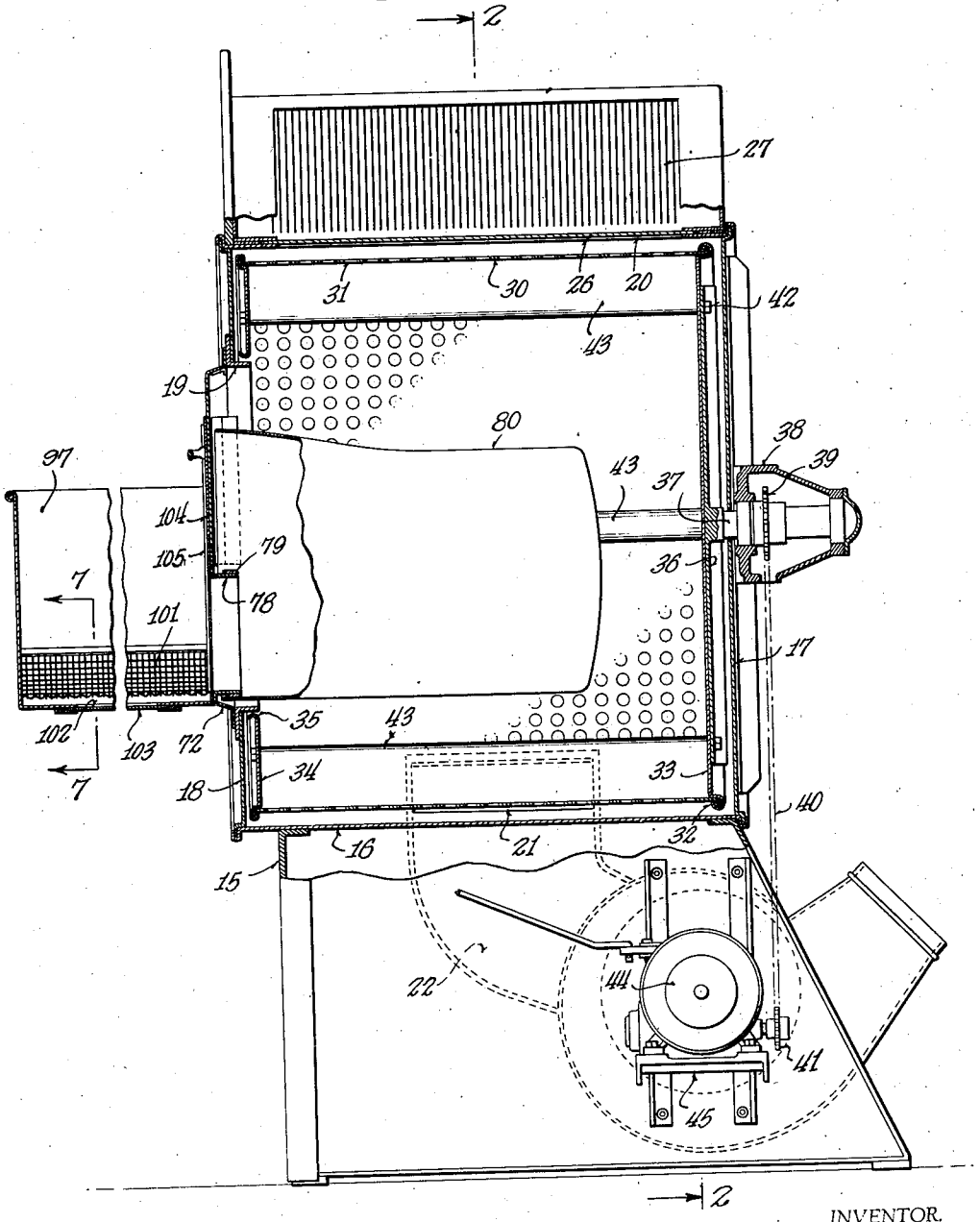
July 18, 1944. J. O. HUEBSCH, JR 2,353,827

