No. 742,784. PATENTED OCT. 27, 1903.

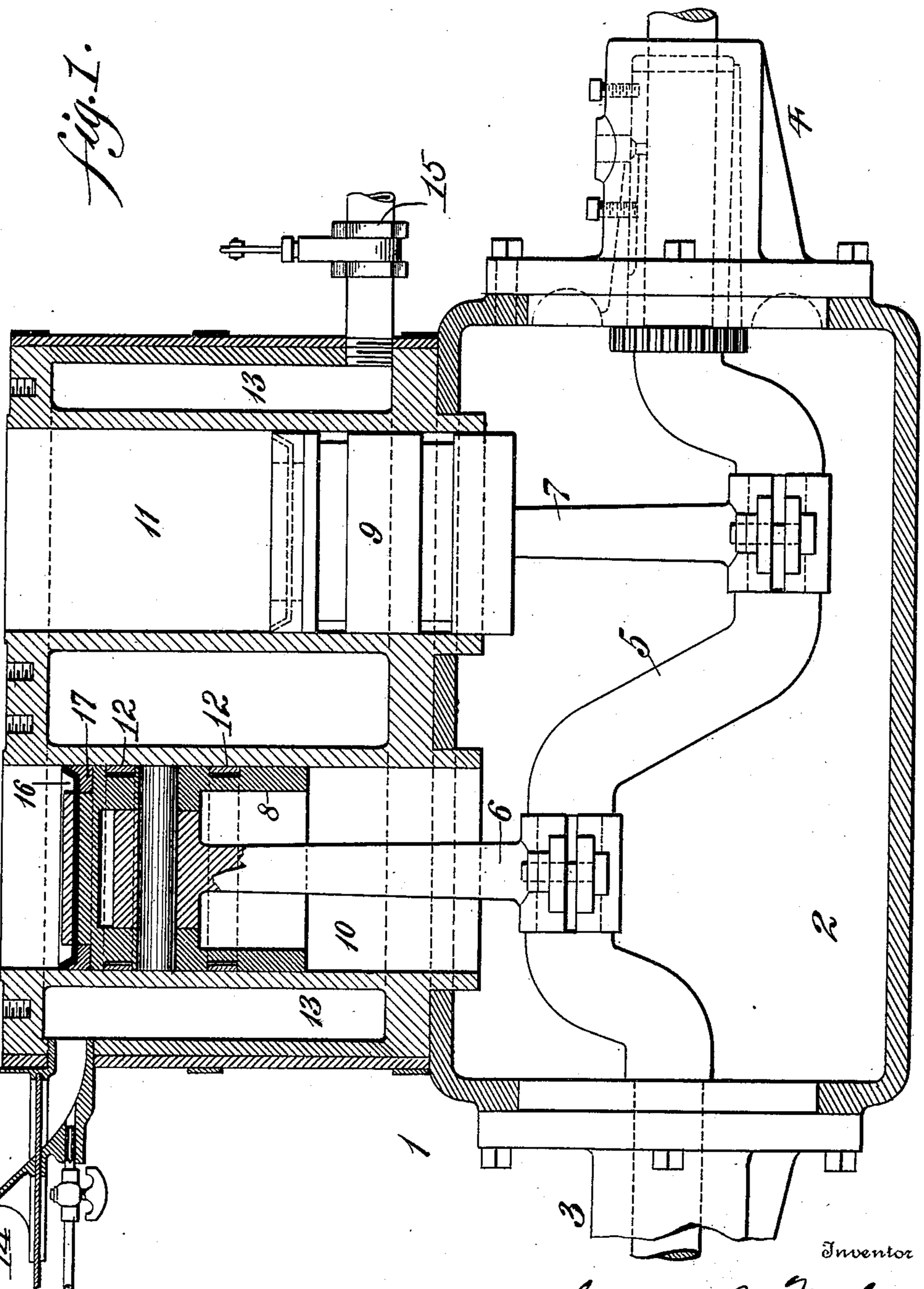
G. B. FRALEY.

PISTON PACKING.

