

(No Model.)

2 Sheets—Sheet 1.

H. W. BRINCKERHOFF.

SPHERICAL PIPE JOINT.

No. 381,826.

Patented Apr. 24, 1888.

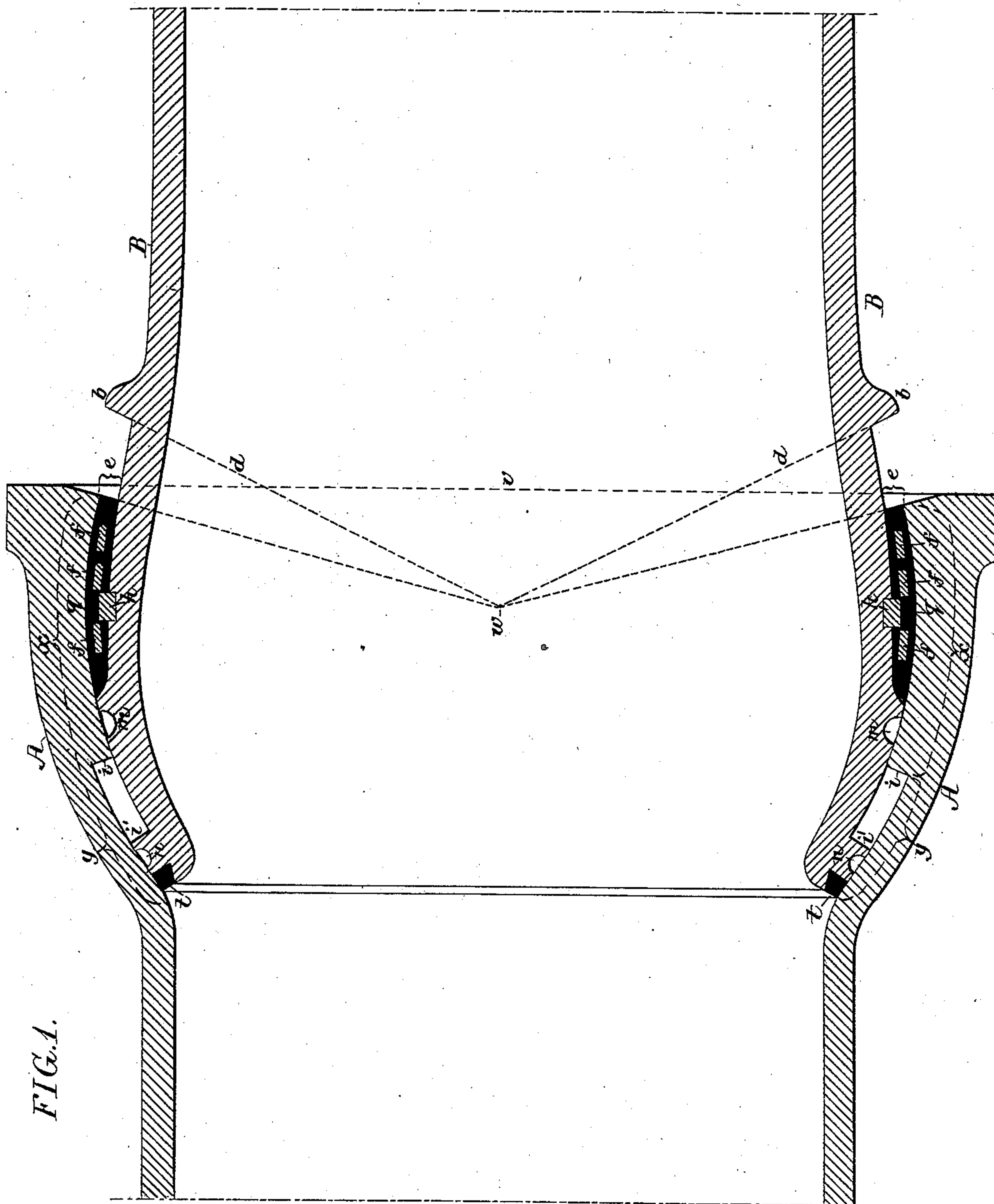


FIG. 1.

Witnesses:
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William D. Bonner.

