

C. S. SCHWARZ.  
MACHINE FOR CLEANING HATS.  
APPLICATION FILED JAN. 22, 1909.

958,327.

Patented May 17, 1910.

7 SHEETS—SHEET 1.

FIG. 1.

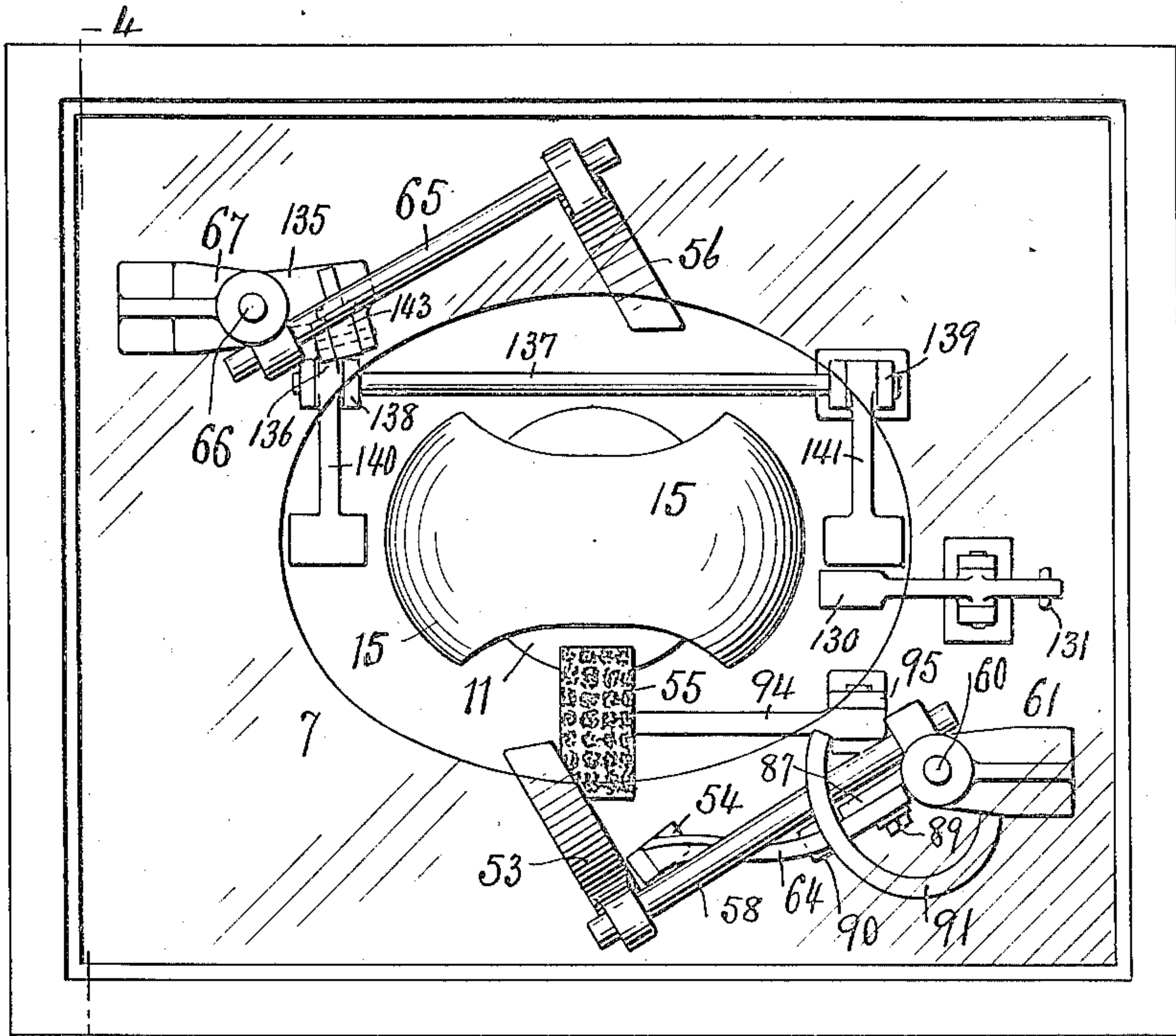
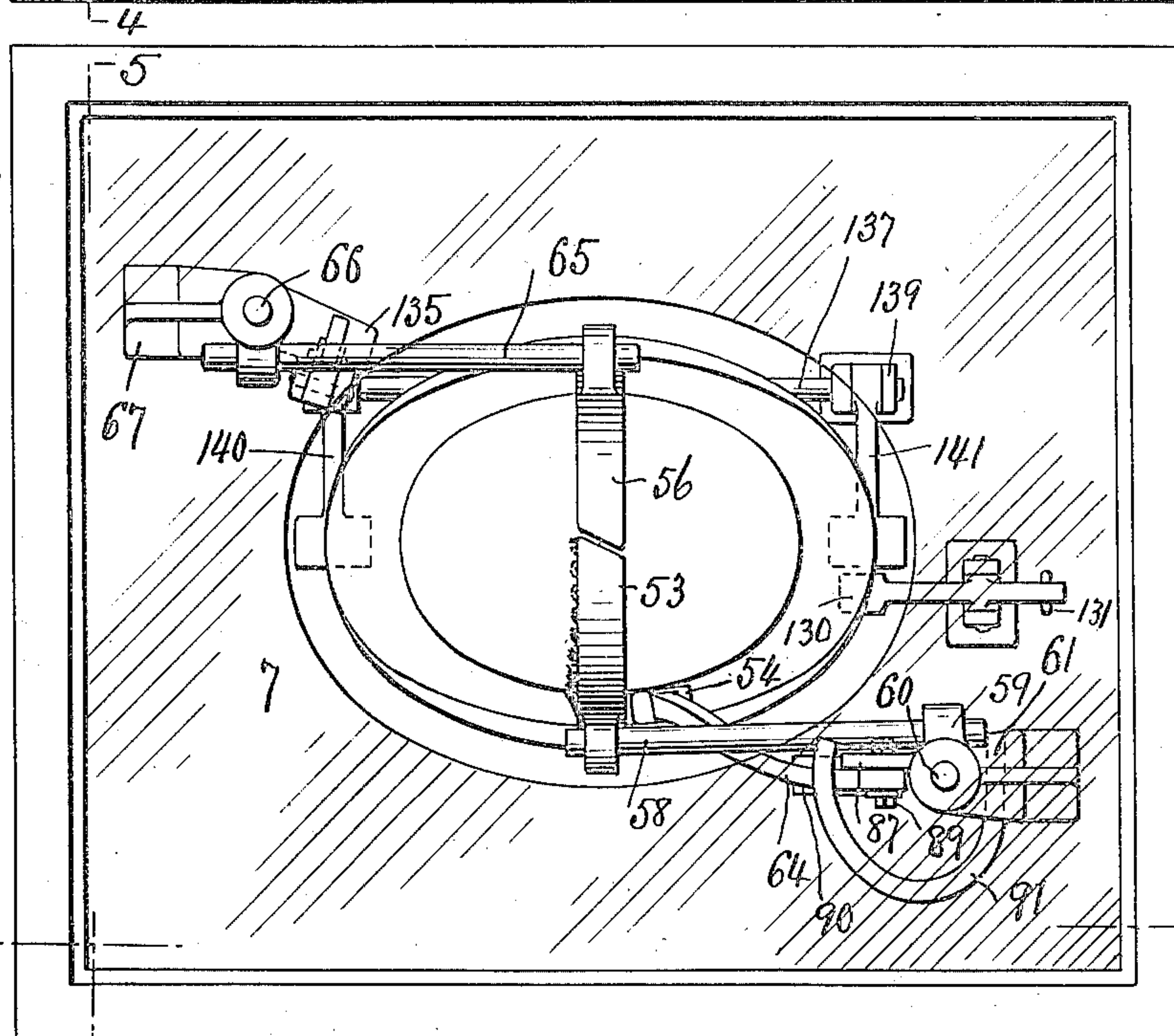


FIG. 2.



