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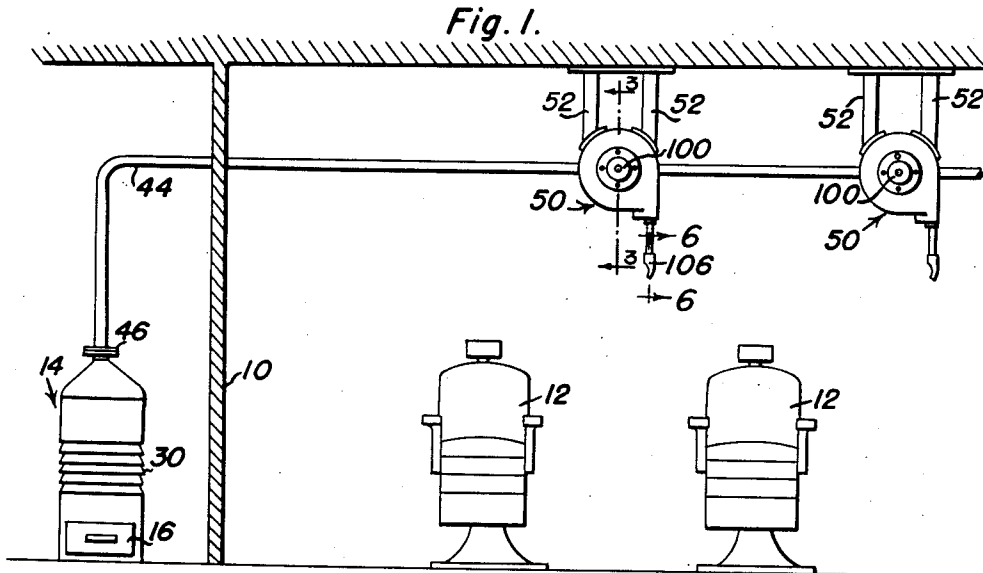
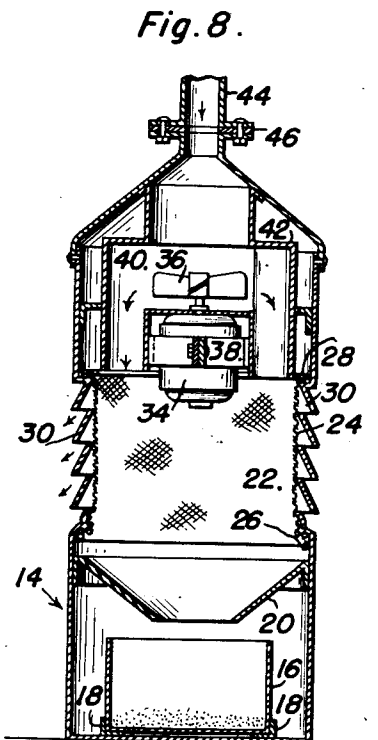
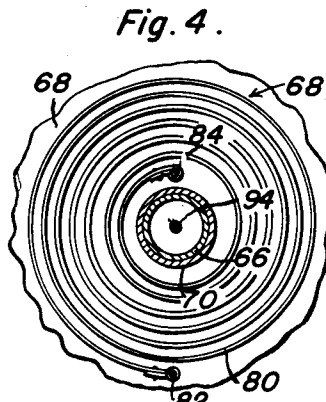
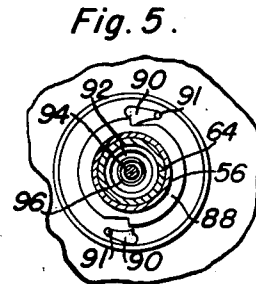
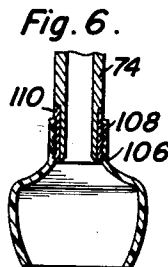
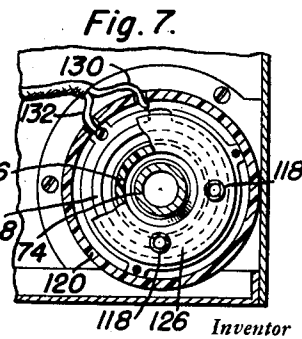
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2,641,790

