

No. 725,192.

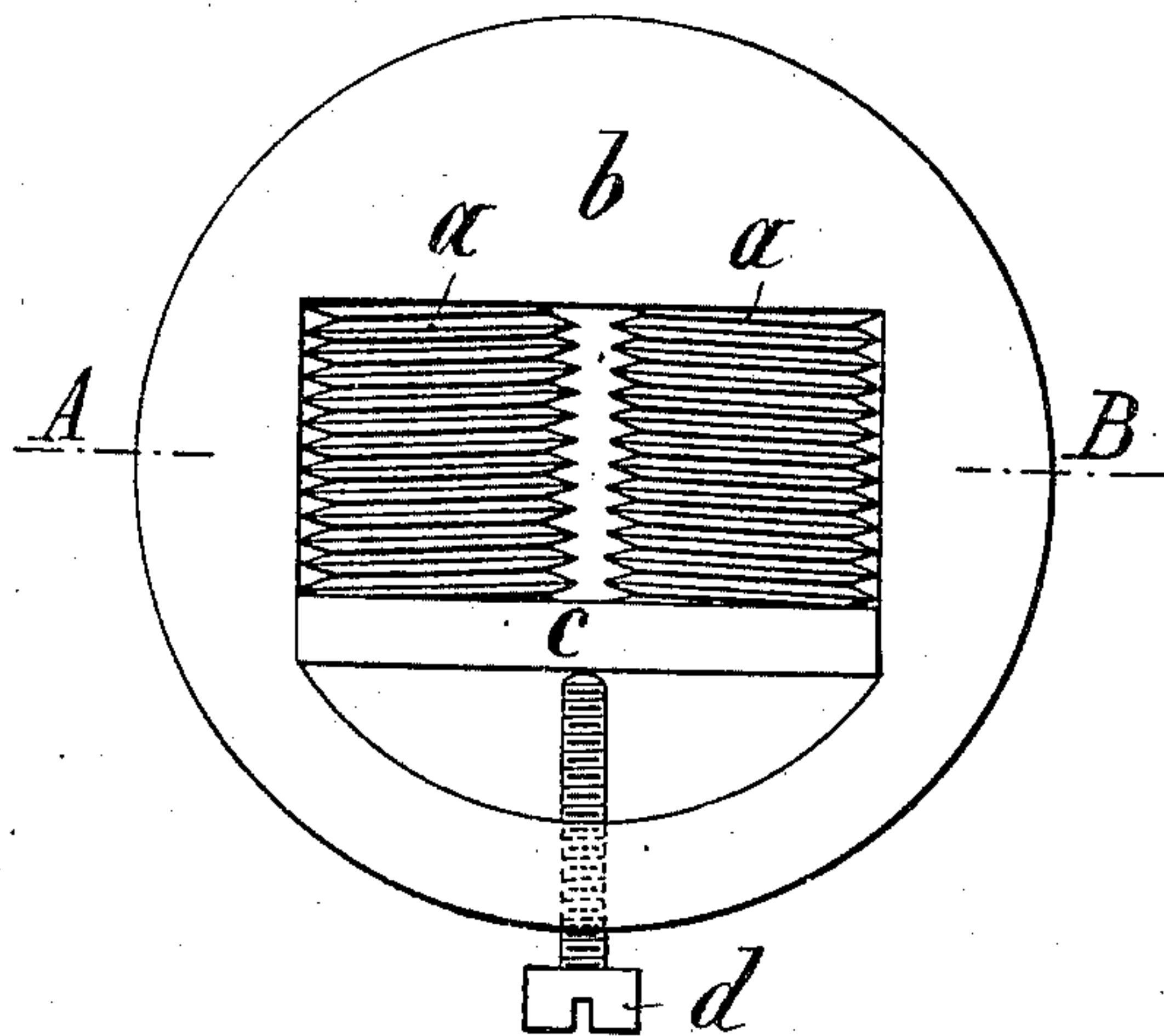
PATENTED APR. 14, 1903.