METHOD AND APPARATUS FOR RENOVATING PILLOWS

Filed June 23, 1941 5 Sheets-Sheet 1

Fig. 1



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BY

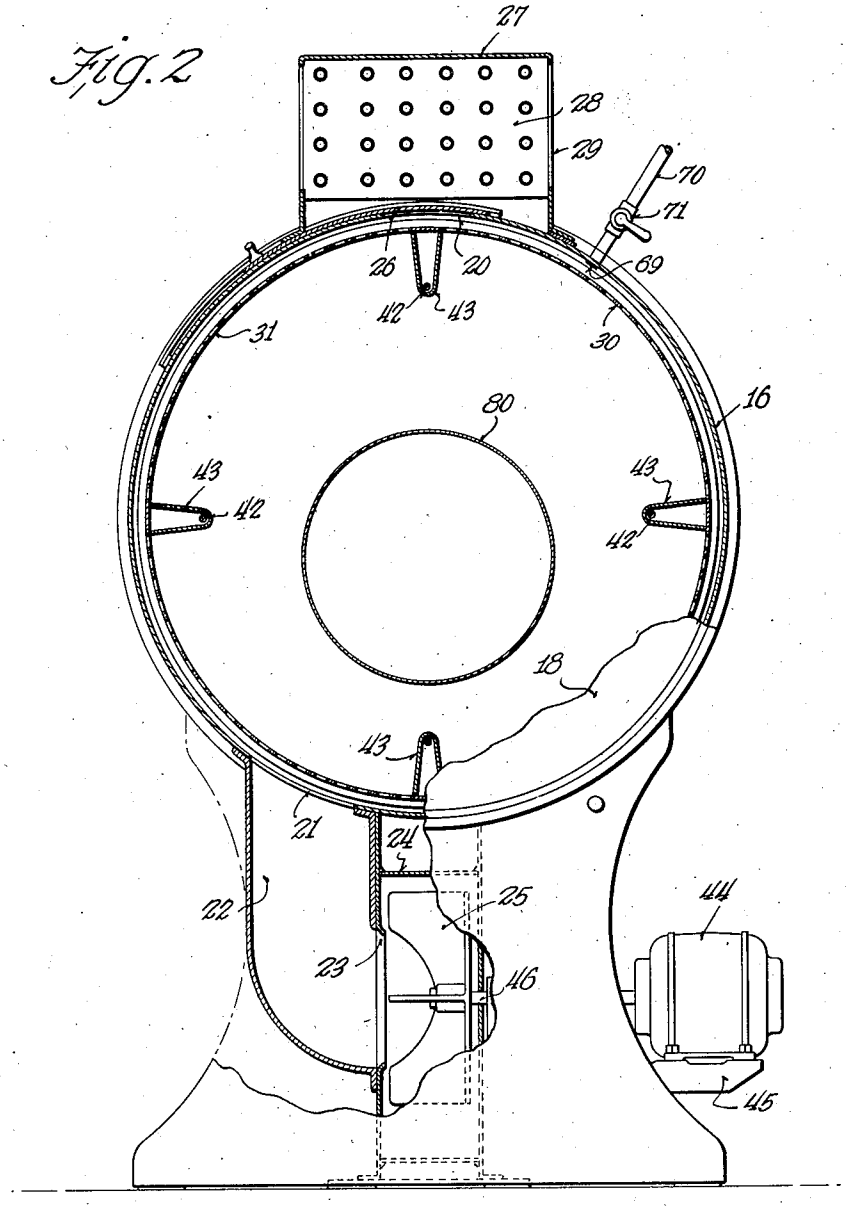
Marks & French
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METHOD AND APPARATUS FOR RENOVATING PILLOWS

