

(No Model.)

2 Sheets—Sheet 1.

H. COLE.

FIBER CLEANING SEPARATOR.

No. 336,294.

Patented Feb. 16, 1886.

Fig. 1.

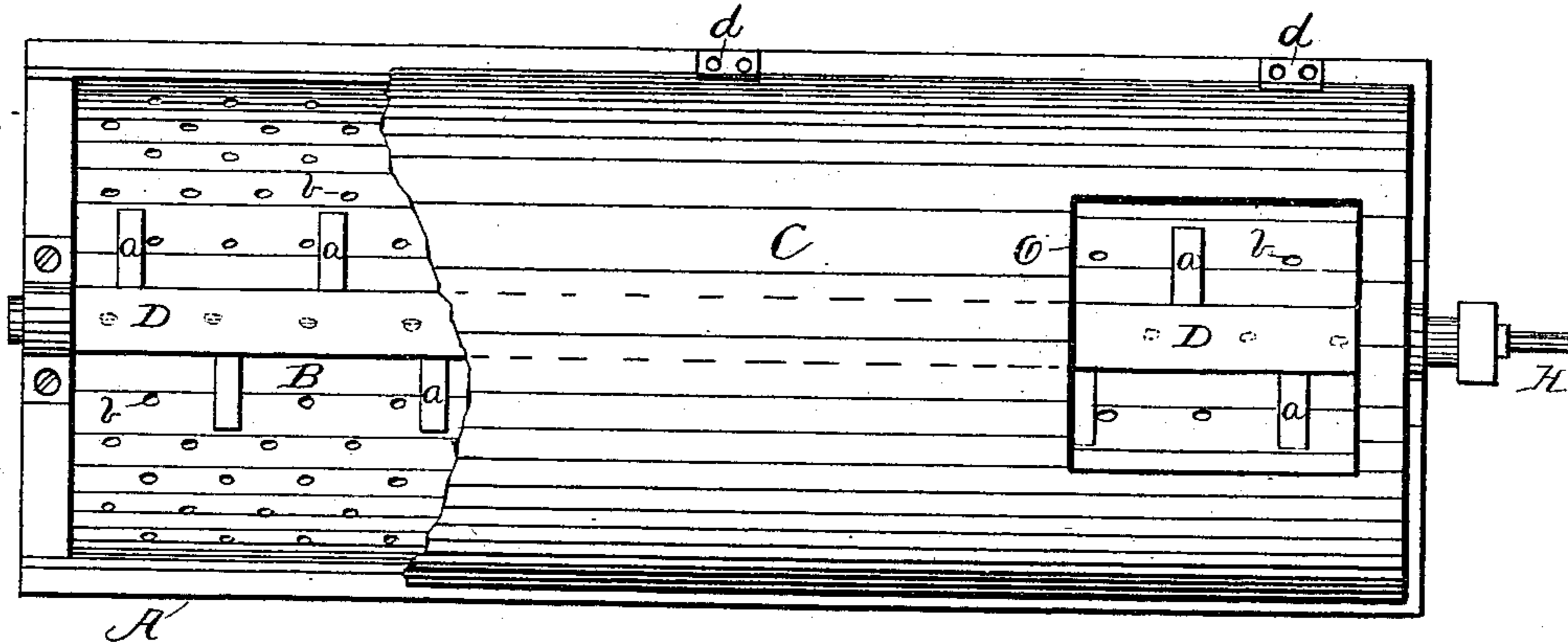


Fig. 2.