A. D'ARSONVAL & G. VAUGEOIS.  
DIE FOR FORMING BATTERY PLATES.

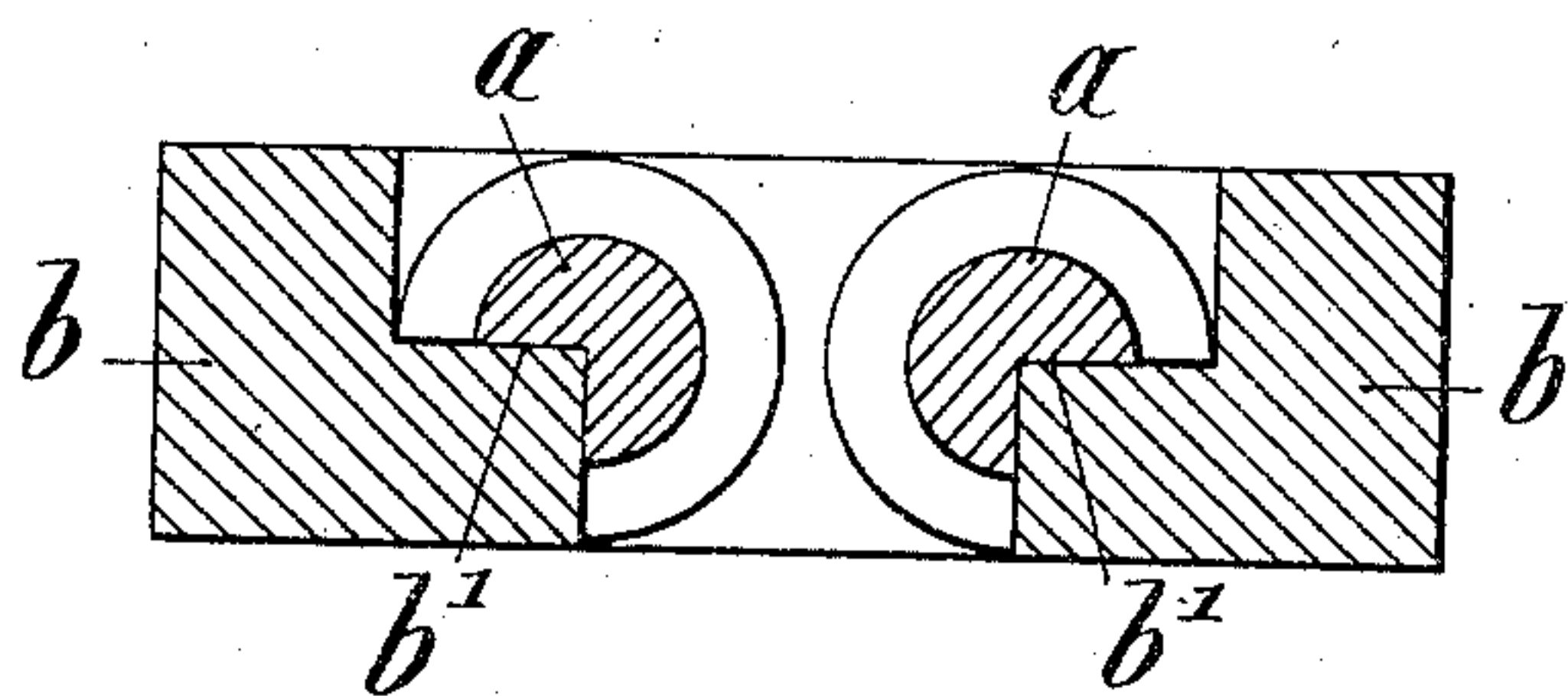
APPLICATION FILED JUNE 4, 1901.

NO MODEL.

