No. 754,755. PATENTED MAR. 15, 1904.

T. A. EDISON.

COMPRESSING DIES.

APPLICATION FILED NOV. 28, 1902.

NO MODEL.

Fig. 1

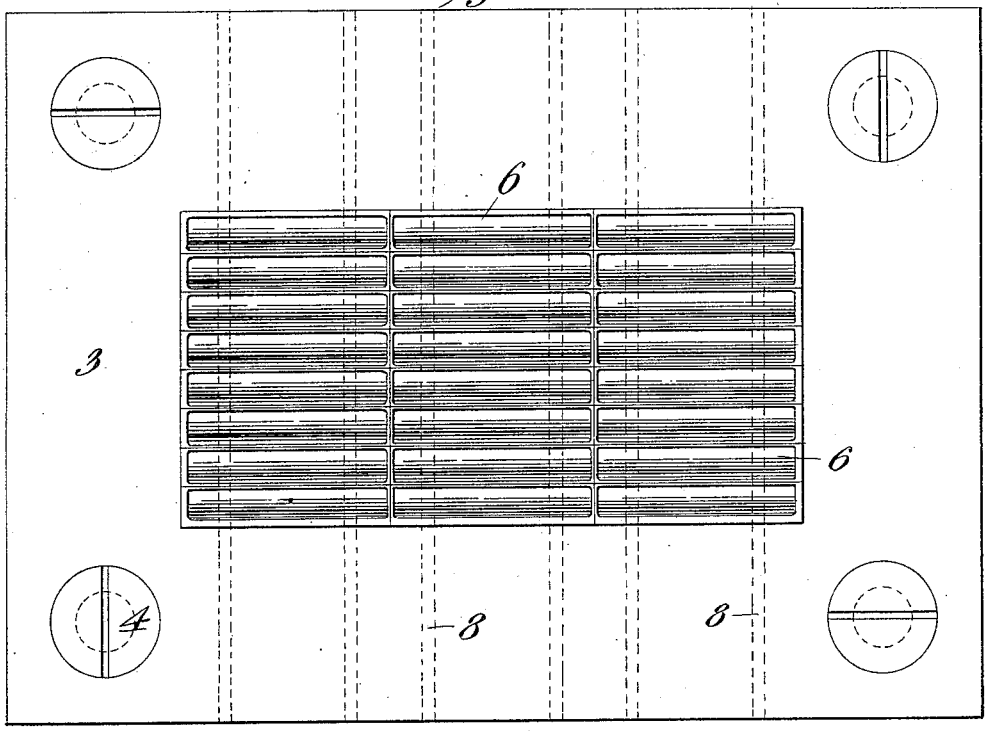


Fig. 2

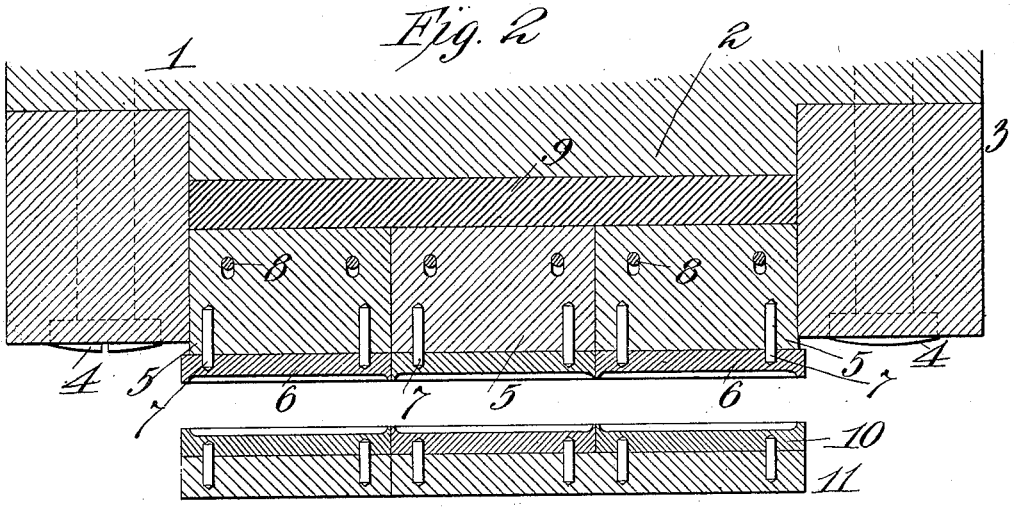
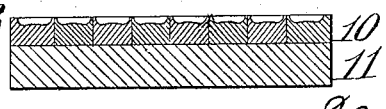


Fig. 3



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No. 754,755. Patented March 15, 1904.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

COMPRESSING-DIES.

SPECIFICATION forming part of Letters Patent No. 754,755, dated March 15, 1904.

Application filed November 28, 1902. Serial No. 133,117. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Compressing-Dies, of which the following is a description.