VACUUM HAIR REMOVAL SYSTEM FOR BARBER SHOPS

Filed July 1, 1949

2 Sheets-Sheet 1



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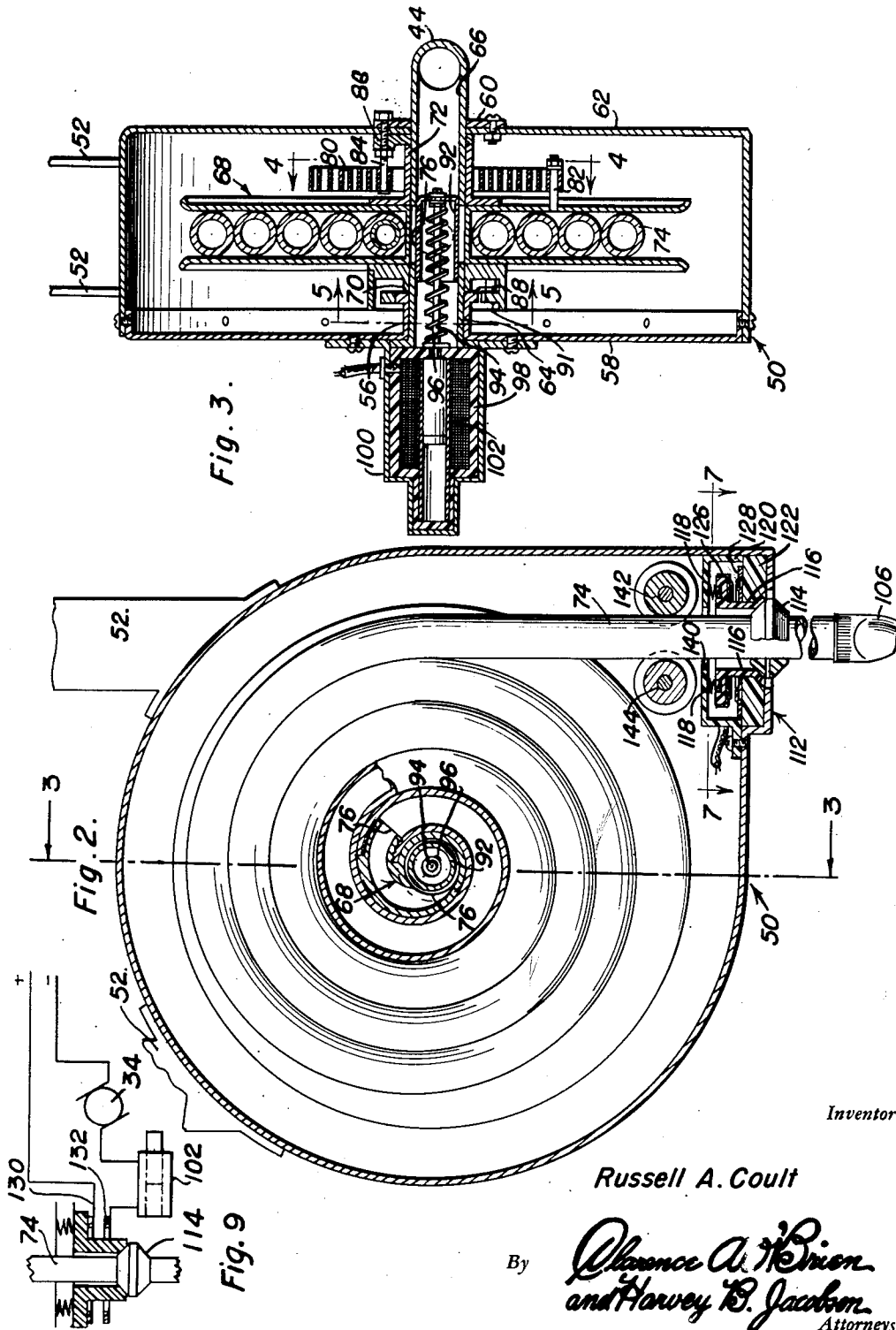
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VACUUM HAIR REMOVAL SYSTEM FOR BARBER SHOPS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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VACUUM HAIR REMOVAL SYSTEM FOR
BARBER SHOPS

