

H. CAIN.  
Pipe-Coupling.

No. 214,881.

Patented April 29, 1879.

Fig. 1

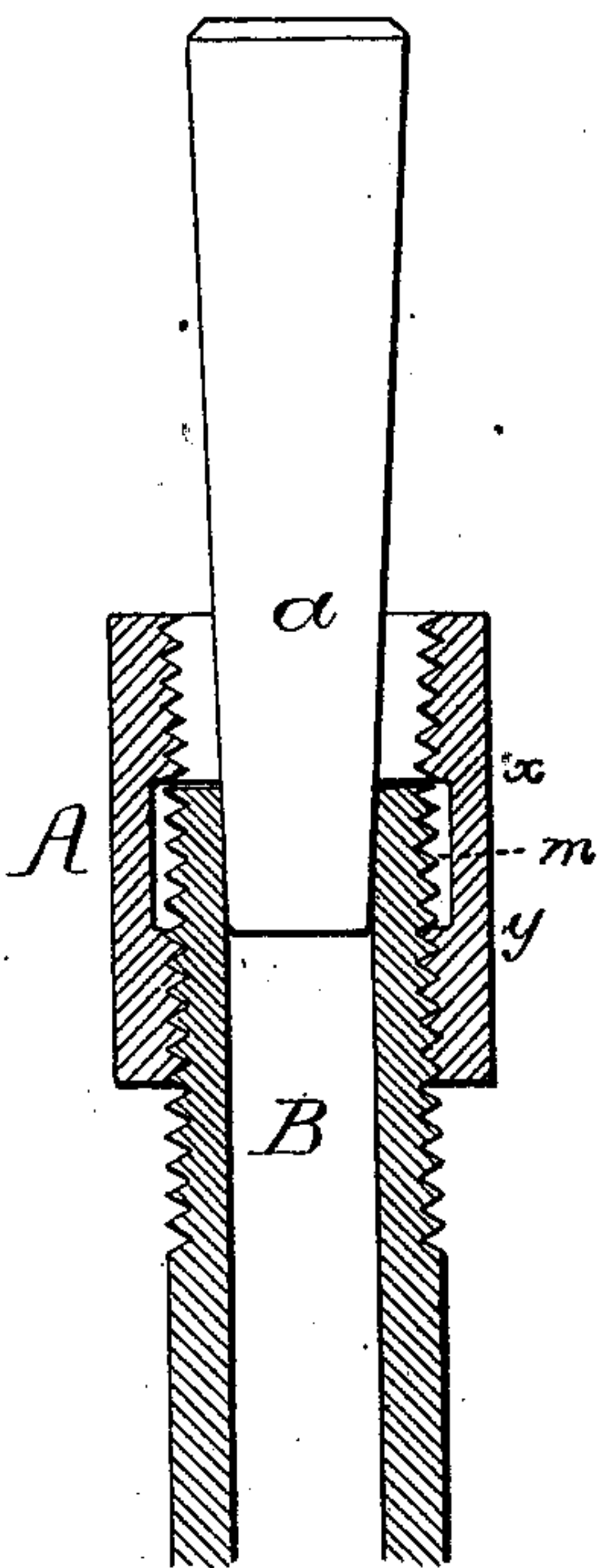


