

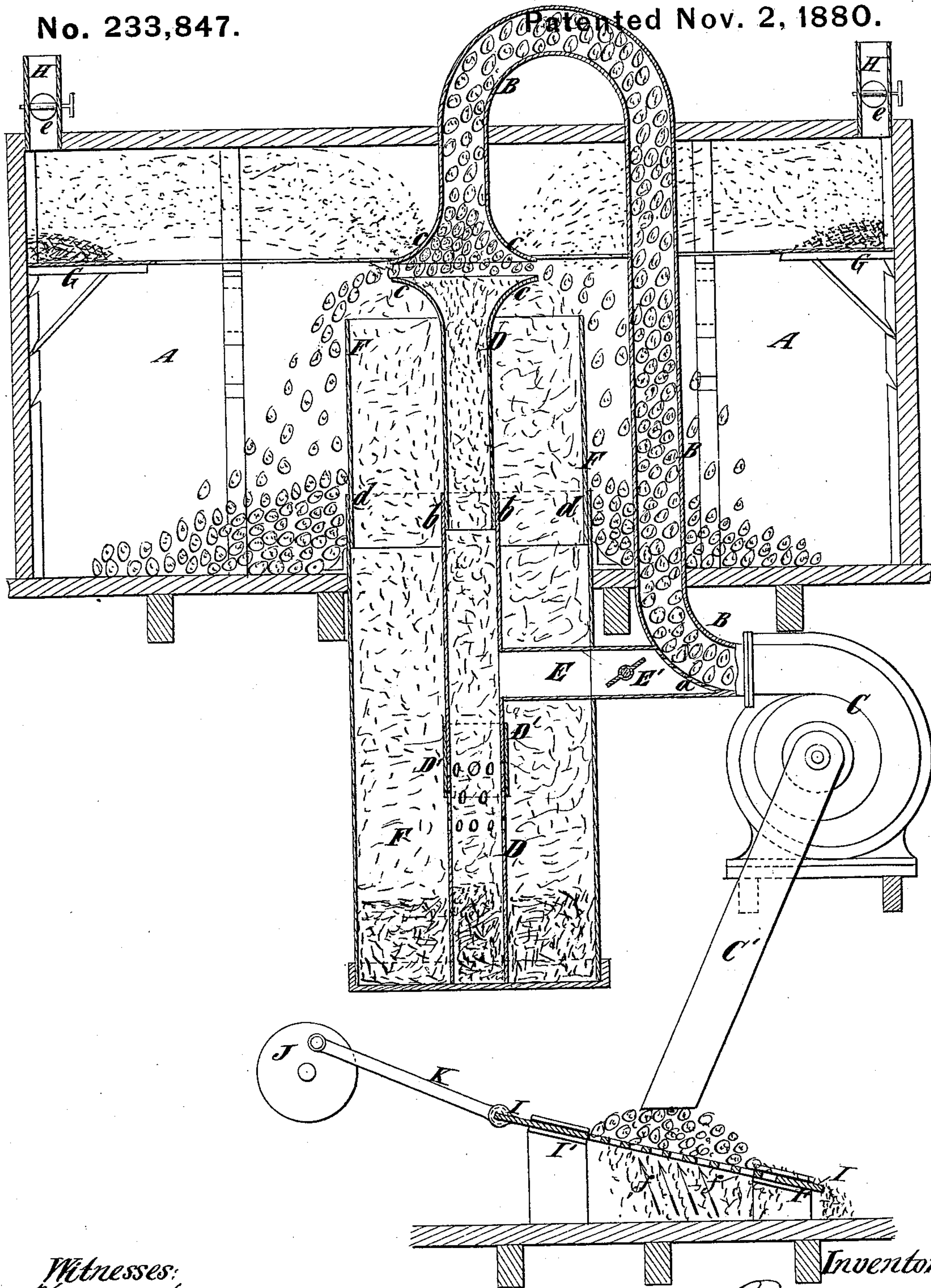
(No Model.)

W. P. GROOM.

Process of and Apparatus for Separating Trash from
Seed Cotton.

No. 233,847.

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Witnesses:
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UNITED STATES PATENT OFFICE.