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Fig. 2



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METHOD AND APPARATUS FOR RENOVATING PILLOWS

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Fig. 3

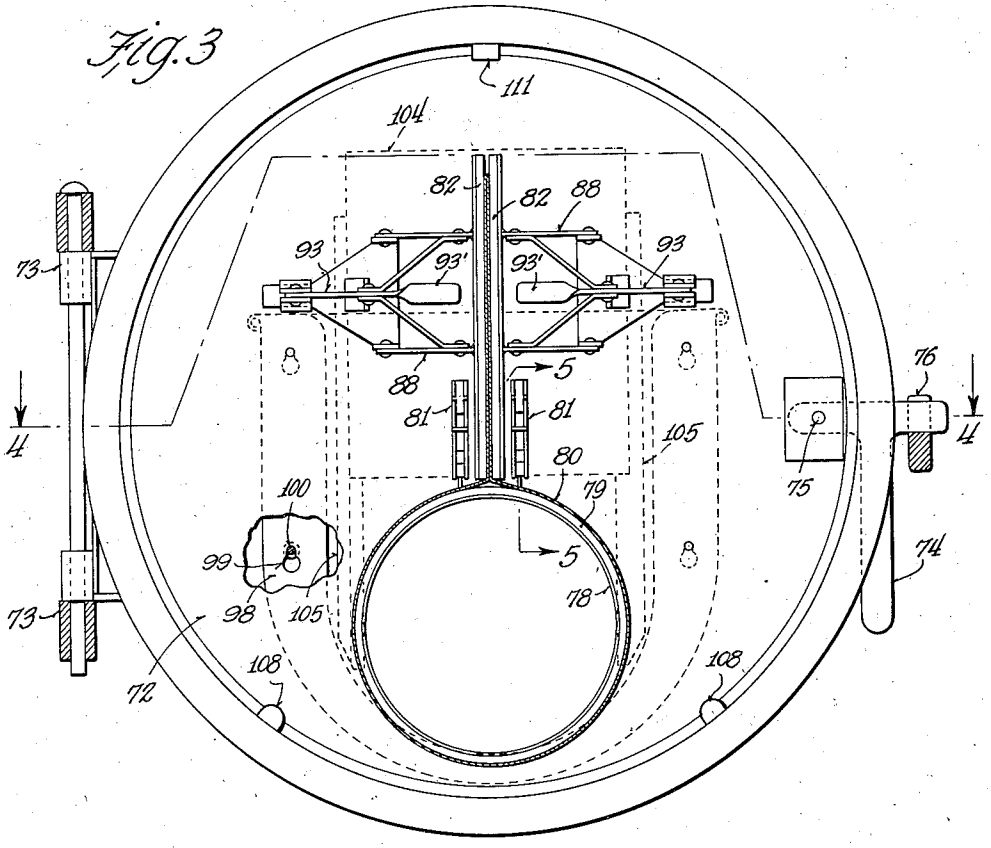
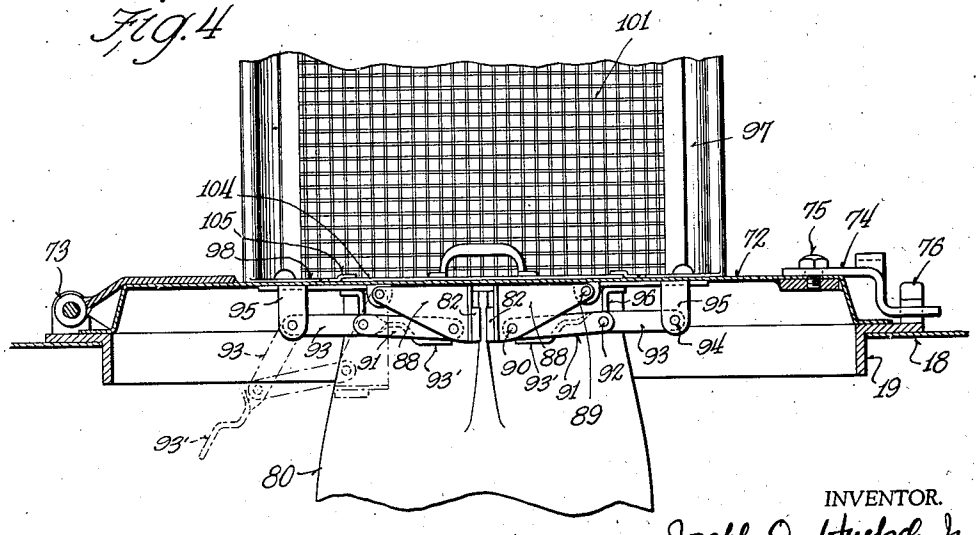


Fig. 4



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METHOD AND APPARATUS FOR RENOVATING PILLOWS

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Fig. 5

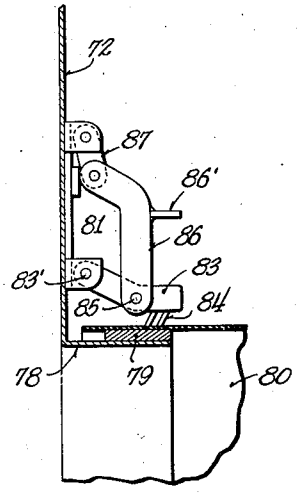


Fig. 6

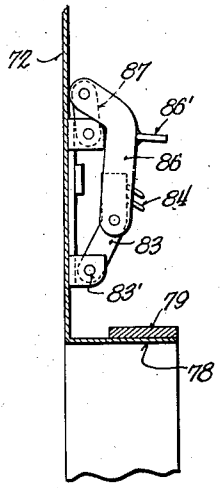


Fig. 9

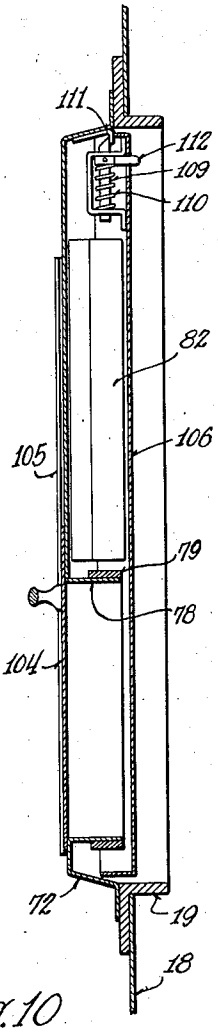


Fig. 8

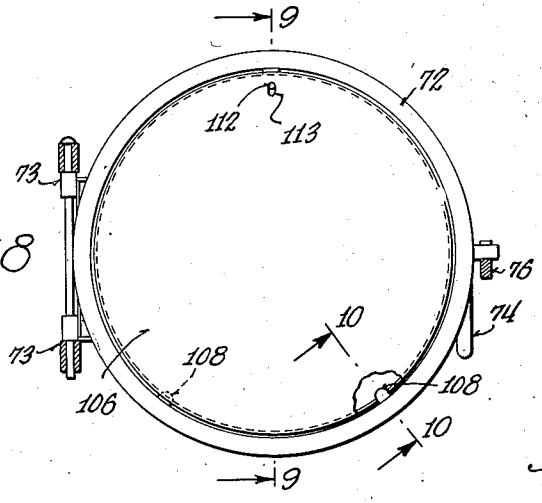
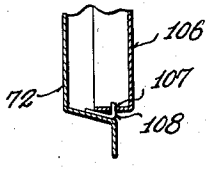


