

No. 837,743.

PATENTED DEC. 4, 1906.

W. W. SLY.  
DUST COLLECTOR.  
APPLICATION FILED MAR. 22, 1905.

2 SHEETS—SHEET 1.

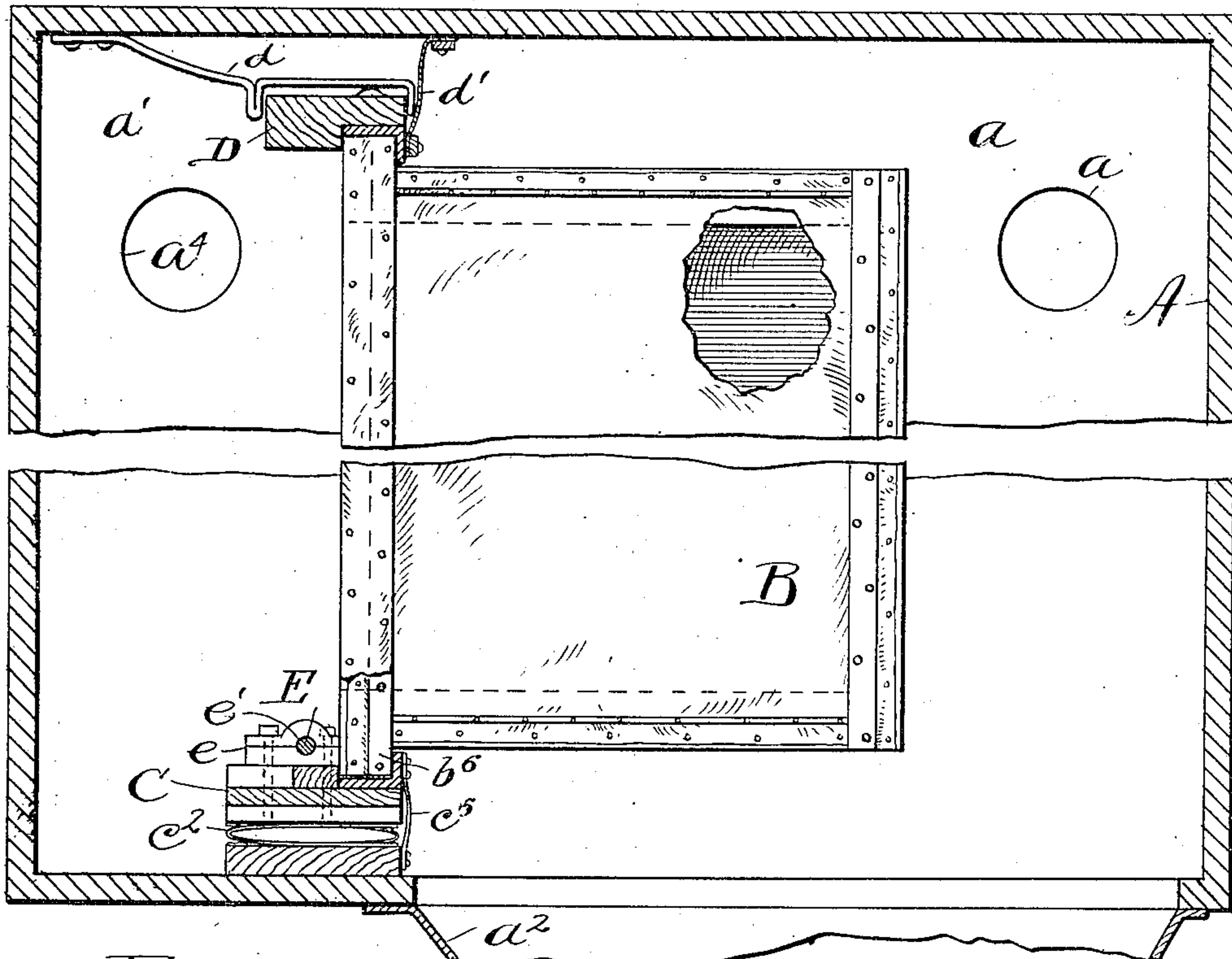


Fig. 1.