WALLACE P. GROOM, OF BROOKLYN, NEW YORK.

PROCESS OF AND APPARATUS FOR SEPARATING TRASH FROM SEED-COTTON.

SPECIFICATION forming part of Letters Patent No. 233,847, dated November 2, 1880.

Application filed April 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, WALLACE P. GROOM, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Process of and Apparatus for Separating Trash from Seed-Cotton, of which the following is a specification.

Leaves, hulls, and other trash which is mixed with seed-cotton, especially during the picking, are broken and cut up in the process of ginning, and afterward the fibers of cotton cling to the small particles of trash, which are so light as to make it very difficult to separate them. Such separation has indeed been heretofore practically impossible, and cotton cloth is frequently filled with minute specks of such waste matters or trash, thus greatly damaging it and reducing its market value.

The object of my invention is to provide means whereby leaves, hulls, and other trash may be separated from the cotton before it is ginned. Separation before ginning may be readily effected, as the fibers of cotton adhere firmly to the seed and are so weighted thereby as to keep them in a controllable condition.

My improved process consists in subjecting seed-cotton to the action of opposed currents of air, whereby it is temporarily suspended in the air and is caused to move horizontally outward by the spreading of the air-currents, while the heavier trash falls downward and the lighter is carried off by the air-currents to a position beyond that at which the seed-cotton falls.

My invention further consists in a novel arrangement of pipes for the air-currents, and in a novel arrangement of adjustable devices for catching and retaining the lighter materials and trash as they are floated off by the air-currents.

It also consists in certain novel details of construction whereby the several parts of my apparatus may be adjusted so as to properly separate light trash of different specific gravities from the seed-cotton.

The accompanying drawing represents a vertical section of an apparatus for treating seed-cotton according to my invention.

A designates a room or closed chamber, and B a pipe through which the air-blast carrying

the cotton is introduced into the upper part of said room or chamber.

C designates a blower by which the blast may be produced, and the seed-cotton is drawn in through a suction-pipe, C', by the action of the blower.

D designates an upright pipe arranged concentrically with the mouth of the pipe B, and E designates a pipe leading from the air-pipe B to said upright pipe D. The pipe E is a branch of the pipe B, and at its junction with said pipe is provided with a perforated partition-plate, *a*, which permits air to pass freely through it, while it prevents the passage of the cotton, and the said branch pipe is provided with a valve, E', for regulating the passage of air through it and equalizing or adjusting the force of the two currents from the pipes B and D.

It will be observed that the pipe E joins the pipe D at approximately a right angle, so that an eddy is created, the operation of which will be explained hereinafter.

In the pipe D is a slip-joint, *b*, and both the pipes B and D are provided with trumpet-shaped mouth *c*, the distance between which may be varied by the slip-joint *b* in the pipe D.

F designates a pipe or cylinder erected around the upright pipe D and concentric therewith, and *d* designates a slip-joint in the pipe F, to permit it to be adjusted so as to bring its mouth into proper position relatively to the trumpet-mouth *c* of the pipe D, it being preferably lower than said trumpet-mouth, and the pipe F being larger in diameter than the outer edge of said trumpet-mouth. In the pipe D is a valve for admitting air from said pipe into the pipe F. As here represented, this valve is formed by perforating the pipe D and employing a sleeve, D', adjustable along the pipe, to cover or uncover the holes or perforations therein. It will be seen that the said valve is below the point at which the pipe E enters the pipe D, and an eddy is thus formed which allows dirt or sand carried by the air through the pipe E to be deposited at the bottom of the pipe D.

The operation of my apparatus is as follows: The cotton carried through the pipe B is temporarily suspended between the two trumpet-mouths *c c* by the opposed currents of air,

and by the spreading of such currents is impelled or floated outward in a lateral direction, some of the heavy trash falling downward through the pipe D against the force of the air-current and collecting at the lower end thereof. The air-current, passing upward through the cylinder F around the pipe D, is made sufficiently strong to prevent the seed-cotton from falling; but trash heavier than cotton falls downward also into this cylinder and collects at the lower end thereof.

