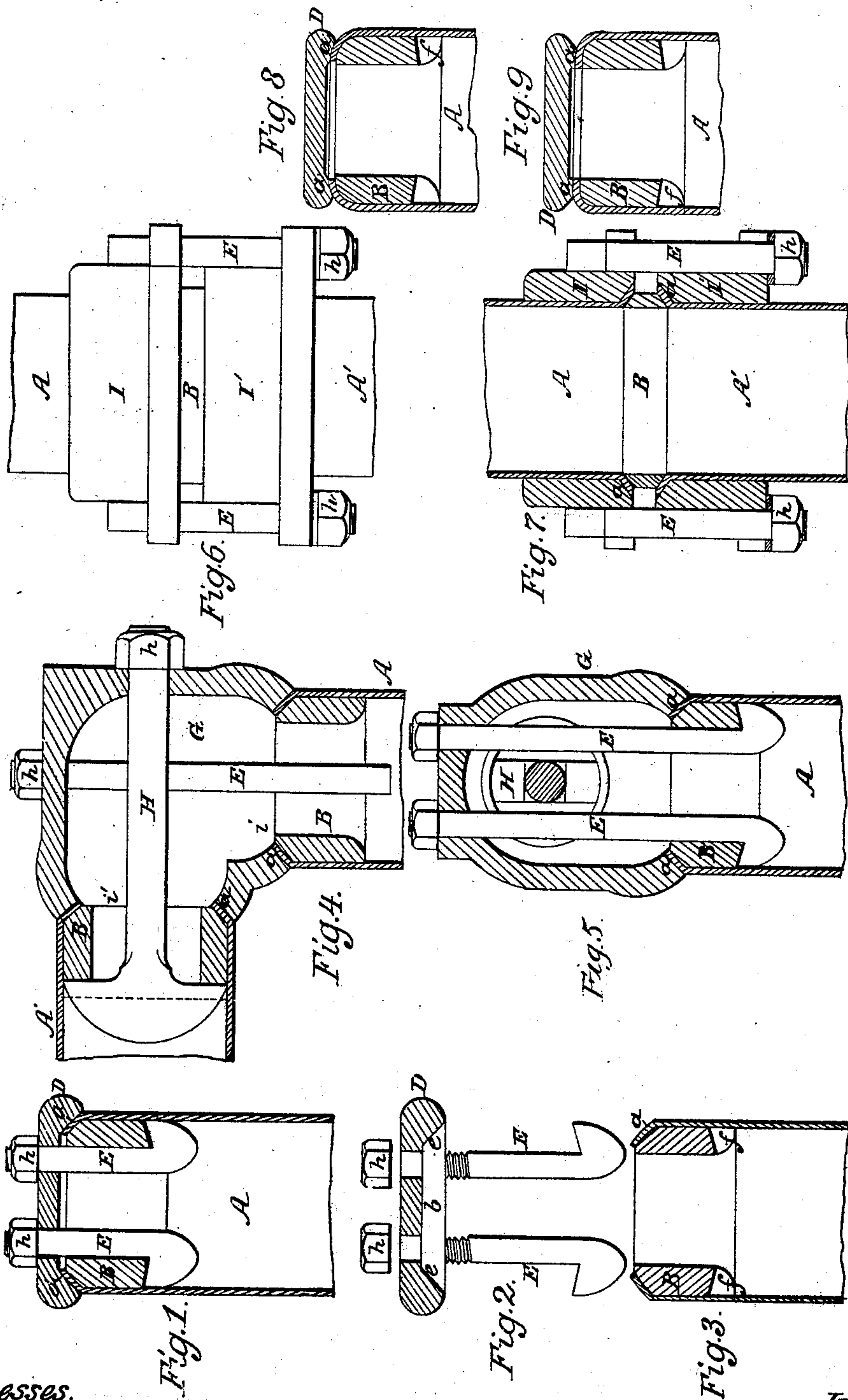


W. H. Harrison.

Metal Pipe Coupling.

N<sup>o</sup> 98,960.

Patented Jan. 18, 1870.



Witnesses.

Jno. B. Harding.  
Wm. A. Steel.

Invento:

W. H. Harrison  
by his atty  
N. Howson



# United States Patent Office.

W. H. HARRISON, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 98,960, dated January 18, 1870.

## IMPROVEMENT IN JOINTS FOR METAL PIPES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, W. H. HARRISON, of Philadelphia, Pennsylvania, have invented an Improved Joint for Wrought-Iron Pipes; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists in closing or connecting together wrought-iron pipes, by forming on the end of each pipe a flange, and confining this flange between an internal ring, or its equivalent, and an external cover, elbow, or ring, all substantially as described hereafter.