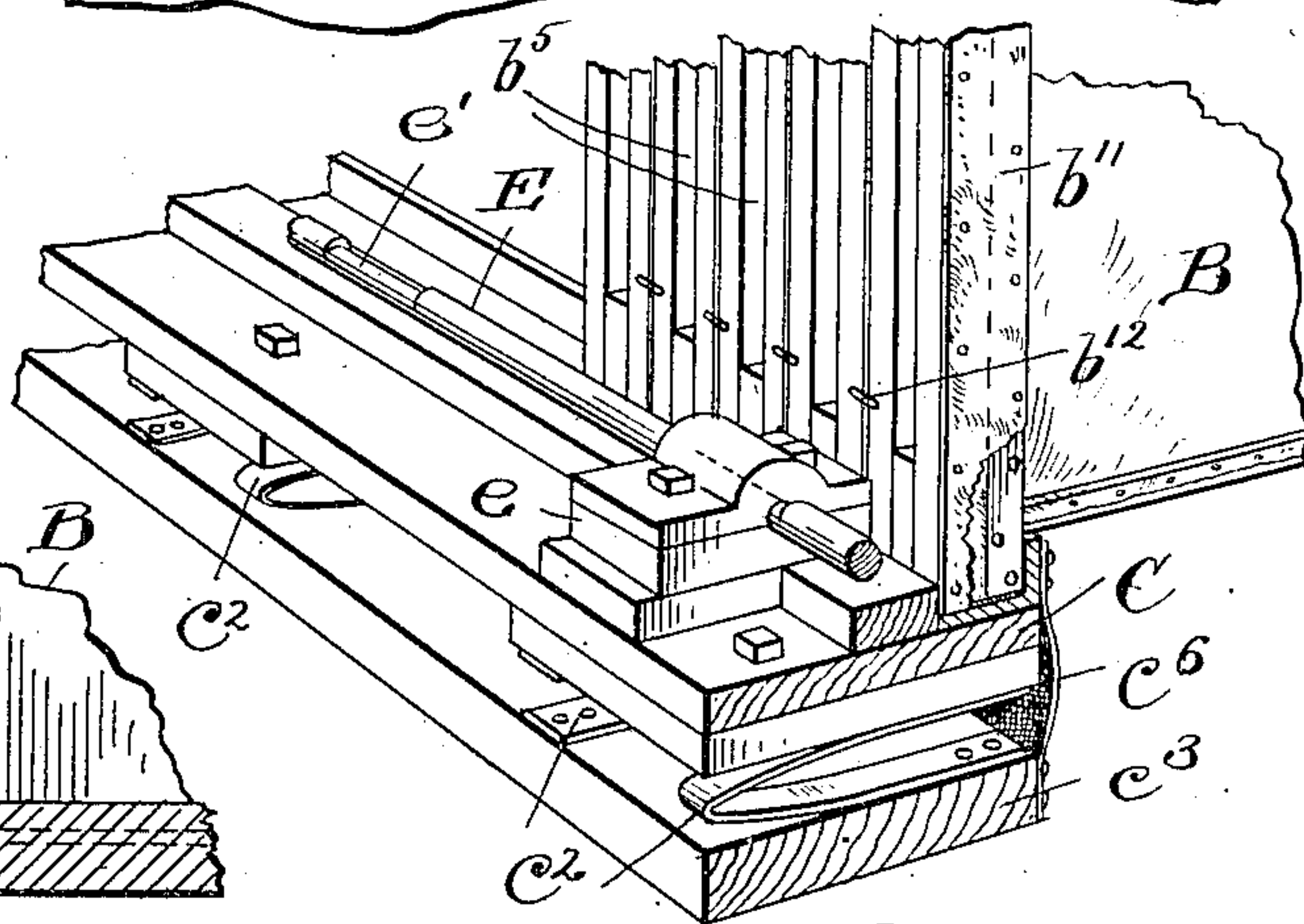


Fig. 2.

