

No. 693,750.

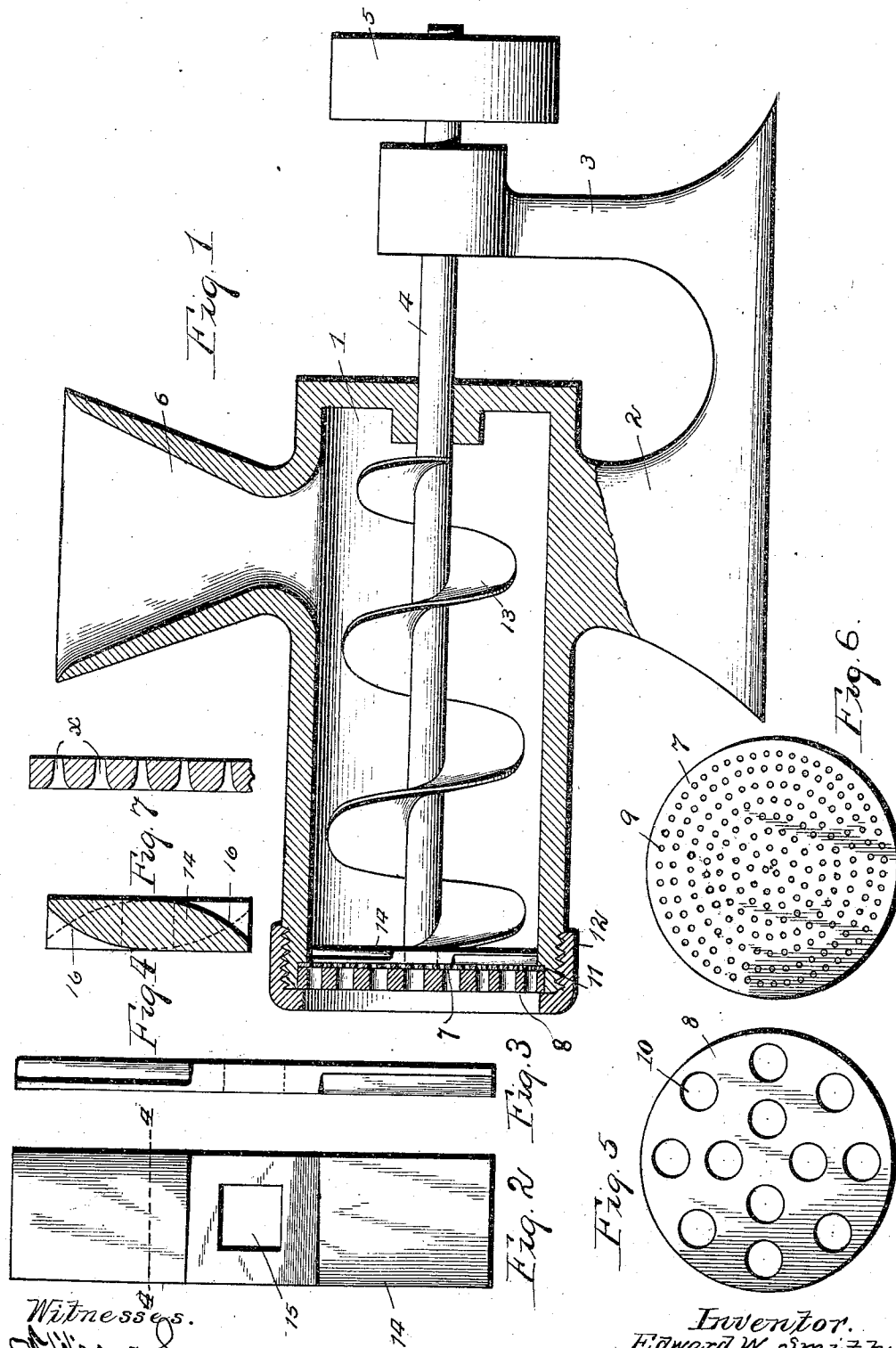
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E. W. SMITH.

APPARATUS FOR PREPARING MATERIAL FOR USE IN STORAGE BATTERIES.

