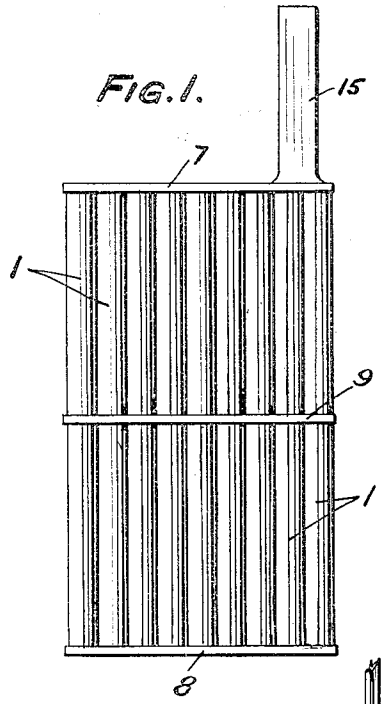
E. W. SMITH.

METHOD OF MAKING AND FILLING STORAGE BATTERY PLATES OR ELECTRODES.

APPLICATION FILED JULY 12, 1909.

1,101,968. Patented June 30, 1914.

FIG. 1.



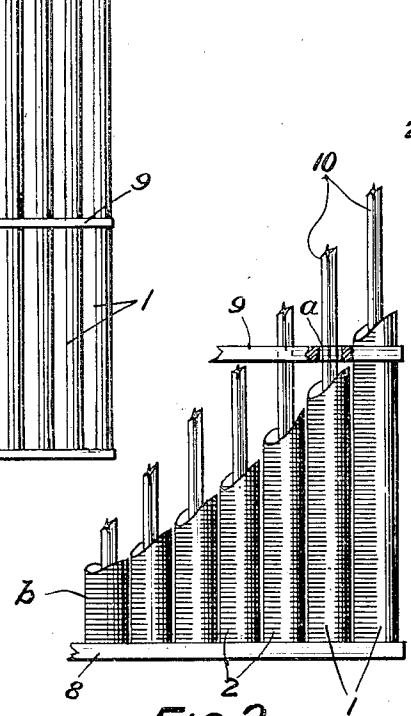
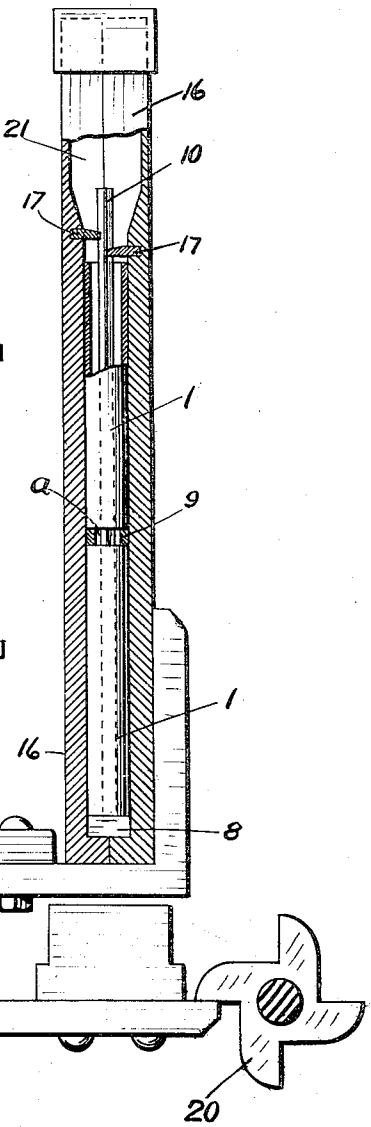


FIG. 2.



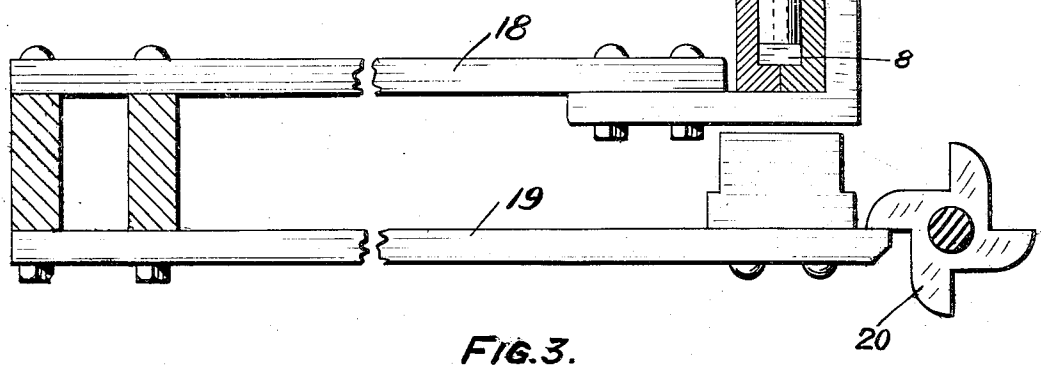


FIG. 3.

WITNESSES:

Robt. R. Kitchel.

Frank E. French.