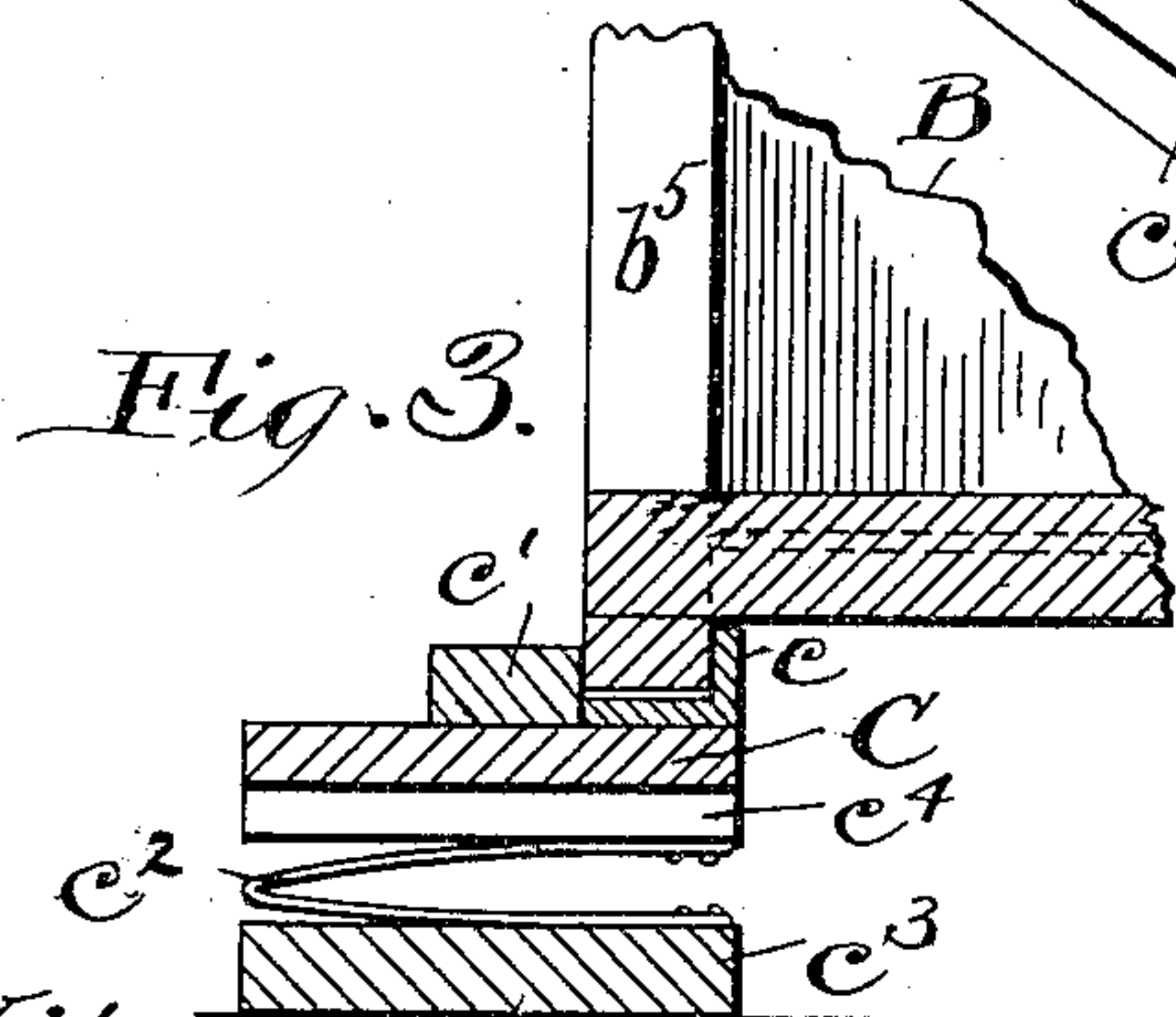


Fig. 3.