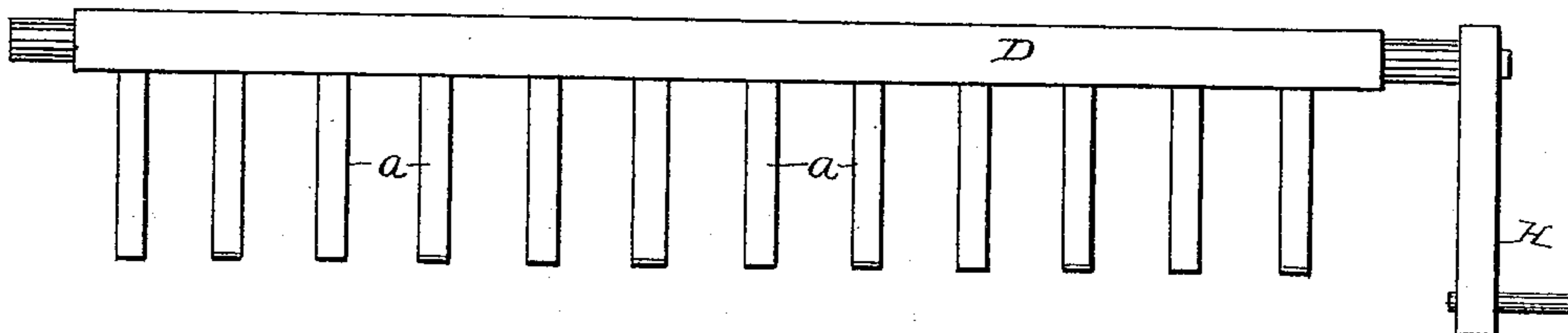
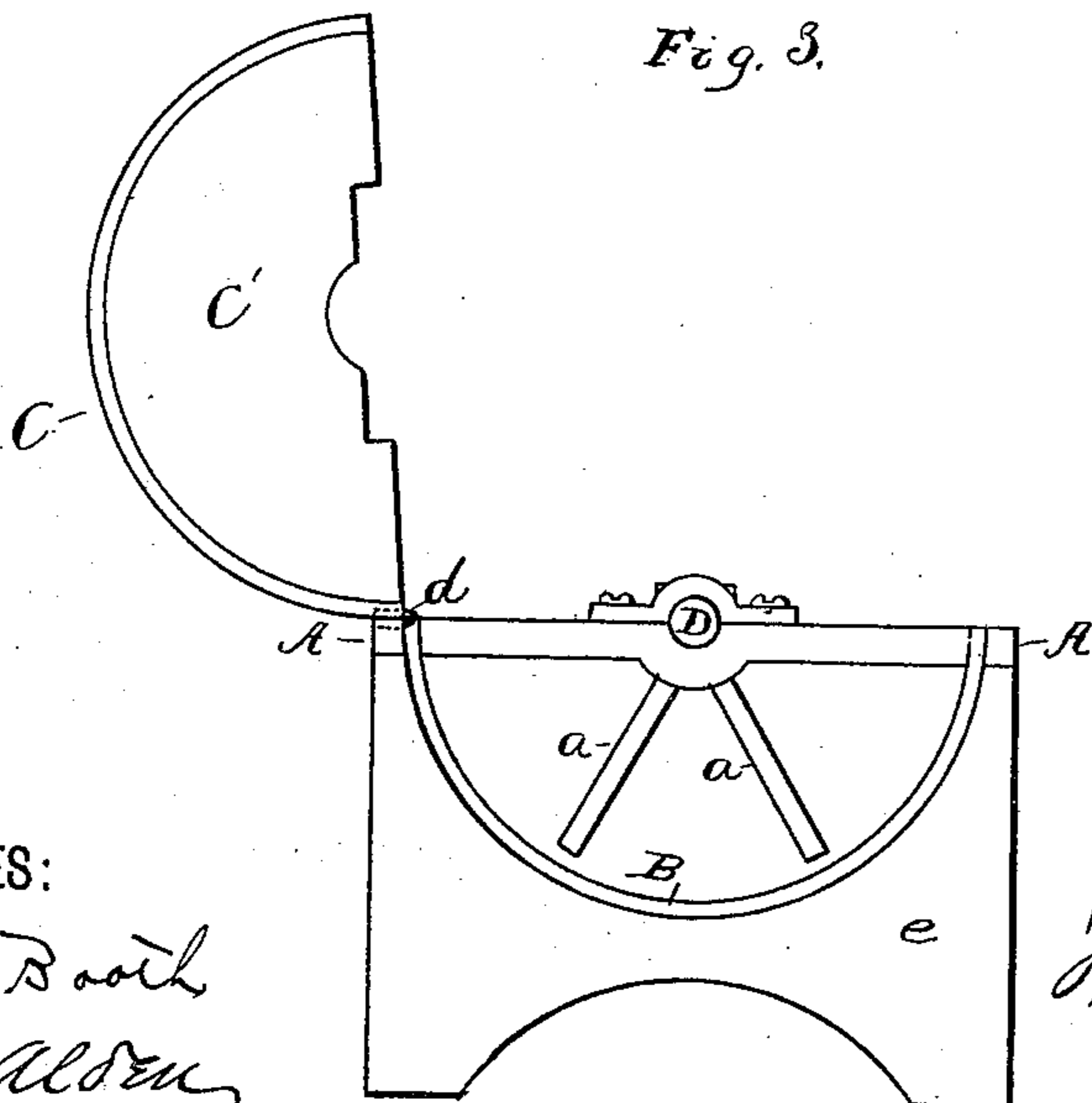


Fig. 3.



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(No Model.)