Fig. 10



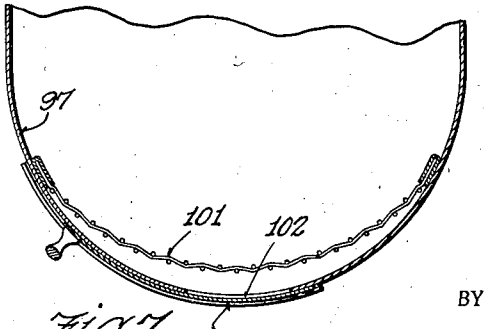


Fig. 7

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METHOD AND APPARATUS FOR RENOVATING PILLOWS

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Fig. 11

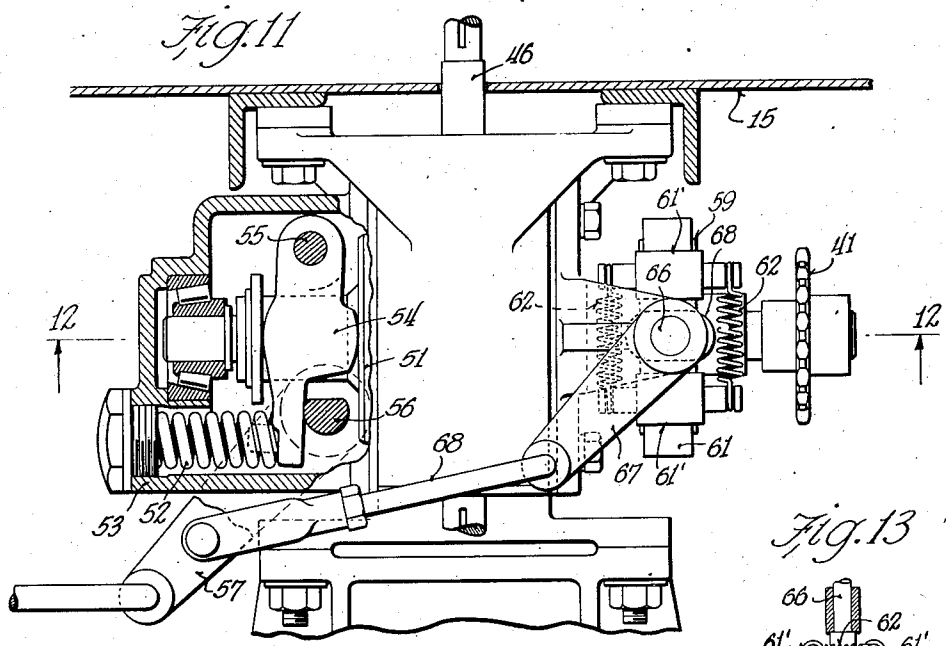
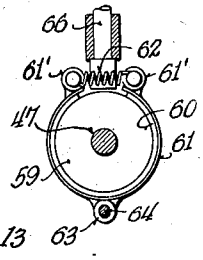


Fig. 13



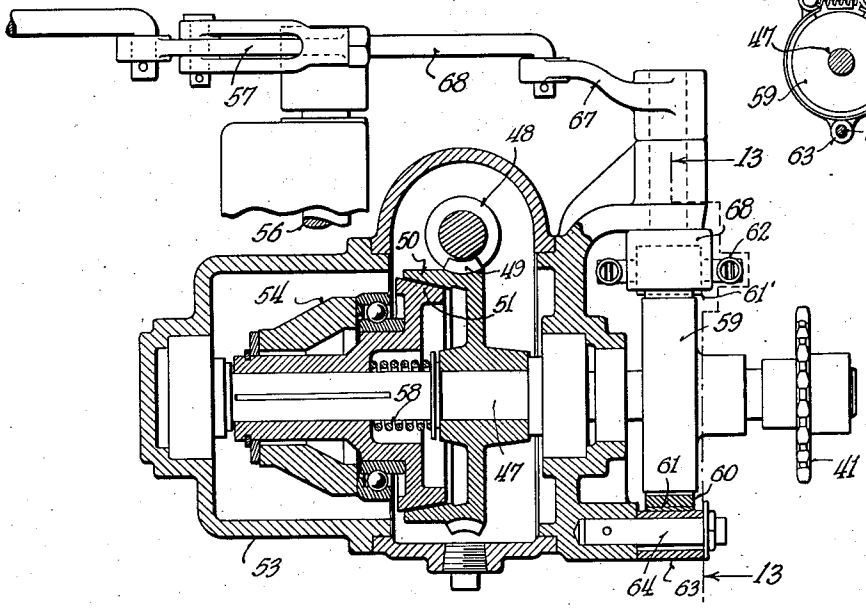


Fig. 12

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Patented July 18, 1944

2,353,827

UNITED STATES PATENT OFFICE

2,353,827

METHOD AND APPARATUS FOR RENOVATING PILLOWS

Joseph O. Huebsch, Jr., Milwaukee, Wis., assignor to Huebsch Manufacturing Company, Milwaukee, Wis., a corporation of Wisconsin

Application June 23, 1941, Serial No. 399,385

8 Claims. (Cl. 34—2)

The invention relates to a feather pillow renovating machine and to a filled pillow cleaning method used with such machine.