APPLICATION FILED JULY 30, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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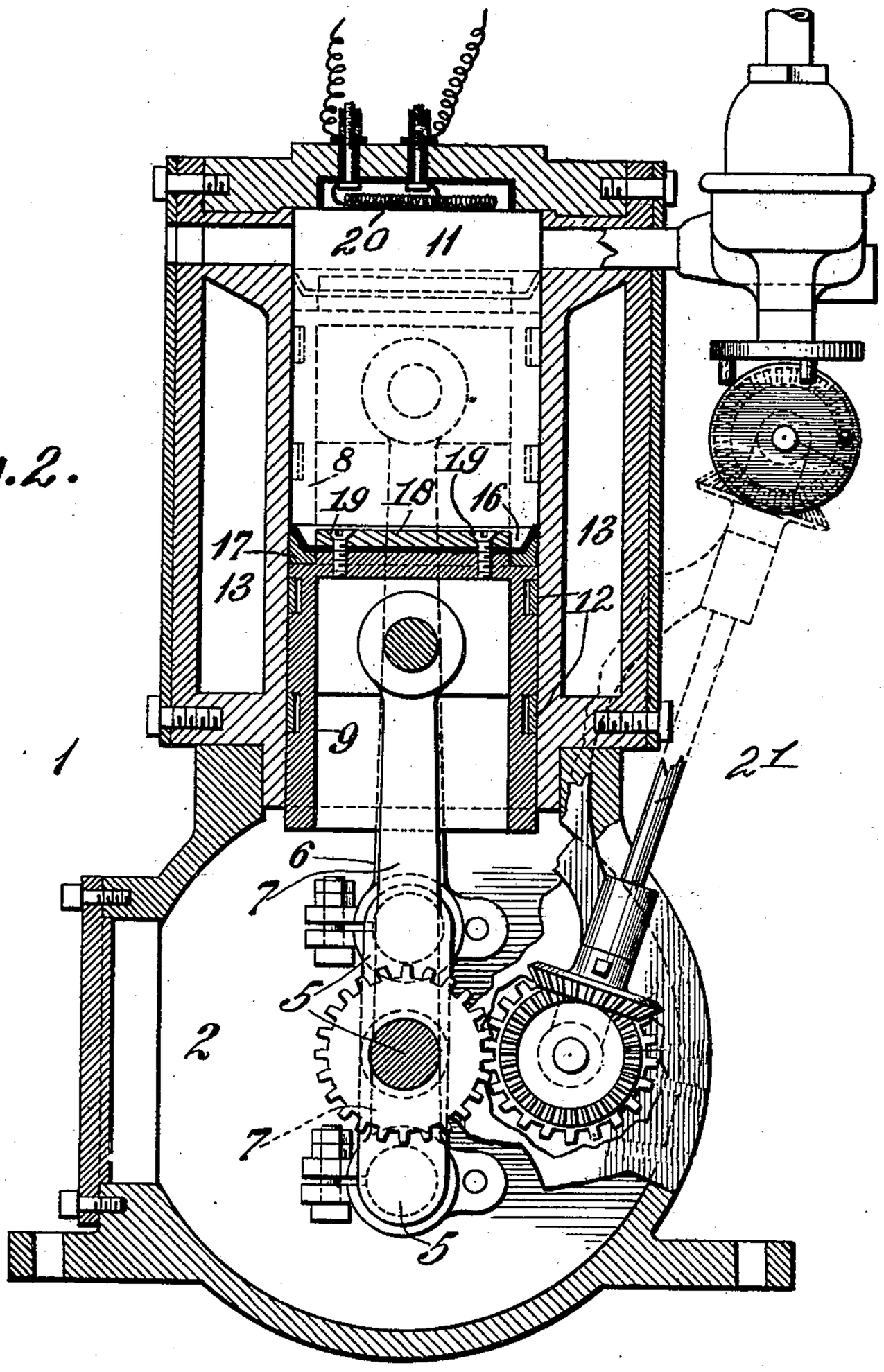
NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE B. FRALEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ELIZABETH S. GALBRAITH, OF PHILADELPHIA, PENNSYLVANIA.

PISTON-PACKING.

SPECIFICATION forming part of Letters Patent No. 742,784, dated October 27, 1903.

Application filed July 30, 1902. Serial No. 117,619. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. FRALEY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Piston-Packing, of which the following is a specification.