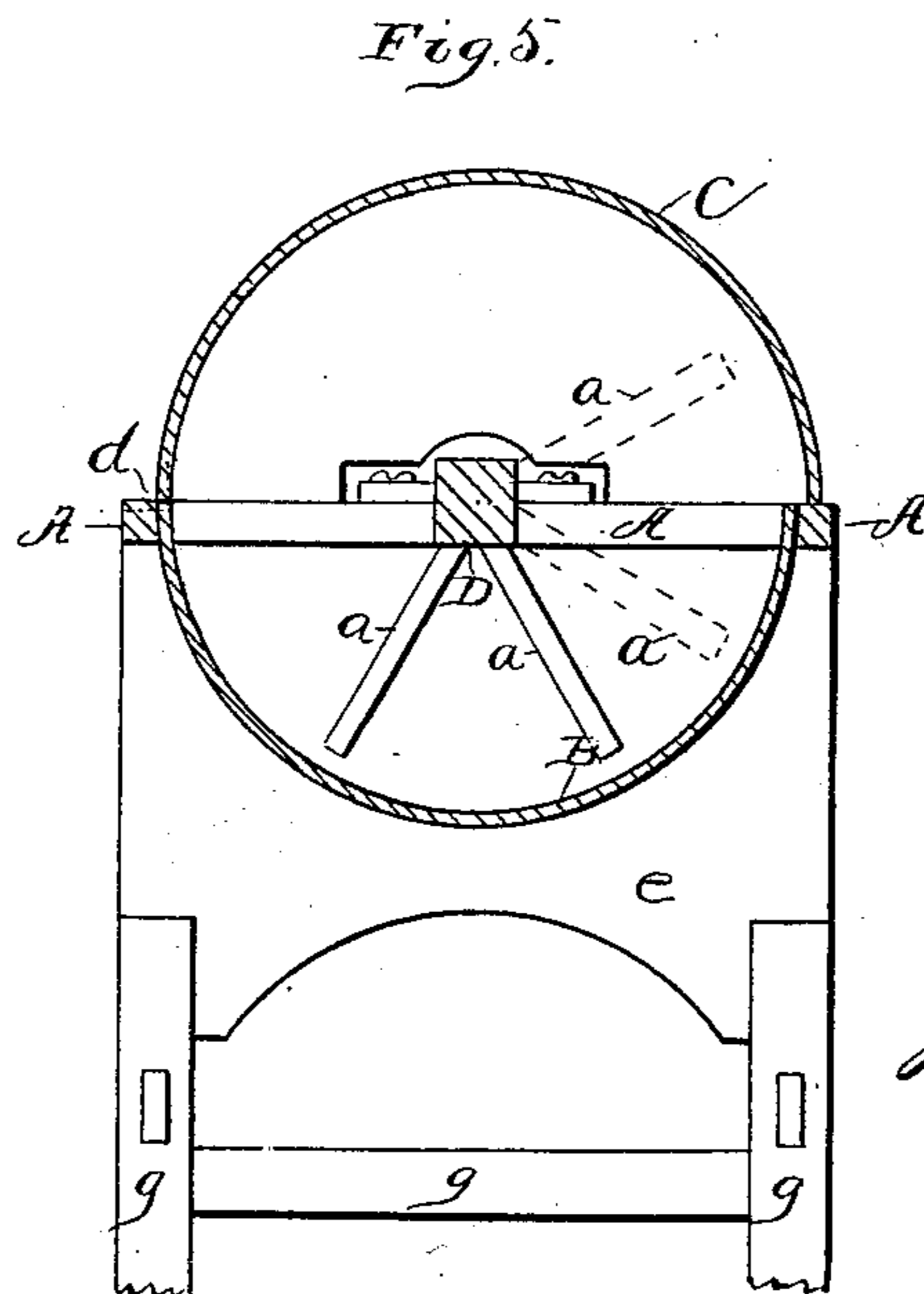
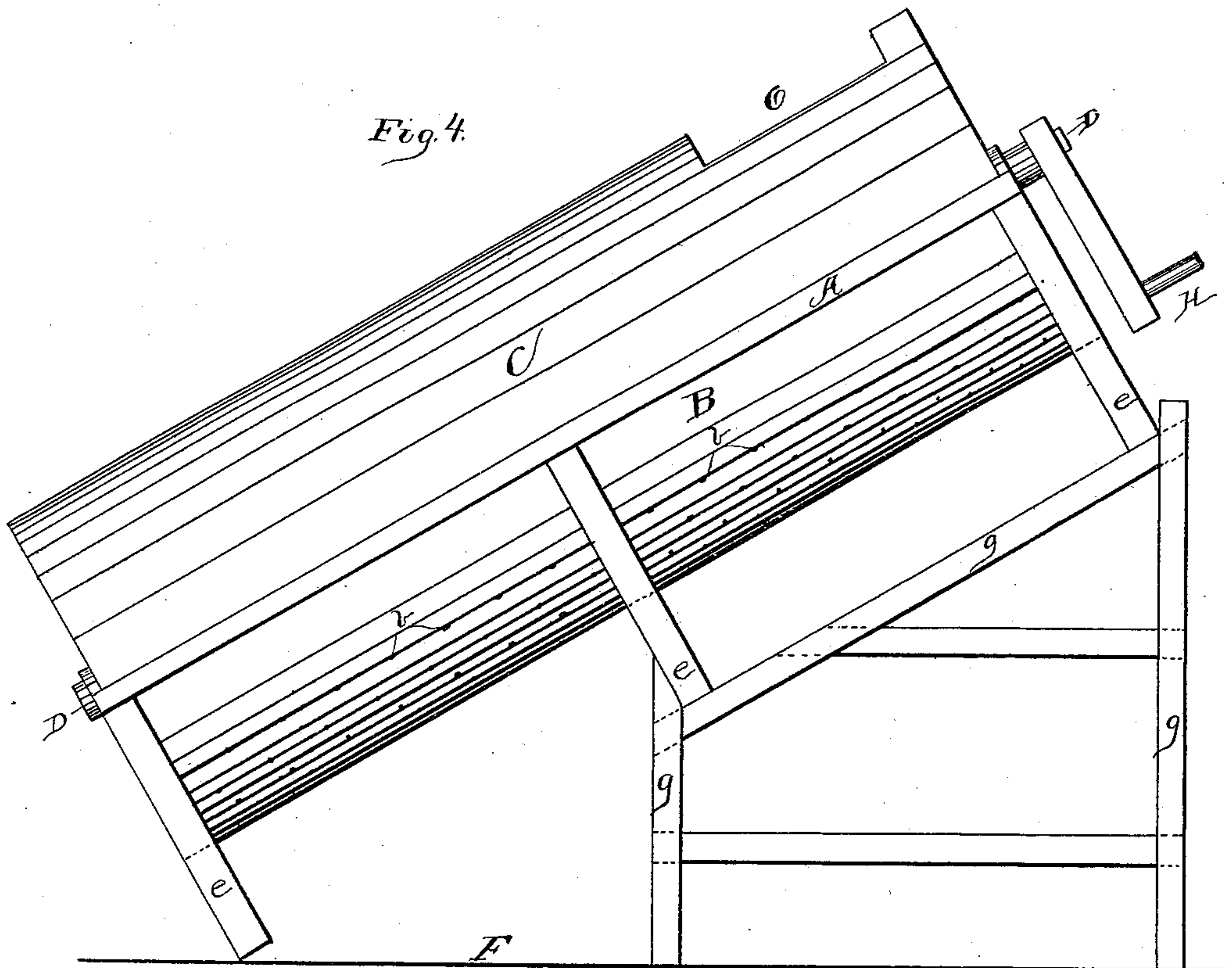
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UNITED STATES PATENT OFFICE.