Witnesses

W. R. Ireland  
Hughes & Co., Jr.

Conrad S. Schwarz

By

J. H. Witt Goodwin

Attorney

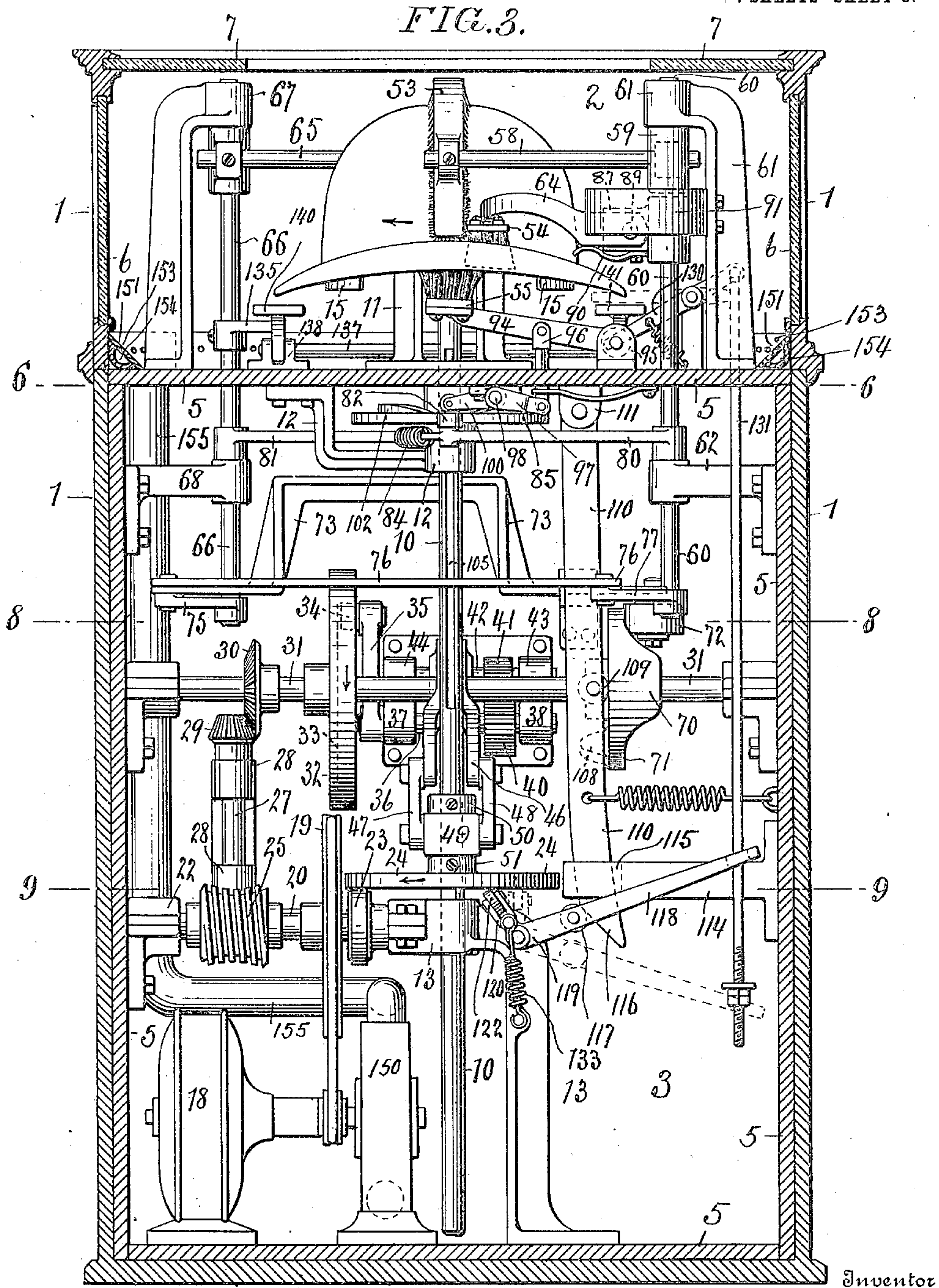


C. S. SCHWARZ.  
MACHINE FOR CLEANING HATS.  
APPLICATION FILED JAN. 22, 1909.

958,327.

Patented May 17, 1910.

7 SHEETS—SHEET 2.



Witnesses  
M. R. Leland  
Hugh H. Leland, Jr.

Conrad S. Schwarz  
By F. H. Witt Goodwin  
Attorney



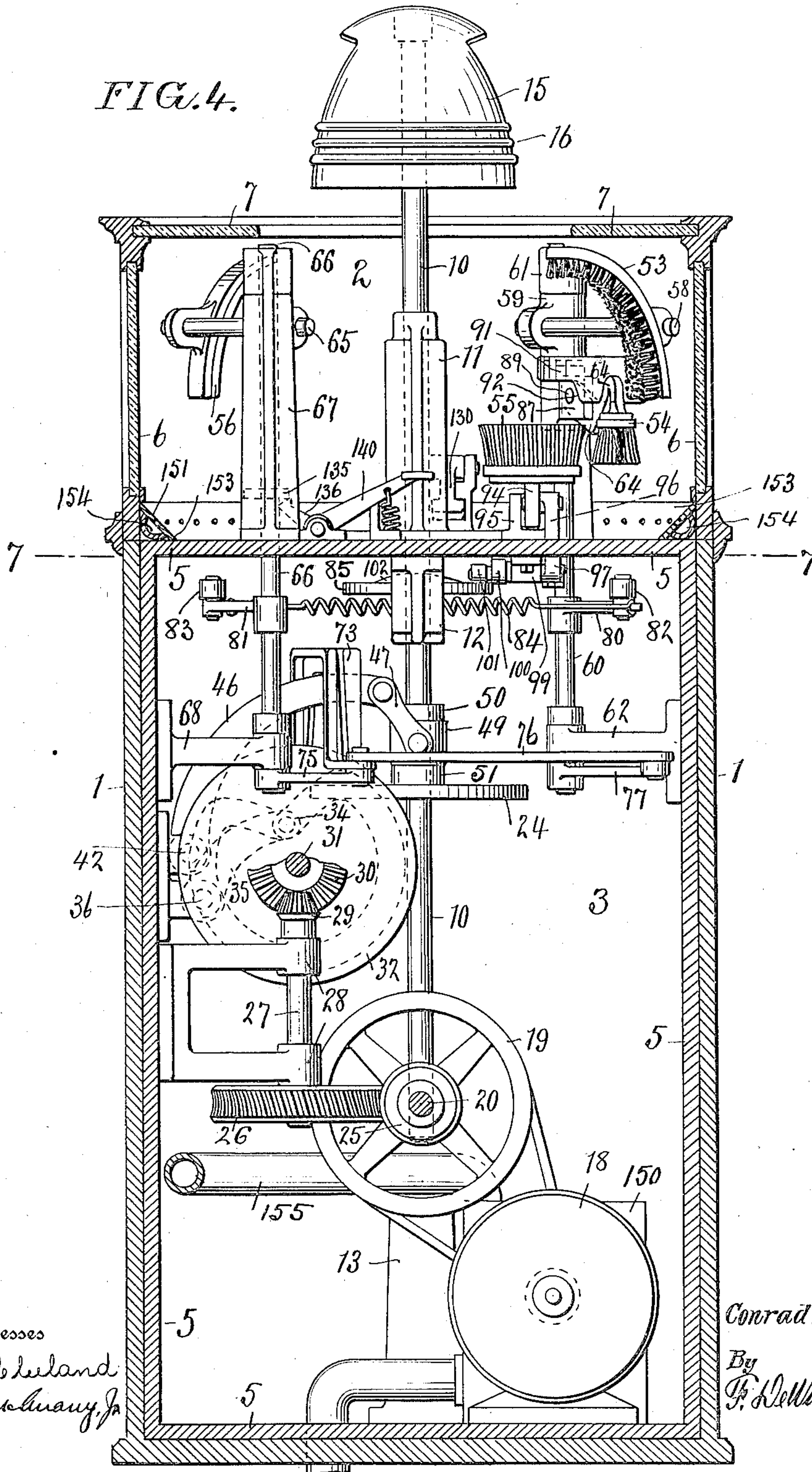
C. S. SCHWARZ.  
MACHINE FOR CLEANING HATS.  
APPLICATION FILED JAN. 22, 1909.

