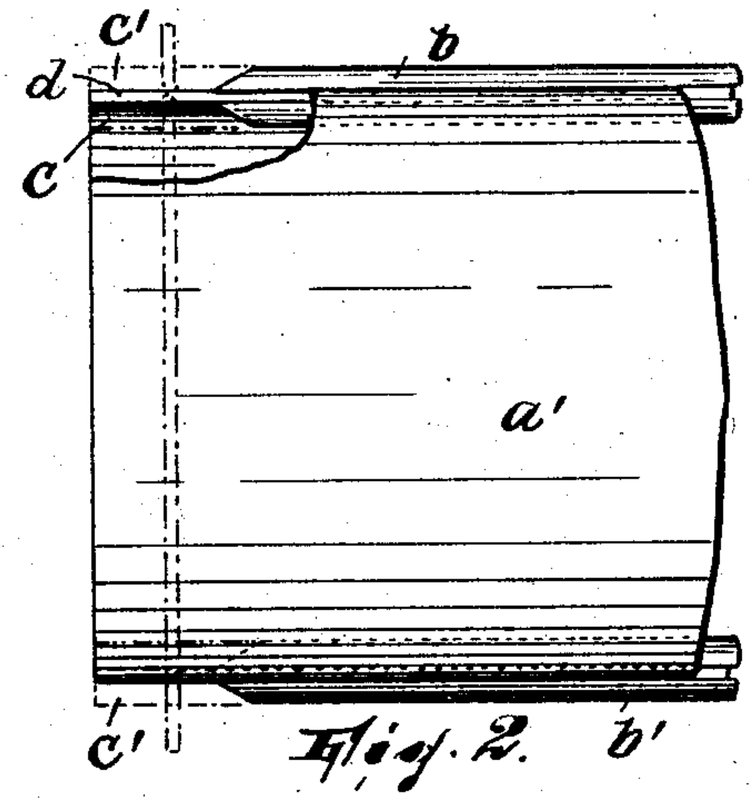

Fig. 2.

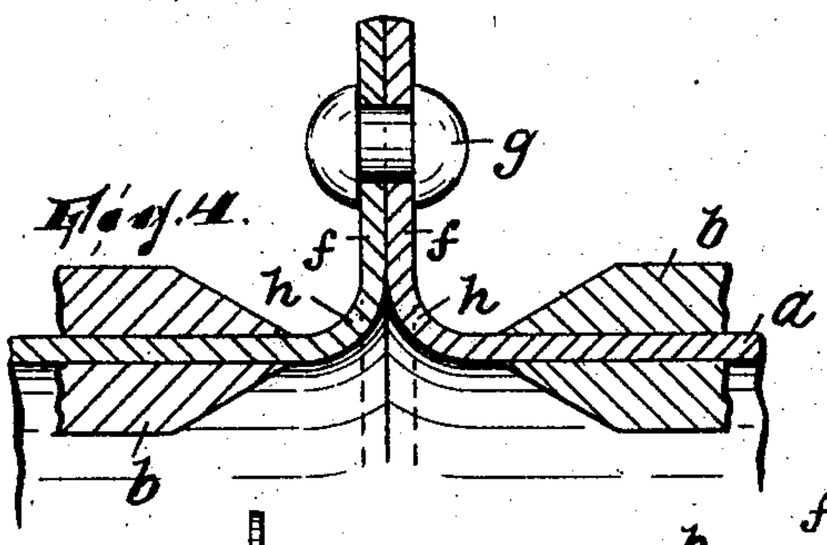

Fig. 4.

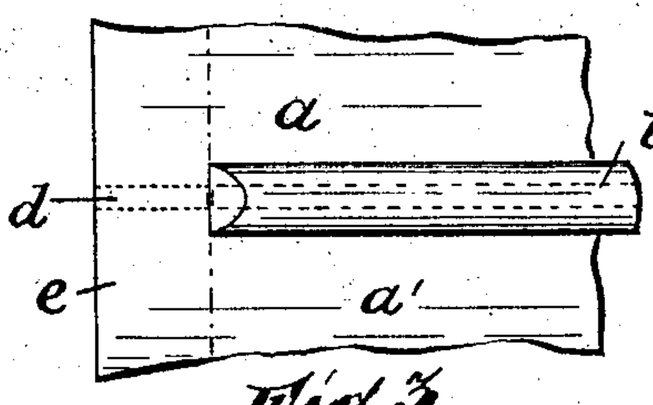

Fig. 3.

