

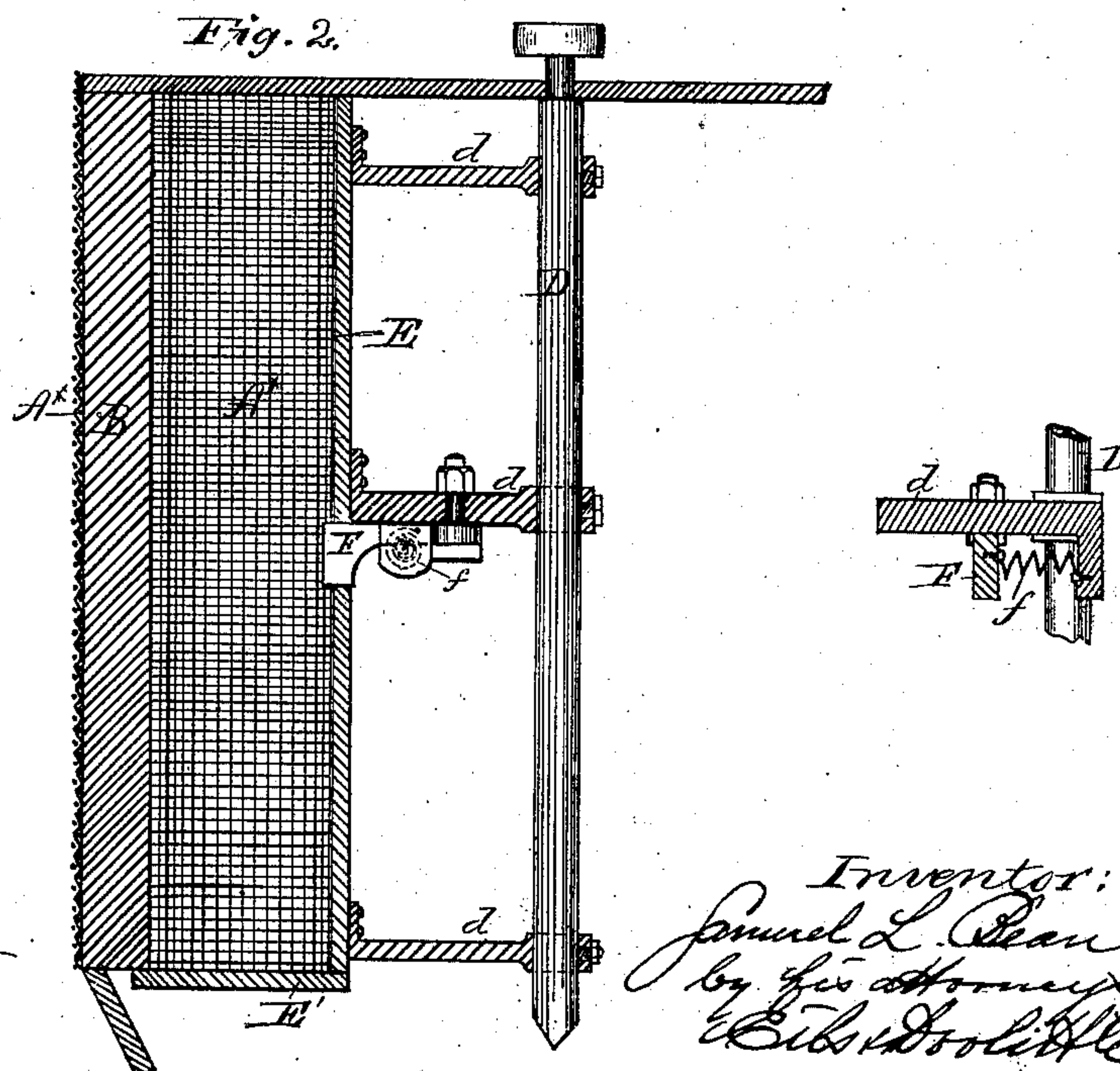
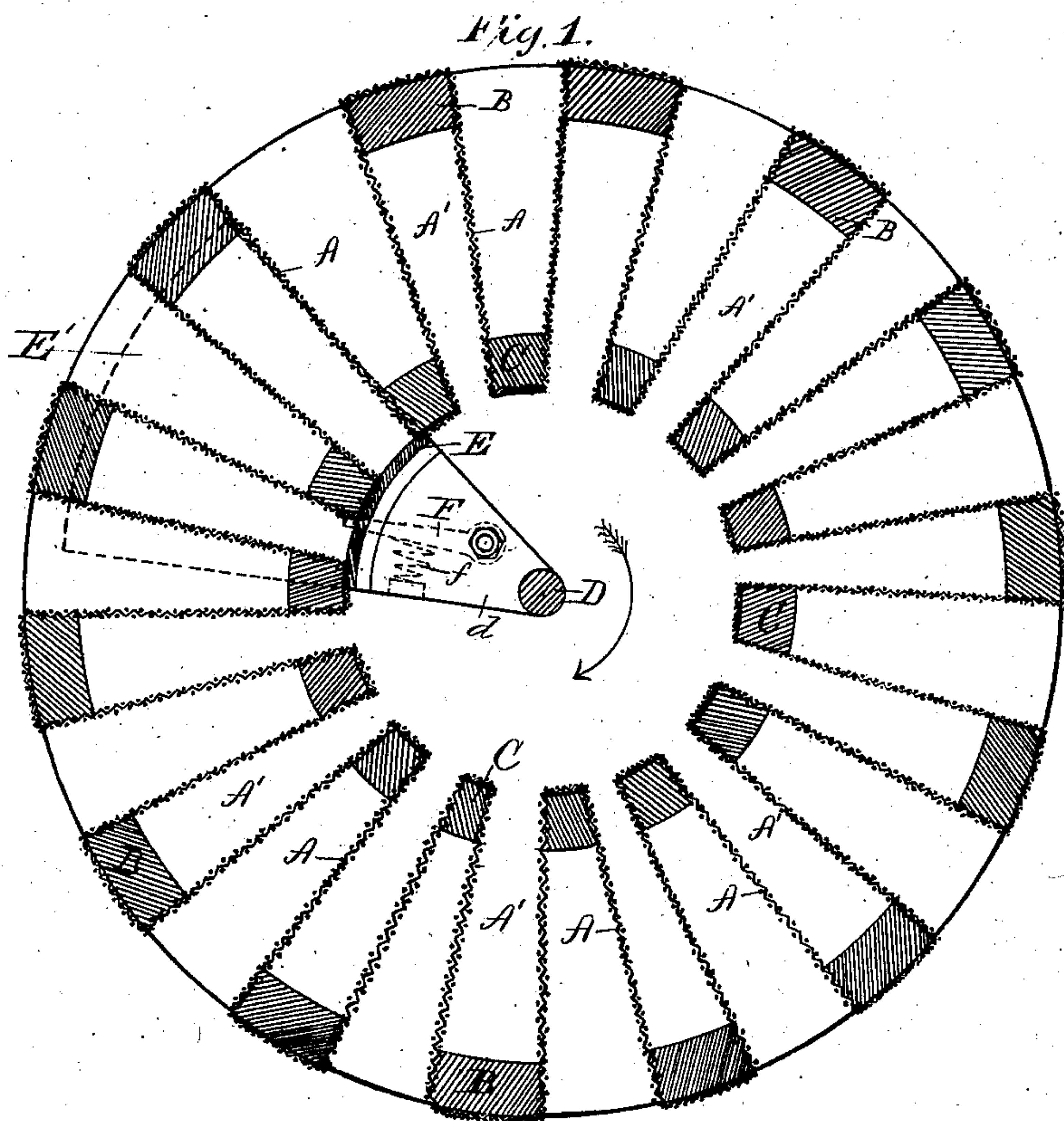
(No Model.)

