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PATENTED MAR. 13, 1906.

H. C. HAM.  
GRAIN DRILL TUBE.  
APPLICATION FILED OCT. 25, 1905.

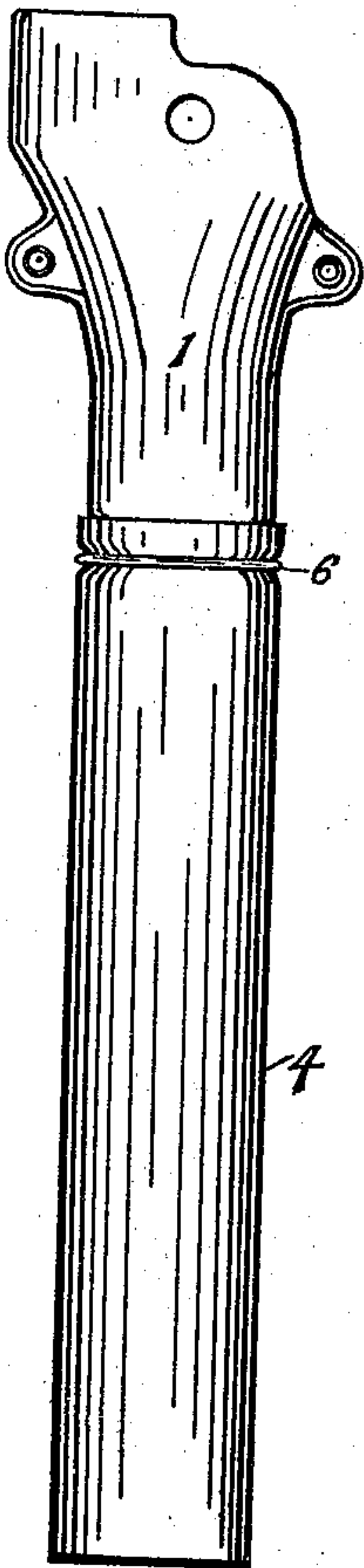


Fig. 3

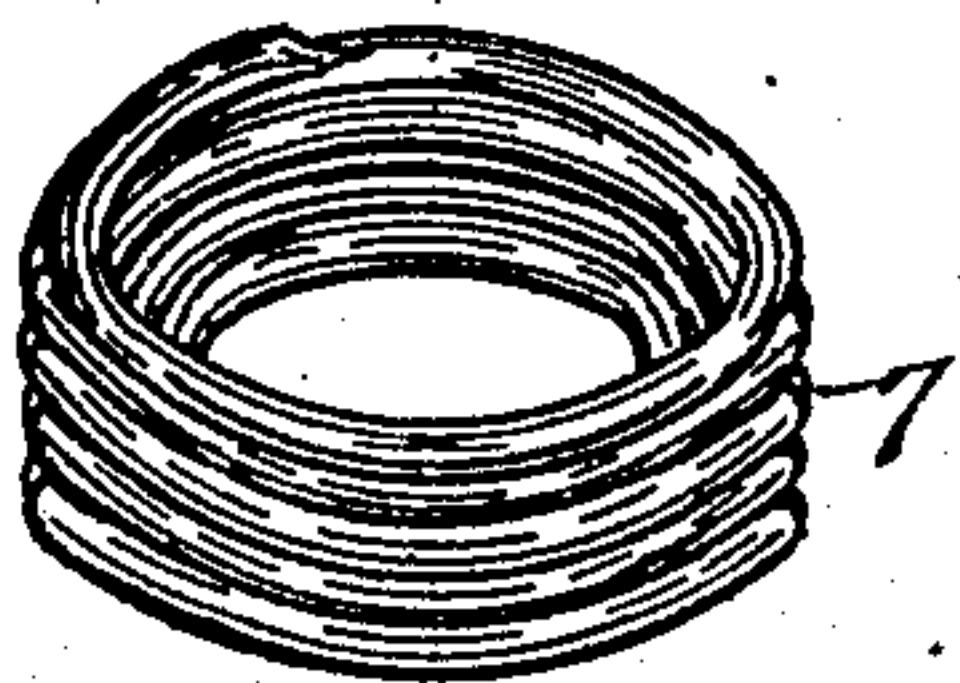


Fig. 5

Witnesses  
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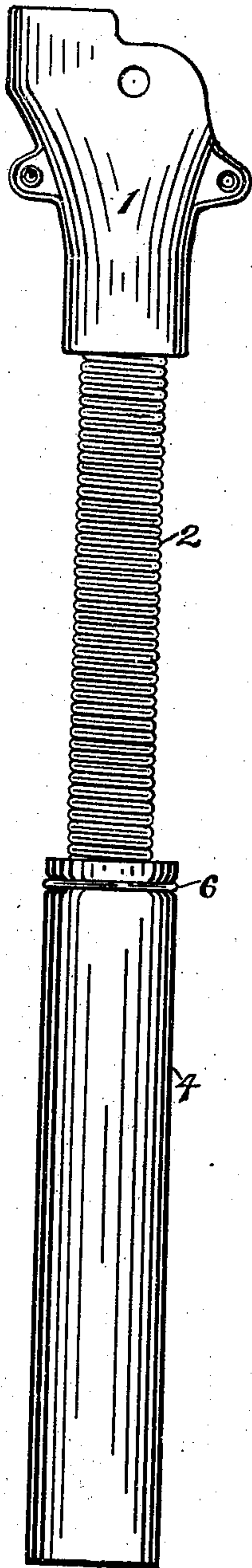