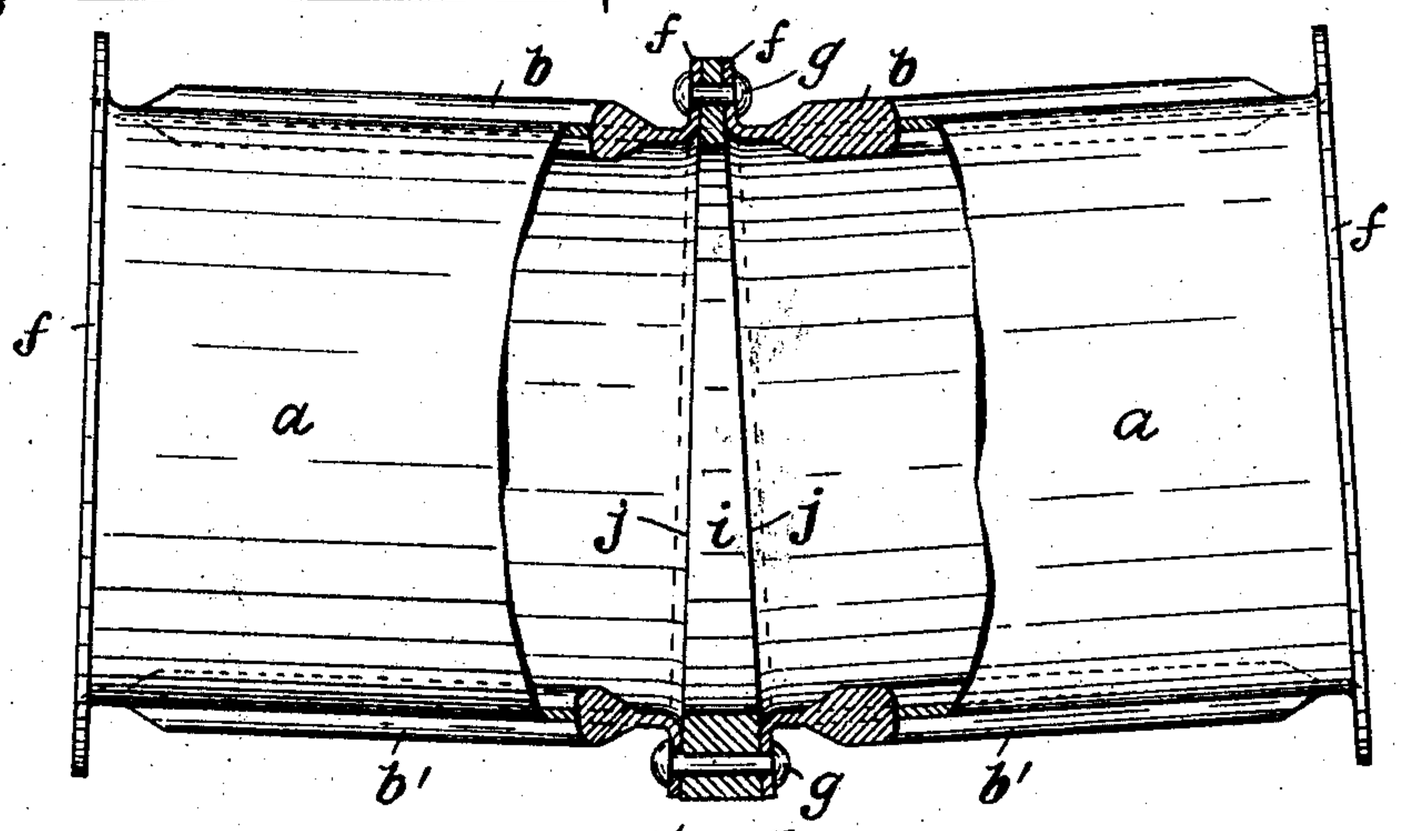

Fig. 5.

WITNESSES:

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No. 765,436. Patented July 19, 1904.

UNITED STATES PATENT OFFICE.

THOMAS H. MILSON, OF PATERSON, NEW JERSEY.

PIPE-JOINT AND METHOD OF FORMING SAME.

SPECIFICATION forming part of Letters Patent No. 765,436, dated July 19, 1904.

Application filed May 5, 1904. Serial No. 206,502. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. MILSON, a citizen of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Pipe-Joints and Methods of Forming the Same; 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-metal pipe of the type known as "lock-bar" pipe. In lock-bar pipe each section comprises two cross-sectionally-semicircular plates secured together by having their edges first peened up and then clamped within the grooves of a longitudinally-grooved bar by compressing the bar.

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 pipe where the joined 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, 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 straight lengths thereof.

My invention consists in an improved method of forming pipe-joints.

My invention further consists in an improved pipe-joint.