In order to enable others skilled in the art to make and apply my invention, I will now proceed to describe the mode of carrying the same into effect, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figures 1, 2, and 3, illustrate my invention as applied to the closing (at the ends) of wrought-iron pipes, or thin pipes of other metal;

Figures 4 and 5 represent my invention as applied to the connecting together of pipes at right angles to each other;

Figures 6 and 7 represent two pipes united (in line with each other) in accordance with my invention; and

Figures 8 and 9, modifications of my invention.

Before describing my invention, I may state that more or less difficulty has been experienced in closing or uniting together lap-welded tubes and other wrought-iron pipes by inexpensive appliances, the thinness and character of the metal militating against the employment of ordinary fastenings.

The object of my invention is to overcome this difficulty—an end accomplished in the manner I will now proceed to describe.

Figs. 1, 2, and 3, illustrate one of the simplest modes of applying my invention, namely, to the closing of pipes.

A is a lap-welded tube or other pipe, of wrought-iron or other metal, the end of which is so bent as to form the internal bevelled flange *a*, which is adapted to the inclined or bevelled edge of a cast-iron ring, B, the latter being fitted snugly to the inside of the pipe.

D is a cast-iron cover, having a recess, *b*, with a bevelled edge, *e*, adapted to the exterior of the bevelled flange *a*.

E E are two bolts, each having a hooked head, for catching into a recess, *f*, in the ring B, these bolts passing through holes in the cover D, on the outside of which they are furnished with suitable nuts, *h h*.

When the several parts are fitted together, as shown in fig. 1, and the nuts are tightened, the pipe is effectually closed, for it should be understood that the bevelled edge of the ring B, and the bevelled edge of the

recess in the cover, are made perfectly true, the flange also being made true, so that little or no packing is necessary, the combined action of the ring and cover on the flange being such, that when the bolt is tightened, the flange is compressed with such force as to insure a tight joint, the pressure being exerted on the flange through a wedge-like action.

The inclined flange has the further advantage of great strength, compared with a straight flange, in the forming of which the metal is necessarily subjected to a much greater strain than in making the inclined flange.

As a means of resisting internal pressure, the inclined flange is much superior to the straight flange, for the abrupt corner of the latter, weakened, perhaps, in bending the metal, would be exposed to rupture, whereas the inclined flange, confined, as it is, between the cover and the ring, presents no such weak point.

The same remarks will apply to the flange shown in the modification, fig. 8, where the flange, instead of being inclined abruptly, is made rounding, so as to form a ball-joint. The remarks will also apply to the modification, fig. 9, in which the joint is made partly rounding, and partly horizontal, the horizontal portion only being compressed.

While a flange bent abruptly at right angles may, in some cases, be used, flanges of any of the above forms are to be preferred, for the reasons given.

Figs. 4 and 5 represent the application of my invention to the joining together of two pipes at right angles to each other. In this case I use a cast-iron elbow, G, having two openings, *i* and *i'*, the edge of the opening *i* being arranged to receive the bevelled or rounded flange of the pipe A, and the edge of the opening *i'* for receiving the flange of the pipe A'.

Each pipe has an internal cast-iron ring, B, similar to that described above, the ring of the pipe A' being recessed, for receiving part of the T-head of the bolt H, which passes through the elbow G, and is furnished outside the same with a suitable nut. The ring B of the pipe A, however, is secured by two bolts E E, similar to those described in reference to figs. 1, 2, and 3. By this arrangement, the bolts for securing one pipe to the elbow cannot interfere with the bolt for securing the other pipe to the same elbow.

In figs. 6 and 7, my invention is illustrated as applied to the uniting of two pipes in line with each other, A and A' being the two pipes, the flanges on the ends of which are external, and a single internal ring, B, is common to both pipes, for one edge of this ring is adapted to the flange of one pipe, and the other edge of the ring is, in like manner, adapted to the flange of the other pipe.

An external cast-iron ring, I, is fitted to the pipe A, and a similar ring, I', to the pipe A', each ring



being arranged to suit the flange of the pipe which it surrounds.

The two rings are connected together by bolts E E, in a manner which will be understood without further explanation.

Other modifications of my invention will readily suggest themselves to those familiar with work of this class.

It will be seen that my invention, whether it be applied to the closing of wrought-iron pipes, or to the connecting of such pipes together, has one main characteristic, namely, the confinement of a flange formed on the pipe between a ring inside the pipe, and a cover, elbow, or ring outside the same.

I therefore claim as my invention, and desire to secure by Letters Patent—

A pipe, of wrought-iron or other metal, closed, or connected to another pipe, or to a vessel or elbow, by forming on the pipe a flange, and confining or gripping the said flange, substantially as and for the purpose described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

W. H. HARRISON.

Witnesses:

E. H. BAILEY,  
HARRY SMITH.