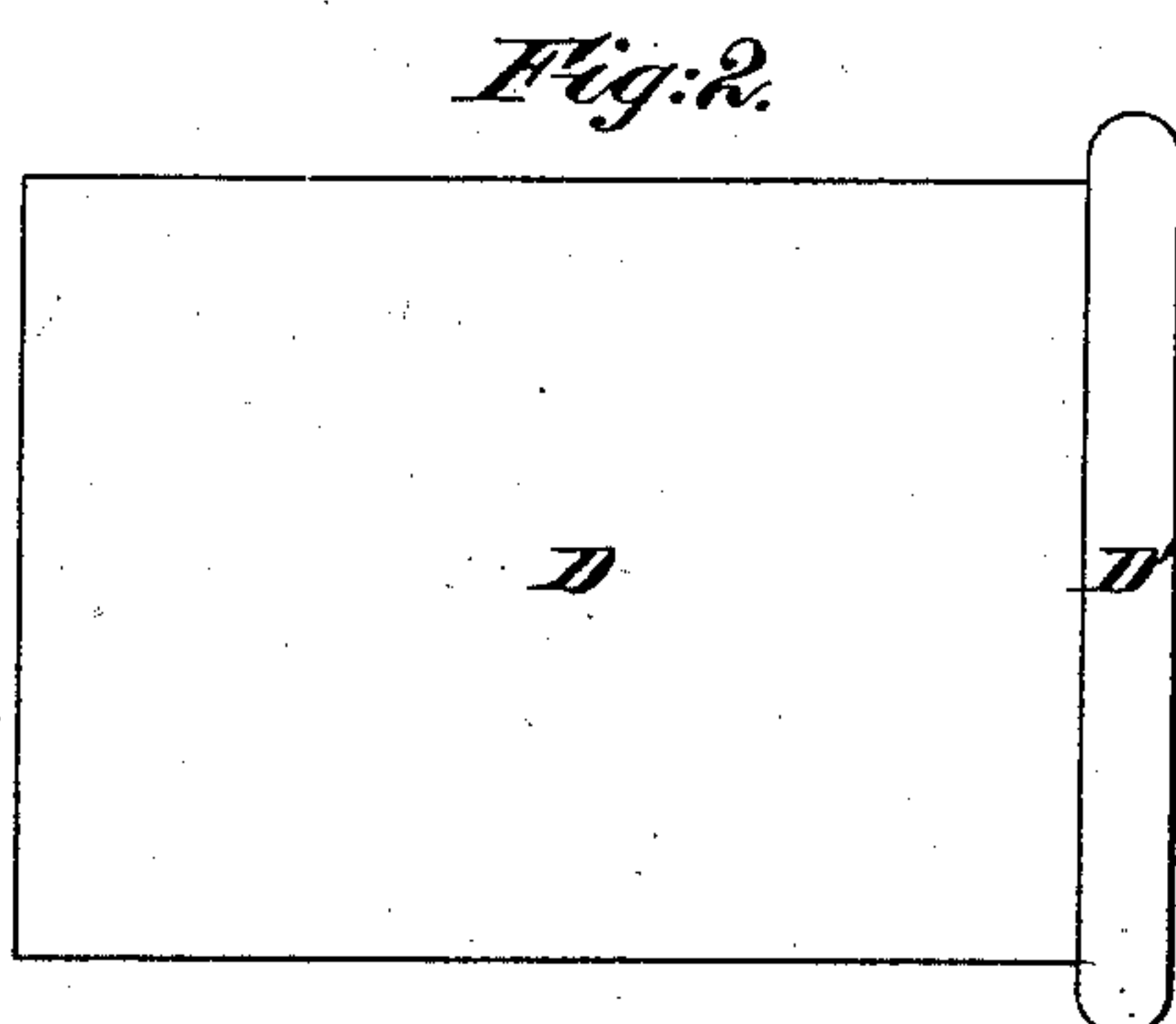
