

No. 778,765.

PATENTED DEC. 27, 1904.

J. H. SPRAGUE.
UMBRELLA JOINT.
APPLICATION FILED NOV. 27, 1903.

Fig. 1.

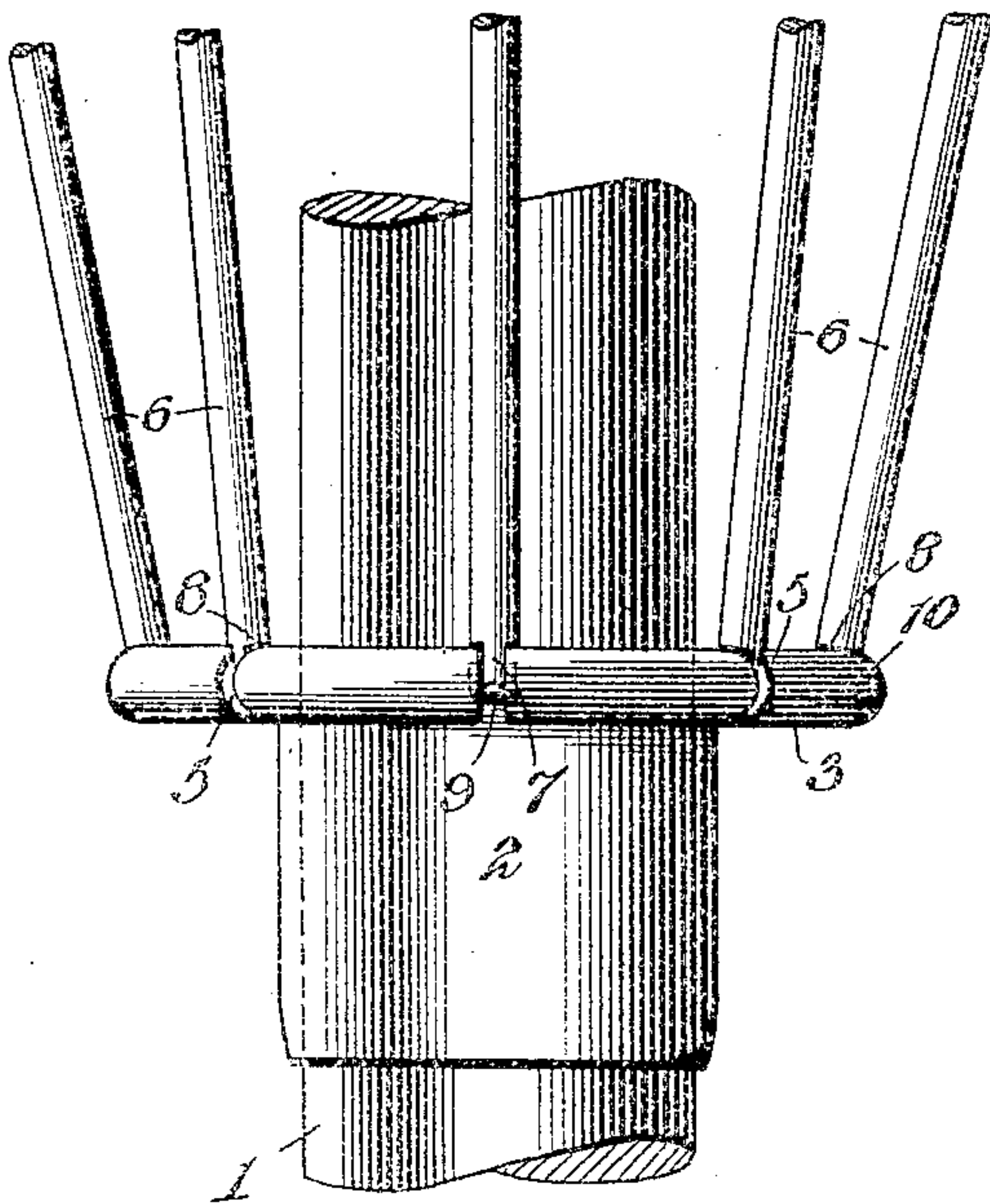


Fig. 2.