958,327.

Patented May 17, 1910.

7 SHEETS—SHEET 3.

FIG. 4.



Witnesses  
M. R. Ireland  
Hughes & Co., Jr.

Inventor  
Conrad S. Schwarz  
By  
J. H. Witt Goodwin  
Attorney

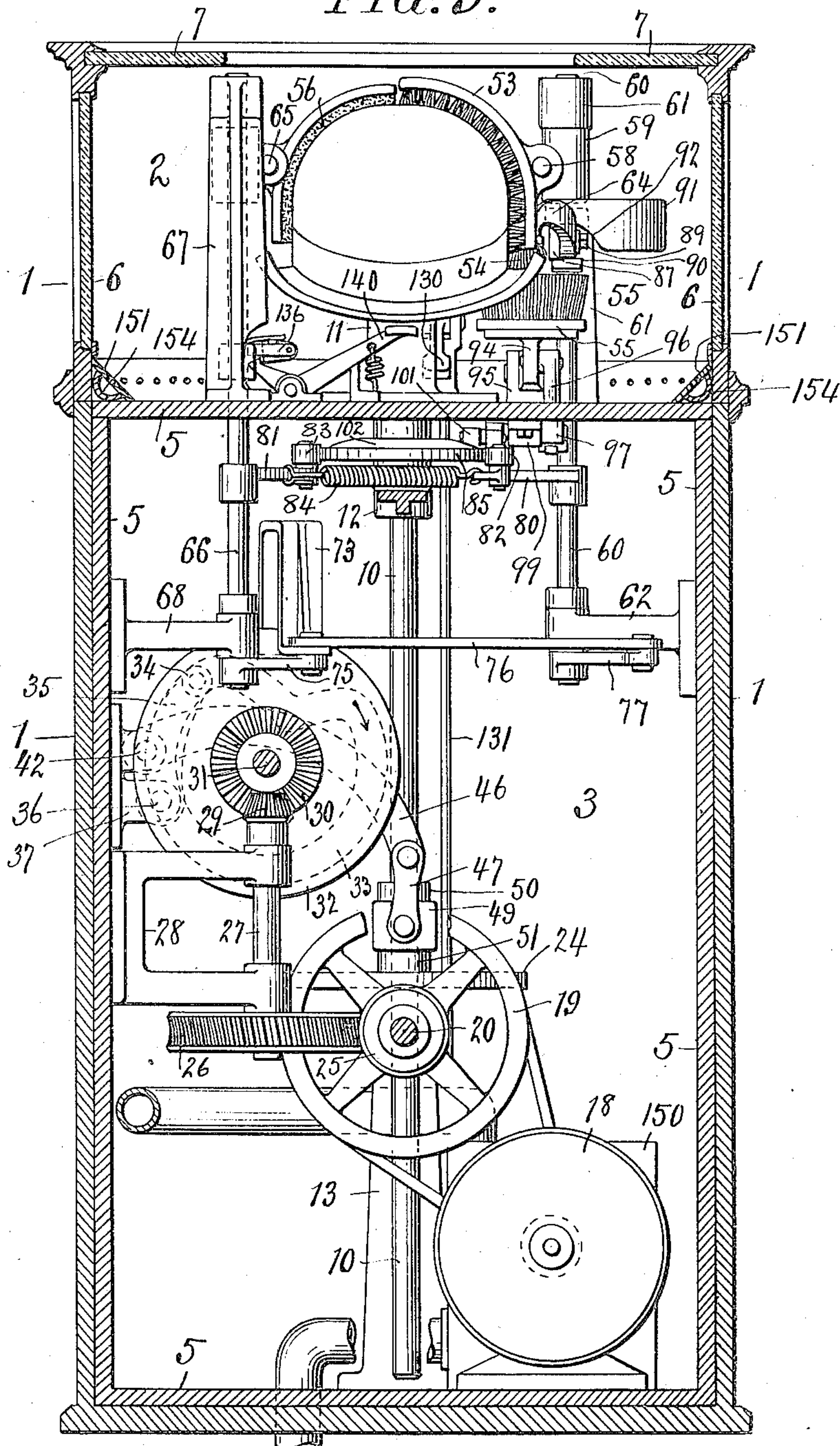
C. S. SCHWARZ.  
MACHINE FOR CLEANING HATS.  
APPLICATION FILED JAN. 22, 1909.

958,327.

Patented May 17, 1910.

7 SHEETS—SHEET 4.

FIG. 5.



Inventor

Witnesses  
Th. R. Ireland  
Meghine Quay Jr

Conrad S. Schwarz  
By J. Dellitt Goodwin  
Attorney





C. S. SCHWARZ.  
MACHINE FOR CLEANING HATS.  
APPLICATION FILED JAN. 22, 1909.

958,327.

Patented May 17, 1910.

7 SHEETS—SHEET 6.

FIG. 8.