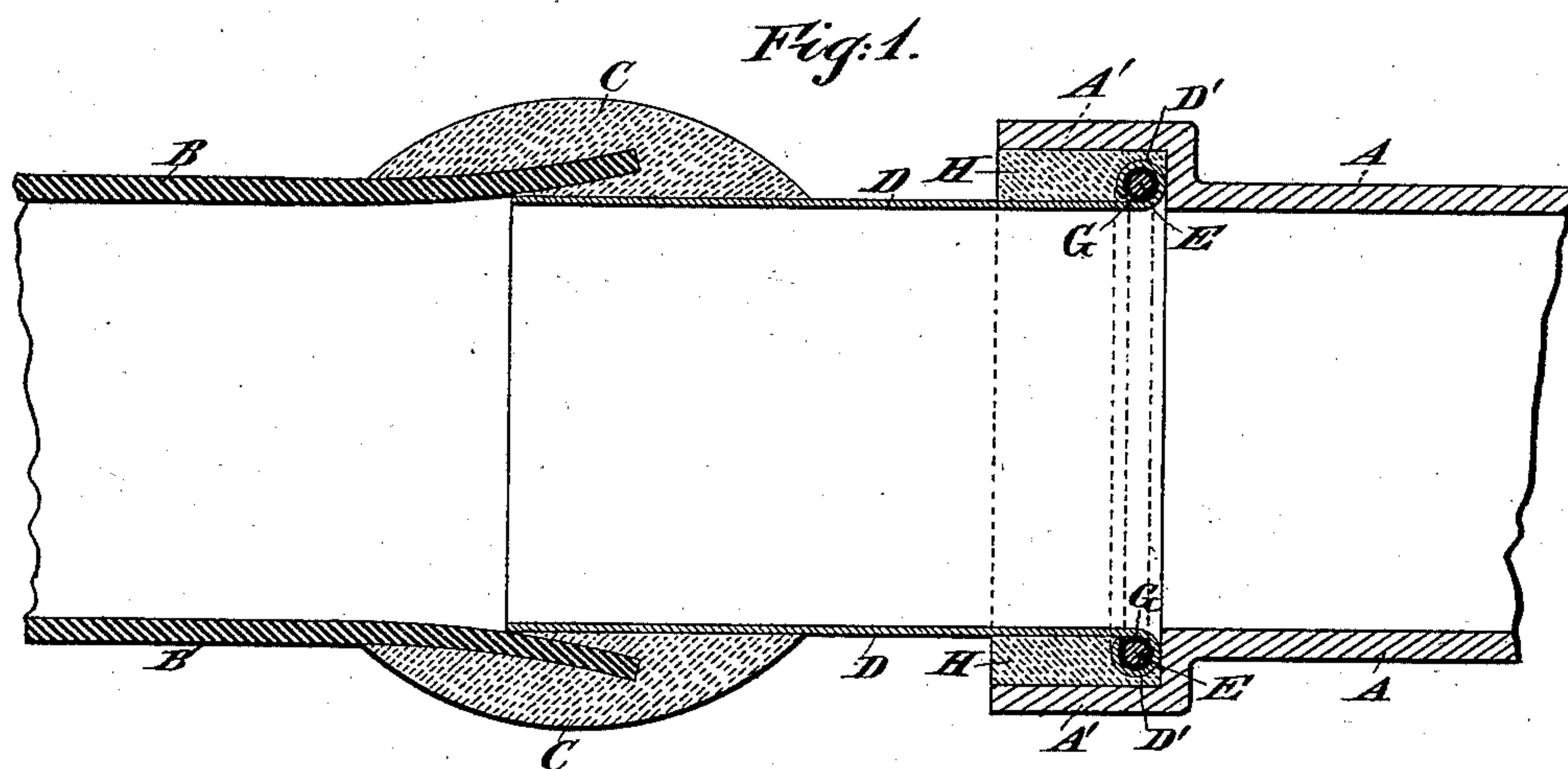