My invention relates to improvements in dies for simultaneously compressing a plurality of objects, and the invention has been particularly designed for use in the manufacture of electrode-plates for my improved storage battery wherein a series of pockets or receptacles are simultaneously subjected to a compressing effect for the purpose of concaving, corrugating, or crimping the pockets or receptacles in position within the openings of a supporting plate or grid. The applicability of my invention in other arts will be understood, and its importance resides principally in the fact that by its use the several articles which may be operated on will be subjected to the same pressure, regardless of the fact that the articles may considerably vary in thickness. The importance of this capacity of the apparatus in the manufacture of storage-battery electrodes resides in the fact that it is extremely difficult to always introduce the same amount of active materials in a large number of pockets or receptacles, and until the present invention was devised difficulty was experienced in subjecting them to pressure, inasmuch as the pockets or receptacles containing more active materials than the others would be subjected to too much pressure, while the other pockets were not subjected to enough pressure. By reason of the present improvements all the pockets or receptacles or other articles which may be acted on will be always subjected to the same pressure, however much they may differ in thickness.

The object of my invention, therefore, is to provide compressing-dies of such construction that a series of articles may be subjected to an identical compressing effect irrespective of the fact that the articles may vary in thickness.

To this end the invention consists generally in a set of dies, one for each article and movable independently of each other and so acted on that while independent movement of the dies is permitted all of the dies will be subjected to the same compressing effect at all times. These dies may coöperate with a corresponding series of independently-movable dies; but preferably they coöperate with a series of fixed dies carried by a solid bed or foundation.

In order that the invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view showing the plunger of a hydraulic press carrying a set of my improved dies for use in the manufacture of storage-battery plates; Fig. 2, a vertical sectional view of the same, showing also the fixed dies carried on the bed of the press; and Fig. 3, a cross-sectional view through the fixed dies.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 represents the plunger of a suitable hydraulic or other powerful press, having a reduced portion 2, entering a heavy frame 3, secured to the plunger by bolts 4. Mounted within the frame 3 are blocks 5, each of which carries a die 6 on its bottom, said die being held in place by pins 7. Obviously the shape of the dies is dependent upon the particular work which they are designed to perform. In the drawings I illustrate the dies as being provided with convexed surfaces, so as to concave the pockets or receptacles and at the same time to crimp the latter in place around the edges of the openings in the plate or grid. The several blocks 5 are capable of independent movement with respect to each other and with respect to the frame 3 and are strung on rods 8, which pass through slots in said blocks. Interposed between the several blocks 5 and the plunger of the press and confined by the frame 3 is a layer 9 of rubber or other yielding non-compressible material. The other set of dies, 10, are of the desired form and are preferably carried on the bed or foundation 11 of the press. In operation the desired articles are introduced between the two sets of dies 6 and 10 and pressure is applied to force the plunger 1 downward, so as to compress

the articles between the dies. It will be understood that the pressure applied to the dies 6 is imposed entirely through the layer of non-compressible material, whereby the dies will be all subjected to the same pressure, while at the same time they will be capable of independent adjustment to accommodate themselves to variations in the thickness of the articles.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. The combination with a support, of a series of dies carried thereby and movable independently of the support and of each other, means for imposing pressure simultaneously on the dies, and a confined mass of non-compressible yielding material between the dies and the means which impose pressure thereon, substantially as set forth.

2. The combination with a support, of a series of dies carried thereby and movable independently of the support and of each other, means for imposing pressure simultaneously on the dies, and a confined mass of rubber between the dies and the means which impose pressure thereon, substantially as set forth.

3. The combination with a plunger to which pressure is applied, a series of independent dies operated simultaneously by the plunger, and a confined mass of yielding non-compressible material between the plunger and said dies, substantially as set forth.

4. The combination with a plunger to which pressure is applied, a series of independent dies operated simultaneously by the plunger, and a confined mass of rubber between the plunger and said dies, substantially as set forth.

5. The combination with a plunger to which pressure is applied, a frame carried by the same, a series of simultaneously-operated dies mounted in the frame and capable of independent movement with respect to each other and with respect to the frame, and a confined mass of yielding non-compressible material between said dies and plunger, substantially as set forth.

6. The combination with a plunger to which pressure is applied, a frame carried by the same, a series of simultaneously-operated dies mounted in the frame and capable of independent movement with respect to each other and with respect to the frame, and a confined mass of rubber between said dies and plunger, substantially as set forth.

7. The combination with a plunger, a frame carried by the same, a series of blocks mounted in said frame and capable of movement independently of each other and of the frame, a confined mass of yielding non-compressible material between said blocks and plunger, and a die removably carried by each of said blocks, substantially as set forth.

8. The combination with a plunger, a frame carried by the same, a series of blocks mounted in said frame and capable of movement independently of each other and of the frame, a confined mass of rubber between said blocks and plunger, and a die removably carried by each of said blocks, substantially as set forth.

This specification signed and witnessed this 13th day of November, 1902.

THOS. A. EDISON.

Witnesses:
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