H. M. SHEER.

TUBULAR JOINT FOR HEATING SYSTEMS.

APPLICATION FILED NOV. 10, 1917.

1,280,091.

Patented Sept. 24, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

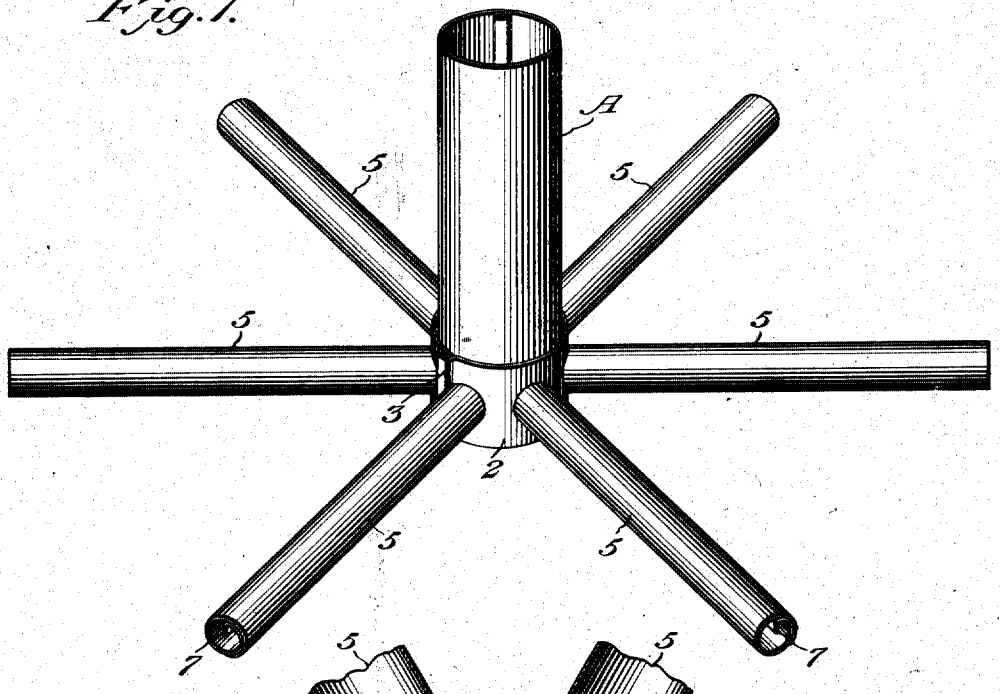
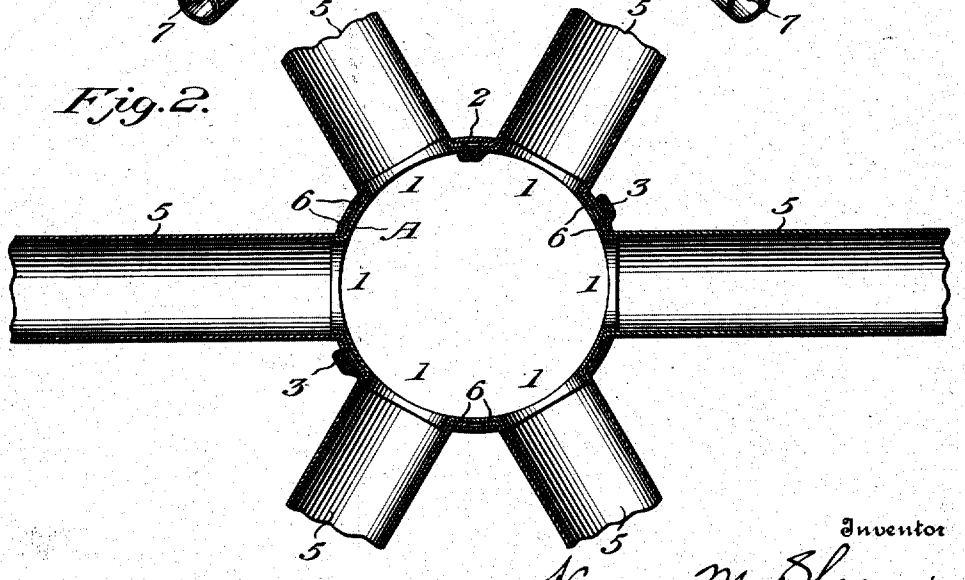


Fig. 2.