HIRAM COLE, OF SANDY HILL, NEW YORK, ASSIGNOR TO ALLEN BROTHERS,
OF SAME PLACE.

FIBER-CLEANING SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 336,294, dated February 16, 1886.

Application filed May 29, 1885. Serial No. 167,040. (No model.)

To all whom it may concern:

Be it known that I, HIRAM COLE, a resident of the village of Sandy Hill, in the county of Washington and State of New York, have invented certain new and useful Improvements in Fiber-Cleaning Separators; and I do hereby declare that the following is a full, clear, and exact description of the invention, that 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 of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention relates to improvements in separator-machines for cleaning fibers.

The object of my invention is to provide a machine that will separate fibers, whether long or short, from foreign substances, whereby the fibers are cleaned for use in manufacturing paper or other stock.

My invention consists in providing a screen or perforated shell adapted to contain fibers with an agitator adapted to agitate the fibers by repeatedly lifting them from the perforated portion of the screen or shell, and permitting them to fall back thereon until the foreign substances have been separated from the fibers and passed out of the shell through the perforations therein.

Figure 1 of the drawings is a plan view of my improved separator, with a portion of the cover broken away to show the inner parts. Fig. 2 is a side elevation of the agitator. Fig. 3 is an end view of device shown in Fig. 1, having the cover raised. Fig. 4 is a side elevation of the machine supported in a longitudinally-inclined position. Fig. 5 is a cross-section taken at the broken line *xy* in Fig. 4.