The object of the invention is to provide a simple apparatus for removing feathers or other loose filling from their enclosing pillowcases, cleaning this filling and restoring it to the laundered pillowcases. More particularly according to the present invention, the feather filling is removed from its cases, and each batch of filling or feathers is delivered to a special washing bag or case of thin porous fabric substantially larger than the pillowslip from which the filling was taken. Several of these filling charged washing bags are then placed in a drum in which the feathers or other filling is subjected to a steaming operation while in the bag and being tumbled about in the drum and then to a drying and fluffing operation while being tumbled about in said drum. Though not essential, it may sometimes be desirable to give the filling charged washing bags a pre-tumbling treatment by first tumbling them about in the revolving drum to loosen foreign material from the filling and also subjecting the bags to the action of a stream of agitating air. After the steaming, drying, and fluffing operations, the cleaned filling is transferred from the bag in which it was treated to its own now washed and ironed pillowcase.

A further object of the invention is to provide modifications and additions to an ordinary tumbler dryer, so that the pillow filling treating operations noted above may be carried out therein and which at other times can be used in the same manner as an ordinary drying tumbler.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a side elevation view of a feather renovating machine embodying the invention, parts being broken away and parts being shown in section;

Fig. 2 is a vertical sectional view taken generally along the broken line 2—2 of Fig. 1;

Fig. 3 is a detailed elevation view of the inside of the door of the machine, parts being broken away and parts being shown in section;

Fig. 4 is a detailed sectional view taken along the line 4—4 of Fig. 3 showing a washing bag in clamped position;

Fig. 5 is a detailed sectional view taken on the line 5—5 of Fig. 3 showing one of the bag clamping devices in clamped position;

Fig. 6 is a view similar to Fig. 5 showing this bag clamping device in open position;

Fig. 7 is a detailed vertical sectional view taken on the line 7—7 of Fig. 1;

Fig. 8 is a rear elevation view of the door with a cover plate applied thereto, parts being broken away;

Fig. 9 is a vertical sectional view taken on the line 9—9 of Fig. 8;

Fig. 10 is a detailed sectional view taken on the line 10—10 of Fig. 8;

Fig. 11 is a plan view of the tumbler drive mechanism and its control, parts being broken away and parts being shown in section;

Fig. 12 is a detailed sectional view taken on the line 12—12 of Fig. 11.

Fig. 13 is a vertical sectional view taken on the broken line 13—13 of Fig. 12.

The apparatus includes a support 15 having a cylindrical drum housing formed by a tubular shell 16, the rear wall 17 and the front wall 18, these parts being formed of sheet metal suitably joined together. The front wall 18 is of annular form and includes the inwardly extending ring member 19.

The shell 16 has an air inlet opening 20 formed in its upper portion and an outlet opening 21 in its lower portion connected by a conduit 22 with the centrally disposed opening 23 of a fan casing 24 having the suction fan 25 mounted therein. The inlet opening 21 is controlled by a sliding damper or valve member 26. A heating compartment 27 is formed above the opening 20 and has its side walls secured to the shell and has a heating unit 28 mounted therein and one or more inlet openings 29 at the side thereof.

A tumbling drum 30 is mounted to rotate in the housing above described and includes a perforated shell 31 whose rear edge is interlocked with the beaded edge 32 of the back wall 33 and whose front edge is suitably interlocked with the outer edge of the annular front wall 34 whose inner opening 35 is concentric with and disposed close to the inwardly extending ring member 19. The shell 31 is perforated so as to allow air to pass freely therethrough and is spaced a short distance from the enclosing casing, and its back wall 33 has a spider 36 secured thereto provided with a shaft portion 37 extending from its center and journalled in suitable bearings in a bearing case 38 secured to the rear wall 17 of the drum housing. A sprocket wheel 39 on the shaft 37 is connected by a chain 40 to a motor driven sprocket wheel 41 for revolving the drum.

The drum 30 is reinforced by the transversely

extending radially disposed bolts 42 connected at one of their ends with the ends of the arms of the spider 36 and at their other ends with the wall 34, and these bolts also form supports for the inner edges of sheet metal lifting ribs 43 whose outer edges have an interlocking connection with the shell 31.