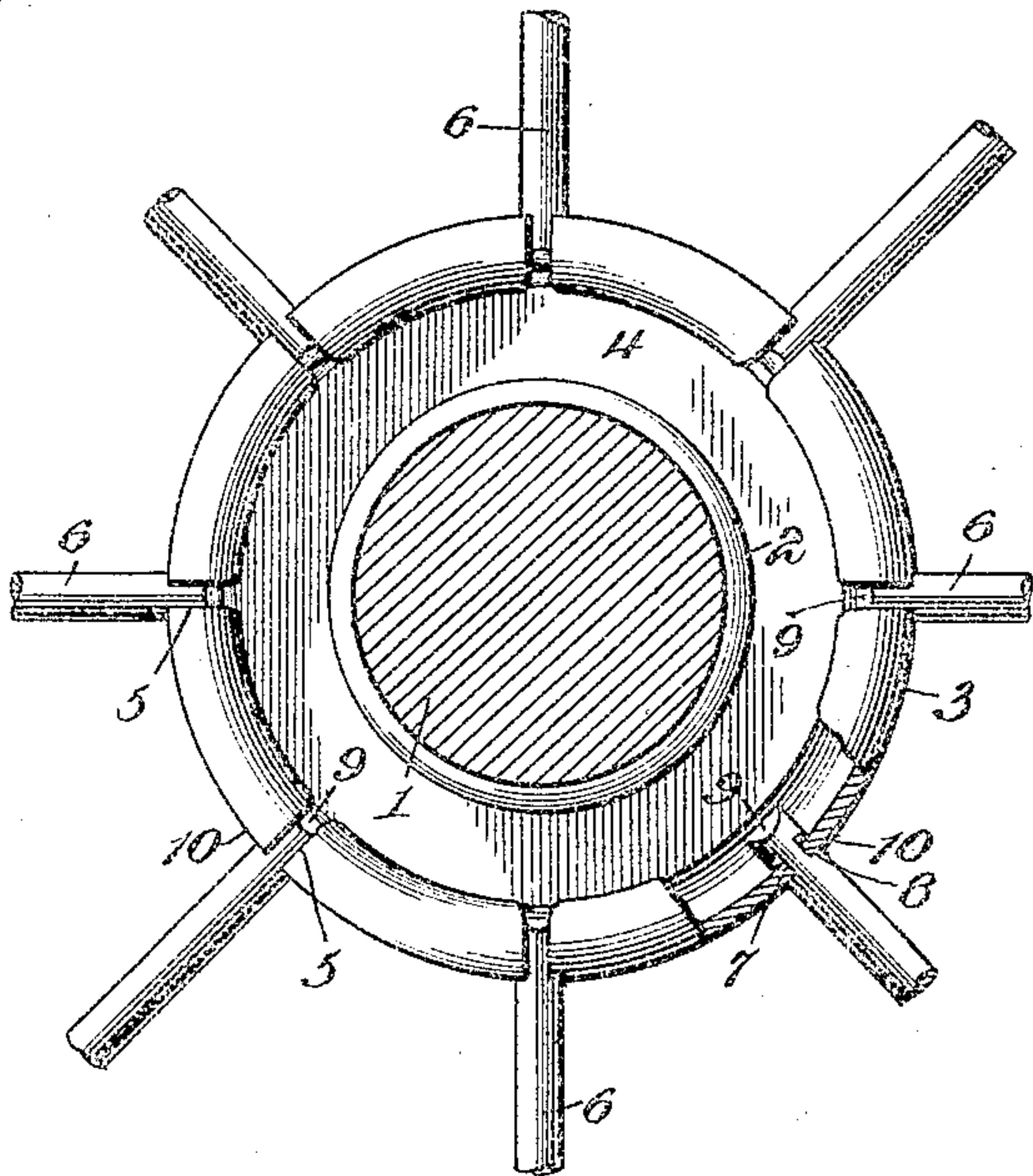


Fig. 3.