(Application filed Sept. 26, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PREPARING MATERIAL FOR USE IN STORAGE BATTERIES.

SPECIFICATION forming part of Letters Patent No. 693,750, dated February 18, 1902.

Application filed September 26, 1900. Serial No. 31,162. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WANTON SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Apparatus for Preparing Material for Use in Storage Batteries, of which the following is a specification.

The invention relates to apparatus for preparing active material or material to become active—that is to say, lead in a very fine state of subdivision, suitable to serve as the positive or negative electrode or plate of a storage battery—so as to facilitate the manufacturing of same in the form of pellets for use in secondary batteries, the object being to provide a machine for granulating the salts or oxid of lead—for example, chlorid, the latter being a salt consisting of chlorin and a base.

The invention consists in the improved granulating-machine, and in the novel features of construction thereof, as will be hereinafter described, and pointed out in the claims.

The nature, characteristic features, and scope of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 illustrates a longitudinal section through a preferred construction of machine, showing the screw-shaft, propelling-blade, and perforated diaphragms. Fig. 2 is a face view of the propelling blade or paddle. Fig. 3 is an edge view, and Fig. 4 is a sectional view thereof on the line 4-4 of Fig. 2 on a larger scale. Figs. 5 and 6 are details of the perforated diaphragm. Fig. 7 is a modified form of diaphragm.

Referring to the drawings, 1 indicates a horizontally-disposed cylindrical casing integral with or otherwise mounted upon a support 2, having an upright 3 to provide an additional bearing for a shaft 4, journaled in the casing and adapted for rotation, as by means of the pulley 5.

The casing 1 has a flaring hopper 6, arranged as shown, and is closed at its outer end by two perforated disks, diaphragms, or

sieves 7 and 8. Said diaphragms are superimposed one upon the other, and the former is provided with a plurality of tiny orifices 9, symmetrically arranged, and the plate 8 is provided with relatively large perforations 10. The object of superimposing the diaphragms and having the smaller openings on the inside is to cause the material to pass through and be cut or granulated by the small openings and then to pass freely away through the larger openings. Instead of the diaphragms 7 and 8 I may employ the single diaphragm illustrated in Fig. 7, which is shown as being provided with conical openings α , the walls of which slope outwardly.

The sieves 7 and 8 fit in an annular groove 11, provided for the purpose, and are secured to place by a threaded annulus or ring 12. The shaft 4 is provided with a worm or screw 13 and at its farther end with a blade or paddle 14, adapted to bear against the diaphragm 7 in the revolution of the shaft. The blade 14 has its axial opening 15 made square, by which it is rigidly fitted to the shaft and is prevented from independent movement thereof. The blade is also turned down or beveled at opposite ends to form the sloping surfaces 16, by which it is made to assume somewhat the form of a propeller. The overhanging working edges formed by the sloping surfaces 16 operate to push the material through the perforations in the plates in contradistinction to the function of the ordinary knife or scraper.

The chlorid is introduced in a spongy or doughy mass of the consistency of soft cheese and is worked or forced toward the outer end by the feed-screw 13, where it is taken up by the propeller or blade 14 and forced through the orifices 9, so that it issues from the larger openings 10 in snake-like particles. This granulating treatment of the chlorid causes it to assume a high degree of coherence, so that it can readily be made up into agglomerate or pellet form.

It will be obvious to those skilled in the art to which it appertains that modifications may be made in detail without departing from the spirit and scope of the invention. Hence I do not limit myself to the precise construction

and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

5 Having thus described the nature and objects of the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the class specified, the combination of a perforated plate, and revol-
10 ule propeller-blades having overhanging working edges, which push the material through the perforations in the plate, substantially as described.

2. In a machine of the class specified, the combination of two concentric plates or

disks, whereof one is provided with small 15
and the other with large openings, said second plate acting as a support for the first, and
revoluble propeller-blades having overhang-
ing working edges, which push the material
through the openings in the plates, substan- 20
tially as described.

In testimony whereof I have hereunto
signed my name.

EDWARD WANTON SMITH.

In presence of—

W. J. JACKSON,
K. M. GILLIGAN.