

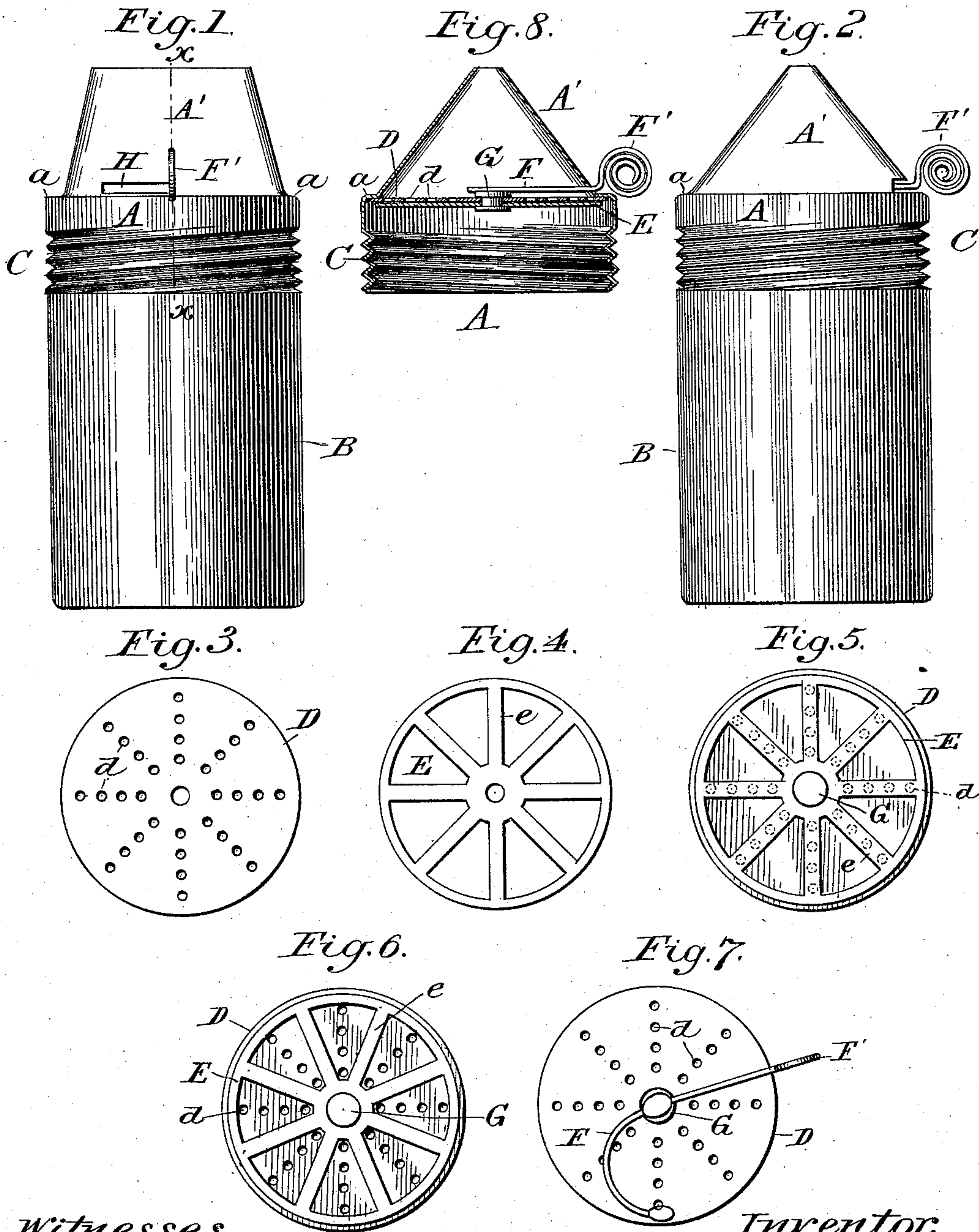
(No Model.)

E. D. STODDER.

POWDER DISINTEGRATOR AND DISTRIBUTER.

No. 585,056.

Patented June 22, 1897.