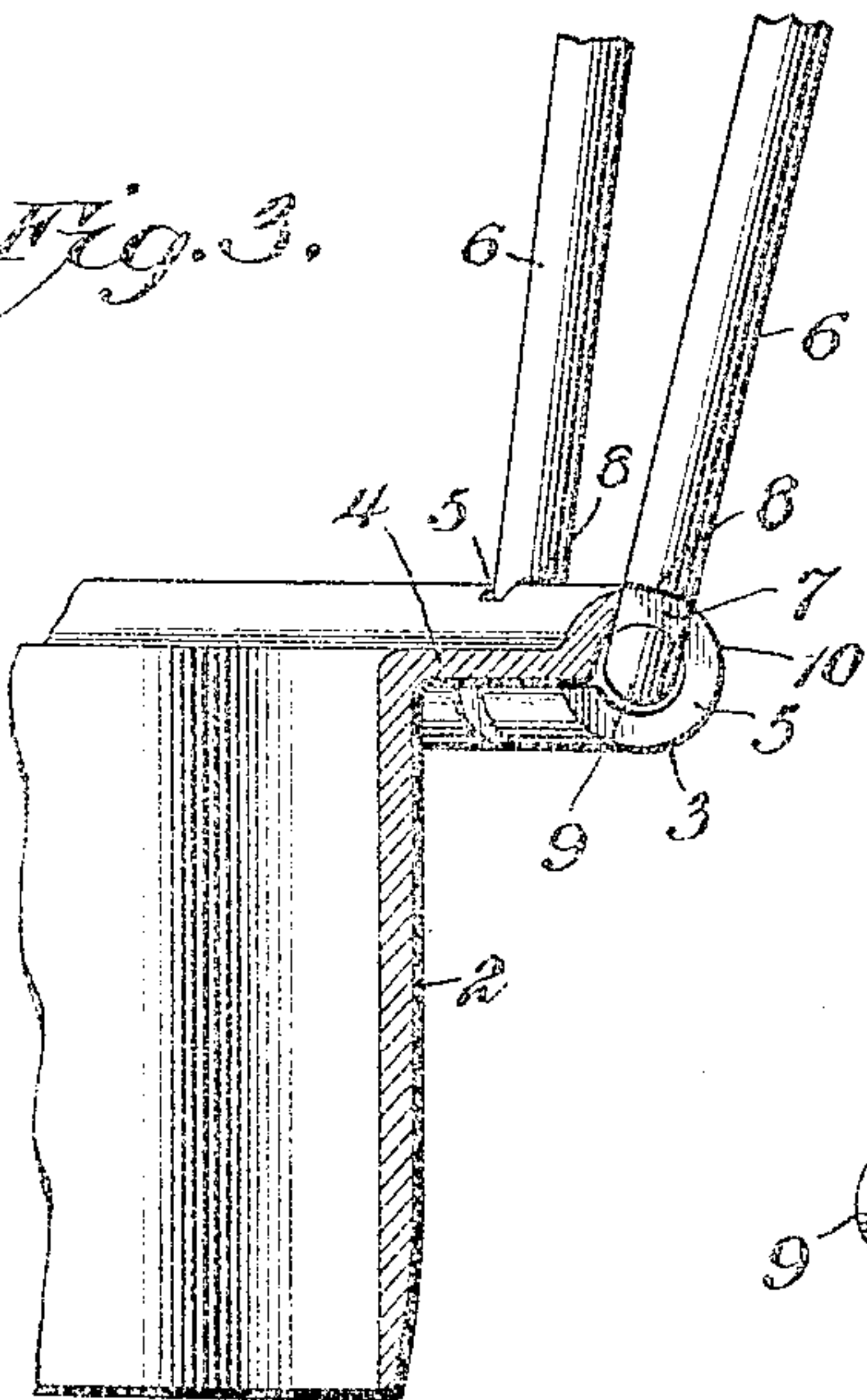


Fig. 5.