The upper edge of the cylinder F may be placed so much lower than the trumpet-mouth of the pipe D that a line drawn through the edges of the two would make an angle of about forty-five degrees with a horizontal plane; but this angle may be increased or diminished by means of the slip-joint *d*, and the air-current passing upward through the cylinder F increased or diminished by adjusting the sleeve D', so that the cotton passing outward from the trumpet-mouth *c* of the pipe D will escape the edge of the cylinder F and fall to the floor outside of it, while the heavy trash will not escape but fall into the cylinder. The leaves and such other trash as may be lighter than the seed-cotton are floated or carried laterally by the outward currents of air from the trumpet-mouths *c c*, and in order to prevent their falling with the seed-cotton I place along the sides of the room or chamber ledges or shelves G, upon which such leaves and light trash fall and collect. These ledges or shelves are preferably adapted to be adjusted vertically and also laterally, so as to bring them at a proper height and width to catch the trash.

In the upper part of the room or chamber, and above the ledges or shelves G, are outlets H for the air, which may be controlled by means of valves *e*. The upward tendency of the air to reach these outlets aids in carrying the light trash upward and outward to the shelves or ledges and prevents eddies that might otherwise carry the light trash back on to the cotton.

In order to provide for separating some of the hulls or other heavy trash from the seed-cotton before it is taken up into the suction-pipe of the blower, I may employ a perforated shaking device, I, arranged at a slight inclination below the mouth of the suction-pipe, and upon this the cotton may be placed, and in connection with such a device I prefer to employ an air-blast impinging upon its under side at a slight inclination from a vertical line toward the higher side of said device, as shown by the arrows *f*.

The device I may be supported in guides I', which permit of its reciprocating, and a movement may be imparted to it by any means—as, for example, a crank, J, and connecting-rod K.

The reciprocating or shaking motion of the device tends to move the heavier trash contained in the cotton toward its lower edge,

and the blast from underneath raises the cotton so that it may be readily caught by the air entering the suction-pipe.

By my invention I provide a convenient means whereby both heavy and light trash may be cheaply and quickly separated from seed-cotton before ginning it, thereby greatly improving the quality of the cloth produced and enhancing its market value.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The process of subjecting seed-cotton to the action of opposed upward and downward air-currents, whereby it is temporarily suspended in the air and is caused to move horizontally outward by the spreading of said currents, while the heavier trash falls downward and the lighter is carried off to a position beyond or above that at which the cotton falls, substantially as specified.

2. The combination of two pipes having concentric mouths arranged opposite each other and a blower for producing the passage of air and cotton through one pipe and a current of air through the other pipe, substantially as and for the purpose specified.

3. The combination of two pipes having concentric trumpet-shaped mouths arranged opposite each other, a slip-joint in one of said pipes, whereby it may be adjusted toward or from the other, and a blower for producing the passage of air and cotton through one pipe and a current of air through the other pipe, substantially as and for the purpose specified.

4. The combination of two pipes having concentric trumpet-mouths arranged opposite each other, a blower for producing a current of air through said pipes, a pipe or cylinder arranged outside one of said pipes, and a valve for admitting air from the inner pipe into the outer pipe, substantially as and for the purpose specified.

5. The combination of the pipes B and D, having trumpet-mouths *c c*, the branch pipe E, entering the pipe D at approximately a right angle, the outer pipe or cylinder, F, and the valve D', arranged below the point at which the pipe E enters the pipe D, substantially as specified.

6. The combination of a room or chamber, two pipes having trumpet-mouths arranged opposite each other in said chamber, a blower for producing the passage of air and cotton through one pipe and a current of air through the other pipe, and shelves or ledges arranged upon the walls or sides of said room or chamber, substantially as and for the purpose specified.

7. The combination of the room or chamber, the two pipes having concentric trumpet-mouths arranged opposite each other in said room or chamber, a blower for producing the passage of air and cotton through one pipe and a current of air through the other pipe, shelves or ledges arranged upon the walls or

sides of said room, and outlets for air arranged above said shelves or ledges, substantially as specified.

8. The combination, with the pipes B and
5 D, having concentric mouths arranged opposite each other, of the blower C for producing opposed currents of air in said pipes, the suc-

tion-pipe C', and the inclined perforated shaking device I, arranged substantially as and for the purpose specified.

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Witnesses:

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