An electric motor 44 is mounted on a base plate 45 on the support 15, and its shaft 46 is direct connected with the suction fan 25, so that whenever the motor runs, the fan runs also. As previously noted, the drum turning mechanism includes the sprocket wheel 41 which, however, is arranged to be selectively driven by the motor at a reduced speed through a manually controlled clutch connection between the shaft 46 and a shaft 47 on which the sprocket wheel 41 is mounted. The shaft 46 has the worm 48 formed thereon meshing with a worm wheel 49 loosely mounted on the shaft 47 and having a clutch cone drum portion 50 formed integral therewith or secured thereto which is adapted to be frictionally engaged by a clutch cone member 51, slidably splined on the shaft. The parts 50 and 51 are normally urged to an engaged position by a compression spring 52 interposed between the clutch casing 53 and the outer end of a lever 54 which engages the cone member 51 intermediate its ends and is pivotally mounted at its inner end upon a vertically disposed pin 55. Release of the clutch is effected by an operated controlled rotary cam member 56 which is turned by a manually operated lever 57. Operation of the cam member 56 relieves the clutch of the pressure of the spring 52, and thereafter a spring 58 interposed between the clutch members 50 and 51 will act to move them apart.

At the time the drum clutch is released, an automatic brake is allowed to operate so as to stop rotation of the drum. This brake includes a drum 59 mounted on the shaft 47 and engaged by the lining 60 of a flexible metal brake band 61 which is normally moved into braking engagement with said drum by a pair of tension springs 62 connected to opposite end portions of the brake band which has an intermediate part 63 pivotally mounted on an anchor pin 64 secured to the casing of the machine. The action of the springs 62 to set the brake is under the control of a manually operated rotary brake cam 65 which is engageable with the ends 61' of the band 61 and whose shaft 66 carries an operating arm 67 operatively connected by a link 68 with the lever 57, so that movement of one lever acts to operate the other and thus release the drum drive clutch 50, 51 and allow the brake 61 to engage the drum 59 to stop rotation of the shaft 47 and the drum 30.

From the foregoing it will be noted that the drum 30 may be driven or held stationary at the will of the operator, and that the suction fan 25 on operating will draw air through the drum from any exposed opening which may be through the opening 20 when the valve or damper 26 is open, and that if the heater 28 is on, the air drawn through said opening 20 will be heated. A pipe 69, connected with a steam supply pipe 70 by means of any suitable manually controlled valve 71, is used to introduce live steam into the drum 30.

The ring member 19 forms a support for a door 72 which, as shown in Figs. 3 and 4, is hingedly mounted on the front face thereof by means of the hinges 73 and is held in a closed position by a latch lever 74 which is pivotally mounted at 75 on the door and engages a slotted catch 76 on the member 19. This door when opening provides comparatively free access to the interior of the drum 30 whose adjacent end is open, so that articles may be readily charged and discharged through the opening 77 of the ring member 19.

The door 72 is provided with a smaller circular opening 78 here shown as at the lower portion thereof and formed by an inwardly extending flange of substantial depth upon which an annular packing or lining 79 of yieldable material, such as carding cloth or brake lining material, is mounted and which flange is adapted to receive part of the walls of the mouth of a porous fabric washing bag 80 which is secured tightly to the lining 79 by hold down clamps 81 and an excess material take up and clamping means 82.

As shown in Figs. 5 and 6, each hold down clamp 81 includes a lever 83 pivoted at one end 83' to the door and at its other end provided with bag-engaging fingers 84, said lever being connected at 85, intermediate its ends, to one of a pair of toggle links 86 and 87, the other link 87 being pivotally connected to the door 72, the lever 86 having a handle projection 86' and being bent as shown, so that in its lowered position it will hold the lever 82 in clamping engagement with that part of the bag 80 which extends around the packing.

The take up and clamping means is shown in detail in Figs. 3 and 4 and includes a pair of oppositely disposed jaw members 88 each pivotally mounted at 89 on the inner side of the door 72 and each pivotally connected at its free end 90 with one end of a toggle link 91 whose other end is pivotally connected at 92 to the break joint end of the companion toggle link 93 whose other end is pivoted at 94 to a bracket 95 mounted on the door. The link 93 is provided with a handle extension 93' for use in operating this toggle clamping means, and the movement of the toggle links 91 and 93 are limited by the stop bracket 96 on the door. Both of the jaw members 88 are shown in full in bag clamping position, and one of them is shown in dotted in released position in Fig. 4. The bag clamping means above described takes care of washing bags and pillowcases of a wide variety of sizes.

A filling-receiving open top sheet metal hopper 97 has inwardly extending flange wall portions 98 at one side abutting the outside of the door 72 and each of which has locking slots 99 for slidably detachable interlocking connection with screws 100 on the door. The hopper has a screen 101 disposed above its bottom to allow dirt or heavy foreign matter to gravitate out of the mass of feathers dumped into said hopper and a discharge opening 102 for this solid matter below the screen and controlled by a door 103 suitably slidably mounted on the curved bottom of the hopper.

Passage through the opening 78 in the door 72 is controlled by a cover or damper 104 which is slidably mounted on the door and guided for vertical movement with respect thereto by the angled guide strips 105 on said door.

