

C. J. A. GOTTLIEB.

CONDENSER.

APPLICATION FILED MAY 28, 1908.

938,476.

Patented Nov. 2, 1909.

Fig 1.

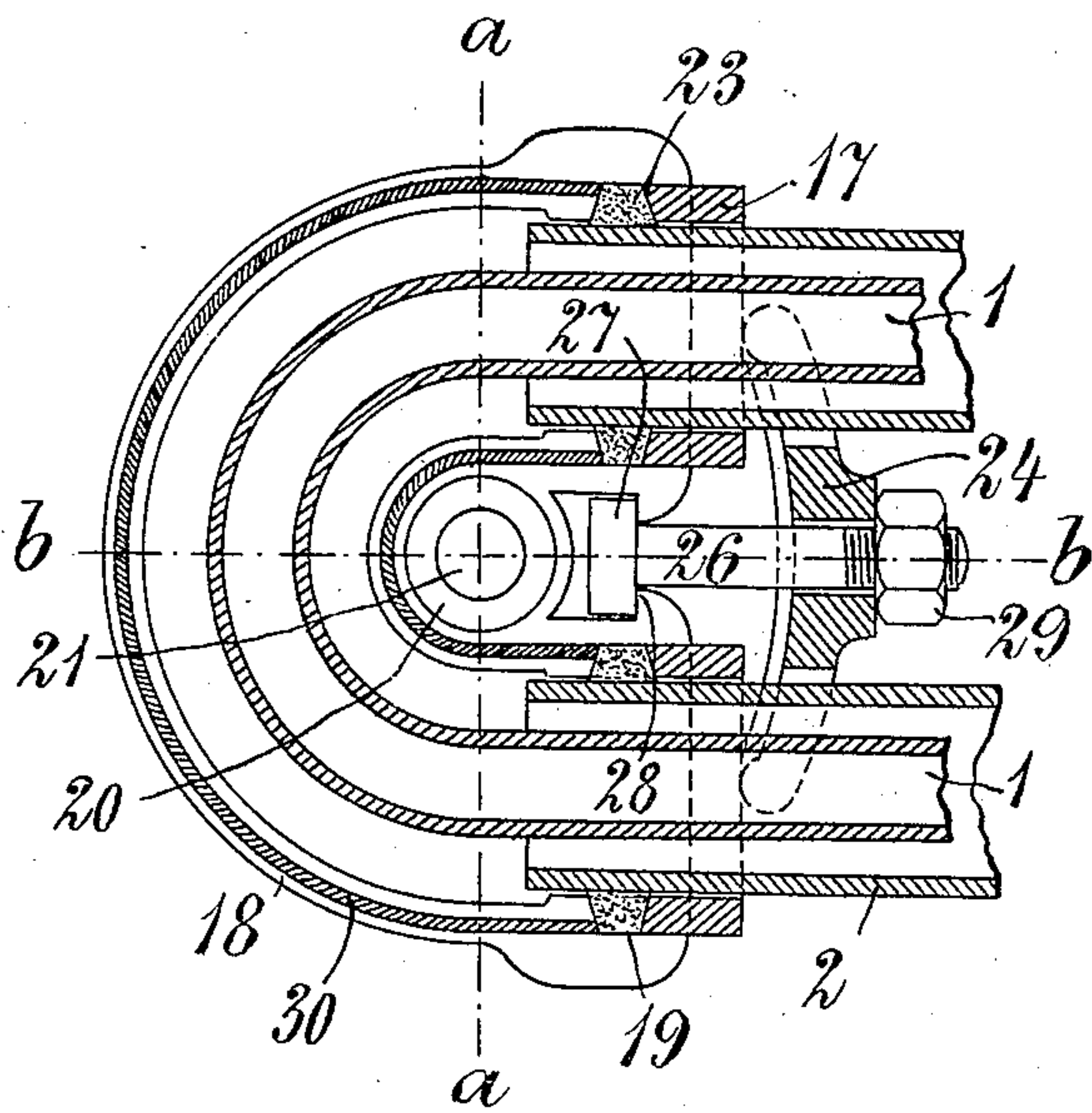


Fig 2.