The frame A is supported by uprights or legs *e*, and itself supports a semi-cylindrical perforated screen or shell, B, and the agitator D. The shell may be a wire screen or a thin shell of any desired material. The perforations or meshes *b* may be of any desired size or number.

Among the best and most expensive materials for making paper-stock are manila and jute, large quantities of which are wasted be-

cause of the imperfect methods and machines employed in cleaning the fibers. When air-currents are employed to separate and eject the dust and other foreign substances from the fibers, much of the latter, and especially short fibers, are carried away and wasted. By properly agitating the fibers in a screen or perforated shell I find that the foreign substances gravitate through the perforations, while very short fibers are separated and preserved in a condition fit for use.

The agitator D is adapted to rotate or partially rotate in suitable bearings, *i i*, located at the ends of the frame, and is provided with radial arms *a a* and crank-handle H at one end. The agitator-shaft occupies the position of the longitudinal axis of the semi-cylindrical shell, and the radial arms are adapted to be oscillated within the shell in planes right angular to their supporting-shaft.

The device may have a cover similar in shape to the shell, and hinged at one side to the shell or frame A.

The device may be operated while occupying a horizontal position, as shown in Fig. 1, or an inclined position, as shown in Fig. 4. When the fibers to be cleaned are long, I prefer to secure the apparatus in a nearly horizontal position, remove the agitator, and partially fill the shell with the fibers to be cleansed, distributing the fibers along the length of the shell; then replace the agitator in its bearings, the arms extending down among the fibers, let the cover down from the position shown in Fig. 3 to that shown in Fig. 1, and by means of the crank-handle partially rotate the shaft of the agitator back and forth, which gives the arms an oscillatory motion and thoroughly agitates the fibers by lifting them up, first on one side of the shell and then on the other, and letting them fall again directly upon the perforations, until all loose and foreign substances have left the fibers and passed through the perforations, leaving the fibers within the shell thoroughly cleaned and fit for use, after which the cover is lifted, the agitator removed, and unclean fiber substituted for that which has been cleaned, when the operation may be repeated; but when the fibers are comparatively short, or no longer than the

fibers which are usually wasted, I prefer to secure the agitator in an inclined position, as shown in Fig. 4, and provide the cover with a suitable opening, O, at the higher end, 5 through which the fibers are introduced with constant flow.

By oscillating the arms as before described, the fibers are not only separated and cleaned, as previously described, but they are continuously fed toward the lower and open end of the shell where they pass out cleaned, ready for use, and are removed by an endless belt or in any desired manner.

By inspection of the several figures of the 15 drawings it will be seen that each arm *a* occupies a position on one side of its supporting-shaft directly opposite the space between two arms on the opposite side of the shaft, and when an arm on one side has oscillated to the 20 highest point, as shown by the upper dotted lines in Fig. 5, any fibers falling from it will pass down upon and beneath the next arm below it, (also shown in dotted lines,) which latter arm passes to the highest point on the other 25 side of the shell, carrying with it the fibers just fallen from the arm next above it, from which the fibers fall to the next arm below, and so on until they are expelled from the shell at its lower end.

30 The explanation of the forward movement of the fibers from one end of the shell to the other is found in the fact that the arms oscillate in planes right angular to their supporting-shaft, as before stated, and that the shaft 35 is inclined, so that the lower side of the circu-

lar plane that would be described by a complete revolution of any given arm about the shaft is in about the same vertical plane as the upper side of the plane described by the arm next above it on the shaft, and the fibers, falling in a vertical line, pass from one arm to the arm next below it on the shaft, thus traveling from one arm to another at each oscillation of the arms. 40

It is obvious that steam or other power may be applied to operate the agitator; or it may be operated by grasping one of the radial arms with the hand, the crank-handle being entirely 45 dispensed with as an unnecessary element.

The legs and supports may be of any desired form or material. 50

When used in an inclined position, the cover may be fixed upon or form a part of the shell.

What I claim as new, and desire to secure by Letters Patent, is— 55

In fiber-cleaning separators, the combination, with a reticulated cylinder, semi-cylinder, or sieve, of a rotary or oscillating shaft, provided with arms, each of which is placed opposite to a space between two arms on the 60 opposite side, whereby the fiber will be tossed from arm to arm until dust and other foreign substances shall have separated therefrom, as described.

In testimony whereof I have hereunto set my hand this 15th day of April, 1885. 65

HIRAM COLE.

Witnesses:

DANIEL G. LLOYD,
WM. H. PETTIT.