In the accompanying drawings, Figure 1 is an end view of a lock-bar pipe-section, showing the pipe-section in the condition in which it stands when the first step of one species of the method hereinafter described is to be applied. Fig. 2 is a view in side elevation of a section of a lock-bar pipe, showing the same in the condition in which it is when the second step of the aforesaid species or the first step of another species of the method is to be applied. Fig. 3 is a fragmentary plan view of the end of a pipe-section, showing the condition of the latter after the second step of the first-mentioned species or the first step of the other species of the method is applied. Fig. 4 is an enlarged sectional view through the finished joint and portions of the pipe-sections joined in a plane which traverses one of the grooves in each of the two corresponding lock-bars; and Fig. 5 shows two pipes joined in accordance with my invention and how provision is made for forming a curve in the system, the joint portion being shown as a section taken in a plane which is substantially central of the two sets of lock-bars.

In forming the joint I may start with each pipe-section complete, so far as the interlocking assemblage of the plates *a a'* and lock-bars *b b'* is concerned, and with the lock-bars extending approximately to both ends of each pipe-section. So much of the end portions of each lock-bar as project inside of the inner surface of the pipe-sections, as at *c*, Fig. 2, (and also preferably outside of the outer surface of said pipe-sections, as at *c'*, Fig. 2,) is then by suitable means cut or otherwise cleared away down to approximately the level of said surface. This leaves a fin *d* at each end of each lock-bar standing in between the edges of the plates *a a'* and projecting, of course, as far as the lock-bar extended before being cut away. Each lock-bar may, however, without departing from the spirit of my invention, have its end portions already cut away in the manner just described before being clamped in locking disposition to the edges of the plates *a a'*. The fins thus left standing between the edges of the plates *a a'* are then welded to the latter, so that as to each annular portion of the pipe-section which includes fins *d* an annular one-piece body *e* is formed. Each annular body *e* at each end portion of the pipe-section is then bent—say by spinning—into a plane substantially at right angles to the axis of the pipe, the line of bend being preferably not coincident with the points where the fins join the bodies of the lock-bars, but preferably between the ends of

the fins. There is thus formed an annular flange *f* at each end of the pipe-section. For obvious reasons the bend is preferably an outward bend, making the flange an exterior flange. The pipe-sections being thus formed are secured together flange to flange by suitable means, preferably rivets, as at *g*, Fig. 4, along an annular line parallel with the cross-sectional contour of the pipe. In bending the end portions of the pipe to form the flange it is preferable to make the bend not too sharp, so that, as at *h* in Fig. 4, the material immediately at the bend will permit lengthwise expansion and contraction in the system under varying temperatures.

In order to form curves in the system, a spacing-ring *i*, whose plane faces *j* stand oblique, the one with reference to the other, may be interposed between the flanges of two adjoining sections, in which case the rivets or other securing means preferably penetrate said rings as well as the flanges.

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

1. The method of forming a joint between sections of lock-bar pipe having the inside surfaces of the lock-bars at the end portions of the latter approximately flush with the inside surfaces of the respective pipe-sections which consists in first making of the end portions of said lock-bars and the end portions of the corresponding plates of each pipe-section an annular one-piece body, then forming a flange on each pipe-section by bending outwardly the one-piece annular body thus produced, and then securing the thus-produced flanges of said pipe-sections together, substantially as described.

2. The method of forming a joint between sections of lock-bar pipe having the lock-bars extending, intact, approximately as far as the ends of said pipe-sections, which consists in first clearing away the inside end portions of the lock-bars approximately down to the level of the inside surface of the respective pipe-sections, then making of the end portions of said lock-bars and the end portions of the corresponding plates of each pipe-section an annular one-piece body, then forming a flange on each pipe-section by bending outwardly the one-piece annular body thus produced, and then securing the thus-produced flanges of said pipe-sections together, substantially as described.

3. As a joint for pipe systems, the combination of the adjoining lock-bar pipe-sections, each pipe-section having the end portions of the lock-bars and plates composing said pipe-section formed as a one-piece, annular body bent outwardly to form a flange on said pipe-section, and also having the inside surfaces of the portions of said lock-bars comprised in said flange substantially flush with the inside surfaces of the corresponding portions of said plates, and means for securing said flanges together, substantially as described.

4. As a joint for pipe systems, the combination of the adjoining lock-bar pipe-sections, each pipe-section having the end portions of the lock-bars and plates composing said pipe-section formed as a one-piece, annular body bent outwardly to form a flange on said pipe-section, and also having the inside surfaces of the portions of said lock-bars comprised in said flange substantially flush with the inside surfaces of the corresponding portions of said plates, a spacing-ring interposed between said pipe-sections and having one of its plane faces disposed obliquely relatively to the other, and means for securing said flanges together, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of April, 1904.

THOMAS H. MILSON.

Witnesses:
JOHN W. STEWARD,
ROBERT J. POLLITT.