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4 Claims. (Cl. 15—315)

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This invention relates to novel and useful improvements in systems for gathering refuse.

An object of this invention is to remove dandruff, small bits of hair and other foreign matter from the head of an individual by means of a system which includes at least one and preferably a number of cases suspended from the ceiling of a barber shop or mounted in another suitable location, each case having a drum therein with a hose on the drum and so disposed and arranged that upon pulling the hose from the case the movement of the hose from the case is opposed by a spring whereby the hose is spring-pulled back into the case when it is inoperative, and to incorporate in the system a switch mechanism which is rendered effectual and operated when the hose is pulled from the case, this switch controlling a valve which communicates the bore of the hose with a conduit, the conduit extending to a suction source and a refuse collecting receptacle.

Another object of this invention is to adapt the same structure for use in connection with other jobs such as cleaning furniture, the interiors of automobiles, valet use, and other environments.

Other objects and features will become apparent in following the description of the preferred form of the invention, illustrated in the accompanying drawings, wherein:

Figure 1 is a schematic view of a part of a barber shop having the apparatus disposed therein;

Figure 2 is an enlarged fragmentary view of Figure 1 and with parts of the casing, switch and hose broken away and shown in section for the convenience of explanation;

Figure 3 is a transverse sectional view of the structure of Figure 2, taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view illustrating details of construction and taken substantially on the line 4—4 of Figure 3 and in the direction of the arrows;

Figure 5 is a detail sectional view of the ratchet and pawl mechanism used in connection with the device and is taken on the line 5—5 of Figure 3;

Figure 6 is an enlarged sectional view of the nozzle at the end of each hose which is disposed in the cases and is taken on line 6—6 of Figure 1;

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 2, illustrating a switch mechanism;

Figure 8 is a longitudinal sectional view taken through the center of the typical suction-produc-

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ing and refuse-collecting unit of Figure 1 which is suggested for use in connection with the apparatus; and

Figure 9 is a diagrammatic view showing the circuit diagram employed in the present invention.

Referring first generally to Figure 1, there is shown a building fragment 10 having a partition and a ceiling. Barber chairs 12 are shown properly aligned.

A housing, generally indicated at 14, is provided in a suitable convenient position and has, at the lower part, a drawer-type receptacle 16 slidable on tracks 18 within the lower part of the housing 14. Disposed directly over the receptacle 16 is a hopper 20 which is in direct communication with a chamber 22 defined by a fabric sleeve 24 which has its lower end fixed by means of a ring 26 or other suitable means above the hopper or funnel 20. The upper end is fixed by means of a ring 28 or by any other suitable means to the top part of the housing 14. Louvers 30 permitting air to pass through the walls of the sleeve 22 are provided intermediate the upper and lower ends of the housing 14.

At the top part of the housing, there is a motor 34 forming a part of an air impeller which also includes a fan 36. This motor is supported in a suitable bracket 38 which is disposed in a suction chamber 40 formed by the walls 42. The walls are disposed within the outside shell of the housing 14 and there is a conduit 44 extending from the housing 14, that is in direct communication with the suction chamber 40. A suitable union 46 is used for connecting the conduit 44 with the top part of the housing 14.

One, and preferably more cases, generally indicated at 50, are suspended from the ceiling by means of brackets 52 or are otherwise suitably fixed to a wall or mounted on a stand which is disposed on the floor.