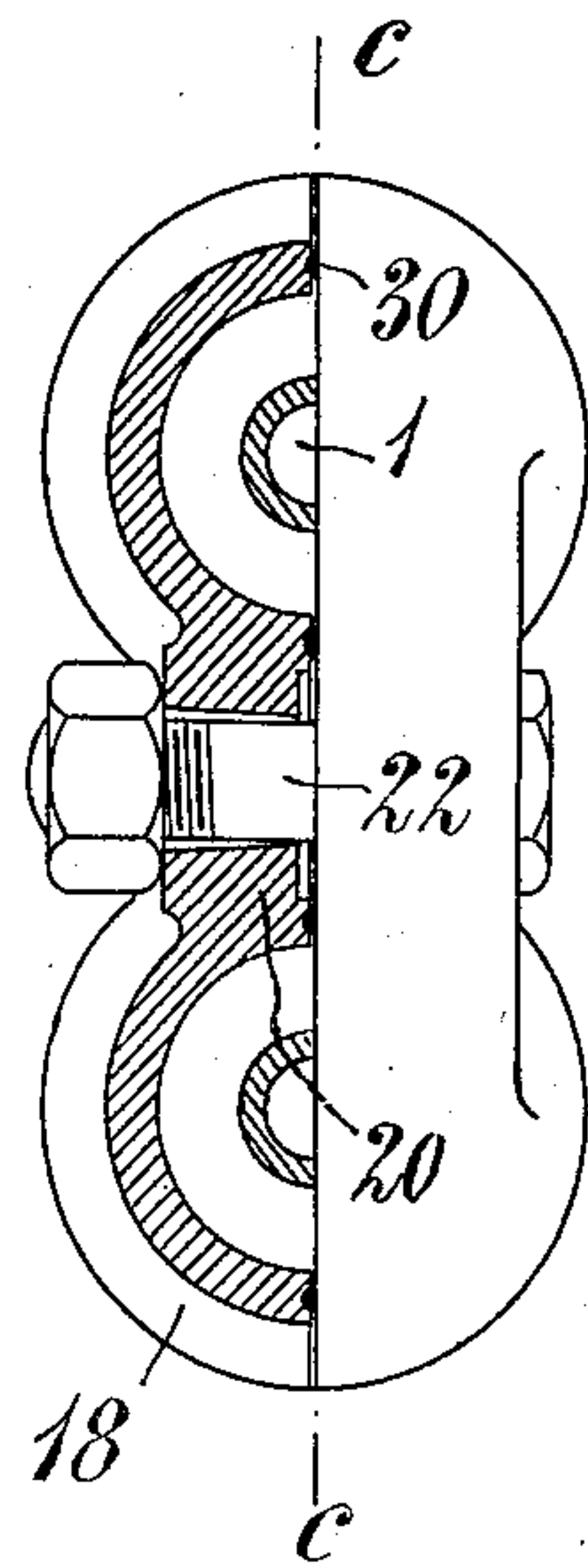


Fig 3.