Inventor

Henry M. Sheer

By Vernon E. Hodges

his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

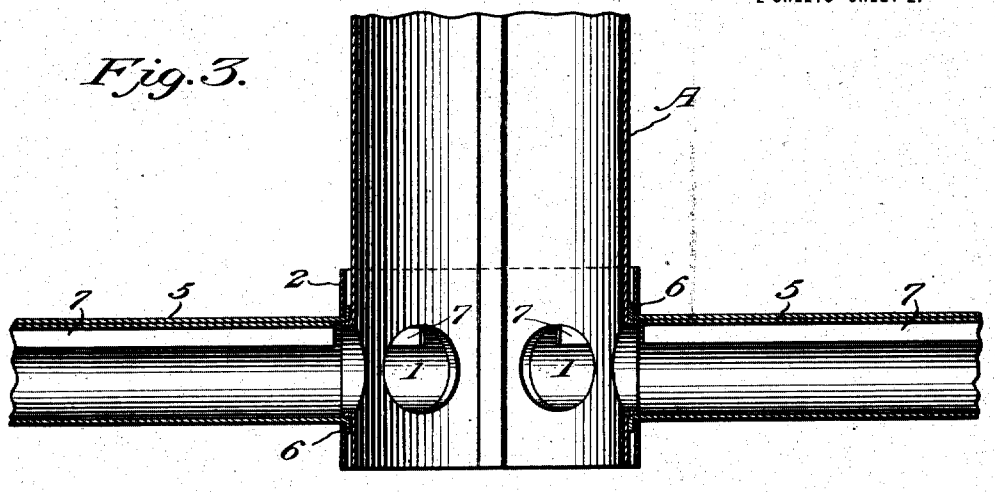


Fig. 4.

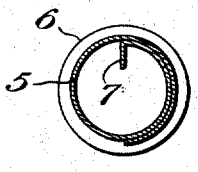


Fig. 5.

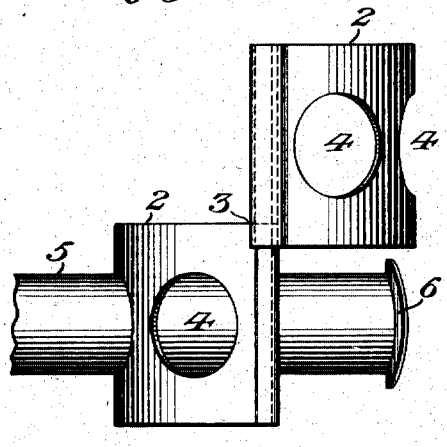
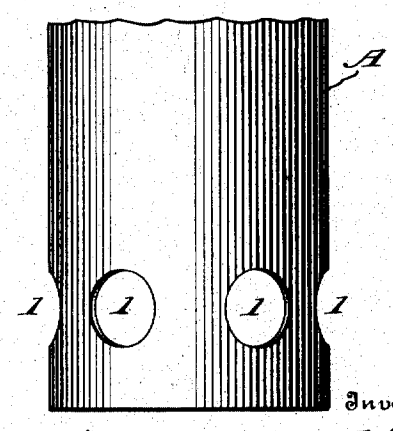


Fig. 6.



Inventor

Henry M. Sheer

By Vernon E. Hodges

His Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY M. SHEER, OF QUINCY, ILLINOIS.

TUBULAR JOINT FOR HEATING SYSTEMS.

1,280,091. Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed November 10, 1917. Serial No. 201,302.

To all whom it may concern:

Be it known that I, HENRY M. SHEER, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Tubular Joints for Heating Systems, of which the following is a specification.