INVENTOR

Edward W. Smith

BY

Augustus B. Stoughton

ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWARD WANTON SMITH, OF PHILADELPHIA, PENNSYLVANIA.

METHOD OF MAKING AND FILLING STORAGE-BATTERY PLATES OR ELECTRODES.

1,101,968. Specification of Letters Patent. Patented June 30, 1914.

Application filed July 12, 1909. Serial No. 507,138.

To all whom it may concern:

Be it known that I, EDWARD WANTON SMITH, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Method of Making and Filling Storage-Battery Plates or Electrodes, of which the following is a specification.

The principal object of the present invention is to provide a simple and expeditious method of making and filling storage battery plates or electrodes which consist of an assemblage of units each comprising active material or material to become active held to place upon a rod or core by means of an encircling pile or series of washer-like covers.

In describing the invention reference will be made to the accompanying drawings in which—

Figure 1, is a side view of a plate or electrode such as can be made and filled according to my invention. Fig. 2, is a similar view, partly in section, drawn to an enlarged scale, of a portion of the plate shown in Fig. 1 and also showing at the left thereof a modification, and Fig. 3, is a side view, partly in section, illustrating an appliance which is useful in the practice of the invention.

7 and 8, are end sections of which the former is provided with a lug 15. These sections are connected by rods 10 and these rods pass through openings in an intermediate grid section 9, in such a way as to leave channels *a*, between. In the construction arbitrarily shown in the drawings, the channels *a*, are provided by ribbing the rods. Around the rods are arranged tubular covers 1 and each of them may be slotted part way across it, as shown at 2, the result being similar to a pile of washers connected together by webs. At *b*, (Fig. 2), I have shown a pile of washers constituting a cover. Between the covers and the rods there is space which is filled with active material, or material to become active.

16, is a holder preferably made in two parts which can be separated and connected together. Internally this holder is adapted to receive and externally fit all of the plate with the exception of the top end section 7 and lug 15. This holder is shown as provided with guides 17, which center the upper ends of the rods 10. The holder is mounted upon a vibratory arm 18, which is vibrated by means of the striking arm 19 and actuating wheel 20.

The invention will be described in connection with the mechanism referred to, although the latter is not necessary for its practice.

The tubular covers are of appropriate construction, and may consist of washers connected by means of webs or otherwise, or not connected at all, and are mounted on rods 10, which project from the grid section 8 and there is afforded space between the rods and the covers or tubes. The intermediate grid section 9, when present, is then mounted on the rods and as has been said there are channels *a*, which extend past the intermediate grid section 9 and communicate with the spaces to which reference has been made. Additional tubes are then mounted on the rods and these have between them and the rods, spaces which by way of the channels *a* communicate with the spaces between the first mentioned covers and the rods. The described structure with the rods projecting from the ends of the tubes or covers is placed in the holder 16, which has at its top a hopper 21 which contains active material, or material to become active. The parts 17 center the rods and the arm 16 is vibrated. The result of this is that the active material, or material to become active, in powdered form, feeds through the open ends of the tubes into the spaces between the tubular covers and rods and passes through the channels *a*. The rods 10 are maintained more or less centrally of the tubes by the grid section 9, as well as by the parts 17, when present.

Inasmuch as the purpose is to feed active material, or material to become active, through the open ends of the tubular covers so as to fill the spaces between the rods and covers and afford channels for the passage of the active material, or material to become active, past the intermediate grid section, it is evident that the mechanism shown in Fig. 3, is not essential, as the result can be accomplished manually or by means of a variety of mechanism. After the plate has been thus far assembled and filled the rods are secured to the end section 7 by burning or in any convenient way. The plate may then be soaked in an appropriate solution, as one containing sulfuric acid, so as to wet the powdered active material, or material to become active, and thus consolidate it.

What I claim is:

1. The method of making and filling storage battery plates or electrodes which consists in mounting tubular covers on rods projecting from a grid section to afford spaces between the tubes and rods, mounting an intermediate grid section on the rods and leaving channels between which communicate with said spaces, mounting more tubes on the rods near the intermediate grid section to afford spaces communicating with said channels and located between these tubes and the rods, maintaining the rods centrally of the tubes, and feeding active material or material to become active through the open ends of the last mentioned tubes into all said spaces and channels, substantially as described.

2. The method of making and filling storage battery plates or electrodes which consists in mounting a perforated cover upon a rod, placing the cover and rod in a suitable holder, maintaining a supply of active material or material to become active at the top of the holder, and shaking the cover, rod, holder and supply while spacing the rod in respect to the cover to provide space into which said material is packed by the shaking to secure the rod and cover together.

In testimony whereof I have hereunto signed my name.

EDWARD WANTON SMITH.

Witnesses:
K. N. GILLIGAN,
FRANK E. FRENCH.

Correction in Letters Patent No. 1,101,988.

It is hereby certified that in Letters Patent No. 1,101,988, granted June 30, 1914, upon the application of Albert C. Bell, of Chicago, Illinois, for an improvement in "Folding Sofa-Beds," an error appears in the printed specification requiring correction as follows: Page 3, line 119, for the word "uppermost" read *outermost;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of July, A. D., 1914.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.