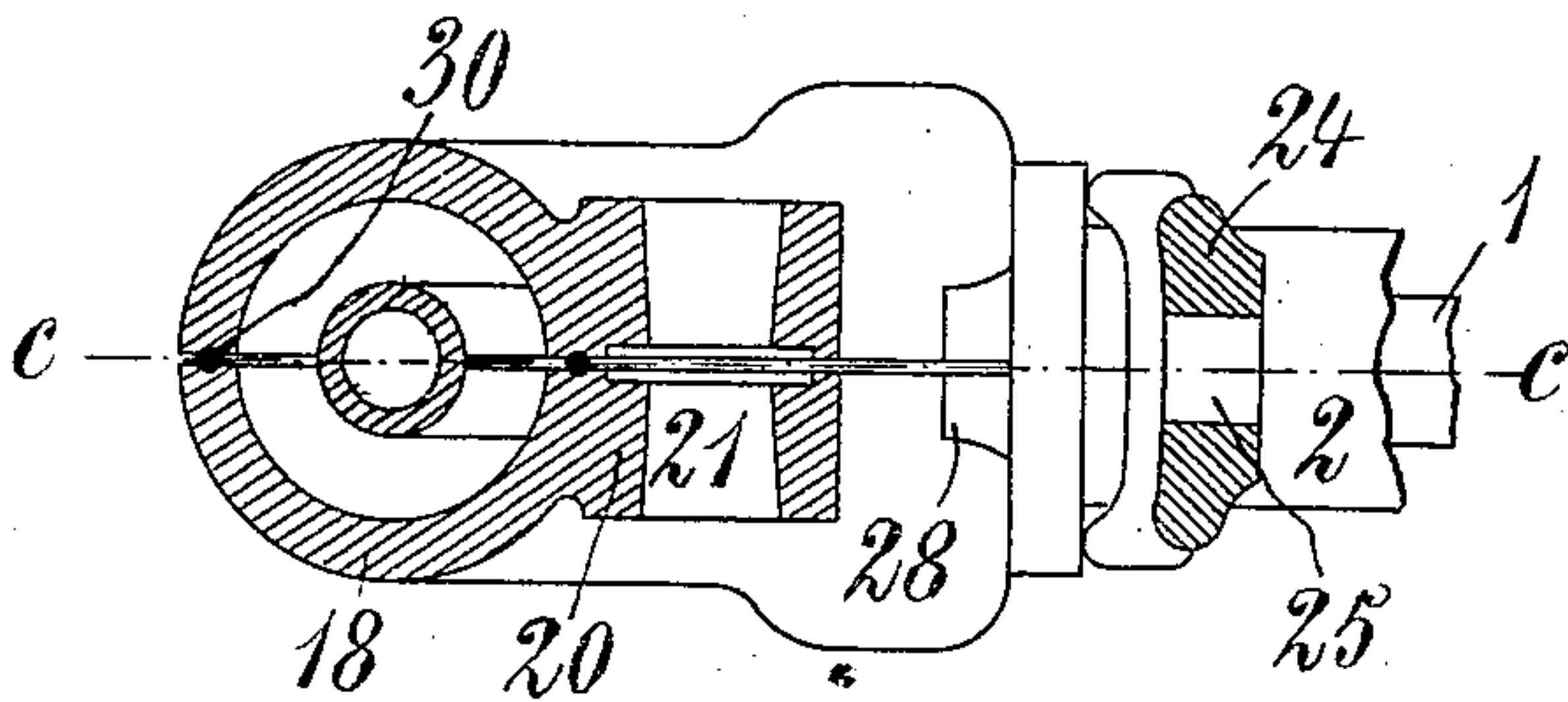
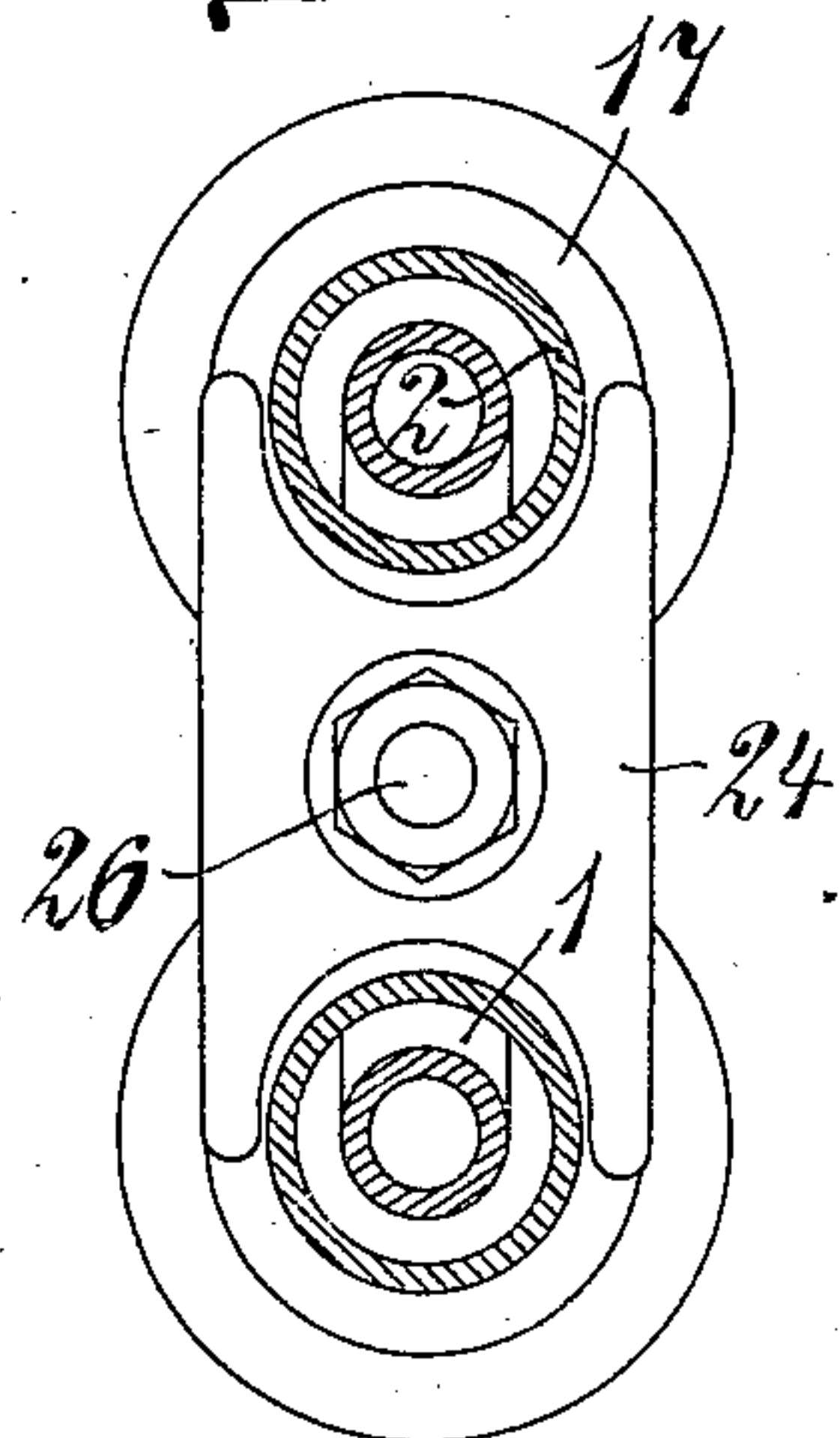