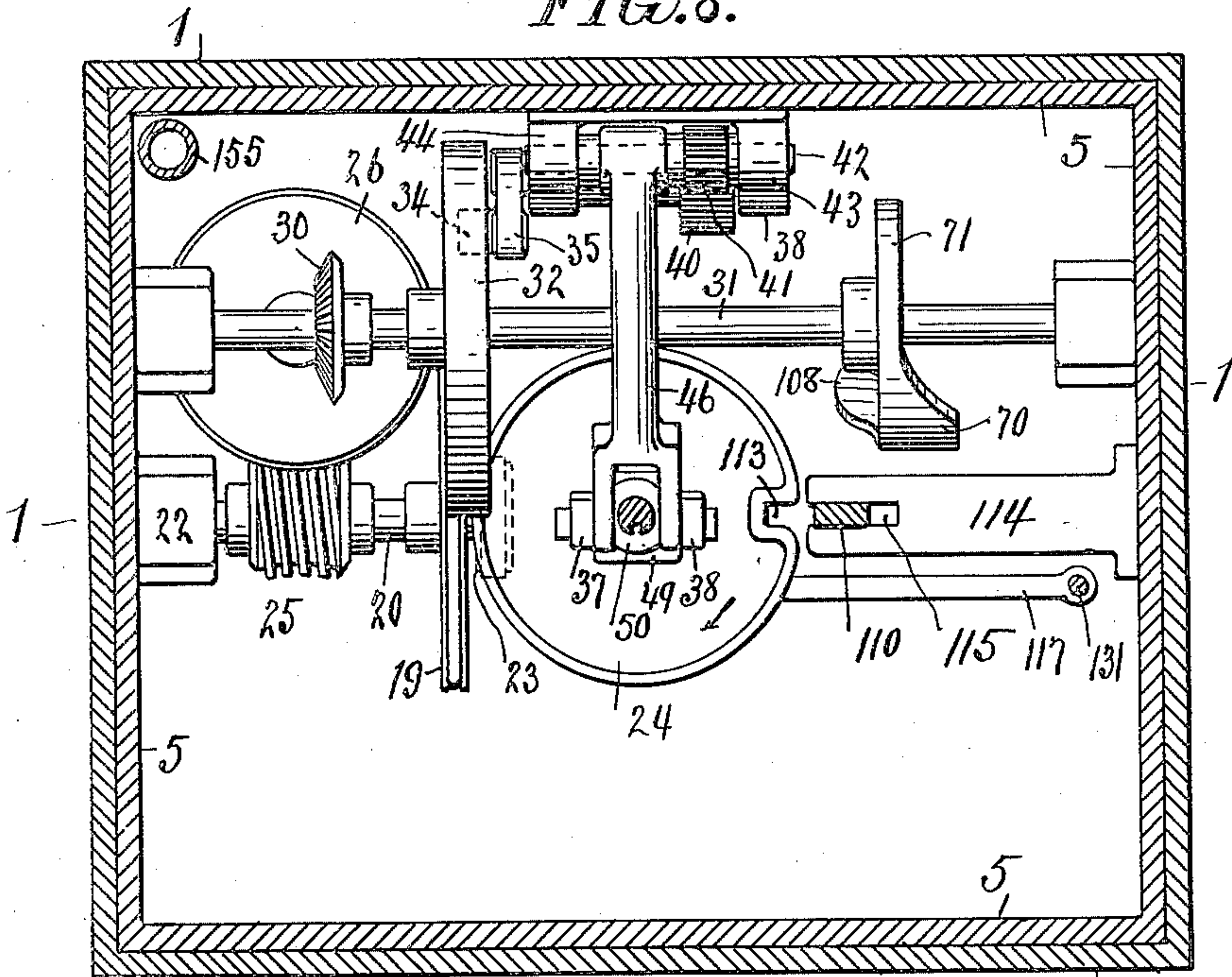
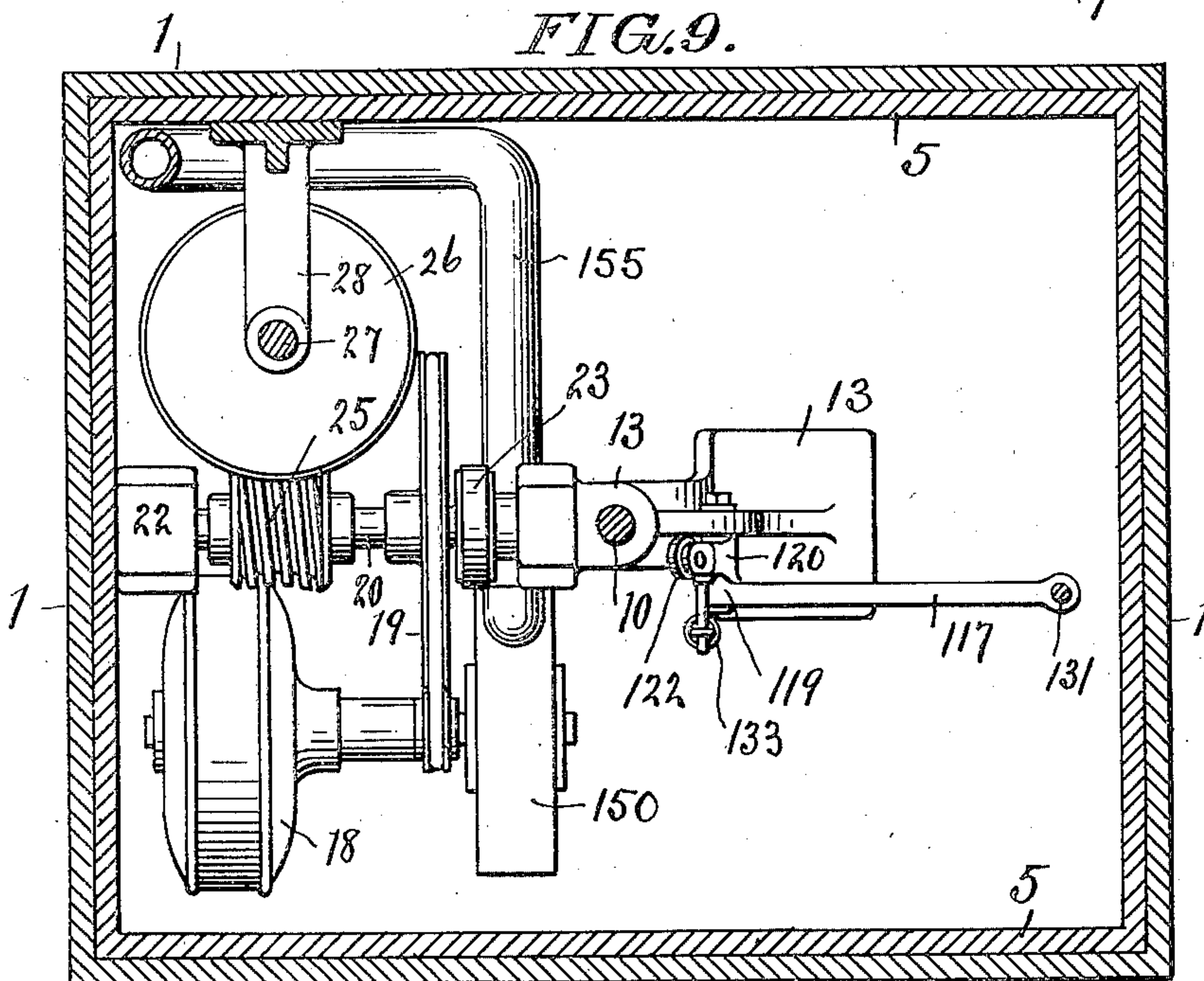


FIG. 9.



Inventor

Witnesses

Wm. R. Ireland  
Hughes & Co., Jr.

By

Conrad S. Schwarz  
Attorney  
H. M. Witt Goodwin



C. S. SCHWARZ.  
MACHINE FOR CLEANING HATS.  
APPLICATION FILED JAN. 22, 1909.

958,327.

Patented May 17, 1910.