Inventor:
Henry W. Brinckerhoff.
by his Attorneys.
Howson & Sons,

(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

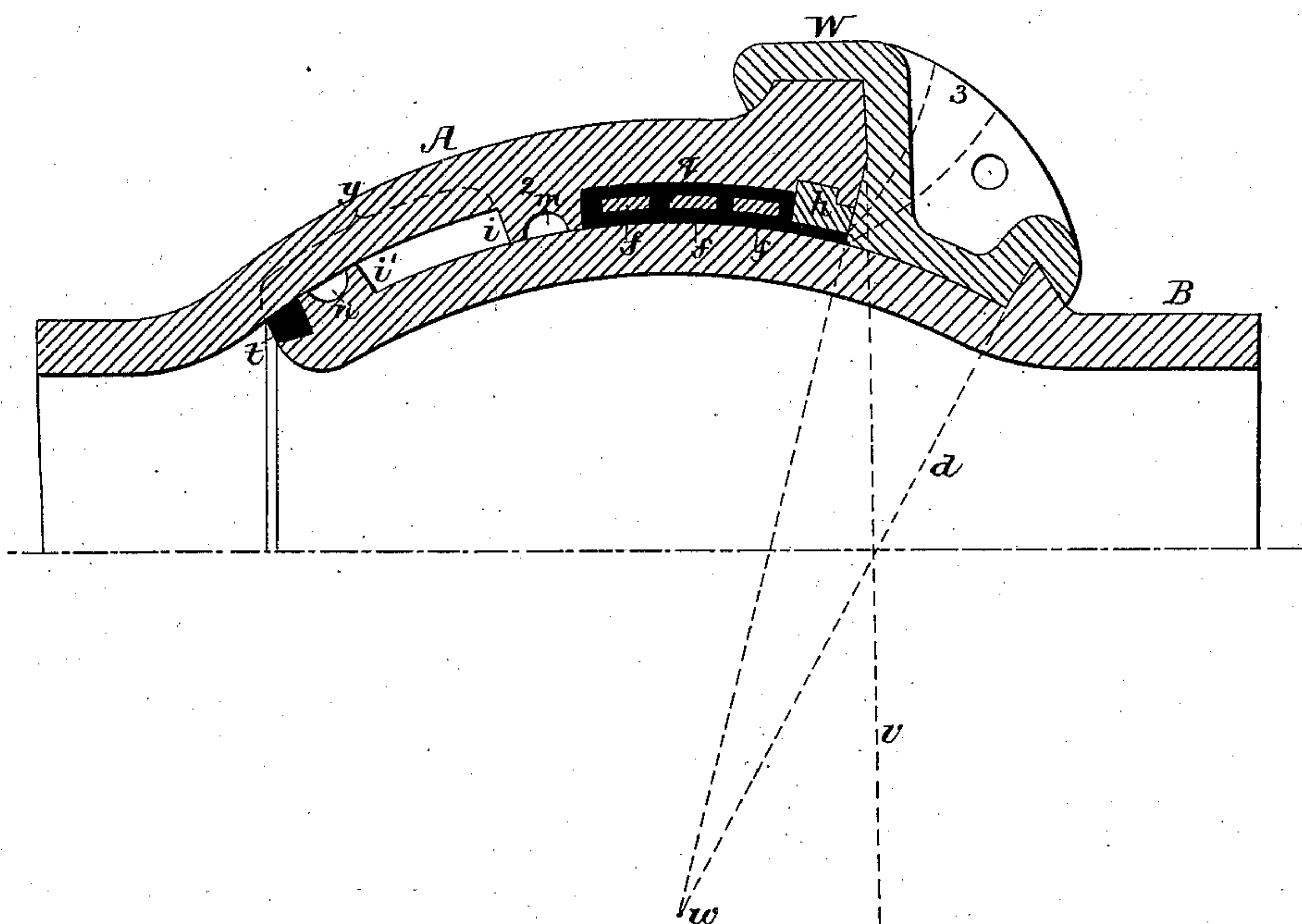
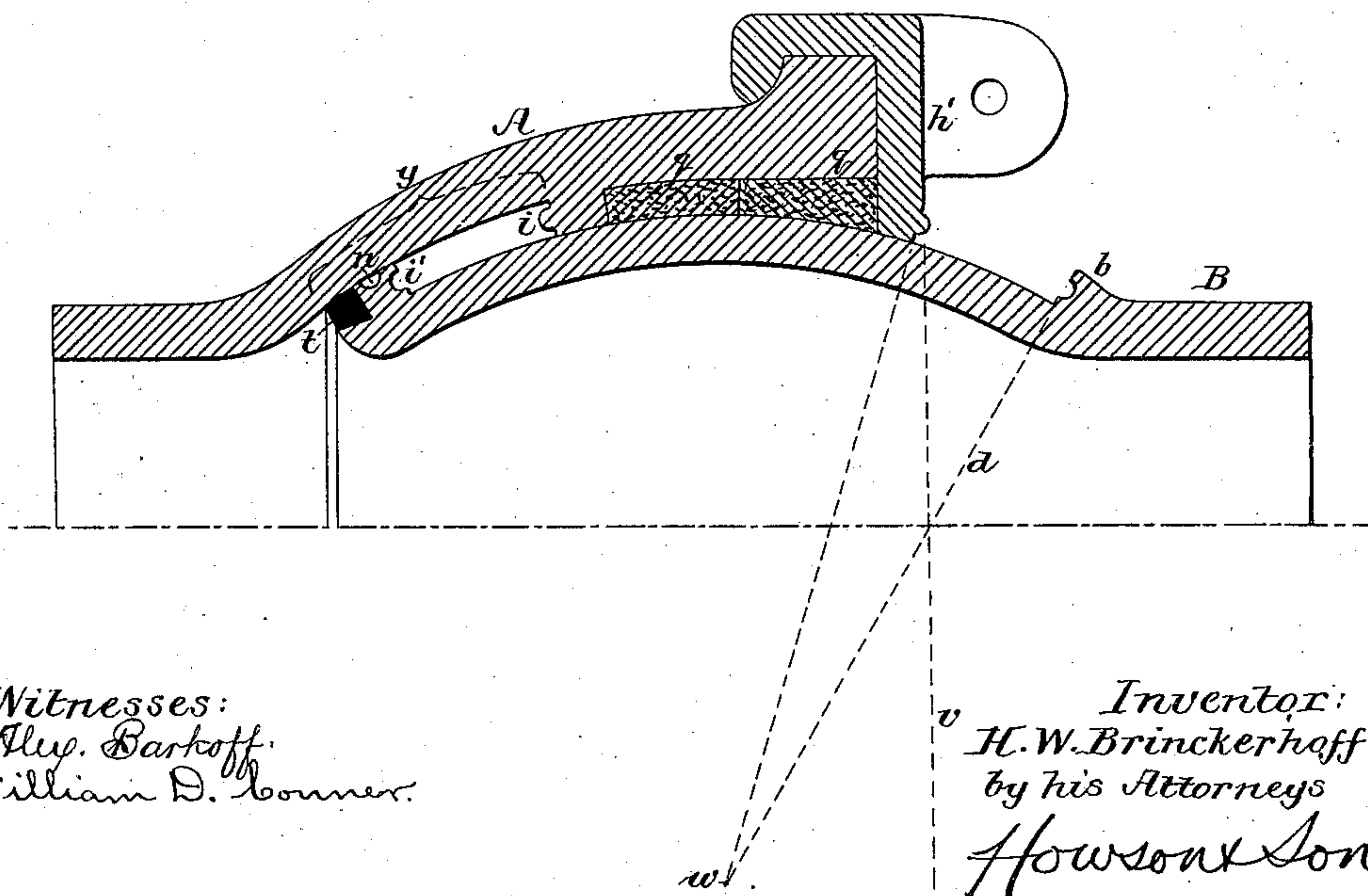