Witnesses.  
E. B. Gilchrist  
C. C. Nixon

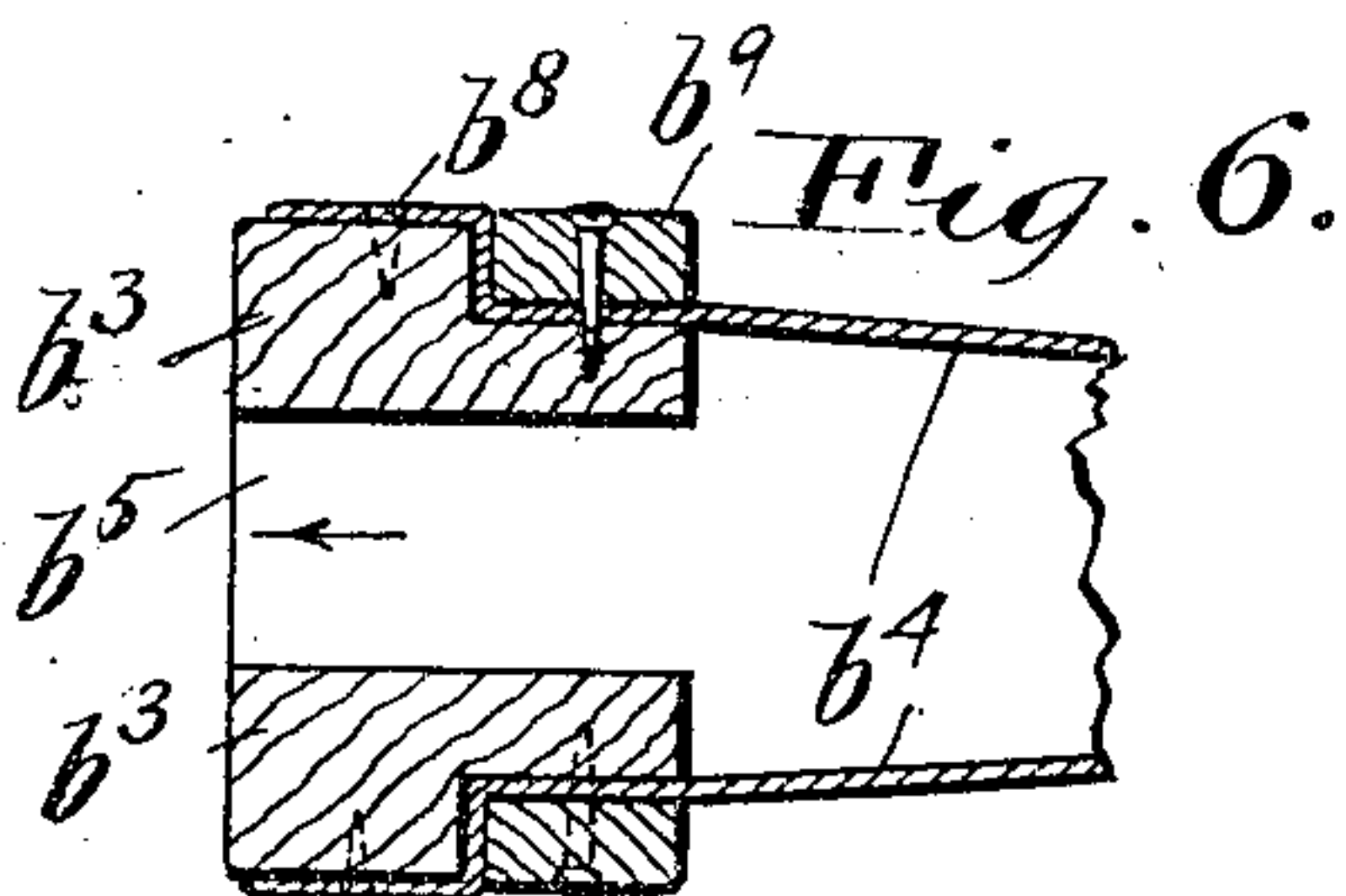