Fig. 2

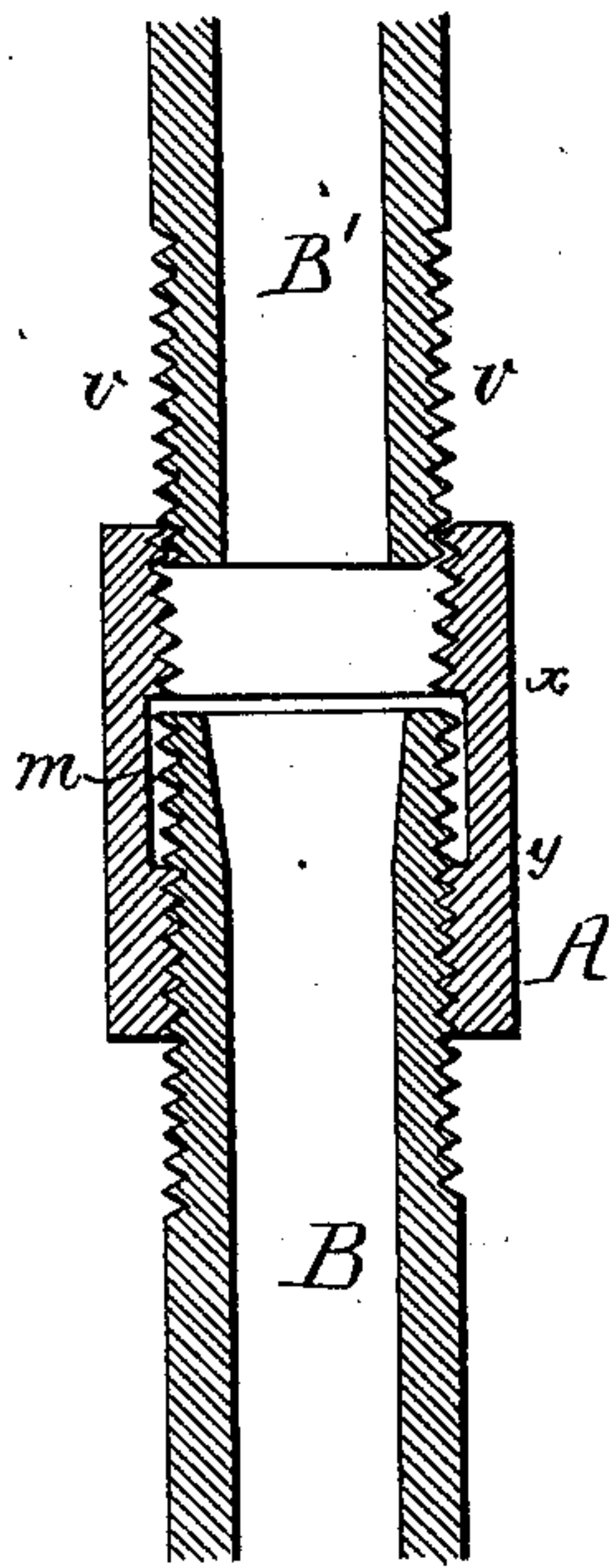
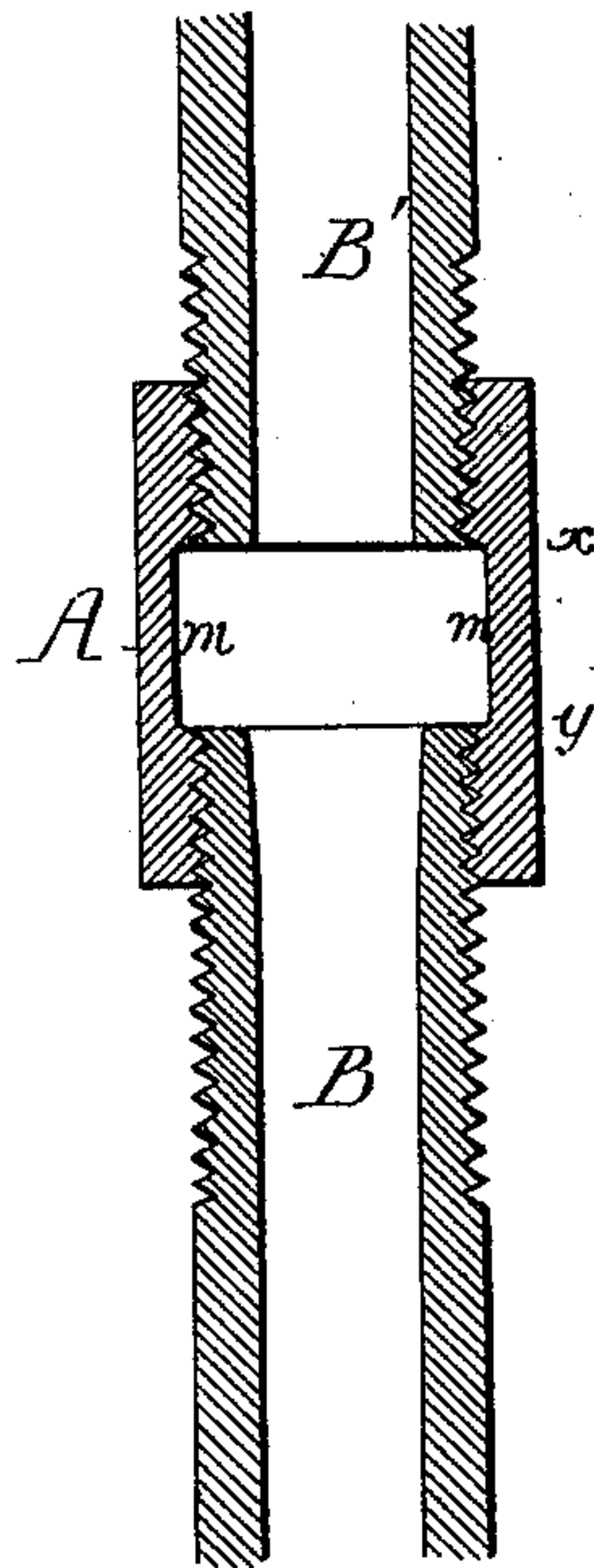