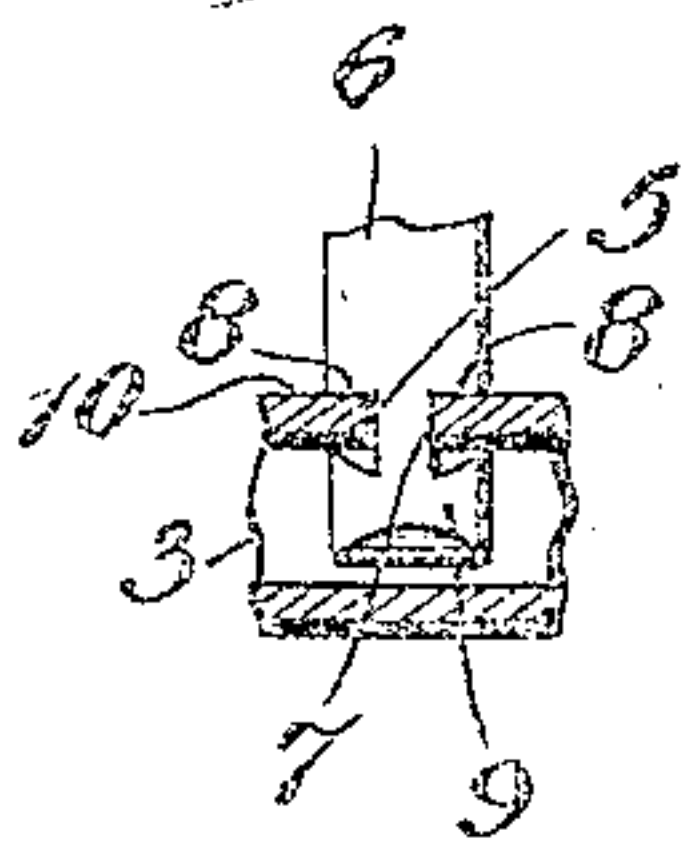


Fig. 4.

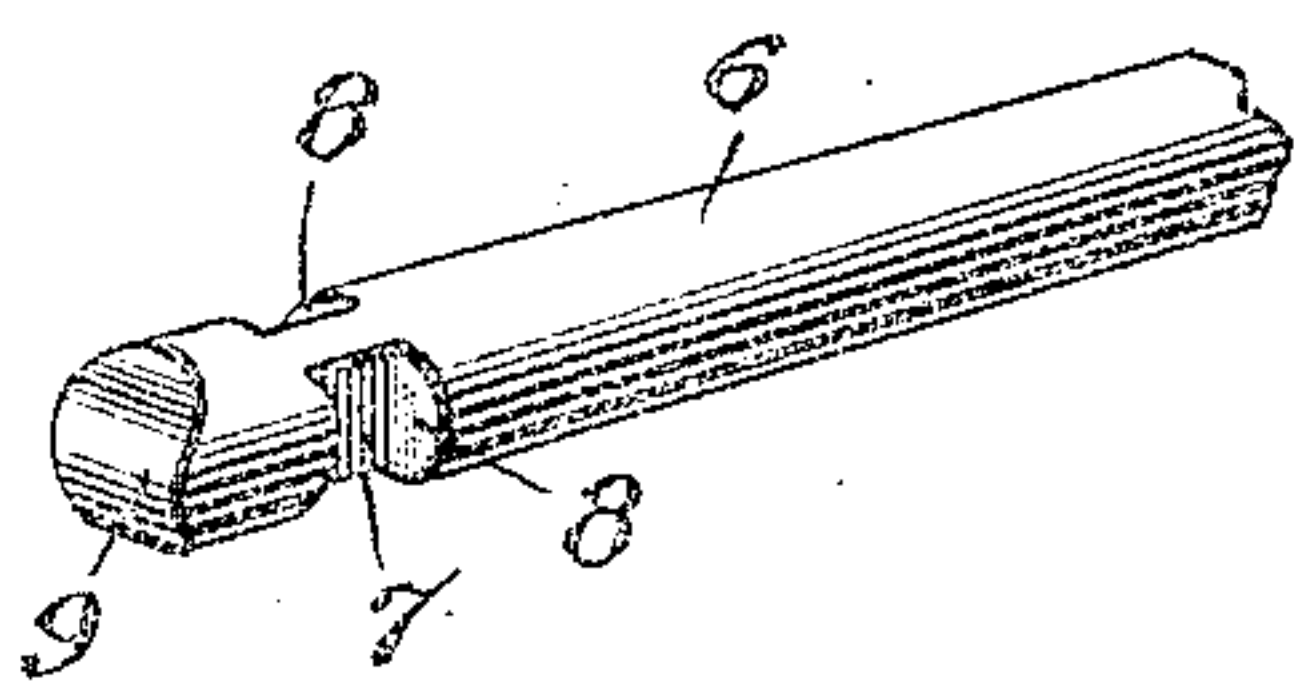
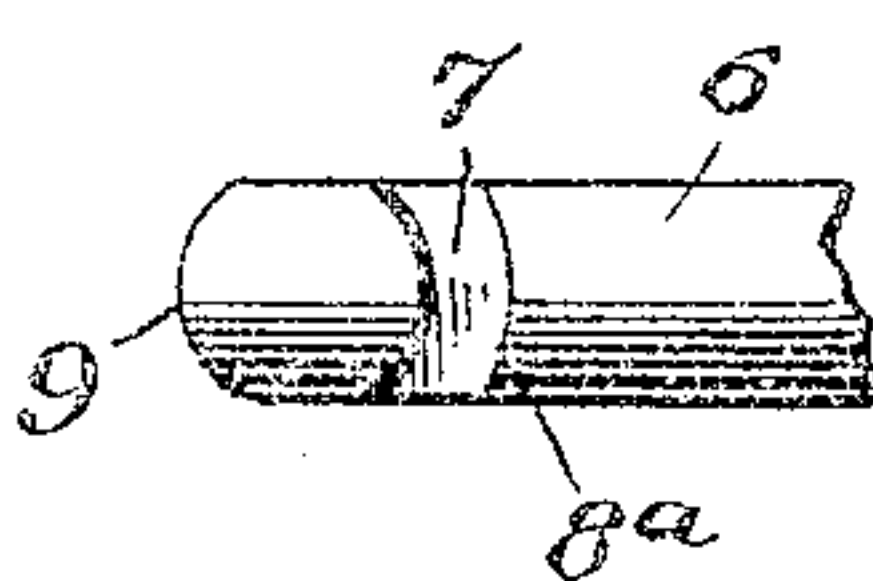