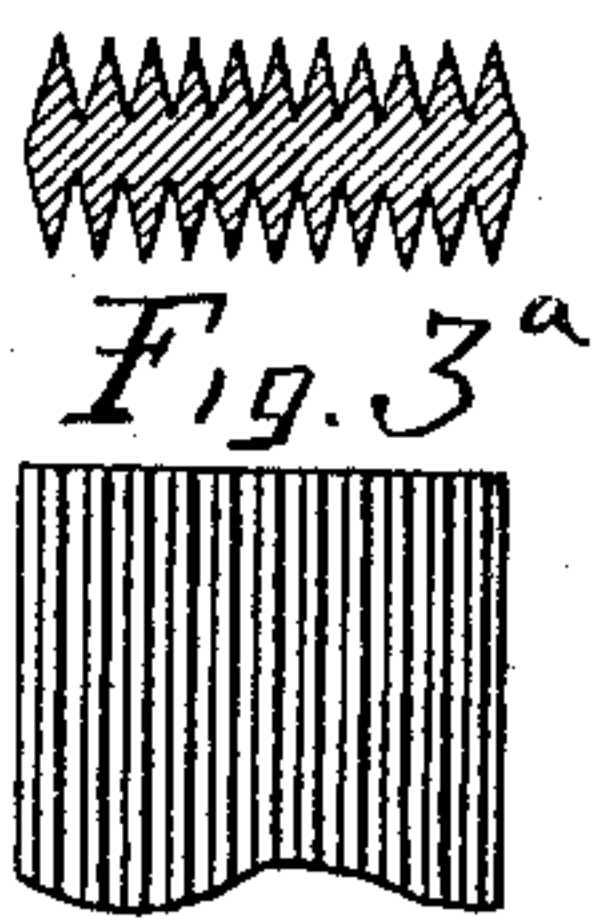
*Fig. 1.*



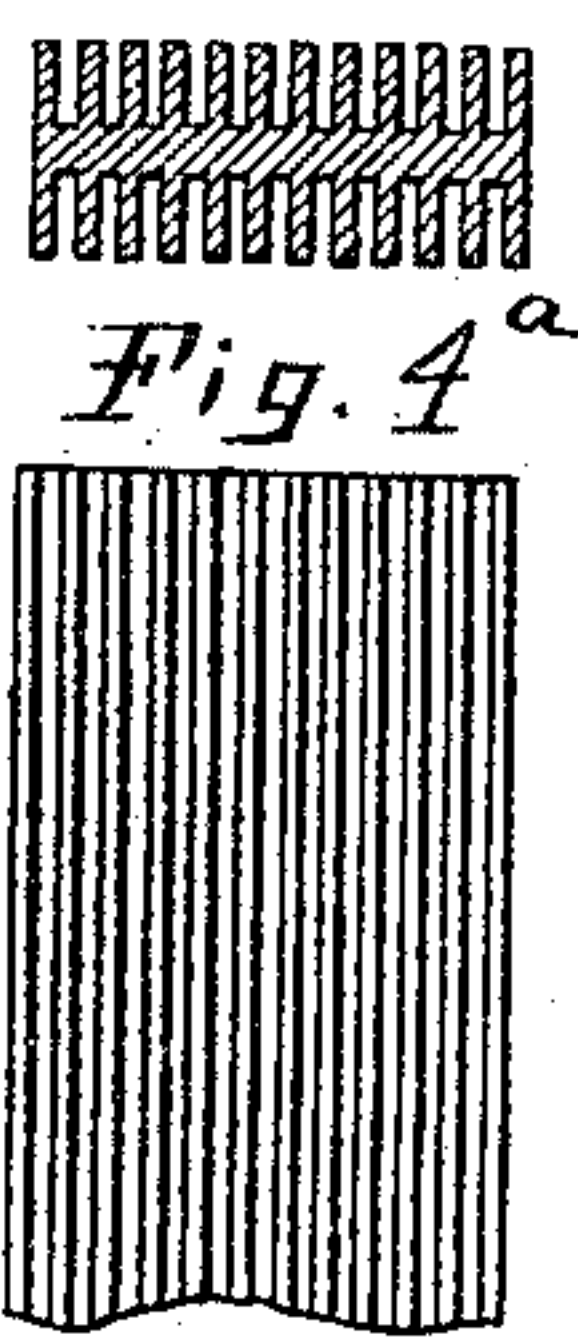
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

ARSÈNE D'ARSONVAL, OF PARIS, AND GEORGES VAUGEOIS, OF BILLAN-COURT, FRANCE.