Fig. 3



WITNESSES.

Henry Howson Jr.  
Harry Smith.

INVENTOR.

Harry Cain  
by his Attorneys  
Howson and Son



# UNITED STATES PATENT OFFICE.

HARRY CAIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF  
HIS RIGHT TO GEORGE C. JENNISON, OF SAME PLACE.

## IMPROVEMENT IN PIPE-COUPPLINGS.

Specification forming part of Letters Patent No. **214,881**, dated April 29, 1879; application filed  
March 17, 1879.

*To all whom it may concern:*

Be it known that I, HARRY CAIN, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Pipe-Couplings, of which the following is a specification.

The object of my invention is to connect pipes and tubes together by an internally-threaded and internally-recessed coupling-sleeve, constructed in the peculiar manner fully described hereinafter, and bearing such relation to one threaded tube having an expanded end, and another tube having a tapering thread, that, on turning the coupling-sleeve, there will be a perfectly tight junction of the same with both tubes.

In the accompanying drawings, Figure 1 represents a section of the coupling-sleeve and the manner in which the end of one of the tubes is expanded within the said sleeve; Fig. 2, a section of the coupling as it appears when adjusted prior to the complete connection of the two tubes together; and Fig. 3, a sectional view of the coupling as it appears when the connection is complete.

The coupling-sleeve A is of the usual construction, an internal thread being formed on it, in the first instance, from end to end, but subsequently cut away in the middle by the formation of an internal recess, *m*, extending from about the point *x* to about the point *y*, this recess being a trifle deeper than the thread.

In a coupling-sleeve of cast-iron the recess *m* may be formed prior to cutting the internal thread.

B B' are portions of the two tubes to be coupled together by the sleeve A. A thread of uniform depth is formed on the exterior of the tube B, so that it can be screwed into the sleeve to the extent shown in Fig. 1, after which a tapering mandrel, *a*, is driven into the end of the tube, so as to expand the same to a limited extent, the recess *m* in the sleeve permitting the expansion.

In attempting to unscrew the tube from the sleeve after this treatment, it can be withdrawn to about the extent shown in Fig. 3,

when the expanded end portion of the tube will be jammed on the thread of the sleeve, efforts exerted to further withdraw the tube resulting in the desired tight junction of the sleeve with the said tube.

The thread on the tube B' is cut, as usual, on a slight taper at *v*, so that when screwed home it will be tightly jammed in the thread of the sleeve.

In coupling the two tubes together they are, in the first instance, adjusted to the sleeve in the manner shown in Fig. 2, the expanded end of the tube B being contained within the recess *m* of the sleeve, and a small portion of the end of the tube B' inserted into the opposite end of the said sleeve, on turning which, by the aid of pipe-tongs or a pipe-wrench, the end of the sleeve will be screwed onto the tube B', and this will be continued until the internal thread in one portion of the sleeve reaches the tapering portion *v* of the thread of the tube B', and the internal thread of the other portion of the sleeve reaches the expanded end of the tube B, after which the leverage exerted to turn the sleeve by the pipe-wrench will result in jamming the sleeve tight to both tubes and effecting the desired joint.

It will be seen that while the above-described inexpensive coupling can be used generally for connecting tubes or pipes together, it is especially applicable to the formation of such joints as have usually required the use of more expensive flanges.

I claim as my invention—

The combination of the internally-threaded sleeve A and its internal recess, *m*, with the externally-threaded tube B, having its end expanded into the said recess, all substantially as described.

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

HARRY CAIN.

Witnesses:

WILLIAM J. COOPER,  
HENRY HOWSON, Jr.