S. L. BEAN.

## FLOUR DUST COLLECTING BALLOON.

No. 258,876.

Patented June 6, 1882.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

SAMUEL L. BEAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

## FLOUR-DUST-COLLECTING BALLOON.

SPECIFICATION forming part of Letters Patent No. 258,876, dated June 6, 1882.

Application filed November 16, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL L. BEAN, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Flour-Dust-Collecting Balloons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to balloons for collecting and grading flour-dust in mills, such as described in my applications for United States Letters Patent filed May 24, 1880, and October 7, 1880, wherein the skeleton frame-work is covered with reticulated cloth, stretched zigzag fashion over the bars of the frame-work, thus forming a stellated structure, the points or angles of which constitute separating-chambers for separating the flour-dust from the dust-laden air, and within which angles or separating-chambers the dust is retained, while the air is permitted to escape through the cloth-covered sides thereof.

The object of the invention is to intermittently suspend the action of the air-current in one or more of the angles or separating-chambers of the stellated balloon at a time, so that the dust which has collected upon the cloth-covered sides of said angles or separating-chambers will be relieved from the pressure of air and the cloth be more readily freed from dust by the action of the knocker.

To this end the invention consists in providing a traveling gate or other suitable means for intermittently shutting off the current of dust-laden air, or practically so, from one or more of the dust-sifting angles or separating-chambers at a time.

It further consists in combining with said gate a knocker adapted to give a trembling vibration to one or more of the angles or separating-chambers just as the air-current is shut off therefrom.

