

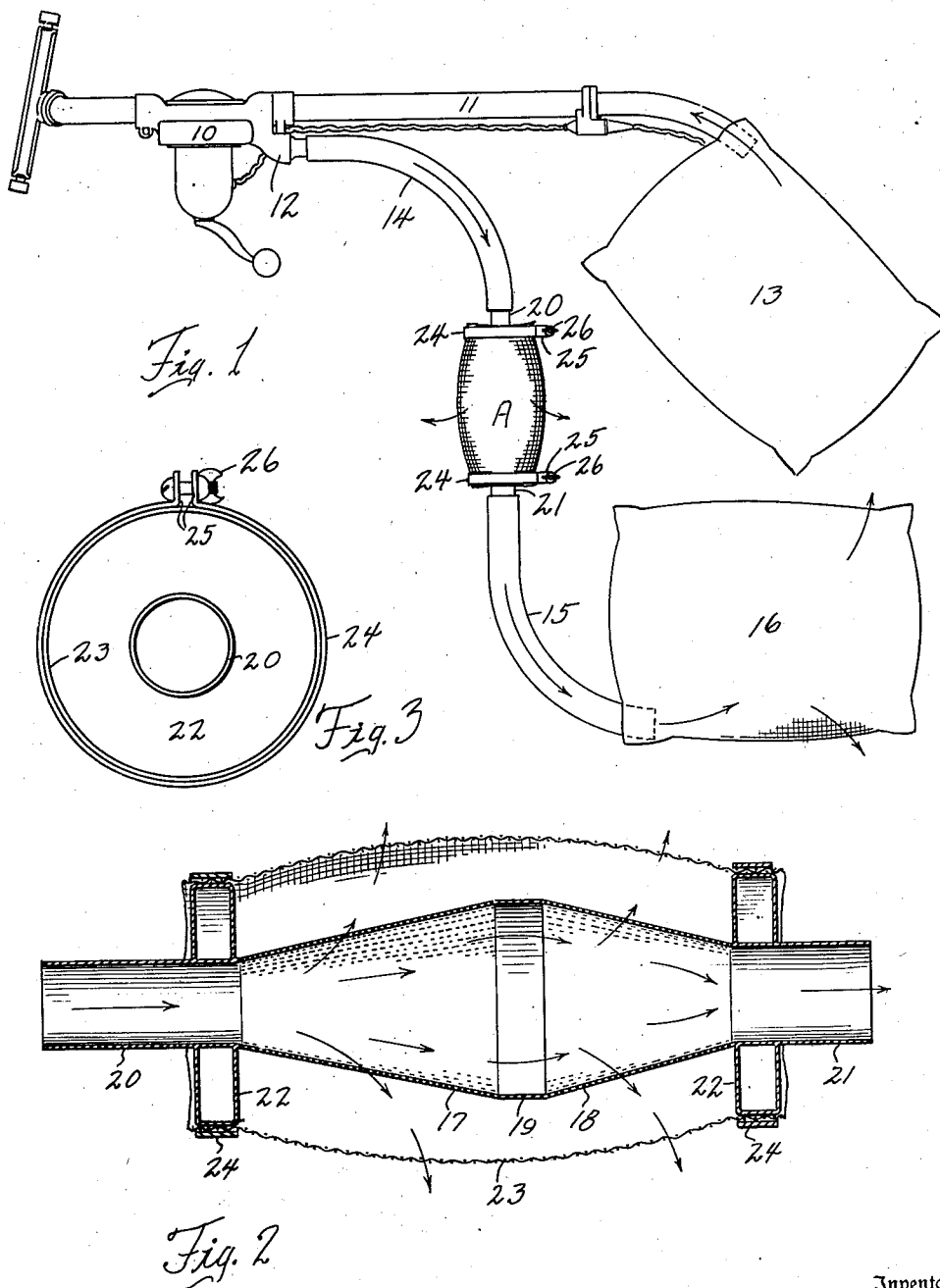
March 3, 1936.

T. A. JOHNSON

2,032,579

FEATHER RENOVATING

Filed June 6, 1933



Inventor

By

Thomas A. Johnson
Lynn H. Latta

Attorney

UNITED STATES PATENT OFFICE

2,032,579

FEATHER RENOVATING

Thomas A. Johnson, Chicago, Ill., assignor to Air-Way Electric Appliance Corporation, Toledo, Ohio, a corporation of Delaware

Application June 6, 1933, Serial No. 674,599

9 Claims. (Cl. 209—22)

My invention relates to the art of feather renovating and has for its object to provide a novel method by which feathers may be renovated and cleaned during transfer under pneumatic power from one feather pillow or tick to another.

The invention contemplates the withdrawal by suction of the feathers from one tick, blowing them into another, and removing the dust and foreign material from the feathers at a point intermediate the receiving tick and the blower device which creates the suction and blowing effects. The idea of employment of this method is not claimed broadly as being new, but certain difficulties have heretofore blocked the successful use of such a method.