Fig. 6.



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331

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UNITED STATES PATENT OFFICE.

JAMES H. SPRAGUE, OF NORWALK, OHIO.

UMBRELLA-JOINT.

SPECIFICATION forming part of Letters Patent No. 778,765, dated December 27, 1904.

Application filed November 27, 1903. Serial No. 182,825.

To all whom it may concern:

Be it known that I, JAMES H. SPRAGUE, a citizen of the United States, residing at Norwalk, in the county of Huron and State of Ohio, have invented a new and useful Umbrella-Joint, of which the following is a specification.

This invention relates to a novel umbrella-joint by means of which the spreaders or ribs are connected to the notch of the runner or crown, as the case may be. In ordinary construction the notch, whether it be formed on the crown or runner, is produced by bending back or curling a notched flange extended from one end of the sleeve through which the umbrella rod or staff is passed. The annular notch or socket thus formed constitutes a bearing for terminal heads formed at the inner ends of the ribs or spreaders, which are recessed at their opposite sides to form comparatively narrow shanks connecting the heads with the body portions of the ribs or spreaders and received within the slits or openings in the wall of the socket. When the umbrella is raised, a longitudinal strain is imposed upon both the ribs and spreaders, and this strain is resisted by the engagement of the head with the inner wall of the socket, this engagement being insured by beveling the shoulders at the outer end of the neck or shank, so that the extremity of the head will be caused to bear against the inner wall of the socket, which thus constitutes a thrust-bearing. I have found in practice, however, that the described construction which has heretofore constituted the standard is open to many serious objections, the principal of which is that when the umbrella is raised the thrust of the ribs and spreaders is sustained by the unsupported side of the socket—that is to say, that part of the notched flange which is bent under and back to form the bearings for the heads. As the strain is considerable, it frequently happens that the notch-sections defined between the slits or openings will buckle outward or bend, thus distorting the notch. This distortion is augmented by the fact that the shoulders at the outer end of the neck taper inwardly toward the latter, and thus

permit the rib or spreader to continue its endwise movement until the tapered portion thereof becomes wedged in the opening in the notch and augments the distortion thereof, as well as interfering with the raising and lowering of the umbrella. Furthermore, this inclined shoulder permits more or less lateral vibration at the joint, with the result that the notch is liable to turn, which frequently results not only in the distortion of the notch or socket, but in the bending of the shank of the rib or spreader. Having in mind these objections to the standard construction, the object of my present invention is to so construct the joint that the thrust of the spreader or rib, as the case may be, will be sustained by the outer surface of the notch in order to increase the bearing-surface and to bring the strain at such points as will tend to maintain rather the proper shape of the notch than to effect its distortion.