In the annexed drawings, Figure 1 is a horizontal section of a stellated dust-catching balloon embodying my improvements. Fig. 2 shows in elevation one form of the device for simultaneously shutting off the air-current from

two angles or separating-chambers and imparting a trembling vibration to the angles or separating-chambers so isolated.

The same letters of reference are used in all the figures in the designation of identical parts.

A refers to the reticulated cloth, which is stretched over the peripheral bars B and inner bars, C, in such manner as to form a stellated balloon having a series of radially-arranged chambers or angles, A', open at their inner sides, as shown. A vertical shaft, D, is arranged centrally within the balloon, its lower end resting in a step or socket, and is rotated by means of belt and pulley on the exterior of the balloon, or in any other preferred manner.

To the shaft D are keyed arms d, which carry on their outer ends a frame or gate, E, adapted to move in such close proximity to the inner bars, C, as to practically close the entrance to the angles or separating-chambers A' successively, and thus prevent the passage of the air-currents from the interior of the balloon to the said angles or separating-chambers.

This gate E, I prefer to make of such size that it will close two angles or separating-chambers at a time. A wing, E', is secured to the bottom of the gate E, extending to the outer sides of the angles or separating-chambers. This wing is arranged to move closely under the bottoms of the angles or separating-chambers A', and prevent the passage of air-currents thereto. To one of the arms, d, is pivoted a knocker, F, actuated by a spring, f. The free end of the knocker extends outwardly through a slot in gate E. The slot is of such size as to permit the free end of the knocker

F to be moved inward sufficiently to allow it to pass the inner line of the bars C. Upon the rotation of the vertical shaft in the direction indicated by the arrow the knocker will be forced inward by its contact with one of the inner bars C; but by the continued rotation of said shaft, the knocker, becoming freed from the bar C, will be impelled by the action of the spring against the next adjacent bar with some force, thus causing a trembling vibration of said bar and to the cloth-covered sides of the angle or separating-chamber on each side thereof. This vibration will cause the dust which has accumulated on the cloth-covered sides of the angles or separating-chambers to be shaken therefrom when it falls to



the flat-surfaced wing E' of gate E, and is swept or scraped off by the bottom edges of the chambers into the bottom of the balloon, to be conducted thence to the proper receptacle. The knocker is so arranged with relation to the gate E and its wing E', that the two angles or separating-chambers nearest to the bar which receives the shock from the knocker will be closed against the air-current by said gate and its wing, so that the dust which has accumulated upon the cloth-covered sides of the angles or separating-chambers will be relieved from the pressure of the air-current and be easily detached, and when so detached by the shock can fall through a practically dead air-space; otherwise a portion of the dust would be held against the cloth-covered sides of the angles or separating-chambers, and a portion of that liberated would be again carried back by the air-current, which is constantly passing through the balloon.

In balloons having other than a cylindrical cross-sectional contour the gate, with its wing, might be operated by means of endless belts and be run on endless tracks, suitable modification being made in the gate and accompanying devices to adapt them to the angles of the balloon.

It will be understood that I do not confine myself strictly to the construction hereinbefore set forth, as many modifications of that construction might be made without departing from the spirit of my invention. For instance, the vertical shaft with the arms and gate might be stationary and the balloon revolve; also, instead of having the knocker protrude through the gate, it might operate on the exterior of the balloon, and be so timed as to impart a shock to the angles or separating-chambers, which are at the time closed. A number of swinging gates could be used hinged to the bars C and operated by an arm projecting from a central shaft such as that shown. This

construction would obviate the necessity of using a knocker, as the swinging gates could be given sufficient force in closing the angle or separating-chamber to impart the required vibration thereto.

The forms of my invention not illustrated in the annexed drawings are described or alluded to simply for the purpose of indicating the scope of my claims, and to have it understood that I regard such forms as subordinate to such claims. As I do not desire, and probably would not be allowed, under the existing rules of practice in the United States Patent Office to specifically claim each separate described form of the invention in this patent, it is unnecessary to illustrate by drawing more than one practical form.

Having described my invention, what I claim as new is—

1. The combination, substantially as before set forth, of a stellated dust-catching balloon and an automatically-operated cut-off or gate within the same, which periodically cuts off the air-current from a portion of the angles or separating-chambers of the balloon to permit the dust to be shaken from the cloth sides of such cut-off angles.

2. The combination, substantially as before set forth, of a stellated dust-catching balloon and a traveling gate within the same for cutting off the air-current from successive angles of said balloon.

3. The combination, substantially as before set forth, of a stellated dust-catching balloon, a traveling gate within the same for cutting off the air-current from successive angles of said balloon, and a traveling knocker.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL L. BEAN.

Witnesses:

SMITH H. MYERS,  
PIERCE NORTON.