## DIE FOR FORMING BATTERY-PLATES.

SPECIFICATION forming part of Letters Patent No. 725,192, dated April 14, 1903.

Application filed June 4, 1901. Serial No. 63,094. (No model.)

*To all whom it may concern:*

Be it known that we, ARSÈNE D'ARSONVAL, member of the Institute of France, doctor of medicine, and professor at the College of France, of 12 Rue Claude Bernard, in the city of Paris, and GEORGES VAUGEOIS, electrical engineer, of 14 Rue d'Issy, in the city of Billancourt, Seine, Republic of France, have invented Improvements in and in Apparatus for the Manufacture of the Plates of Electric Accumulators, of which the following is a full, clear, and exact description.

The present invention relates to a die for the manufacture of accumulator-plates, adapted to produce plates of maximum surface with a minimum weight and volume.

The die comprises, essentially, a pair of oppositely-placed screws located opposite each other with a space between through which the material for forming the plate is forced. The distance between the threads of the adjacent screws corresponds to the thickness of the plate, while the depth of the thread corresponds to the width of the wings or ribs of the plate.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view, and Fig. 2 is a cross-section on line A B of Fig. 1. Fig. 3 is a cross-section of a plate obtained from the die shown in Figs. 1 and 2, and Fig. 3<sup>a</sup> is a plan view of the same. Fig. 4 is a cross-section of a plate made from a die having square threads, and Fig. 4<sup>a</sup> is a plan of the same.

Referring to Figs. 1 and 2, *b* indicates a die block or frame within which are mounted a pair of screws *a* in such a position as to leave a narrow space between, the threads of one screw being arranged opposite the threads of the other screw. We prefer to support the screws in the die-block by providing each with an angular recess extending longitudinally of the screw and fitted over a shoulder or abutment *b'* on each side of the die-block, as shown in Fig. 2. In order to securely clamp the screws in position, a cross-bar *c* is provided, bearing against the ends of the two screws,

and this is engaged by a clamp-screw *d*, threaded through the wall of the die-block. It will thus be seen that a die is provided having an opening or space between the adjacent screws *a*, through which material, such as lead, for forming the accumulator-plates, may be forced. It will thus be seen that the ribs or wings of the accumulator-plates will correspond in shape to the threads of the screws. If the threads be of angular shape, as shown in Fig. 1, the plate, such as indicated in Fig. 3, will be produced, while if the threads are of rectangular shape in cross-section a plate such as indicated in Fig. 4 will be the result.

By the use of a die such as herein described we may produce accumulator-plates having the ribs and grooves of any desired width or thickness, as it will be readily seen that the threads of the screws may be made of any desired thickness.

Having thus described our invention, what we claim is—

1. A die for forming accumulator-plates, comprising a pair of screws with means for holding them in proximity to each other, substantially as described.

2. A die for forming accumulator-plates comprising a frame or die-block and a pair of screws held therein in proximity to each other, substantially as described.

3. A die for forming accumulator-plates comprising a frame or die-block having an open center and side ribs, a pair of screws having recessed portions supported by said ribs and means for clamping said screws in place upon the ribs, substantially as described.

The foregoing specification of our improvements in and in apparatus for the manufacture of the plates of electric accumulators signed by us this 20th day of May, 1901.

ARSÈNE D'ARSONVAL.  
GEORGES VAUGEOIS.

Witnesses:

EDWARD P. MACLEAN,  
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