Each case 50 is identical in external and internal structure and configuration. A typical case and its internal structure is shown in Figures 2-7. A central bearing 56 is provided in the wall 58 of the case and the bearing plate 60 is fixed to the opposite wall 62 of the case. A sleeve 64 is disposed in the bearing 56 and forms a part of a non-rotatable hollow shaft. The other part of the non-rotatable hollow shaft is indicated at 66 and is passed through the bearing plate 60. The said part 66 of the non-rotatable hollow shaft is in direct communication with the conduit 44 so that the air drawn through the

conduit 44 is also drawn through the part 66 of the non-rotatable hollow shaft.

A drum 68 having bearing type flanges 70 and 72 projecting from the hub thereof is disposed for rotation on the hollow shaft. A hose 74 has one end fixed in communication with an opening 76 of the hub of the drum 68 which, in turn, is in direct communication with the hollow shaft formed by the two parts 64 and 66, respectively.

A clock spring 80 is fixed at one end on a post 82 to the drum 68 and the other end is fixed to a pin 84 which is secured to a spacer plate 86 fixed to the wall 62 of the case 50. Accordingly, upon rotation of the drum, the operation is opposed by the force of the spring, the spring constantly tending to return the drum after it has been rotated.

A ratchet mechanism (Figure 5) is operatively connected with the drum to retain it in a selected position. This ratchet mechanism includes a ratchet gear 88 which is secured to the bearing 56 so that, upon rotation of the drum 68, the teeth of the ratchet gear 88 pass under the dogs 90 which are mounted for pivotal movement on the pins 91 carried by the drum 68. However, rotation in the opposite direction is impeded, this rotation being influenced and ultimately caused by the spring 80. The structure and operation of the ratchet mechanism is for the most part the same as a curtain rod ratchet mechanism.

The opening 76 which communicates with the inner end of the hose 74 has a valve 92 operatively connected therewith. This valve has a rod 94 fixed thereto and a spring 96 concentric with the rod 94. One end of the spring bears against the valve 92, while the other end bears against a solenoid case 98. This solenoid case is disposed in a small housing 100 which is fixed to the wall 58 of the case 50. A solenoid, generally indicated at 102, is disposed in the said solenoid case 98 and has the rod 94 secured to the core thereof. Hence, upon operation of the solenoid the valve 92 is operated to open and close the inner end of the hose 94.

In operation of the device, insofar as air flow is concerned, when the solenoid 102 is operated, the opening 76 is communicated through the part 66 of the hollow shaft with the conduit 44 so that the air impeller in the housing 14 may cause a flow of air through the hose 74.

The opposite end of the hose has a nozzle 106 secured thereto. This nozzle has a threaded neck 108 so that it may be removed from the threaded sleeve 110 disposed at the end of the hose 74. Differently shaped nozzles may be substituted for different purposes.

Referring to Figure 2, a switch, generally indicated at 112, is illustrated in detail. This switch includes an operator or collar 114 which is fixed to the hose 74. Since the spring 80 constantly pulls the hose in such a manner that it tends to go into the case 50, the collar 114 abuts the sleeve 116 which forms a part of the switch and urges it against the force of the spring 118. These springs react on the operator 116 which is of electrically insulating material and a case 120 which is secured within the said case 50. The case 120 is also of electrically insulating material, as is the block 122 disposed therebelow.

Contacts 126 and 128 respectively are secured to the block 122 and the operator 116. Hence, when the hose 74 is pulled from the case 50, the compression in the springs 118 is relieved so that the contacts 126 and 128 become engaged.

By appropriate wiring, such as indicated at 130 and 132, the solenoid 102 is rendered operative as soon as the hose 74 is played out from the case 50 sufficient to allow the switch to become closed. By further appropriate wiring, for example by putting the impeller in series with the solenoid, the air impeller is rendered operative immediately upon operation of the solenoid so that suction is produced in the conduit 44.