FIG. 3.



Witnesses:
 Alex. Barkoff.
 William D. Conner.

Inventor:
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UNITED STATES PATENT OFFICE.

HENRY W. BRINCKERHOFF, OF BROOKLYN, NEW YORK, ASSIGNOR TO JOHN F. WARD, OF JERSEY CITY, NEW JERSEY.

SPHERICAL PIPE-JOINT.

SPECIFICATION forming part of Letters Patent No. 381,826, dated April 24, 1888.

Application filed December 4, 1885. Serial No. 184,715. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. BRINCKERHOFF, a citizen of the United States, and a resident of Brooklyn, New York, have invented certain Improvements in Spherical Pipe-Joints, of which the following is a specification.

My invention relates to improvements in spherical pipe-joints of the class shown in Letters Patent of J. F. Ward, dated August 25, 1863, and those granted to R. B. Coar, dated March 15, 1870, and May 31, 1870; and the objects of my invention are to strengthen the packing, to relieve it from undue strain, to effectually retain it in its place, and to facilitate its introduction into the packing space. These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figures 1, 2, and 3 represent sections of different forms of pipe-joint illustrating the features of my invention.

In Fig. 1, which is an improvement on the Ward pipe-joint, above referred to, A represents the bell end of one length of pipe, and B the spigot end of an adjoining length. The interior of the bell A has a bearing-surface consisting of a zone, *x*, forming a seat for the main body of packing of the spigot, and inward beyond this another zone, *y*, of larger radius, forming a seat for the packing *t* at the inner end of the spigot, the zones having a common center, *w*, which is situated within the bell at a distance from the plane *v* of the mouth.

