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PATENTED JULY 9, 1907.

W. K. DANA.

PICKER NOZZLE FOR PNEUMATIC COTTON PICKING MACHINES.

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Fig. 1.

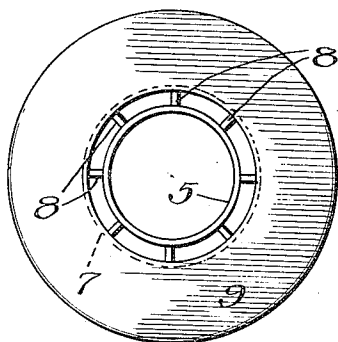


Fig. 3.

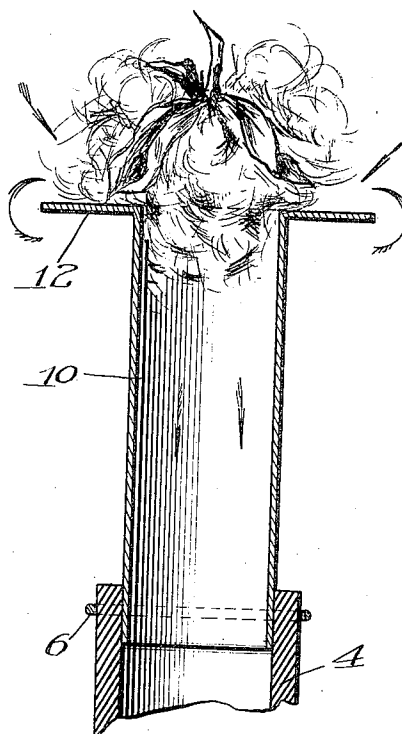
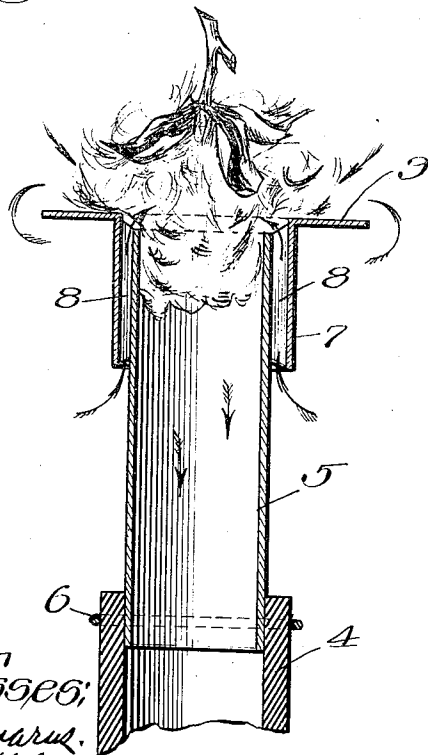


Fig. 2.



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PICKER-NOZZLE FOR PNEUMATIC COTTON-PICKING MACHINES.

No. 859,204.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WOODBURY K. DANA, a citizen of the United States, residing at Westbrook, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Picker-Nozzles for Pneumatic Cotton-Picking Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in the nozzles in pneumatic cotton-picking machines, and, generally speaking, its object is to provide a new and improved nozzle by which the cotton will be more certainly detached from the husk by the inrush of air into the nozzle.

As is well known, a number of pneumatic cotton-picking machines have been devised, such, for instance, as is shown in Letters Patent to me No. 564,974 of August 4, 1896.

Generally speaking, these cotton pickers consist of a chamber, in which a vacuum or partial vacuum is produced by an exhaust fan suitably placed, or other appropriate mechanism, and from which chamber lead one or more flexible tubes. One of these machines being placed in the field and the fan or other vacuum-producing mechanism being set into operation, an inblast of air through the tubes into the chamber is caused by the production of a partial vacuum in said chamber. It is the design in their operation that when the end of one of these devices is presented to a boll of cotton, the inrush of air striking against the cotton boll should detach the cotton from the husk and carry it through the tube into the chamber and either deposit it there or carry it thence to a suitable receptacle, as might be desired.

Machines of this character are so common in the art that it is believed it is not necessary to illustrate or further describe them in so far as the purposes of the present invention are concerned. Such machines, however, in which merely the end of the tube is presented to the cotton boll do not work satisfactorily because of the well-known character of the boll of cotton and the relations between the cotton and the husk. The husk is so formed as to tend to deflect away from the cotton any air striking upon it directly and to prevent the separation of the cotton from the husk by the wind; and this prevents the certain separation of the cotton from the husk, as has been said, by the presentation thereto of the ordinary nozzle of the pneumatic picker.