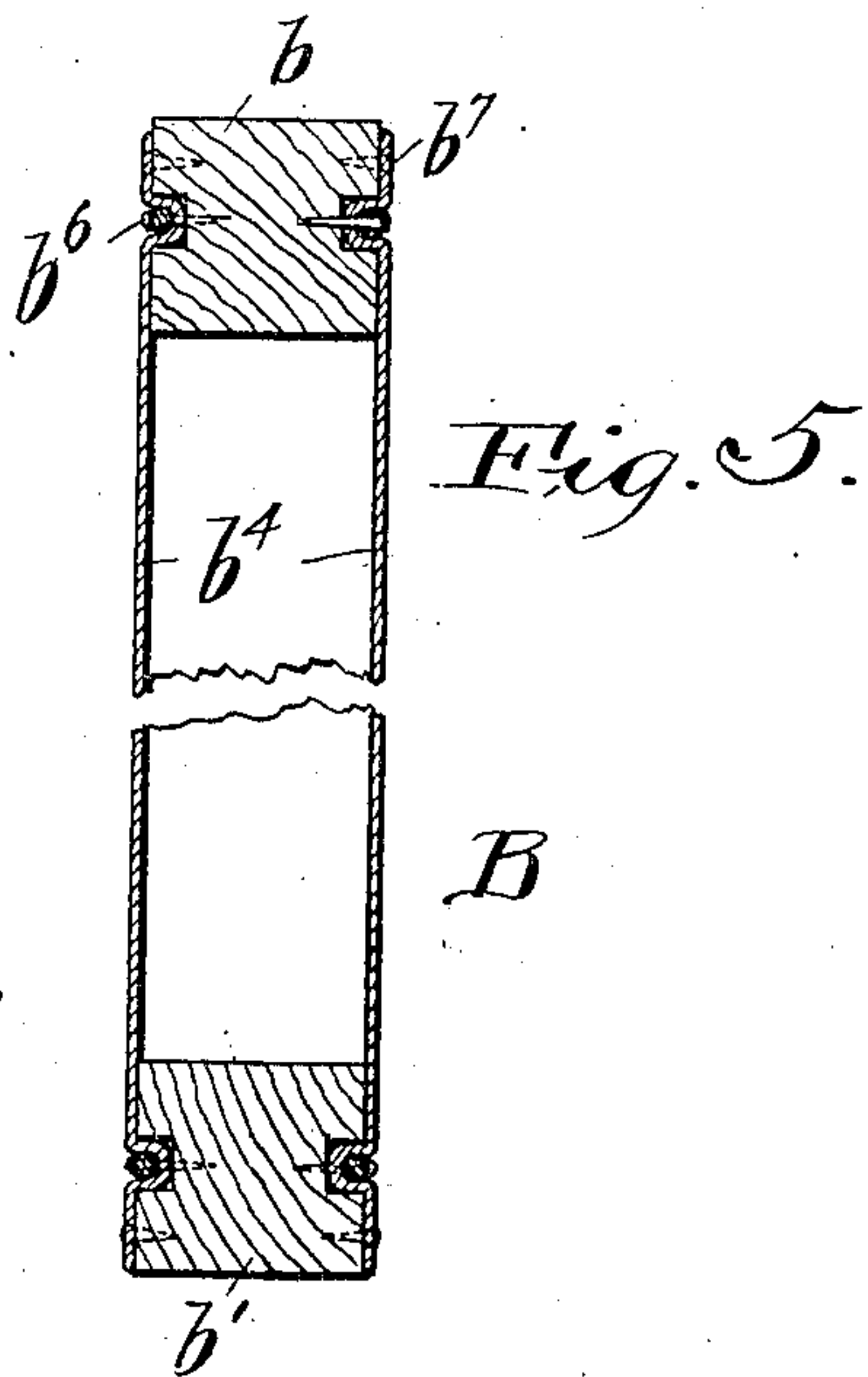
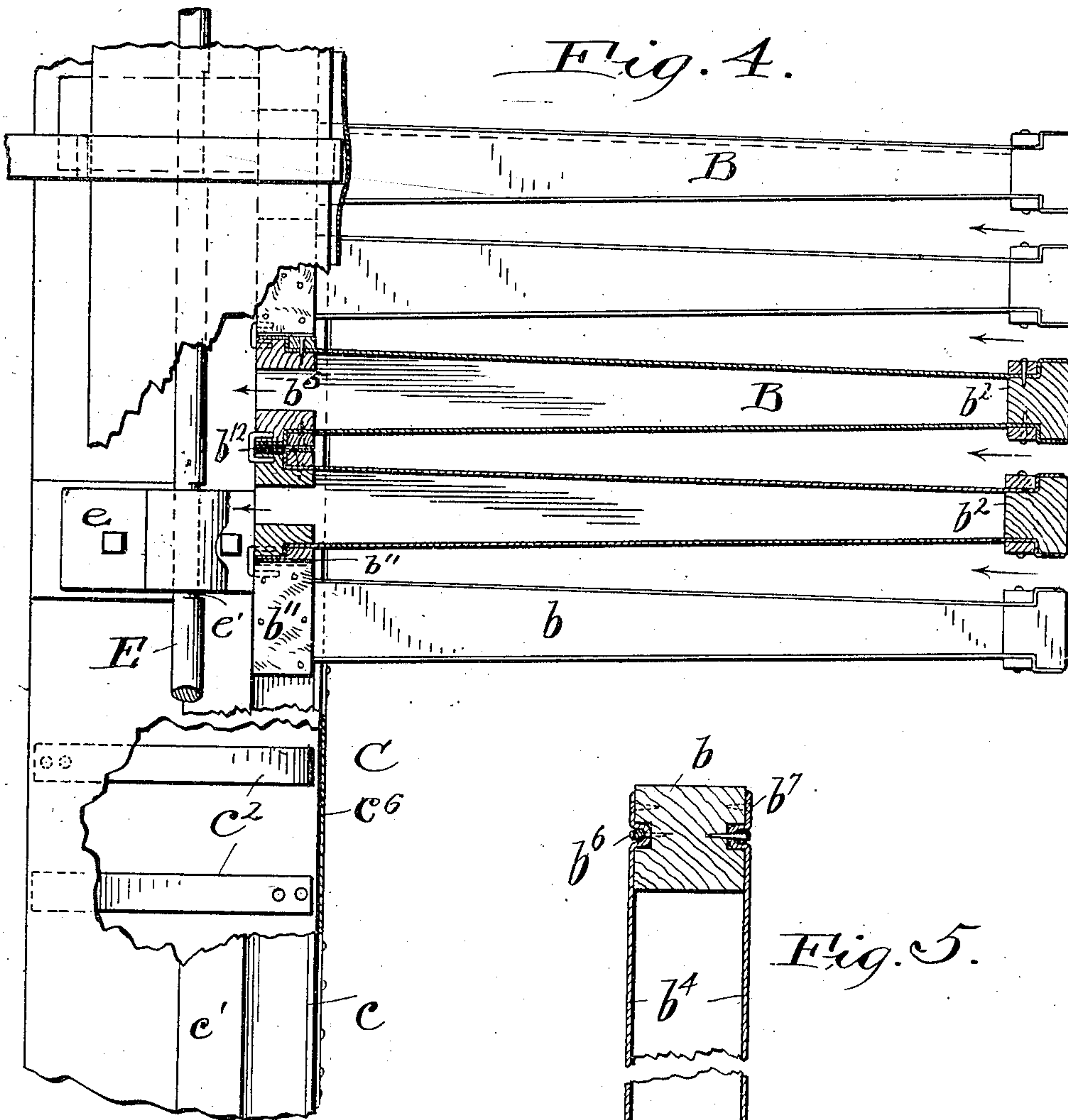
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William W. Sly,  
By his Attorneys,  
Thurston & Bates.