This invention relates to a piston-packing capable for use in various kinds of engines; and the objects and advantages thereof will be set forth at length in the following description, while the novelty of the invention will constitute the basis of the claims succeeding said description.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a vertical sectional elevation of an engine, the piston of which is provided with packing including my improvements. Fig. 2 is a sectional elevation, the section of which is taken at substantially a right angle to that of Fig. 1.

Like characters refer to like parts in both figures of the drawings.

The numeral 1 denotes a gas-engine provided with a crank-casing 2, furnished with the usual bearings 3 and 4, in which is mounted the crank-shaft 5, to which are suitably united the connecting-rods 6 and 7, which are provided with the pistons 8 and 9. These pistons are adapted to traverse the cylinders 10 and 11. Each of said pistons is provided with the usual snap-rings 12. Each cylinder is shown surrounded by an annular chamber 13, into which a suitable fluid may be conducted by way of the valve-inlet 15, and after circulating through the same can be discharged from the valve-outlet 14. As the said chambers 13 and the inlet and outlet therefor constitute no part of the present invention, it is unnecessary to describe the same at length. Each piston is provided with a cup 16, which is made of leather or suitable material and which is adapted to act as a receptacle for oil, glycerin, or other lubricating substances, it being seen that between the outer edge of the cup and the head of the piston and inner wall of the cylinder is situated a packing-ring 17, which thus protects the edge and side of said cup and prevents wearing of the same.

The circular cups 16 are fastened to the upper ends of the pistons 8 and 9 by means of circular plates or disks 18, screws 19 or their equivalents being passed through the plates, rings, and upper ends of the pistons, respectively, in order to unite the parts, the heads of the screws being countersunk in the plates or disks in order to present no protuberances on the upper faces of said disks. The packing-rings 17 snugly fit in rabbets in the upper ends of the pistons, and their upper sides are shaped to agree with the corresponding portions of the packing-rings, the fit between the rings and packings being a snug one.

The cups or packings 16 are adapted to contain a lubricant, and their outer edges or margins travel lightly in contact with the inner surfaces of the cylinders, whereby said surfaces are properly lubricated, and the rings 17 in addition to preventing undue wear of the packing disks or cups 16 also limit the lateral expansion of said cups, whereby the latter cannot be unduly laterally expanded by the entering charges of gas, as in case they were they would bind against the inner surfaces of the cylinders, and thereby affect the proper operation of the engine.

The invention is not limited to use in connection with any particular type of engine; but that shown is of a type using carbon dioxid as the motive agent, and in an engine of this kind it is the custom to employ a heater in the acting side of the cylinder. Such a heater is shown in Fig. 2 and is denoted in a general way by 20. This feature, as well as the supply-valve mechanism, forms no part of the invention, and hence a detail description thereof is unnecessary. In said Fig. 2, however, I have shown an arrangement of gearing between the crank-shaft 5 and the supply-valves, which I denote in a general way by 21.

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

1. The combination of a cylinder and a piston therein, a circular cup adapted to contain a lubricant, fastened to the upper end of the piston, constituting a packing and the outer

edge of which is adapted to travel lightly in contact with the inner surface of the cylinder, and a ring fitted to the upper end of the piston and shaped upon its upper side to snugly receive the outer portion of the cup and serving to prevent the wear of said cup.

2. The combination of a cylinder and a piston therein, a circular cup adapted to contain a lubricant, fitted to the upper end of the piston, constituting a packing and the outer edge of which is adapted to travel lightly in contact with the inner surface of the cylinder, a plate upon the cup, fastening devices extending through the plate, cup and upper end of the piston, respectively, to hold the parts together, and a ring fitted to the upper end of the piston, shaped on its upper side to snugly fit the outer portion of the cup and serving to prevent the wear of the cup.

3. The combination of a cylinder and a piston therein, a circular cup adapted to contain a lubricant, fastened to the upper end of the piston, constituting a packing and the outer edge of which is adapted to travel lightly in contact with the inner surface of the cylinder, and a ring fitted in a rabbet in the upper end of the piston, shaped on the upper side to snugly receive the outer portion of the cup and serving to prevent wear on said cup.

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