A further object is to so construct the joint that such lateral vibration of the ribs and spreaders as would tend to rotate the crown and runner will be prevented.

To the accomplishment of these objects and others subordinate thereto, the preferred embodiment of the invention embraces the construction and arrangement of parts to be hereinafter described, illustrated in the accompanying drawings, and succinctly defined in the appended claims.

In the said drawings, Figure 1 is an elevation of a portion of an umbrella staff or rod equipped with a runner having its notch connected to the inner ends of a series of spreaders. Fig. 2 is a plan view of the subject-matter of Fig. 1, a portion of the notch being broken away. Fig. 3 is a sectional view, on a somewhat-enlarged scale, showing the connection between one of the spreaders and the notch. Fig. 4 is a detail perspective view of the inner end of a spreader. Fig. 5 is an enlarged section of the joint, and Fig. 6 is a detail view of the inner end of a slightly-modified form of a rib or spreader.

Like numerals of reference are employed to designate corresponding parts throughout the several views.

Upon the umbrella-rod 1 is mounted a runner 2, provided at its upper end with a notch 3. The notch 3 is formed, as usual, by providing an outturned angular flange 4 with a series of radial slits 5 and by bending the outer edge of the flange into transversely cylindrical form to produce an annular socket having equidistant openings. This annular socket having equidistant openings for the reception of the members joined thereto is known as the "notch," and it should be understood that in employing the term "notch" hereinafter I have reference to the socket irrespective of its attachment to the runner or crown of the umbrella.

In carrying out my invention the members connected to the notch—as, for instance, the spreaders 6—are formed with reduced shanks or necks 7, defined between square shoulders 8 and a head 9, the neck, shoulders, and head being preferably produced by recessing the opposite side of the spreader. The shoulders 8 are designed to bear against the outer face 10 of the notch, the head 9 being of proper size to leave an interval between its inner end and the inner wall or face of the notch. By this arrangement the bearing-surfaces of the joint are the outer face 10 of the notch and the shoulders 8 as distinguished from the inner face of the notch and the head, as usual. By this arrangement the thrust of the spreader or rib tends to hold the wall of the socket to its true form, since the strain is always directed toward the center of the socket instead of outwardly therefrom, as in ordinary constructions. Furthermore, as the shoulders 8 bear against the outer wall of the notch at opposite sides of the neck 7, confined between the walls of the slits, lateral vibration of the ribs and spreaders is prevented and the notch is securely held against turning movement on the rod.

I have stated that the shoulders 8 are flat. By this I mean that they are disposed in planes at right angles to the neck instead of tapering outwardly; but it is of course to be understood that if desired these shoulders may have a slight longitudinal curvature—that is to say, a curvature extending from edge to edge of the neck—so that while these shoulders have a bearing against the outer walls of the notch they may also conform to the transverse curvature thereof. A spreader formed in accordance with this variation is shown in Fig.

6, the curvature of one of the shoulders 8 being shown at 8^a.

It is thought that from the foregoing the construction of my improved joint and the advantages accruing therefrom will be clearly understood; but while the present embodiment of the invention appears at this time to be preferable I desire to reserve the right to effect such changes, modifications, and variations of the illustrated structure as may fall fairly within the scope of the protection prayed.

What I claim is—

1. In an umbrella, a joint of the character described, comprising a hollow member having a curved outer face provided with a slit or opening, and a relatively swinging member in the form of a rod having a head located within the hollow member and a thrust bearing against the outer face thereof.

2. In an umbrella a joint of the character described comprising a hollow transversely-cylindrical member having a slit or opening in its wall, and a cooperating member having a neck located in the slit or opening, a head located within the first-named member, and a thrust bearing upon the outer face of said member.

3. In an umbrella a joint of the character described comprising a hollow transversely-cylindrical member having a slit or opening in its wall, and a cooperating member formed with flat shoulders bearing against the outer face of the first-named member and also formed with a neck movable in the slit or opening and with a terminal head located within the hollow member and having its end face out of contact with the inner surface thereof.

4. The combination with an umbrella-rod, of a sleeve mounted thereon and having a curled flange formed with slits, and a plurality of frame members having heads confined by the flange, necks movable in the slits, and shoulders bearing against the outer face of the flange to sustain the thrust of the members.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAS. H. SPRAGUE.

Witnesses:

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