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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM W. SLY, OF CLEVELAND, OHIO.

## DUST-COLLECTOR.

No. 837,743.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed March 22, 1905. Serial No. 251,369.

*To all whom it may concern:*

Be it known that I, WILLIAM W. SLY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Dust-Collectors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a simple and durable dust-collector wherein the screens shall be so arranged that it shall be impossible for the dust to leak through into the clean side of the collector and there shall be efficient means for shaking the screens to cause the dust to drop off of the same.

The invention, which is an improvement on my prior patent, No. 710,624, comprises the means for securing the screening-canvas in a dust-tight manner, the means for holding the screens, and the means for shaking them, all of which is hereinafter more fully described and which is definitely set out in the claims.

In the drawings, Figure 1 is a vertical section through my dust-collector, the same being broken away intermediately. Fig. 2 is a perspective view of the support for the screens. Fig. 3 is a vertical cross-section through such support. Fig. 4 is a plan view, partly broken away and sectioned, through some of the screens. Fig. 5 is a vertical cross-section through the upper and lower portions of the screens, showing the method of securing the canvas. Fig. 6 is a horizontal cross-section through the screen at its exit side.

As shown in the drawings, A represents a suitable chamber which receives the dust-laden air and carries the screens for removing the dust. The screens B are placed vertically within this chamber side by side in such a way that their abutting edges constitute a partition dividing the chamber into the receiving portion *a* and the exit portion *a'*. At the base of the receiving portion is a hopper *a<sup>2</sup>*, into which the dust descends. A suitable opening *a<sup>3</sup>* allows the entrance of the dust-laden air into the receiving-chamber, and an opening *a<sup>4</sup>* allows the removal of the pure air. A suitable suction-fan is connected with this opening. The only passage-way for the air from the chamber *a'* is through the screens, as hereinafter more fully explained, whereby

the air is filtered, the dust remaining on the outside of the screens in the chamber *a*.

Each screen consists of a rectangular frame having top members *b*, bottom members *b'*, front vertical edges *b<sup>2</sup>*, and rear edges provided by the members *b<sup>3</sup>*. On opposite sides of this frame are secured sheets *b<sup>4</sup>* of canvas. The horizontal members *b* and *b'* of the frame are tapered toward a point away from the end where the screens are secured, and there is thus left between the screens space at their free end, so that the air enters at the bottom and top and at the free vertical edge of the screens, as indicated by the arrows in Fig. 4. The air then passes through the canvas *b<sup>4</sup>* and out through the opening *b<sup>5</sup>* at the rear edge of the screen between the two frame members *b<sup>3</sup>*. The dust is thus left on the outer side of the canvas *b<sup>4</sup>* and descends into the hopper, the pure air passing out through the opening *a<sup>4</sup>*. The frame members *b<sup>3</sup>* of successive screens abut each other and are secured together by staples *b<sup>12</sup>*, making a continuous partition across the chamber. A cloth padding *b''* passes entirely around the outer edges of the rear members *b<sup>3</sup>* to make a dust-tight connection between them and with the supports.

In order to shake loose the dust which collects on the outer side of the canvas *b<sup>4</sup>*, I provide a support for the screens which is adapted to be vibrated, shaking the screen sufficiently to dislodge the dust. This support consists of a horizontal board or plate C, extending across the chamber A and carrying on its upper side a groove, in which the lower ends *b<sup>6</sup>* of the screen members *b<sup>3</sup>* stand. This groove may be provided by an angle-iron *c* and a bar *c'* behind it. This structure is supported on springs *c<sup>2</sup>*, which rest on a bottom board *c<sup>3</sup>*. The springs are U-shaped and face in opposite directions, being secured at suitable intervals between the boards *c<sup>3</sup>* and blocks *c<sup>4</sup>* on the under side of the board C. By this means the support may be given an up-and-down motion as well as a forward-and-back motion.