7 SHEETS—SHEET 7.

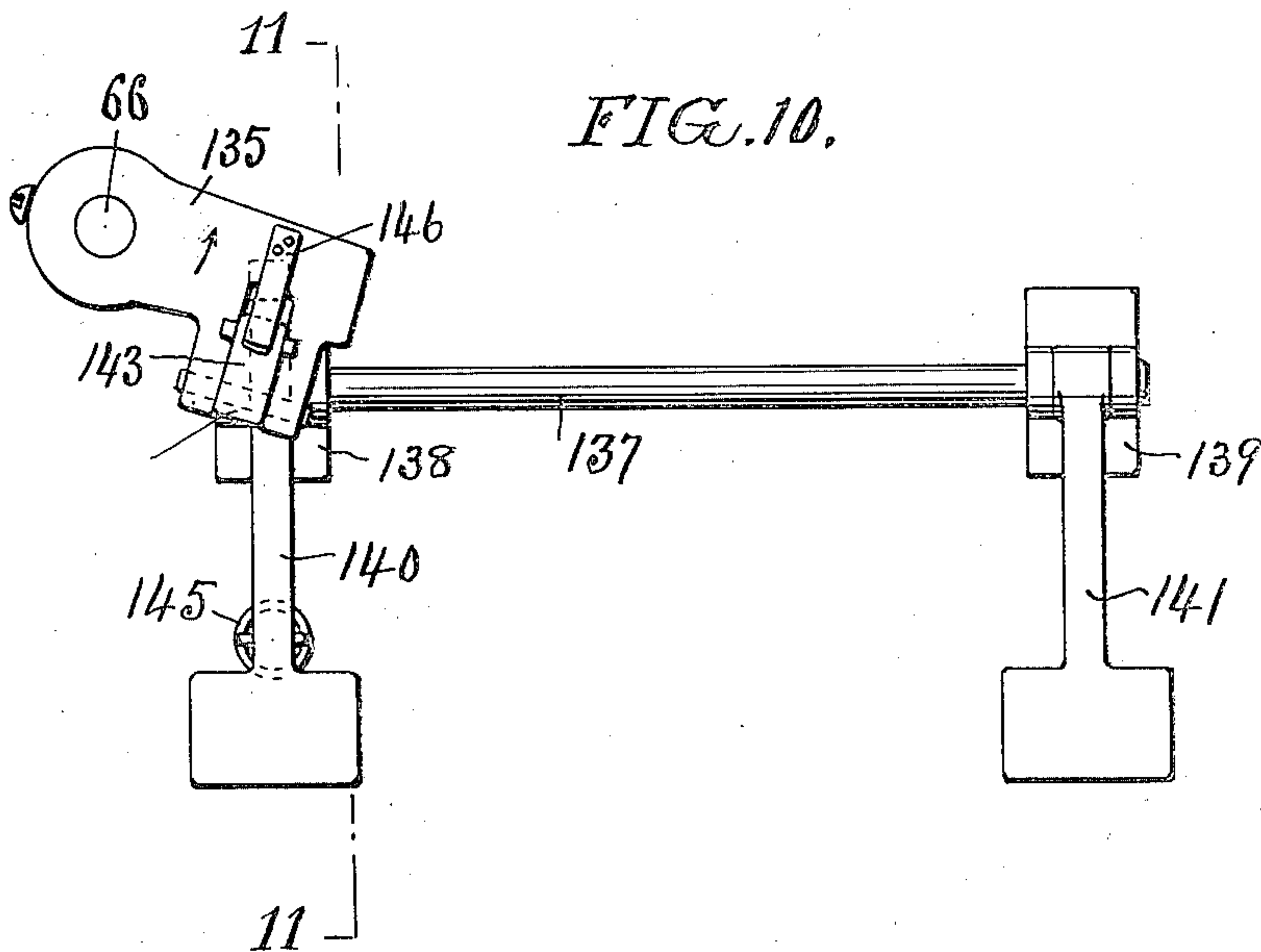


FIG. 11.

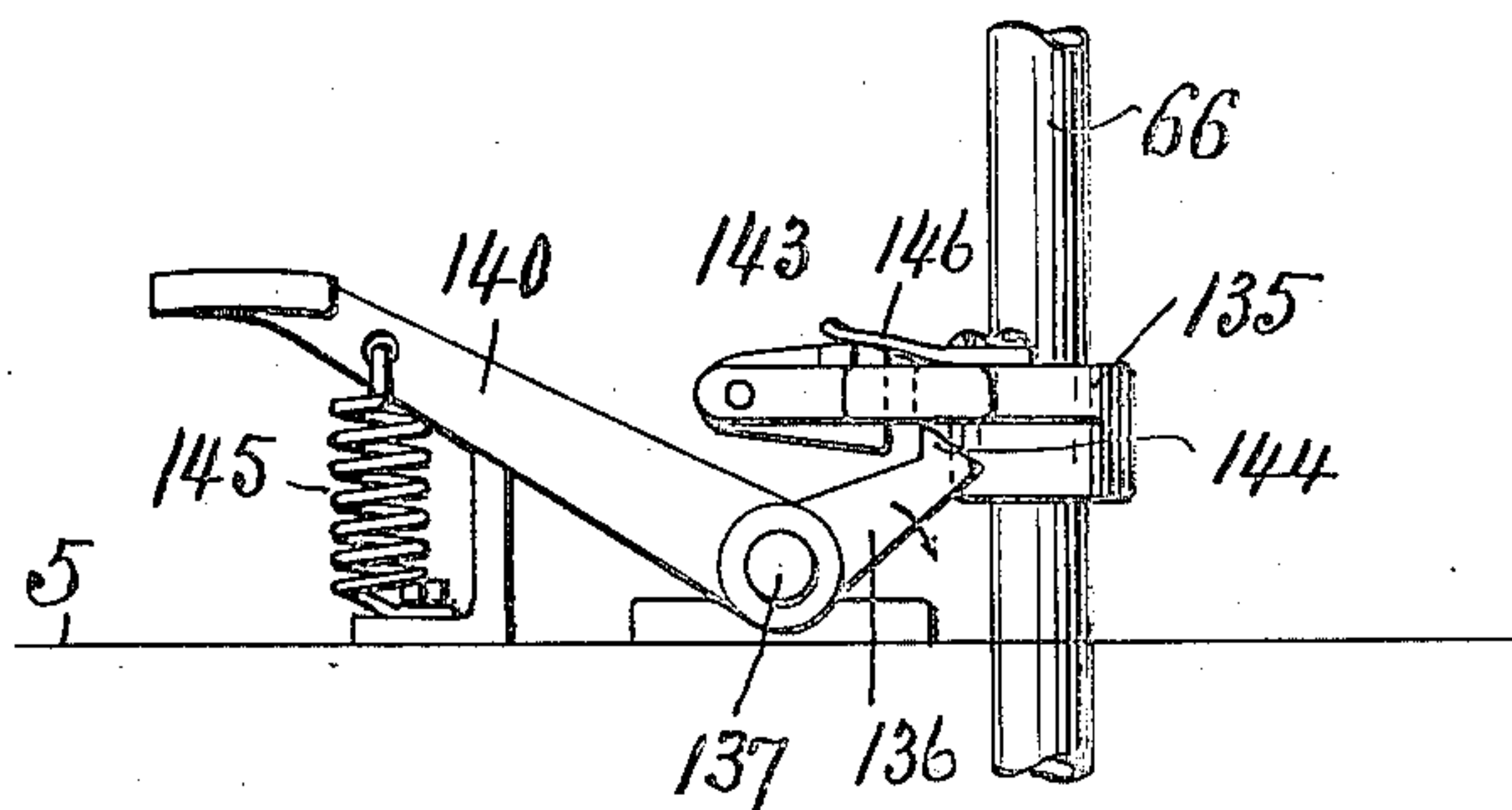
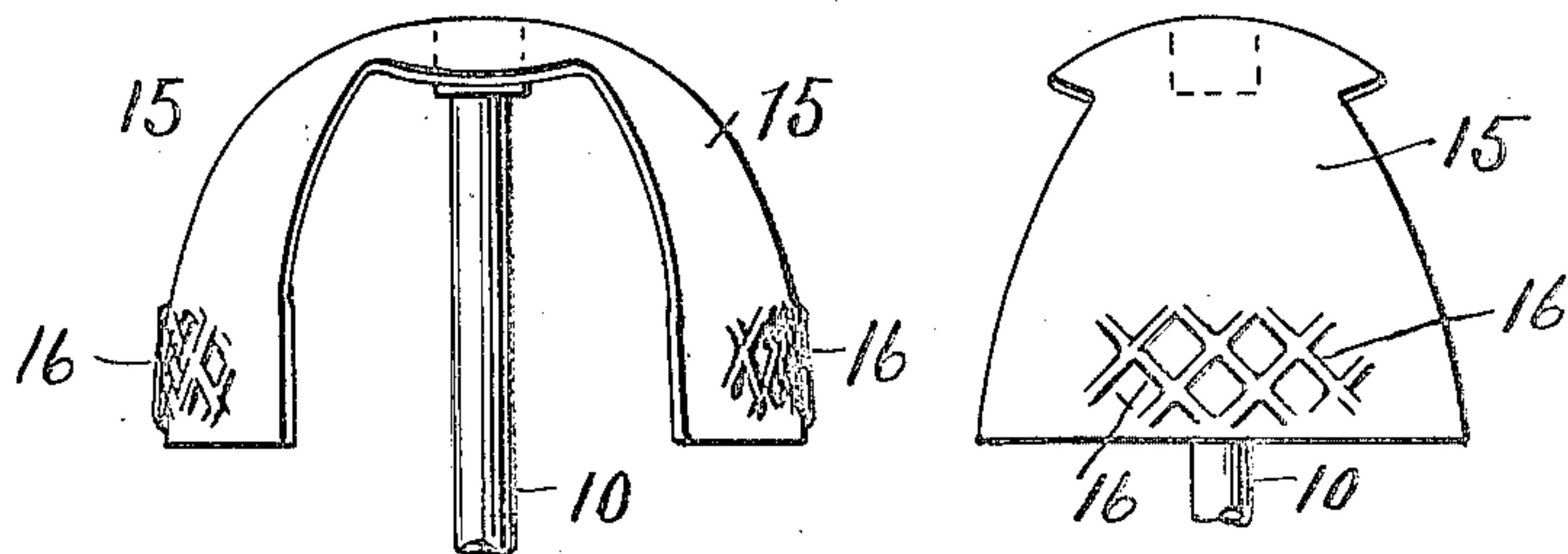


FIG. 12.