When not in use, the bag clamping devices and the opening 78 are covered up by a peripherally flanged cover plate 106 which, as shown in Figs. 8 to 10, has spaced slots 107 in its flanged edge at its lower part engageable with projections 108 on the inner side of the door and carries a latch

109 at its upper end normally urged by a spring 110 into locking relation with a projection 111 on said door, the latch being released by the operator's pressing down on a pin projection 112 of said latch which extends through an elongated slot 113 in the cover.

From the foregoing it will be noted that the main elements of the machine are a main casing or housing 16, 17, and 18, a drum 30 mounted to revolve or remain stationary in said housing as determined by the operation of the clutch 50, 51, a fan 25 associated with opening 20 in the casing for drawing air either heated or unheated through the drum and also associated with the opening 78 in the door 72 to induce a suction of air through this opening, and clamping means are provided for clamping a bag about the opening 78.

With the above in mind the method of operating the machine for the renovating of feather filled pillows will now be described. The damper 26 controlling the opening 20 is closed, so that suction from the fan 25 will draw air through the opening 78 in the door 72. The thin porous bag 80 substantially larger than the pillow-slip from which the feathers or other filling have been removed is attached to the inner side of the door 72 of the machine by application of the clamps 81 to the mouth of the bag so as to draw it tightly around the lining 79 and the application of the clamp members 88 to the excess material of the mouth. This bag is placed on the door before the filling has been deposited in the hopper 97, if desired. The tumbler door is then closed with the bag 80 inside the cylinder. The motor 44 is started although the clutch 50, 51 between the motor shaft and the tumbler or drum 30 is disconnected, so that only the suction fan is operated. Under these conditions there is a strong suction of air through the hopper 97 and into the bag 80 on the inside of the tumbler. One side of the pillow to be renovated is then opened and the feathers or other loose filling gently shaken into the hopper 97 where the strong suction draws the filling material into the large porous bag inside the tumbler or drum 30. Heavy particles of dirt or other foreign matter drop through the porous screen 101 to the bottom of the hopper and may be later removed through the opening 102. After the bag 80 is charged, the tumbler door 72 is opened and the clamps released from the bag and the same removed from the door and tied tightly closed with a string about its mouth. This same operation is carried out with five or six or more pillows, enough to constitute a load in the drum 30 for steaming, drying, and fluffing.

When five or six pillows have been so bagged, they are placed in the drum 30 and the cover placed in the drum 30 whose door 104 has been previously shut and whose holding devices have been protected by the mounting of the cover 106 over them, as shown in Fig. 9, at the inside of the door 72. Thereafter, the operator through operation of the lever 57 allows the clutch 50, 51 to engage to connect the motor with the drive for the drum 30, and as the drum revolves, the bags are tumbled about therein. This mechanical pre-tumbling may be used to loosen up fine dust and other foreign matter most of which will find its way through the porous washing bag and be discharged from the tumbler. Before doing this, the damper 26 operating the steam coils or heating unit 28 from the housing for the drum 30 is opened permitting of air circulation through the drum 30 and through the bags therein, the air being drawn through said drum by the action of the suction fan 25 which is, of course, running all the time that the motor 44 is in operation. The pre-tumbling operation above described is not essential but may be used if desired. Thereafter, the damper 26 is closed over the opening 20, and the steam valve 71 at the side of the housing is opened injecting a large volume of steam into the drum. The damper 26 may also be open when steam is introduced into the drum, so that heated air may be drawn into the tumbler, but the closing of the damper 26 when the steam valve 71 is opened is preferred as the steaming action is faster and more thorough than when the damper 26 is open. The steam is kept on from three to four minutes, so that all the feathers or other filling in the porous bags being treated are thoroughly steamed. Next, the steam is turned off and the separating damper 26 opened again whereupon heated air is drawn from the openings 29 of the compartment 27 past the heating unit 28 and through the opening 20 into the housing for the drum, and said drum, and then the exhaust opening 21 to the fan casing 24 until by this circulation of heated air the filling is thoroughly dried and fluffed. Both during the pre-tumbling and drying operation above mentioned considerable fine dust in the pillows is drawn out of the porous bags and discharged with the air from the tumbler by the fan.

The bagged treated material is then removed from the drum 30 and the plate 106 removed from the inside of the door. The pillowslips, which, while the filling of the pillows is being washed and cleaned, have themselves been washed and ironed, are then returned to the machine, and each of the bagged units are then returned to their proper pillowcases by the substitution of the washed and ironed pillowcase against the inside of the door of the drum for that of the washing bag with the operations previously described repeated upon these bags; that is, first the drum opening 20 is closed, the pillowcase attached to the door 72 by the clamps 81 and 82, the door 104 opened, and the filling material dumped from the washing bag into the hopper 97, and with the fan 25 in operation creating a suction through the opening 78, the filling material from the washing bags is dumped, one bag at a time, into the hopper 97, and this charge is sucked back by the action of the fan into the original but now clean pollowcase. Of course, during this bag filling operation the drum 30 does not revolve.