It has not been known how to successfully extract the dust and foreign material efficiently enough to provide a practical and successful method of renovating.

The present invention solves the difficulty by dividing or forking the air stream delivered from the blower device, into two air currents, one of which is utilized to carry the foreign material through a screen into a porous dust collecting chamber, from which it dissipates into the atmosphere, and the other of which carries the feathers into the receiving tick, from which it in turn is dissipated into the atmosphere.

A feature of the invention is the relating of the porosities of the screen and dust collector to that of the receiving tick so as to secure a fairly definite pressure differential through the separator, such as to give maximum cleaning efficiency and yet to maintain a sufficient flow of air into the receiving tick to assure proper delivery of the feathers.

Another object is to provide a novel method in which the feathers are fluffed and rolled in the region where the foreign material is extracted, so as to allow the air currents to exert maximum cleaning effect.

The invention further contemplates the provision of a novel, simple, inexpensive separator, attachable to a standard domestic vacuum cleaner, for carrying out the above method.

With these and other objects in view my invention consists in the combination and construction and arrangement of the various parts thereof, whereby the objects contemplated are attained, as more fully set forth in the accompanying specification, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Fig. 1 is a plan view of an apparatus by means of which the invention may be carried out,

Fig. 2 is a sectional view through the separator. Fig. 3 is an end view of the same.

In the practice of the invention, any suction or blower device, such as a common household vacuum cleaner, may be employed. In the drawing I have shown a standard type of cleaner embodying a suction-blower unit 10, a hollow suction handle 11, communicating with a suction intake to the unit 10, and a discharge outlet 12. The handle 11 is inserted in pillow 13, from which it may withdraw the feathers, and a discharge conduit 14 is coupled to the outlet 12.

The separator A is coupled at one end to the discharge conduit 14 and at its other end to a delivery conduit 15, through which the cleaned feathers are carried into the receiving tick 16.

The separator includes a centrally enlarged chamber through which the feathers travel from end to end, such chamber comprising the two conical screen sections 17 and 18, preferably constructed of perforated sheet metal, and a connecting ring 19, which is impervious.

The ends of the chamber form coupling necks 20, 21, for connection to the conduits 14, 15. Cylindrical collars 22 are secured to the necks 21. Between the collars 22 is carried the dust collector casing 23, a cloth tube, open at both ends, and preferably of larger diameter intermediate its ends than at its ends. At its ends it receives the collars 22, and is clamped thereagainst by constricting bands 24. The ends of the bands 24 terminate in spaced ears 25 which are connected by a bolt and thumb nut 26.

In the operation of the invention, the suction unit 10 sucks the feathers from the tick 13, passes them through its impeller (not shown) in which they are agitated and the dust and foreign material loosened, and thence blows them into the separator A.

The feathers enter the separator A through the constricted neck 20. As they pass through the screen chamber, a portion of the air current will be diverted through the screens 17, 18, and through the casing 23, and the feathers will be rolled against the sides of the screens by the expanding air currents, and will be pulled apart or fluffed by these air currents as they move toward the enlarged central region of the screen chamber.

This combination rolling and spreading movement will work the dust and foreign material out of the feathers, into the air currents, which will carry such foreign material through the screens into the collecting casing 23, in which it will be intercepted, the air currents dissipating through

the meshes of the casing. The separator and conducting tubes are constructed so that the path of the feathers therethrough will be continuously a sweeping one, i. e., either on a substantially straight line (as along the axis of the separator) or on a broad curve, (as may be assumed by the flexible tubes 14, 15) without any sharp deflection or obstruction at any point along the line which could cause the feathers to pile up and clog the air passage.

The impervious ring 19 creates a temporary dead air space in which there are no outwardly moving currents. This temporary cessation of the outward pull against the feathers appears to assist in the fluffing and agitating of the feathers.

The back pressure built up by the screens and casing combined, will be sufficient to cause a portion of the air stream to continue on through the conduit 15 into the tick 16, carrying the cleaned feathers into the tick. The porosity of the separator is preferably such as to achieve a maximum pressure differential through the separator, without sacrificing efficiency in the delivery of feathers from the separator. This is achieved by proper relation to the porosity of an average tick.

The casing 23 may be removed for disposal of the collected refuse.

I claim as my invention:

1. In a feather renovating system, wherein feathers are transferred from one tick of fabric material to another through a connecting tube and blower for exhausting from one tick and discharging into the other, the improvement which comprises a separator, including an elongated tubular chamber of substantially rigid porous material the respective ends of which are connected to sections of said tube, collars supported on and encircling the end regions of said chamber and maintained in spaced relation by said chamber, and a tubular collecting casing of limp porous material, surrounding said chamber, its respective end regions receiving and secured to said collars, said chamber being in the form of two conical sections joined at their larger ends and terminating at their smaller, remote ends, in cylindrical neck portions for attachment to said tubes.