Accordingly, it is only necessary to pull the hose 74 from the case to utilize the nozzle 106 for whatever purpose is found desirable. As soon as the hose 74 is pulled out of the case slightly, the solenoid is operated, thereby opening the valve 92; the spring 80 is placed under a load opposing the operation of the drum 68 when the hose 74 is pulled out; and the air impeller is rendered operative so as to pick up the various undesired articles for deposit in the receptacle 16.

So that the hose 74 will be led through the central opening 140 in the member 120 and through the central passage in the operator 116, a pair of idler pulleys 142 and 144 respectively are mounted on suitable pins within the case 50 directly over the switch 112.

Having described the invention, what is claimed as new is:

1. In a suction cleaning apparatus which has a suction conduit and a refuse pickup unit and said unit comprising a case, a hollow shaft disposed in said case and a flexible hose connected to and in communication with said hollow shaft and having a free end, said conduit being connected to and in communication with said hollow shaft, said case having an aperture therein through which the free end of said hose passes, a switch carried by said case and located adjacent the aperture in said case, a collar connected to the free end of said hose and arranged for holding said switch in the open condition, means to close the switch when the hose and collar are withdrawn from the case, a valve disposed in said hollow shaft to control the passage of air from said hose to said hollow shaft, a solenoid with a plunger connected to said valve and arranged to actuate said valve, electrical wiring connected to said switch and said solenoid whereby upon closing of said switch said solenoid may be actuated to operate said valve, and said solenoid plunger being in axial alignment with the hollow shaft, and a spring operatively connected with said valve, normally holding said valve in closed position.

2. An apparatus for suction cleaning comprising a housing with a refuse cleaning receptacle and an air impeller to deliver refuse to the receptacle, a conduit extending from said housing, at least one refuse pick-up unit operatively connected with said conduit, said impeller communicating with the conduit at a point intermediate the refuse pick-up unit and the collecting receptacle, said unit comprising a case with a drum therein mounted on a hollow shaft, said conduit being connected to and in communication with said shaft, a hose on said drum in communication with said shaft and having a free end, a collar on the free end of said hose, and a switch carried by said case normally retained open by said collar and closed when said hose is unwound from the drum, means connected with said switch urging said switch in a normally closed position, a normally closed valve disposed in said hollow shaft at the junction with said conduit, means including wires and a solenoid connecting said switch with said valve and with the impeller so that

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closing of the switch opens the valve and energizes said impeller, a spring reacting on said case and said drum opposing rotation of the drum for unwinding the hose, and a ratchet mechanism secured to said drum to retain the drum in selected positions.

3. A suction cleaning apparatus comprising a source of suction having a conduit extending therefrom, at least one refuse pick-up unit including a case with a hollow shaft within the case and fixed to and in communication with said conduit, a drum rotatably disposed in said case and on said hollow shaft, said drum including a hub with an opening therein, a hose having one end fixed in communication with said opening, a nozzle on the opposite end of said hose, a switch carried by said case, means responsive to movement of said hose from said case to operate said switch, a normally closed valve disposed in said hollow shaft controlling said opening, said valve having solenoid operated means connected by an electrical conductor with said switch for opening said valve as the hose is moved from the case to close the switch.

4. A suction cleaning apparatus comprising a source of suction having a conduit extending therefrom, at least one refuse pick-up unit including a case with a hollow shaft within the case and fixed to and in communication with said conduit, a drum rotatively disposed in said

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case and on said hollow shaft, said drum including a hub with an opening therein, a hose having one end fixed in communication with said opening and being passed through said case, a nozzle on the opposite end of said hose, a switch carried by said case, means responsive to movement of said hose from said case to operate said switch, a normally closed valve disposed in said hollow shaft controlling said opening, said valve having means electrically connected with said switch for opening said valve as the hose is moved from the case to permit actuation of said switch to its closed position by the first named means, means connected with said last mentioned electrical means for controlling the actuation of said source of suction, and a spring reacting on said drum and said case, said spring biasing said drum in a direction tending to wind the hose on the drum.

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