FIG. 13.



Inventor

Witnesses

M. R. Ireland  
Rugbyman, Jr.

Conrad S. Schwarz

By

F. W. Witt Goodwin  
Attorney



# UNITED STATES PATENT OFFICE.

CONRAD S. SCHWARZ, OF PHILADELPHIA, PENNSYLVANIA.

## MACHINE FOR CLEANING HATS.

958,327.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed January 22, 1909. Serial No. 473,721.

*To all whom it may concern:*

Be it known that I, CONRAD S. SCHWARZ, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Cleaning Hats, of which the following is a specification.

My invention relates to improvements in a machine for cleaning hats.

The object of my invention is to provide a machine for cleaning hats by the use of brushes.

A further object of my invention is to construct said machine so that the entire operation of cleaning the hat will be automatic; and a still further object of my invention is to provide means for discharging the hat from the machine after the hat has been cleaned.

My invention as generally stated consists of a casing containing a vertical shaft carrying a hat holder adapted to normally stand above the casing; means for lowering said shaft to bring the hat into the casing; brushes located in the casing to clean the hat as the hat is rotated; means for giving said brushes motion so that they will follow the shape of the hat and for withdrawing them from the hat when it has been cleaned; means for raising said hat holder; together with various other novel features which will be hereinafter fully set forth and claimed.

Referring to the drawings: Figure 1. is a plan view of my improved hat cleaning machine showing the parts in their normal positions; Fig. 2. is a view similar to Fig. 1. showing a hat in the machine and the brushes in the operating position; Fig. 3. is a vertical section on line 3—3 Fig. 2; Fig. 4. is a transverse vertical section on line 4—4 Fig. 1. showing the parts in their normal positions; Fig. 5. is a view similar to Fig. 4. with the parts shown in the operating positions taken as on line 5—5 Fig. 2; Fig. 6. is a horizontal section on line 6—6 Fig. 3, showing the parts in the operating position; Fig. 7. is a horizontal section on line 7—7 Fig. 4, showing the parts in their normal positions; Fig. 8. is a horizontal section on line 8—8 Fig. 3; Fig. 9. is a horizontal section on line 9—9 Fig. 3; Fig. 10. is a plan view of the fingers for striking the hat to loosen it from the holder; Fig. 11. is a vertical section on line 11—11

Fig. 10; Fig. 12. is a side elevation of the hat holder; and, Fig. 13. is an end view of the hat holder.

In the drawings 1 represents the outer casing consisting of two compartments 2 and 3, the lower one of which contains a rectangular lining or frame 5 to which the various parts of the machine are attached. The upper compartment 2 of the casing is in the form of a frame having glass panels 6 on the four sides and a glass cover 7 with an aperture formed in the central portion of the same for the insertion of a hat, into the upper compartment 2 of the machine.

In the central portion of the machine is a vertical shaft 10 adapted to rotate and also slide vertically in bearings 11, 12 and 13 secured to the frame 5. The upper end of the vertical shaft 10 carries the hat holder 15 made of resilient members over which the hat may readily be placed. The said members are provided with ribs or corrugations 16, which ribs are preferably arranged diagonally to each other as shown in Figs. 12 and 13. Said ribs prevent the hat from slipping off the holder. The vertical shaft 10 and the hat holder 15 are normally in the position shown in Fig. 4. that is to say, when the machine is at rest and in which position the brushes for cleaning the hat are open or spread apart as shown in Figs. 1 and 4, so that when the hat is lowered into the upper compartment of the machine to be cleaned the hat will not come in contact with the brushes.

After a hat has been placed upon the holder, the machine is set in motion by starting the motor 18 in any suitable manner. It is intended that the motor should be operated by a coin controlled mechanism, but this is not shown in the drawings or intended to be made part of this application. The motor 18 drives a wheel 19 secured on the horizontal shaft 20, mounted in the bearings 13 and 22. Upon the driven shaft 20 is a friction wheel 23 which drives a disk 24 secured on the vertical shaft 10. Said disk 24 is raised and lowered with the vertical shaft 10 and therefore is only in contact with the driving friction wheel 23 when the shaft 10 is lowered to bring the hat down into the upper compartment 2 of the machine, as shown in Figs. 3 and 5. When the machine is stopped the disk 24 is raised, as shown in Fig. 4.

The vertical shaft 10, carrying the hat



holder 15, is lowered in the following manner: Upon the horizontal driven shaft 20 is a worm 25 which meshes with the worm-wheel 26 on a vertical shaft 27 mounted in the bearings 28 secured to the frame 5. Said vertical shaft 27 has a gear-wheel 29 thereon which meshes with another gear-wheel 30 on a horizontal cam shaft 31. The cam shaft 31 rotates at a greatly reduced speed, due to the worm and worm-wheel and the gear-wheels above described. Upon the cam shaft 31 is a cam or disk 32 having a groove 33 formed therein to form the cam, into which groove fits an anti-friction roller 34 on the end of an arm 35 secured to the shaft 36 mounted in the bearings 37 and 38 secured to the frame 5. Said latter shaft 36 has a pinion 40 thereon which meshes with a smaller pinion 41 on a shaft 42 mounted in the bearings 43 and 44 secured to the frame 5. Upon the latter shaft 42 is secured an arm 46 which is pivotally connected at its free end to the vertical shaft 10 by means of links 47 and 48 secured to a collar 49 fitting loosely around said vertical shaft 10 and held in position between the collar 50, secured to said shaft and the hub 51 of the disk 24, which rotates the vertical shaft 10. By the action of the above described cam 32 the vertical shaft 10 will be moved from the position shown in Fig. 4. into the position shown in Fig. 5, with the hat holder carrying a hat as shown in the drawings 2, 3 and 5 drawn down into the upper compartment 2 of the machine. The hat is now in such a position that the brushes may be swung into a position which will bring them in contact with the hat. There are three brushes 53, 54 and 55 which act upon the hat as the hat is rapidly revolved upon the holder 15 and there is a felt pad 56 for polishing the surface of the hat. The brush 53 for cleaning the crown of the hat is mounted on a rod 58 extending from a sleeve or bearing 59 secured to a vertical shaft 60, mounted in the bearings 61 and 62 secured to the frame 5. The brush 54 for cleaning the inside of the brim of the hat is mounted on an arm 64 secured to the last mentioned shaft 60. The pad 56 is mounted on an arm 65 secured to a shaft 66 mounted in bearings 67 and 68. Said shaft 66 is located diagonally opposite to the shaft 60, carrying the above mentioned brushes. Both of these shafts 60 and 66 are oscillated sufficiently to swing the brushes and the pad out of the way of the hat when the latter is being raised and lowered. Said shafts 60 and 66 are operated or turned to bring the brushes into contact with the hat after the vertical shaft 10 has descended and the hat lowered into the upper compartment 2 of the machine. The shafts 60 and 66 carrying the brushes and the pad are operated by the action of a cam 70 formed upon the disk 71, on the above described cam shaft 31, clearly shown

in Fig. 6. The cam 70 on the disk 71 acts upon a roller 72 carried by a bracket 73 slidably mounted in the bearing 74, at one end, and at the other end is pivotally connected to an arm 75 extending from the shaft 66 carrying the pad arm 65. A connecting bar 76 extends from the end of said arm 75 and connects the arm 77 upon the opposite shaft 66 carrying the brushes. The shaft 60 carrying the brush arms and the shaft 66 carrying the pad arm are each provided with an arm 80 and 81 secured to said shafts and upon the free end of each arm is an anti-friction roller 82 and 83. A spring 84 is connected between said last mentioned arms and tends to draw them together against the cam 85, on the vertical sliding shaft 10.