My invention relates to an improvement in tubular joints for heating systems, and more particularly as applied to brooders and incubators.

One of the primary objects is to do away with the use of solder, thus preventing injury from overheating, while at the same time making the joint practically air-tight or sufficiently air-tight at least for the purposes intended.

In the accompanying drawings:—

Figure 1 is a view in perspective;

Fig. 2 is a horizontal sectional view;

Fig. 3 is a vertical section; and

Fig. 4 is a section through one of the tubes.

Fig. 5 is a fragmentary view showing the members of the band partly assembled and one of the tubes broken off but partly extended through one of the band orifices; Fig. 6 is a view of the lower end of the center flue.

A, represents the center flue, it being provided with a plurality of holes 1, 1, of suitable size.

A band 2 made as shown in Figs. 2 and 5 in two sections, detachably connected by joints 3 at their edges, has the same number of holes 4, 4, therein as in the flue, but of larger size.

The radiating tubes 5, 5, are made of sheet-metal and rolled up to a size to be inserted through, and fit snugly in the holes 4, 4, of the band, the inner end of these tubes being curved to the proper form and bent outwardly in the form of a flange 6 whereby to fit and rest against the inner surface of the band adjacent to the holes 4, 4.

These tubes 5 are inserted through the holes 4, and then the band is fitted over the lower end of the flue with the holes 4, 4, and the holes 1, 1, in registry, and, after the parts are thus assembled, the edges of the holes 1, 1, are bent or swaged outwardly as shown in Figs. 2 and 3 into the inner ends of the tubes 5, 5, by means of a special die and swage for the purpose.

This forms a perfect gas-tight joint by forcing the tubes 5 out to the full size of the hole 4 in the band, overlapping and breaking the joint between the tubes and the inside flue. The entire structure is firmly locked together, after the various operations above mentioned are completed. To give additional strength, the band could be spot-welded to the inside flue at points between the tubes. These tubes can be made, of course, with lock-seam, when desired, as well as with the plain lap-seam, as shown.

The tubes are preferably so formed that the inner edge of the sheet-metal is bent inwardly to form a strengthening flange 7, as shown in Fig. 4.

By the use of this form of joint, I am enabled to do away with the use of solder; hence it cannot be injured by overheating. I also dispense with the use of a cast-iron heat distributer, the latter being heavy and expensive, and besides it is difficult to secure anything like an air or gas-tight joint, not to speak of the weight of such a distributer making it necessary to have it supported or attached in some manner to the incubator top.

By my present form of joint, I have a light, simple air and gas-tight joint, easily and cheaply constructed, and at the same time effectual in its work.

I claim:

1. A joint for heating systems comprising concentric tubular members having registering holes, and tubes inserted through the holes of the outer member and having flanged inner ends adapted to be held between the tubular members, the edges of the holes of the inner tubular member bent outwardly into the inner ends of the tubes, whereby to form an air and gas-tight joint.

2. The combination with a band having holes therein, and tubes inserted through said holes and having flanged inner ends, and a central flue of less diameter than the band having holes of smaller size than the holes in the band, and brought into registry therewith and their edges bent outwardly into the inner ends of the tubes.

3. The combination with a band made in sections and having holes therein, and tubes inserted through said holes, and having flanged inner ends, of an inner central flue having holes of smaller size adapted to register with the holes of the band, and to receive the flanges on the inner ends of the tubes between the band and the central flue, the edges

of the holes of the flue bent outwardly into the flanged inner ends of the tubes.

4. The combination with a band having holes therein, and tubes formed of a roll of sheet-metal, the inner edge thereof terminating in an inwardly-extending flange, and the inner end of the tube flanged, these tubes being inserted outwardly through the holes in the band, and a central flue inserted in the band, with its holes in registry with those of the band, the edges of the holes in the flue bent outwardly into the inner flanged ends of the tubes.

In testimony whereof I affix my signature.

HENRY M. SHEER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."