To allow the screens to move when the support is vibrated, I secure the upper projecting ends of the members *b<sup>3</sup>* in a groove carried by a cross-bar D, which extends from side to side of the casing and is guided in a bracket *d*, depending from the roof of the chamber. The dust is prevented from pass-



ing from one side of the chamber to the other at the supports by reason of the canvas  $d'$  and  $c^a$ , secured from the roof to the member D and vertically across the springs at the base.

To vibrate the screens, I mount on the board C bearings  $e$ , in which is journaled a shaft E. This shaft is cut down eccentrically at its bearings, as shown at  $e'$ , so that when it is rotated by a suitable belt-pulley (not shown) it is out of balance and its inertia causes it to jerk the support first in one direction and then in the other. By this means the support and the screens are given a sufficient vibration to cause them to constantly tremble, efficiently shaking the dust from them.

Owing to the vibration of the screens and the weight of the dust which collects on them, it is essential that the canvas  $b^4$  be held to the frame in a very secure manner, as well as in a manner which shall be dust-tight. This I accomplish as follows: In each of the frame members  $b$  and  $b'$  I make a groove  $b^6$ , and the canvas is stretched across the frame and securely tacked thereto at  $b^7$  beyond the grooves. Then a piece of cord is forced into the groove, pressing the canvas beneath it, and the cord is tacked in place in the groove. By this means the canvas is not only drawn very tight, but it is securely held, so that the vibration does not shake it loose, and it is made dust-tight, so that no dust can work in between the canvas and the frame members and pass into the screen. At the front and back ends of the screen the canvas is tacked at  $b^8$  to the respective members and is then drawn tight and securely held by strips of wood  $b^9$ , which are secured in rabbeted edges of the members  $b^2$  and  $b^3$ , respectively. A dust-tight and effective securement is thus made at these edges of the canvas.

The securement of the edges of the canvas in such manner that it shall be taut and dust-tight and firmly held is extremely important, for a considerable weight of dust collects on the canvas, and the vibration of the canvas with this dust on it causes considerable strain. If the canvas were at all slack, the effect of the vibration would be much worse, and if the securement were not very tight the canvas would soon tear loose sufficiently to let dust pass into the interior of the screen. I have found by practice that the means shown and above described are extremely efficient for the purpose intended.

By setting the cans of the screens in from

the edge not only is it protected against chafing when shipped, but in use a clear space is provided between the screens at their supported edge, so that the dust will not clog at this point, but will pass down freely:

Having described my invention, I claim—

1. In a dust-collector, in combination a horizontal support mounted on springs and a series of vertical screens mounted at their rear edges on said support.

2. In a dust-collector, in combination a pair of horizontal supports one above the other and one mounted on springs, and a series of vertical screens mounted at their rear edges on said supports.

3. In a dust-collector, the combination of a casing, a series of springs supported from the floor of the casing, a support resting upon said springs and extending across the casing and a series of screens in dustproof contact along their rear edges and supported at said rear edges upon said support.

4. In a dust-collector, the combination of a casing, a support therein extending across the same, a series of screens resting upon said support and placed side by side, and having their abutting edges forming a partition across the casing; springs supported on the floor of the casing and interposed between it and the said support; a support for the upper ends of the screens extending across the casing and flexible means for preventing the passage of dust between said support and the floor and top of the casing.

5. In a dust-collector, the combination of a casing, a plurality of rectangular frames therein, the rear member of each having an opening through it, screens secured to both sides of each of said frames, a horizontal support on which the rear ends of said frames are supported, springs upon which said support is supported, a screen  $c^a$  secured at its edges and spanning the space occupied by said springs, a horizontal support engaging with the tops of the rear parts of said rectangular frame, a guide-bracket engaging with said upper support and connected with the casing, and a screen connected with the roof of the casing and with the upper support and spanning the space between them.

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

WILLIAM W. SLY.

Witnesses:

ALBERT H. BATES,  
C. E. NIXON.