When the machine is in its normal, or stopped, position the brushes are opened and withdrawn from the hat, as shown in Fig. 1, and the arms 80 and 81 and cam 85 are in the position shown in Fig. 7. When the machine is started and the cam shaft 31 is turned sufficiently to lower the vertical shaft 10 and bring the hat down into the upper compartment 2 of the machine, the cam 70 will pass from beneath the roller 72 on the sliding bracket 73, so that the spring 84 will draw the arms 80 and 81 into the position shown in Fig. 6, which will turn the vertical shafts 60 and 66 and bring the brushes 53 and 54 and the pad 56 into contact with the hat. As the crown of the hat is elliptical in form it is necessary to give the brushes 53 and 54 and the pad 56 a slight horizontal movement to provide for the eccentricity in the shape of the hat; this I accomplish by providing an elliptical cam 85 corresponding in shape to the shape of the hat. The above mentioned arms 80 and 81 carrying the anti-friction rollers 82 and 83 are held against said elliptical cam 85 by the action of the spring 84 connected between the arms 80 and 81. Said elliptical cam 85 is keyed to the vertical shaft 10 carrying the hat and as said hat revolves the cam will revolve correspondingly with said hat and the brushes and pad will be moved horizontally by the cam 85 to provide for the variation in the shape of the crown of the hat.

Referring to the brush 54 for cleaning the inside of the brim of the hat, which in addition to having the above described horizontal movement to conform to the shape of the crown of the hat also is adapted to be given a slight vertical movement, to provide for the horizontal curvature of the brim of the hat. This I accomplish by pivoting the arm 64 carrying said brush 54, as shown in Fig. 3, to the arm 87 secured upon the vertical oscillating shaft 60. Said arm 64 carrying the brush 54 is pivoted on the center 89 so that it may have a slight vertical movement. A spring 90 acts on the



under side of said arm 64 to force the brush 54 up and the said arm 64 bears against a cam 91 secured to the bearing 61. Said cam 91 has a cam-surface 92 shown in Fig. 5, and when the brush 54 is oscillated, the cam-surface 92 will force the arm 64 down against the action of the spring 90 and give said brush 54 the proper vertical movement to cause said brush to follow the curve of the brim of the hat.

The underside of the brim of the hat is cleaned by the brush 55 located under the brim of the hat and carried by an arm 94 which is pivoted in a bearing 95 located on the frame 5 of the machine. The latter brush 55 is given a slight vertical movement so that said brush will follow the horizontal curvature of the brim of the hat. This brush 55 does not have a horizontal movement as the other brushes have. To the arm 94, carrying said brush 55, is a connecting pin 96 pivoted to an arm 97, as shown in Figs. 3 and 6, which arm 96 is rigidly secured to a shaft 98 mounted in the bearing 99 secured to the frame 5. Upon the end of said shaft 98 is another arm 100 having an anti-friction roller 101 which is raised or lowered by the high places 102 and 103 formed on the top surface of the cam plate 85 which is rotated by the vertical shaft 10. As the vertical shaft 10 rotates the cams 102 and 103, the shaft 98, carrying the arms 97 and 100, will be oscillated, which motion will be communicated to the brush 55 bearing against the underside of the brim of the hat, giving said brush 55 the proper vertical movement to cause it to follow the shape of the brim of the hat.

The cam 85, having the said high places 102 and 103, above described, is loosely mounted on the vertical shaft 10, so that said shaft may slide vertically through the hub of said cam without moving the latter. Said vertical shaft is provided with a keyway 105 and in the hub of the cam 85 is secured a feather-key 106, fitting in said keyway formed in said vertical shaft, so that the cam will rotate with said vertical shaft. The cam 85 is held in its vertical position between the horizontal portion of the frame 5 and the bearing 12, secured to said frame 5. The vertical shaft, carrying the hat, continues to revolve until the cam shaft 31 makes approximately one revolution. The disk 71 on said shaft is provided with a cam 108 which acts upon a roller 109 carried by a stop arm 110 pivoted in the bearing 111 on the frame 5 shown in Fig. 3. Said stop arm 110 extends downwardly so that the end of said stop arm will be adjacent the disk 24 on the vertical shaft 10, which disk 24 is provided with a slot 113, shown in Fig. 8, to receive the end of said stop arm 110. The end of said stop arm 110 is held in its proper position by a

bracket 114 and said stop arm is adapted to slide in a slot 115 formed in the said bracket 114.

Upon the lower end of said stop arm 110 is formed a cam surface 116 which acts upon an anti-friction roller 117 on the arm 118 of the bell-crank-lever 119 pivoted on the bearing 13. The other arm 120 of said bell-crank-lever is provided with an anti-friction roller 122 which bears against the underside of the disk 24, so that when the stop arm is acted upon by the cam 108 on the disk 71, on the cam shaft 31, said stop arm will be forced toward the disk 24 and move the bell-crank-lever into the position shown in dotted lines Fig. 3, which will raise the disk 24 and the vertical shaft 10 sufficiently to separate the disk 24 from the friction wheel 23 on the driven shaft 20 and as the stop arm is moved still farther toward the disk 24, by the action of the cam 108, said stop arm will enter the said slot 113 formed in said disk 24 which will stop the latter from rotating and bring the hat to rest. When the vertical shaft 10 is brought to rest as above stated, the cam 70 on the disk 71 will act upon the roller 72, as above stated, which will rotate the shafts 60 and 66 and swing the arms, on said shafts, carrying the brushes and pad away from the hat, as shown in Figs. 1 and 7. The hat is now free to be raised out of the upper compartment 2 of the machine, the cam 32 will now operate the arms 35 and 46 and move them into the position shown in Fig. 4, with the vertical shaft 10 raised and the hat holder lifted above the machine. After the parts have been brought into the position shown in Fig. 4, the motor is stopped by any suitable means and the machine will remain in this position until another hat is placed on the holder and the motor is again started.

It is desirable not to have the hat holder revolve unless the hat is in its proper position, firmly in place upon said holder. I therefore provide a pivoted finger 130, shown in Figs. 1 and 3. The free end of said finger 130 is normally in a position which will be in line with the brim of the hat when said hat is lowered into the machine and said hat if properly placed on the holder will, as it is lowered, take against the finger 130 and move the latter into the position shown in full lines Fig. 3. The hat can then revolve without striking said finger. Upon the other end of said finger is pivoted a rod 131 which extends down into the lower compartment of the machine and passes through an aperture in the arm 118 of the bell-crank-lever 119, which latter is normally in the position shown in dotted lines, Fig. 3.

When the free end of said finger 130 is touched by the hat, the rod 131 will raise the arm of the bell-crank-lever sufficiently



to allow the spring 133 to move said bell-crank-lever into the position shown in full lines Fig. 3 which will permit the disk 24 to contact with the driving wheel 23 on the driven shaft 20. It will be seen that if the machine is started without the hat being in its proper position, that the finger will not be acted upon and therefore the bell-crank-lever will still hold the disk separated from the driving disk on the driven shaft and the vertical shaft 10 will not operate, that is to say, the cam shaft 31 will be rotated and complete one revolution and raise the hat out of the machine without cleaning it. This saves the hat from being torn and the brushes from being broken.

After the hat has been cleaned and at the time the brushes and pad begin to open, it is desirable to have the hat loosened from the hat holder so that it can more readily be removed from said hat holder after the hat has been raised above the machine; this I accomplish in the following manner: Upon the vertical oscillating shaft 66 carrying the pad, I provide an arm 135, shown in Figs. 1 and 3, and more clearly shown on a larger scale in Figs. 10 and 11. The arm 135 acts upon an arm 136 secured to a shaft 137 mounted in bearings 138 and 139 on the top surface of the frame 5 of the machine. Said shaft 137 extends beneath the hat and has secured thereto arms 140 and 141, the ends of which arms are adapted to strike the brim of the hat and force the hat up sufficiently to release it from the pressure of the hat holder. As above stated, the arm 135 operates these releasing arms when the brushes are being opened. The actuating arm 135 for this purpose secured to the oscillating shaft 66 is provided with a pawl 143 which engages the hook formed on the end of the arm 136 and raises the free end of the arms 140 and 141 which strike the hat. As the arm 136 carrying the hook travels in an arc of a circle and the arm 135 on the vertical shaft 66 travels in a horizontal plane, the pawl 143 will slip off the hook on the arm 136 and allow the spring 145 to draw the arms down away from the brim of the hat. When the vertical shaft 66 is again rotated in the opposite direction to bring the brushes in contact with the hat, the arms 140 and 141 will not be moved, due to the fact that the spring 146 on the top of the arm 135 will allow the pawl 143 to raise sufficiently to pass over the hook end of the arm 136 without moving said latter arm. Thus the releasing arms 140 and 141 will only be operated when the vertical shaft turns to open the brushes.