2. In a feather renovating system, wherein feathers are transferred from one tick of fabric material to another through a connecting tube and blower for exhausting from one tick and discharging into the other, the improvement which comprises a separator, including an elongated tubular chamber of substantially rigid porous material the respective ends of which are connected to sections of said tube, collars supported on and encircling the end regions of said chamber and maintained in spaced relation by said chamber, and a tubular collecting casing of limp porous material, surrounding said chamber, its respective end regions receiving and secured to said collars, said chamber being in the form of two conical sections joined at their larger ends and terminating at their smaller, remote ends, in cylindrical neck portions for attachment to said tubes, said collars being secured to said neck portions.

3. The method of renovating feathers which comprises blowing them under pressure into a separator; carrying them through the separator in an unobstructed sweeping path; reducing the pressure of the air stream as it passes through the separator by allowing part of the air to filter through the separator into the atmosphere;

carrying the dust out of the feathers in such escaping air; collecting the dust which thus escapes from the feathers; and thence passing the reduced air stream and the feathers carried thereby, out of the separator and into a receiving tick.

4. In a feather renovating system wherein feathers are transferred from one tick to another through a blower; a separator comprising an elongated tubular chamber of form retaining material through which the feathers are blown, said chamber being formed at one end for attachment to means for conducting feathers to it from the blower, having at its other end means for delivering feathers to a receiving tick, said chamber forming an enlarged, substantially aligned continuation of said means for conducting and delivery, and having a perforate portion in its side wall; and a tubular collecting casing surrounding said chamber, said casing having an air pervious portion and its end regions encircling and secured to the end regions of the chamber.

5. In a feather renovating system, a separator comprising a tubular chamber having a perforate side wall portion and an air pervious dust collecting casing supported on said chamber and communicating with said perforate portion; a blower for forcing the feathers under pressure into said chamber, means attached to the respective ends of said chamber, forming substantially aligned continuations thereof, for conducting the feathers to the chamber from the blower and for delivering the feathers to a receiving tick; said perforate portion and casing allowing the pressure to be partially reduced in said chamber by the escaping of part of the air through said perforate portion and casing, said escaping air carrying the dust through said perforate portion into the collecting casing, and the remainder of the air carrying the feathers into the receiving tick.

6. In a feather renovating system, a separator comprising a tubular chamber having a perforate side wall portion and an air pervious dust collecting casing supported on said chamber and communicating with said perforate portion; a blower for forcing the feathers under pressure into said chamber, means attached to the respective ends of said chamber, forming substantially aligned continuations thereof, for conducting the feathers to the chamber from the blower and for delivering the feathers to a receiving tick; said perforate portion and casing allowing the pressure to be partially reduced in said chamber by the escaping of part of the air through said perforate portion and casing, said escaping air carrying the dust through said perforate portion into the collecting casing, and the remainder of the air carrying the feathers into the receiving tick, said chamber being enlarged intermediate its ends and said perforate portion being in the enlarged region, whereby the feathers are caused to fluff by the reduction of air pressure.

7. In a feather renovating system wherein feathers are transferred from one tick to another through a blower, a separator comprising an elongated tubular chamber of substantially rigid material through which the feathers are blown under pressure, said chamber having at its respective ends means for conducting feathers to it from the blower and for delivering the feathers to a receiving tick, both forming substantially aligned continuations of the chamber, said chamber having a perforate portion in its side wall and a tubular collecting casing of air pervious

material surrounding said chamber, its end regions encircling and secured to the end regions of the chamber, said chamber comprising two conical sections joined at their larger ends.

5 8. In a feather renovating system wherein feathers are transferred from one tick to another through a blower; a separator comprising an elongated tubular chamber of perforated sheet metal through which the feathers are blown
10 under pressure, said chamber having at its respective ends means for conducting feathers to it from the blower and for delivering the feathers to a receiving tick, both forming substantially aligned continuations of the chamber, and a tubular collecting casing of limp air pervious material surrounding said chamber, its end regions
15 encircling and secured to the end regions of the chamber whereby it is supported in extended position.

9. In a feather renovating system wherein feathers are transferred from one tick to another through a blower and conducting tube; a separator comprising an elongated tubular chamber of substantially rigid material through which
5 the feathers are blown under pressure, said chamber having at its respective ends means for conducting feathers to it from the blower and for delivering the feathers to a receiving tick, both forming substantially aligned continuations of the
10 chamber, said chamber having a perforate portion in its side wall, collars supported on and encircling the end regions of said chamber and maintained in spaced relation by said chamber, and a tubular collecting casing of air pervious
15 material, surrounding said chamber, its respective end regions receiving and detachably secured to said collars.

THOMAS A. JOHNSON.