Fig. 1

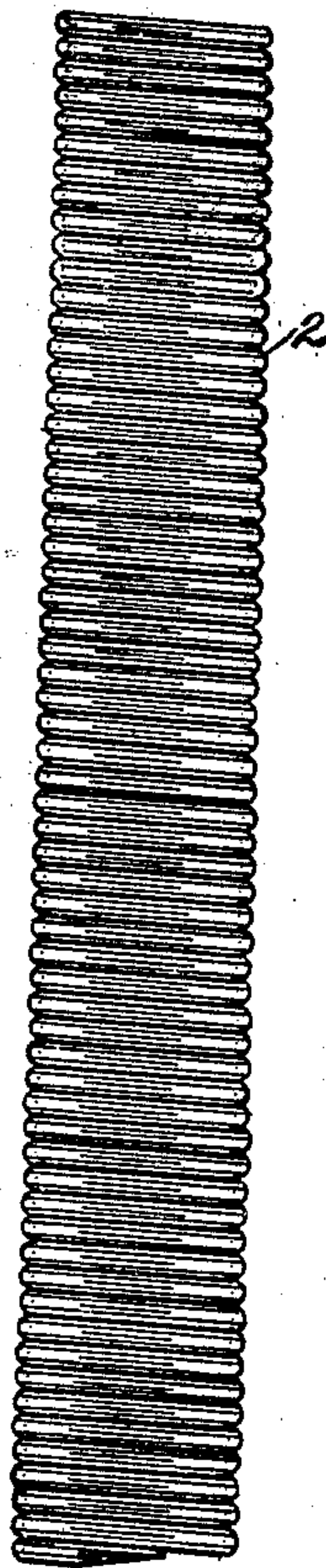


Fig. 4

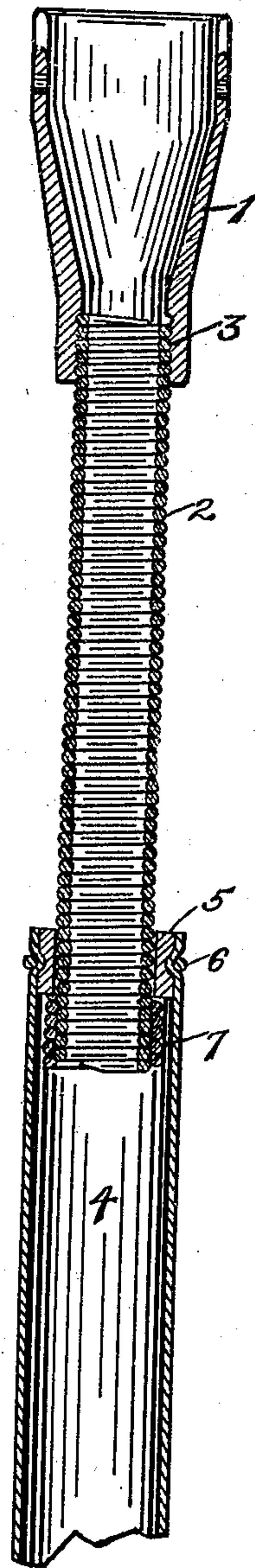


Fig. 2

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# UNITED STATES PATENT OFFICE.

HENRY C. HAM, OF LIBERTY, INDIANA, ASSIGNOR TO THE RUDE BROTHERS  
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## GRAIN-DRILL TUBE.

No. 814,957.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed October 25, 1905. Serial No. 284,361.

*To all whom it may concern:*

Be it known that I, HENRY C. HAM, a citizen of the United States, residing at Liberty, in the county of Union and State of Indiana, have invented certain new and useful Improvements in Grain-Drill Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to delivery-tubes for grain-drills, more particularly of that class in which spiral wire forms the body of the tube; and the purpose of my invention is to provide a tube, collapsible when desired, in which the spiral wire will not kink and become permanently distorted when meeting obstructions on the field. Such tubes are usually provided at the upper end with a metallic cup or receiver, which is suspended from the drill underneath the seed-cups to receive the seed and convey it through the tubes to the hoes and the soil, and heretofore with spiral-wire tubes such tubes have been riveted or otherwise secured outside the seed-receiver, so that in order to fit over the discharge-opening of the receiver these spiral tubes have been constructed cone-shaped at the upper end. As the spiral wire is uniform in gage, the wider coils at the upper end have less strength than the coils of the minimum diameter below, and the strain of an obstruction against the spiral tube is very apt to pull out and distort the upper coils, so that they will remain permanently out of shape.