From the foregoing it will be noted that I have provided a simple form of machine for renovating pillows, such as feather pillows or others provided with a loose filling, and which machine may also be used for other drying purposes, if desired.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What I claim as my invention is:

1. The method of renovating pillows which comprises transferring the loose filling material from the original pillowcase into a washing bag of thin porous material and substantially larger than the original pillowcase, placing the bagged filling in a tumbling drum and tumbling it around therein while drawing air through said drum, then steaming the bagged material while in the drum, and thereafter drying the bagged material while tumbling it about in said drum, then re-

turning the cleaned filling to the original pillowcase.

2. In an apparatus of the character described, the combination of a casing provided with an opening, a door for said opening, a tumbling drum mounted in said casing to revolve therein and provided with an opening to which access is had through said opening in said casing controlled by said door, said door having an opening therein, a pillow filling receiving hopper mounted adjacent and communicating with said opening in said door, means for securing a bag over said opening in obstructing relation therewith with its closed end projecting into the drum to intercept passage of pillow filling from the hopper to the drum, and means for reducing the air pressure in said drum to induce a suction of the filling material from the hopper into the bag to load the bag while the drum is stationary.

3. In an apparatus of the character described, the combination of a casing having an opening, a tumbling drum mounted in said casing to revolve therein and having an opening, a door for the opening in said casing, said door having a tubular opening therein connecting said drum with the atmosphere, a pillow filling receiving hopper mounted adjacent said opening, a pair of clamps for securing a portion of the mouth of the bag about the wall of said tubular opening, another clamping means for securing the excess material at the mouth of the bag in a fixed position, said clamps and clamping means mounted on the inner side of said door for clamping the bag to the inner side of said door, and means for inducing a suction through the hopper into the drum to draw filling material, deposited in the hopper, into the bag to charge the same while the drum is stationary.

4. In an apparatus of the character described, the combination of a casing having an air inlet at one end portion and an outlet at its opposite end portion and a charging opening, means for controlling the flow of air through said inlet, and a fan for inducing the circulation of air from said inlet to said outlet through said casing, a perforated drum mounted to revolve in the casing having an opening registerable with said charging opening, a movable door for said charging opening, said door having an opening leading to atmosphere, means for clamping a bag to the door over the opening in obstructing relation therewith, means for presenting the pillow filling material to be treated at the opening in said door so that when the drum is stationary and the fan is in operation said filling material will be drawn into the bag in said drum, means for covering up the bag clamping means on the door when the drum is charged with several bags of the material to be treated and rotated, means for introducing live steam into the drum while the filled bags are being carried about therein, means for also supplying heated air to said inlet for furnishing drying air to the drum, and means under the control of the operator for revolving said drum.

5. In an apparatus of the character described, the combination of a casing having an opening, a tumbling drum mounted in said casing to revolve therein and having an opening, a door for the opening in said casing, said door having a tubular opening therein connecting said drum with the atmosphere, a hopper for pillow filling mounted adjacent said tubular opening, clamping means on the inside of the door for securing the mouth of a bag about the wall of said tubular opening, means for inducing a suction through the hopper into the drum to draw the filling material, deposited in the hopper, into the bag to charge the same while the drum is stationary, and a cover plate removably secured to the inner side of the door to cover said clamping means when the filled bag has been removed and the drum is ready to be revolved, and means under the control of the operator for revolving said drum.

6. In an apparatus of the character described, the combination of a casing having an opening, a tumbling drum mounted to revolve in said casing and having an opening, a door for the opening in said casing, said door having a relatively small opening therein connecting said drum with the atmosphere, a hopper mounted on the outside of the door to communicate with said opening and having a perforated bottom to permit the removal of foreign matter from pillow filling material dumped into the said hopper, means for securing the mouth of a bag, to receive the pillow filling material, over said opening in said door so that the bag intercepts the passage of filling material from the hopper to the drum, and means for inducing a suction through the hopper to draw the filling material from the hopper to the bag to charge the same while the drum is stationary.

7. In an apparatus of the character described, the combination of a casing having an air inlet in its upper portion, an air outlet in its lower portion and a charging inlet, and a door for said charging inlet with an opening therein, individual means for controlling both the top inlet and the opening in said door, means for inducing a flow of air from either inlet to said outlet including a fan, a perforated drum mounted to revolve in said casing and having an opening in registry with the opening in said door, means controlled by the operator for rotating said drum, said drum being held stationary when the inlet in the door is in use, means for clamping the mouth of a bag to said last named opening to bring the bag into obstructing relation between the atmosphere and the interior of the drum, and means for presenting the filling material to be treated at the entrance to said opening in said door from which it is carried into said bag through the suction action of said fan.

8. In an apparatus of the character described, the combination of a casing provided with access means, a tumbling drum mounted in said casing to revolve therein and provided with an opening to which access is had through said access means, a pillow filling receiving hopper mounted adjacent said access means, bag mounting means in conjunction with said access means for mounting a bag in a filling position with its closed end projecting into the drum to intercept passage of pillow filling from said hopper to said drum, and means for reducing the air pressure in said drum to induce a suction of the filling material from the hopper into the bag to load the bag while the drum is stationary.

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