With this fact in view, a number of nozzles have been devised of various structures in which devices have been employed which would engage the cotton and separate it from the husk by a manual operation after which the cotton would be drawn into the tube and into the chamber by the inrushing air.

It is the object of my invention to provide a new and improved form of nozzle which by directing the current of air upon the cotton boll in different directions as the air rushes into the tube will overcome this difficulty and detach the cotton from the boll. I accomplish this object as illustrated in the drawings and hereinafter described. That which I believe to be new will be set forth in the claims.

In the accompanying drawings,—Figure 1 is a top view of my improved nozzle; Fig. 2 is a longitudinal section of the nozzle and a portion of the flexible tube; and Fig. 3 is a modification, being a longitudinal section of the nozzle.

Referring to the drawings,—4 indicates a flexible tube, which is adapted to be connected with a pneumatic cotton-picking machine of the class that I have above described. As these machines are well known, and as any approved form may be used, and, furthermore, as the vacuum chamber and fan, or other devices form no part of my present invention, it is believed that it is not necessary to show or describe them here. It is enough to say that the tube may be attached to any appropriate form of vacuum chamber cotton picker.

5 indicates an inner tube preferably formed of metal, which is inserted into the tube 4 and secured thereto by binding wire 6, or in any other appropriate way.

7 indicates a nozzle, which is of somewhat larger internal diameter than the external diameter of the inner tube 5, and which is provided on its interior with a series of ridges 8 secured thereto and whose inner edges bear upon the exterior of the tube 5 so as to hold the outer tube or nozzle 7 in position leaving a peripheral space between the inner tube and the outer tube. The outer tube 7 is preferably slid upon the end of the inner tube 5 so that it may be adjusted thereon and is preferably placed so that its outer or engaging end is somewhat beyond the outer end of the inner tube 5.

9 indicates a peripheral flange integral with or in any appropriate manner secured to the outer or engaging end of the outer tube or nozzle 7. When this nozzle is applied to a boll of cotton, as is indicated in Fig. 2, the air which enters the tube 5 will rush in from a number of directions, as is indicated generally by arrows in Fig. 2. The air will rush in not only directly in line with the tube but at an angle thereto; a current of air being deflected by the flange will tend to rush around the flange and strike directly upon the boll; another current will enter between the inner and outer tubes, and, meeting the currents from the other directions, will bear directly upon the boll of cotton, as indicated by the arrows in Fig. 2, thus insuring the separation of the cotton boll from the husk by the inrushing of the air from the various directions.

In Fig. 3 I have shown a modified form of my im-

proved device, in which 4 indicates the flexible tube. 10 indicates a nozzle adapted to enter the outer end of the flexible tube 4 and secured therein in any appropriate manner. 12 indicates a circular peripheral flange formed upon or secured to the outer end of the engaging tube 10. When the outer or engaging end of this nozzle is presented to the cotton boll, as shown in Fig. 2, the various currents of air, as the air rushes into the tube, will enter from various directions, being deflected and turned by the peripheral flange 12 so as to strike upon the boll of cotton in various directions and insure its separation from the husk.

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

- 15 1. A cotton-picker, consisting of an inner tube, and an outer tube at the free end of the inner tube and of somewhat greater diameter leaving a space between said tubes and having at its engaging end a radial flange.
- 20 2. In a cotton picker, the combination with suction mechanism, of a nozzle adapted to engage a boll of cotton at its free end and having at its engaging end a thin

radially-projecting flange adapted to deflect currents of air striking it and direct them laterally against a boll of cotton at the engaging end of said nozzle, substantially as described.

3. A picker-nozzle for pneumatic cotton-pickers, consisting of an inner tube, and an outer tube mounted thereon of somewhat greater diameter than the inner tube and projecting a short distance beyond it and having at its engaging end a radial flange.

4. In a picker-nozzle for pneumatic cotton-pickers, the combination with an inner tube, an outer tube of somewhat greater diameter mounted thereon to leave a space between said tubes, and a radial flange upon the engaging end of said outer tube.

5. In a picker-nozzle for pneumatic cotton-pickers, the combination with an inner tube, an outer tube mounted thereon with space between the outer surface of said inner tube and the inner surface of said outer tube, said outer tube projecting somewhat beyond the end of the inner tube and being provided at its engaging end with a radial flange, substantially as described.

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