On the spigot B is formed a stop, *b*, the face of which is determined by a radial line, *d*, drawn from the center *w* of the joint. The spigot B is so formed that there shall be a space, *e*, between it and the interior of the bell for the reception of the lead or other soft-metal packing, *q*, and into this space are introduced loose rings *f*, by preference of wrought-iron, these rings becoming embedded in the lead as the latter is poured into the space *e*, thereby rendering the lead more rigid and more capable of resisting distortion. To a groove in the spigot is also adapted a ring, *h*, of wrought-iron, which should be severed at one point, so that it can be expanded and passed over the spigot and permitted to recoil and enter the groove. This ring (or there may be more than one) serves as a retainer

for the lead packing, and in fact renders the same such a permanent part of the spigot that it cannot be wrenched therefrom by the movement of the joint. It will be noticed that there is an internal shoulder, *i*, within the bell and an external shoulder, *i'*, on the spigot, these shoulders bearing such relation to each other and to the stop *b* that when the stop on one side of the spigot is in contact with the mouth of the bell the shoulder *i'* on the other side of the spigot is in contact with the shoulder *i* in the bell; hence the entire strain is resisted by these shoulders and the stop and is thus removed from the packing. There is a space for packing, *t*, at the end of the spigot between the latter and the interior of the bell, so that in pipes large enough in diameter to admit an operator the latter can pack and calk this space from the inside.

Figs. 2 and 3 illustrate my improvements as applied to the pipe joints for which Letters Patent were granted to R. B. Coar, dated March 15, 1870, and May 31, 1870. A represents the bell end of one pipe, and B the spigot end of the adjoining pipe, this spigot being in the form of a zone of a sphere of which *w* is the center. In Fig. 2 there is in the bell an internal rib, 2, between which and the jointing-ring W the packing of molten lead is run, this ring being made in sections bolted together, so as to embrace the mouth of the bell, the spigot, and the stop shoulder of the latter, and thus serves the purpose of confining the lengths of the pipe in their proper relative positions prior to and during the pouring in of the metal through a runner, 3. (Shown by dotted lines.) The ring has to be removed after the introduction of the packing. This modification contains several features, described in reference to the joint shown in Fig. 1—namely, the external and internal stops, the loose rings *f*, the internal packing-space, and the retaining-ring *h*, which in this case is attached to the bell instead of to the spigot.

In the joint shown in Fig. 3 an external retaining-ring, *h'*, is used in place of an internal ring, *h*, projecting into the packing, part of the ring *h'* coming into contact with the stop *b*, to limit the movement of the pipes, and said ring having a projection adapted to a recess in the stop. The internal shoulder, *i*, has a similar projection adapted to a recess in the

spigot-shoulder, the hold being thus made more secure. In this instance the packing, instead of being poured into the space between the bell and spigot, is introduced into the same either before or during the putting together of the pipes, the packing *q* consisting of papier-maché, tarred rope, or other fibrous material, or wood, or even soft metal, and being molded in the form of split rings or segments which admit of ready adjustment to their proper positions.

It will be observed that there are in the joints shown in Figs. 1 and 2 grooves *m* and *n*, formed either in the outer surface of the spigot or in the inner surface of the bell, the grooves *m* being in the rear of the packing-space *e* and in advance of the shoulder *i*, and the groove *n* being in advance of the space for the rear packing, *t*, and in the rear of the shoulder *i'*. These grooves, which are empty in the first place, serve to receive and retain any of the soft metal which may find its way beyond the packing-spaces and thus prevent its entrance to the clearance-space between the shoulders *i i'*, where it would interfere with the play of the joint.

I claim as my invention—

1. The combination of the bell and spigot and the interposed packing, with internal stop-shoulders formed upon the bell and spigot and serving to limit the movement of the bell and prevent straining of the packing, all substantially as specified.

2. The combination, in a spherical pipe-joint, of the bell, spigot, and interposed packing, said bell having an internal shoulder and the spigot having an external stop to seat against the mouth of the bell, and a second

stop to simultaneously seat against the internal shoulder in the bell, all substantially as specified.

3. The combination of the bell and spigot, and intervening packing of a spherical pipe-joint, with the rings *f*, embedded in and forming part of the packing, as set forth.

4. The combination of the bell, spigot, and packing of a spherical pipe-joint, with the retaining-ring *h*, adapted to a groove in the spigot or bell and projecting into the packing so as to retain the same, as specified.

5. The combination of the bell and spigot constructed to form a packing-space, *e*, between them, shoulders in the rear of said packing-space to limit the movement of the spigot, and a groove between the packing-space and the forward shoulder, all substantially as and for the purpose specified.

6. The combination of the bell and spigot, constructed to form internal stop shoulders, a packing-space around the inner end of the spigot, and a groove to prevent the passage of packing from said space to the clearance-space between the stop-shoulders, all substantially as specified.

7. The combination of the bell, the spigot having an external stop-shoulder, and the jointing-ring *W*, fitted to the bell and to the spigot and its stop-shoulder, all substantially as specified.

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

HENRY W. BRINCKERHOFF.

Witnesses:

CHRISTOPHER C. WHITEMORE,
WILLIAM C. WESTERVELT.