(No Model.)

J. F. SULLIVAN.
FERRULE FOR PIPE JOINTS.

No. 278,061.

Patented May 22, 1883.



WITNESSES—

Charles R. Searle,
H. A. Johnstone.

INVENTOR—

John F. Sullivan
by his attorney
Thomas D. Watson

UNITED STATES PATENT OFFICE.

JOHN F. SULLIVAN, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF
AND JULIA CONNOLLY, OF SAME PLACE.

FERRULE FOR PIPE-JOINTS.

SPECIFICATION forming part of Letters Patent No. 278,061, dated May 22, 1883.

Application filed September 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SULLIVAN, of Brooklyn, Kings county, in the State of New York, have invented certain new and useful
5 Improvements in Ferrules for Pipe-Joints, of which the following is a specification.

In the uniting of lead pipes or pipes of other soft metal to cast-iron pipes it has long been common to solder upon the end of the soft-
10 metal pipe a ferrule of harder metal having an enlarged end, and to fit this ferrule with its enlarged end in a socket in the end of the cast-iron pipe to secure it by calking. It is important, for several reasons, to make the
15 ferrule of some of the alloys generally denominated "brass." It is common to make them of cast-brass, which necessitates the employment of a large quantity of that expensive material. Efforts have been made to employ
20 drawn tubes of brass for such ferrules; but the enlargement of each having been heretofore made in a plain flange sufficient strength was not offered to endure the calking and the subsequent strains to which the joint is liable
25 to be exposed. I have discovered and practically wrought out a construction which allows the use of relatively light tubes of drawn metal to effect a strong junction with the cast metal. It is formed by spinning the end of
30 the ferrule, so as to form a smoothly-rounded ring. The particles of metal in this form brace each other. The construction of the end is further fortified by inclosing a previously-formed ring of wire of a size just sufficient to
35 fill the ring of metal which is so spun as to inclose the wire. Thus equipped, the metal of the tube is further re-enforced and braced by the ring, which is thus reliably engaged with it.

The accompanying drawings form a part of
40 this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a longitudinal section, showing the invention as fully applied for use. Fig. 2
45 is a side elevation of the ferrule with its peculiarly-formed end alone.

Similar letters of reference indicate corresponding parts in both the figures.

A is the cast-iron pipe, and A' an enlarged
50 end forming the socket thereof.

B is a lead pipe; C, a wiped joint of solder,

and D a ferrule of brass made of a short length of drawn tubing of proper diameter. It may, for most purposes, be of very moderate thickness. The end farthest from the lead
55 pipe B is spun outward and over until it forms in section a complete loop, curling quite around, like the numeral 6, (six.)

E is a ring of steel or iron wire, previously placed in the required position, so that as the
60 end of the tube D' is spun outward and over upon itself it completely embraces the wire ring E. The small space between the spun metal D' and the wire E may be filled with solder G to still further increase the strength.
65 For this purpose the wire E should be previously tinned, and the adjacent surface of the spun metal D' touched with acid. I do not esteem soldering generally necessary.

The junction of my ferrule to the lead pipe
70 may be made by abutting the end of the ferrule against the end of the lead pipe or by socketing the ferrule a distance more or less into the interior of the soft-metal pipe. The joint may be secured by wiping, as above de-
75 scribed, or by any other means. Such junction forms no part of my invention.

When my ferrule, after being strongly and rigidly fixed to the lead pipe by any ordinary or suitable means, is inserted in the socket A'
80 and melted lead or solder poured in the joint around it, the side of the spun portion D' which is deepest in the socket A' and farthest from the melted metal is preserved by the construction from attaining any injuriously high
85 temperature. When the end of the thin tube is simply flanged out, the heat of the melted metal employed for calking injures its qualities, and makes it still more likely to be straightened out or broken off when the calking metal
90 is subsequently driven home tightly by a calking-iron.

H is the calking-metal.

Modifications may be made in the forms and proportions. Parts of the invention can be
95 used without the whole. My ferrule will serve with some success without the solder G and without the ring E. Instead of using drawn tubing, I can use brazed tubing. Instead of using brass, I can use iron tubing properly
100 tinned; but I prefer drawn brass tubing.

I claim as my invention—

1. In a joint or junction of a soft-metal to a hard-metal pipe, the thin ferrule D D', rigidly joined to the soft metal B, and having its opposite end spun in the form of a ring, so as to
5 realize the strength and the protection from the heat of the calking, as herein specified.

2. The spun-over end D', in combination with the inclosed ring E, the ferrule D, soft-metal pipe B, and cast-iron or other socketed pipe, A
10 A', and calking material H, combined and ar-

ranged to serve substantially as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, this 27th day of September, 1882, in the presence of two subscribing witnesses. 15

JOHN F. SULLIVAN.

Witnesses:

PATRICK CONNOLLY,
H. A. JOHNSTONE.