Witnesses:

W. H. Cobb

Elmer Wickes

Inventor:

Edward S. Stodder

by *W. A. Acker*  
att'y



# UNITED STATES PATENT OFFICE.

EDWARD D. STODDER, OF SAN FRANCISCO, CALIFORNIA.

## POWDER DISINTEGRATOR AND DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 585,056, dated June 22, 1897.

Application filed July 18, 1892. Serial No. 440,361. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD D. STODDER, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented a certain new and useful Improvement in Powder Disintegrators and Distributers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved mechanism for distributing powdered substances in small quantities at the will of the operator; and it consists of the parts and details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

The object of my invention is to provide a simple and effective mechanism to disintegrate and distribute from tooth-powder bottles or boxes, salt-sprinklers, flour and sugar dredge-boxes, &c., such powdered substances as are inclined to pack together and clog the holes through which it is desired to distribute it, it having been demonstrated by experiment that some powdered substances will readily pass through quite small holes, while others will clog or stop up quite large ones or the hole in a funnel if dropped into it in large quantities, as by placing the funnel over an open bottle of powder and turning it upside down, whereas if the powder is sprinkled into the funnel in small quantities it will all pass through and not clog it.

My invention consists in providing a top or cover that is to be fastened to the box or bottle used as a receptacle for the powdered substance and comprises a wedge-shaped top, inside of which is fastened a perforated diaphragm over or under which another perforated diaphragm or agitator is arranged, so that it can be moved by a motion of a finger of the operator, and when the apparatus is not in use the perforations in each diaphragm are covered by the solid part of the other; but when in use and the apparatus is turned upside down the diaphragms prevent the powder from falling out until the upper one or agitator is moved by the operator, when the perforations come opposite to each other,

forming a passage-way through which the powder will drop out in small quantities, as desired, being under the complete control of the operator, as will more fully appear from the drawings and accompanying detailed description.

Referring to the drawings forming a part of this application, in which similar letters of reference are used to denote corresponding parts throughout the entire specification and several views—

Figure 1 is a side elevation. Fig. 2 is the same turned one-quarter around. Fig. 3 is a plan view of one of the perforated diaphragms. Fig. 4 is a plan view of the other diaphragm or agitator. Fig. 5 is a plan view of the two diaphragms together, showing the holes covered or closed. Fig. 6 is a plan view of the two diaphragms together, showing the holes open; Fig. 7, a plan view of the upper diaphragm, showing pivot and spring attached; and Fig. 8 is a vertical sectional view, through X X, Fig. 1, of the two diaphragms, the top, pivot, and spring combined.

In carrying out my invention I construct, preferably of a piece of sheet metal, a top or cover A of such size and shape as to adapt it to the box or bottle B, to which it is desired to apply it and to which it may be attached by a screw-thread C or in any other suitable manner.

The wedge-shaped top A' is to be applied to such covers as are to be used for special purposes, such as tooth-powder distributors, in which case the opening may be oblong instead of round, as shown by Figs. 1 and 2, so as to guide and distribute the powder the whole or nearly the whole length of a tooth-brush at one operation instead of in one spot, as with a round opening. When made for such purposes, the cover A and wedge-shaped top A' may be stamped in one piece, a small offset being made at a, to which the diaphragm D is afterward attached.

A metal disk or diaphragm D, Fig. 3, forms the top of the cover A when used without the wedge-shaped top, or closes the opening through the shell formed by the parts A and A' being stamped as one piece, in which case



it may be easily fastened at or to the offset *a*. A number of holes *d* are made in the diaphragm D of such size as to permit the powdered substance to pass through it in small quantities only, the size, number, and position of the holes being governed by the nature of the powdered substance it is desired to pass through them. In Fig. 3 I have shown a convenient way of arranging these holes; but it is evident that there are other ways the holes might be arranged without changing the principle of the invention. This perforated diaphragm forms part of the cover when the apparatus is not in use, and when in use makes it absolutely impossible for the powder to pass through in sufficient quantities to clog the opening cut in the wedge-shaped top, yet permits it to pass through in such quantities as may be required when being used for the purpose for which it was designed.