Fig 4.



WITNESSES;

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UNITED STATES PATENT OFFICE.

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CONDENSER.

938,476.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARL JULIUS ALEXANDER GOTTLIEB, manager, a subject of the Kingdom of Denmark, residing at St. Pauls Kirkeplads No. 9, Aarhus, Denmark, have invented a new and useful Improvement in Condensers; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in heat-exchanging apparatuses as these are used, for instance, in refrigerating or vaporizing plants.

It relates particularly to an arrangement to be employed in the double-tube system, whereby the inner tube is surrounded at the curves by the outer tube, thereby increasing the efficiency of the plant, and rendering the cleaning of the tubes easy.

In condensers or vaporizers of the double-tube system it has often been felt as a deficiency that the inner tube was not surrounded by the outer tube at the curves uniting the inner straight tubes, so that the surface of the said inner tube was not utilized to the full extent, while difficulties arose in connection with the cleaning of the water tubes, whether the latter were the inner or outer tubes. The present invention aims at meeting these deficiencies by shaping the outer tube so as to both surround the inner tube entirely and to render the cleaning very easy.

In the drawings: Figure 1 shows a sectional side view through both tubes at one of the connecting curves; Fig. 2, a partial section on the line *a—*a** of Fig. 1; Fig. 3, shows a section on the line *b—*b**, in Fig. 1, and Fig. 4, shows an end view of the clamp.

Referring to the drawings, 1 indicates the inner tube, through which the cooling medium, carbonic acid, ammonia, or the like, passes.

2 is the outer tube, through which passes the water to be cooled, or which is to do the cooling. On either side of this outer tube 2, is laid a ring 17, on both of which is arranged from the outside the curved tube-piece 18 formed in two parts on the plane *c—*c** (Figs. 2 and 3). Each half portion of the tube 18 is provided at the end with the groove 19 for the rings 17, and is, on the sides facing the tubes 2, provided at the curve with strengthening enlargements 20, through which pass holes 21, for the screw-bolt 22,

which by means of head and nut, keep together the two tube-halves 18. As a tightening between the tube halves 18, and the rings 17, a packing 23 has been inserted between the same, and the rings 17 and the tube-halves 18 are pressed together in the longitudinal direction of the tube by means of a clamp 24, which with both its ends rests on the rings 17, and which is provided with a hole 25 for the passage of a screw-bolt 26, the head 27 of which rests on shoulders 28 on the internal opposite sides of the tube-halves. By means of the nut 29, the tube-halves 18 and the rings 17 are carried against each other. As a tightening between the two tube-halves 18, a packing 30 is inserted between the same.

The construction described can advantageously be used not only in connection with refrigerating plants, but in all cases, where heat has to be exchanged between two mediums of different temperatures.

Having thus fully described and illustrated my invention, what I claim is:—

1. In a heat-exchanging apparatus, the combination of an inner and outer tube, a detachable two-part curved connector forming a prolongation of the outer tube, said curved connector being divided on a plane through the axis of the outer tube, the curve being provided with strengthening enlargements where it is attached to the outer tube, and means for detachably uniting the two parts of the divided curved connector.

2. In heat-exchanging apparatus, the combination with an outer and an inner tube, of a divided curved connector forming a prolongation of the outer tube and provided with a shoulder on each of the divided parts, a pair of packing-rings encircling the two outer tube ends, a packing joint between the two-part curved connector and the packing rings, a bolt engaging with the shoulder on the divided curved connector, and means cooperating with said bolt for tightening the joint between the rings and the divided curved connector.

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

CARL JULIUS ALEXANDER GOTTLIEB.

Witnesses:

H. FLEISCHER,
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