The first object of my invention is to obviate this objection to the spiral-wire tubes, which I accomplish by providing a tube secured inside the seed-receiver and in which the coils of wire exposed below the receiver shall be of uniform diameter throughout.

It has been customary to provide grain-drill tubes in telescopic sections, so that with any undue upward movement of the hoes the tubes may collapse or telescope; but heretofore the connections have been made with straps or other attachments upon the outside, a cumbersome and expensive construction which it is the purpose of another feature of my invention to avoid by a simple, cheap, and effective construction in which the telescopic connection of the parts is accomplished

by washers secured on the outside of one portion and the inside of the other in the manner to be hereinafter described and claimed. With this construction, also with a spiral-wire upper section and a rubber extension, when the extension-tubes are not in use they are telescoped outside the wire tube, thus preventing the rubber tubes from permanent kinks and bends, which are apt to result where the rubber tubes have been flattened or bent for any considerable length of time.

In the drawings, Figure 1 is a side elevation of my improved grain-drill tube. Fig. 2 is a central vertical section of same. Fig. 3 is a side elevation of the tube collapsed. Fig. 4 is a side elevation of the spiral-wire tube alone somewhat enlarged in size. Fig. 5 is a perspective view of the washer for the wire tube when used with telescopic extension.

1 is the metallic seed-receiver, which is hung or pivoted underneath the seeding devices of the drill.

2 is the spiral-wire tube, of uniform diameter throughout and the upper end of which is secured inside the seed-receiver in any desired way, the preferable method being to screw-thread the delivery-throat of the receiver, as shown at 3 in Fig. 2, and to screw the coil of wire into place so that the inside of the wire tube will be flush with the inner surface of the seed-receiver. When the tube is otherwise secured, as by riveting, the inner surface of the receiver is also recessed, so that the inside of the tube will be flush with the surface of the receiver above the point of attachment. This spiral tube is made long enough to be used alone, and inasmuch as all of the wire coils below the receiver are of uniform diameter the coil will withstand uniformly all the strains to which it may be subjected without permanent distortion. The upper attaching end of the coil may vary in diameter from the rest of the coil, if desired, as this portion lies within the mouth of the seed-receiver; but the essential feature is that all the exposed portion of the wire tube shall be of uniform diameter throughout.

When it is desired to provide a telescopic extension for the spiral tube, I arrange as follows: 4 is the extension-tube, preferably of rubber, so that it can readily enter the hoes, which frequently do not have a round open-



ing and will not admit the spiral-wire tube. 5 is a collar or washer around which the upper end of the rubber tube is secured by the wire 6. 7 is a washer, preferably made of a wire coil of somewhat larger diameter than the wire tube, which is screwed on the lower end of the spiral tube. Then the extension-tube is slipped over the wire tube before it is attached to the seed-receiver. The wire tube is then secured to the seed-receiver, and the tube is ready for use. By using a wire-coil washer the coils of the washer enter somewhat between the coils of the tube, so that an extension-tube of somewhat smaller diameter can be used than would be the case if an ordinary annular washer were merely secured to the coil.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a grain-drill tube, the combination, with a seed-receiver, and a delivery-tube secured thereto, of a telescopic extension-tube therefor, with washers on the outside of one and the inside of the other tube, for holding the two together.

2. In a grain-drill tube, the combination, with a seed-receiver, and a spiral-wire tube of uniform diameter throughout, of a telescopic extension-tube therefor, with washers on the outside of the lower end of the spiral tube,

and on the inside of the upper end of the extension-tube, for holding the two together.

3. In a grain-drill tube, the combination, with a seed-receiver, and a spiral-wire tube of uniform diameter throughout, of a telescopic rubber extension-tube therefor, with washers on the outside of the lower end of the spiral tube and on the inside of the upper end of the rubber extension-tube for holding the two together.

4. In a grain-drill tube, the combination with a seed-receiver, and a cylindrical wire tube adapted to screw into said receiver, of a telescopic rubber extension-tube therefor, with a coiled-wire washer screwed onto the lower end of the wire tube, and a washer on the inside of the rubber extension to engage said wire washer.

5. In a grain-drill tube, the combination with a seed-receiver, and a spiral-wire tube of uniform diameter throughout adapted to screw into said receiver, of a telescopic rubber extension-tube therefor, with a coiled-wire washer screwed onto the lower end of the wire tube and a washer on the inside of the rubber extension to engage said wire washer.

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Witnesses:

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