Another perforated diaphragm or agitator E is arranged to oscillate in contact with or very close to D, the diaphragm E being on the upper side of D when the box or bottle B is turned upside down for use, but on the under side when not in use, and the apparatus is in the position shown in Figs. 1, 2, and 8. One of many shapes in which this diaphragm or agitator may be made is shown in Fig. 4, which is adapted to be used in connection with the plan of D, Fig. 3, the arms *e* covering the holes *d*, as shown in Fig. 5. This diaphragm E, also referred to as an agitator, performs two distinct and important operations, that of closing or opening the holes *d* and of agitating and disintegrating the powder, as follows: In connection with the diaphragm D it completely closes the opening through the cover when the solid part of each is allowed to cover the perforations in the other, as shown in Fig. 5, and when in use, moved by the operator, it alternately closes and opens the holes and thus permits and also assists the powder to pass through or stops it at the will of the operator. It also agitates and disintegrates the powder, because when in use it is directly under the bulk of the powder and directly over the other perforated diaphragm, so that when oscillated by the operator as each of the arms *e* passes from over a row of the holes *d* it separates a small quantity of the powder from the bulk of it and some of it drops through the holes into the guiding wedge-shaped top A', while the combined motion of all the parts of the agitator undermines the whole of the powder, causing it to fall down and keep the diaphragms covered as long as there is any in the receptacle, and the motion of the agitator E in contact with the perforated diaphragm D compels powder to readily pass through the holes *d* that would not readily pass through them without the said motion or its equivalent.

An oscillating motion is given to the agitator

by alternately pressing on and releasing a finger-button F' on the side of the cover. This may be a small button or knob of any convenient shape or substance attached to the wire F, or the wire may be coiled so as to form a convenient button or knob, as shown in Figs. 2 and 8. The wire F is fastened to the pivot G and to the diaphragm D and is coiled, as shown in Fig. 7 or in any other convenient manner, to form a spring. The pivot G passes through holes in the center of the diaphragms D and E, being free to turn in D, but is fastened to E, so as to turn with it, so that when the button F' is moved it moves the wire F, and it moves the pivot G, and that moves the agitator E.

A horizontal slot H is made in one side of the cover A', through which the wire F projects. This slot permits the button F' to be moved through an arc of a circle around the outside of the cover A'.

The spring F is placed inside of the cover and connected to the agitator E by means of the pivot G, as shown in Fig. 8, instead of being on the other side of the diaphragms and fastened directly to the agitator. This is to avoid the possibility of the powder interfering with its operations, and so the slot for the projecting end could be made where it would avoid the possibility of the powder leaking out of the side of A'; but it is evident the spring and slot could easily be changed to other positions without changing the principle of the invention.

The object of the spring F is to keep the diaphragm E in the position necessary to keep the holes *d* closed until it is desired to open them, when a slight pressure on the projecting end F' opens them, and when released the reaction of the spring closes them again, and if allowed to fly back quickly it causes a slight shock or jar, which facilitates the passage of the powder.

From the foregoing description it will be manifest that to get a small quantity of the powder out of the receptacle it is simply necessary to hold the apparatus upside down and move the button and a small quantity will fall out. Then release the button and the reaction of the spring closes it, the operation to be repeated if more is required. It is also manifest that although I have shown the apparatus more particularly as a "tooth-powder distributor" the principle is applicable to any kind of powdered substance.

While my cover is described as having a wedge-shaped top provided with an elongated discharge-opening, I do not wish to be understood as confining myself thereto, for I am well aware that a funnel or suitable shaped top may be made use of.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

A device for disintegrating and distribut-

ing powdered substances consisting of a top  
or cover adapted to be secured on the vessel  
containing the powdered substance and pro-  
vided with a horizontal slot in one side, a per-  
forated diaphragm secured within the cover  
and forming the base of the same, an agitator-  
disk pivoted to the diaphragm, and a wire  
spring fastened to the pivot of the disk and

to the perforated diaphragm and having one  
end projecting through the slot in the cover. 10

In witness whereof I have hereunto set my  
hand and seal this 7th day of July, A. D. 1892.

EDWARD D. STODDER. [L. s.]

Witnesses:

BUTLER BURRIT,  
EVE JOSEPHI.