A fan 150 driven by the motor 18, is provided for carrying away the dust made by the cleaning of the hat in the upper compartment 2 of the machine. In the lower

portion of this compartment 2, I provide an air tube 151 which fits into the right angle formed around the four sides of the upper compartment 2. Said air tube 151 consists of a flat plate 153 set at an angle in the corners of the said compartment; said flat plate has a series of apertures formed therein and a semi-circular tube 154 secured to the underside of said plate to form a continuous passage for the air. Extending from the fan to the air pipe 151 in the upper compartment of the machine is a pipe 155 connecting said pipe with said fan.

The operation of my invention is as follows: The motor is started by any suitable means. The cam shaft is first rotated and the vertical shaft lowered so that the hat upon the hat holder will be brought into the upper compartment of the machine; the brushes and pad are brought into contact with the hat; the hat releases the disk on the vertical shaft so that the latter may revolve and turn the hat; the hat is revolved rapidly until the cam shaft makes one revolution, at which point the disk 24 is released from the driving wheel, by the cam which acts upon the stop arm, which latter stops the disk 24 and brings the vertical shaft to a standstill; the releasing arms then strike the hat and loosen it from the holder and then the cam shaft raises the vertical shaft so that the hat and hat holder are above the top of the casing where the hat can readily be removed from the hat holder.

Having thus described my invention I claim and desire to secure by Letters Patent:—

1. In a machine of the character described, the combination of a hat holder, means for rotating said hat holder, a brush, an arm carrying said brush, a cam for automatically moving said arm toward said hat holder and for withdrawing said arm away from said hat holder at the commencement and at the end of the rotating operation of said hat holder.

2. In a machine of the character described, the combination of a hat holder, means for raising and lowering said hat holder, means for rotating said hat holder when in the lower position, an arm, a cleaning member carried by said arm, a cam to move said arm toward said hat holder before the latter begins to rotate and for withdrawing said arm when said hat holder stops rotating.

3. In a machine of the character described, the combination of a hat holder, a shaft on which said hat holder is mounted, means for rotating said shaft, an elliptical cam secured on said shaft, arms controlled by said elliptical cam, cleaning means secured upon said arms and a cam adapted to act upon said arms and automatically move said arms toward said hat holder and for withdrawing



said arms away from said hat holder at the commencement and at the end of the rotating operation of said hat holder.

4. In a machine of the character described, the combination of a hat holder, a shaft on which said hat holder is mounted, means for rotating said shaft, a brush located below said hat holder, an arm carrying said brush, a bearing in which said arm is pivoted, a rock-shaft pivoted in a bearing, an arm on said rock-shaft, said arm connected with said arm carrying said brush, a second arm on said rock-shaft, a cam on said first mentioned shaft to move said brush and a spring to move said brush against the action of said cam.

5. In a machine of the character described, the combination of a hat holder adapted to receive a hat, a shaft to rotate said hat holder, a brush adapted to clean the upper side of the hat brim, an arm carrying said brush, a shaft to move said brush arm horizontally, a joint formed in said arm to permit said brush to move vertically, a cam secured to a bearing, said cam adapted to bear against said movable part of said brush arm and move said brush vertically and a spring to move said brush against the action of said cam.

6. In a machine of the character described, the combination of a hat holder, a shaft carrying the same, means for rotating said shaft, oscillating shafts located adjacent to said hat holder, arms on said oscillating shafts, cleaning means upon said arms, an elliptical cam on said shaft carrying said hat holder, arms extending from said oscillating shafts to said elliptical cam, said elliptical cam adapted to move said arms carrying said cleaning means horizontally and follow the shape of the crown of the hat upon said hat holder, a cam secured upon a shaft located at right angles to said shaft carrying said hat holder, means for rotating said latter cam and connecting means between said last mentioned cam and said oscillating shafts whereby said arms carrying said cleaning means are automatically moved toward and withdrawn from said hat holder at the beginning and at the ending of the rotating operation of said hat holder.

7. In a machine of the character described, the combination of a hat holder, a shaft carrying the same, means for rotating said shaft, an oscillating shaft, an arm on said oscillating shaft carrying a brush curved to conform to the crown of a hat, a second brush on said oscillating shaft adapted to fit into the brim of a hat, a second oscillating shaft, an arm on the latter carrying a felt-cleaner, a cam on said shaft carrying said hat holder to move said arms and cause said brushes and said felt-cleaner to follow the shape of the hat as the latter revolves and means for automatically bringing said

arms toward said hat and for moving said arms away from said hat.

8. In a machine of the character described, the combination of a hat holder, a shaft carrying the same, bearings in which said shaft is slidably mounted, a driven shaft, means for rotating said shaft carrying said hat holder, an arm pivotally mounted in a bearing, said arm pivotally connected with said shaft carrying said hat holder and means for raising and lowering said arm operated by said driven shaft.

9. In a machine of the character described, the combination of a hat holder, a shaft carrying the same, bearings in which said shaft is slidably mounted, a driven shaft, means operated by said driven shaft by which said shaft carrying said hat holder is raised and lowered and means for communicating motion from said driven shaft to rotate said shaft carrying said hat holder when the latter is in the lower position.

10. In a machine of the character described, the combination of a hat holder, a vertical shaft carrying the same, bearings in which said shaft is slidably mounted, a driven shaft, a cam shaft, means for driving the cam shaft by said driven shaft, a cam on said shaft, an arm pivotally connected with said vertical shaft, said arm adapted to be raised and lowered by said cam, and means for rotating said vertical shaft when the latter is in the lower position.

11. In a machine of the character described, the combination of a hat holder, a vertical shaft carrying the same, bearings in which said vertical shaft is slidably mounted, a driven shaft, a cam shaft driven by said driven shaft, a cam on said cam shaft, a shaft mounted in a bearing and having an arm thereon operated by said cam, a shaft mounted in a bearing having an arm thereon adapted to raise and lower said vertical shaft, gear-wheels on said shaft carrying said arms, said gear-wheels meshing with each other and means for rotating said vertical shaft when the latter is in the lower position.

12. In a machine of the character described, the combination of a hat holder, a vertical shaft carrying the same, a disk secured on said vertical shaft, bearings in which said vertical shaft is slidably mounted, means for raising and lowering said vertical shaft, means for rotating said vertical shaft when in the lower position, a stop arm to engage a disk on said vertical shaft when the latter is disconnected from the means for rotating it.

13. In a machine of the character described, the combination of a hat holder, a vertical shaft, bearings in which the latter is slidably mounted, means for raising and lowering said vertical shaft, means for rotating



ing said vertical shaft when in its lower position, a disk on said vertical shaft, said disk having a slot formed therein, a stop arm pivotally mounted in a bearing, a cam to act upon said stop arm, a spring to act against said cam, said cam and spring arranged to force said arm into the slot in said disk when the latter is disconnected from the means for rotating said vertical shaft.

14. In a machine of the character described, the combination of a hat holder, a vertical shaft carrying said hat holder, bearings in which said vertical shaft is slidably mounted, a disk on said vertical shaft, a driven shaft, a friction wheel on said driven shaft to drive said disk, a cam shaft, a cam on the latter, a stop arm operated by said cam, a bell-crank-lever adapted to raise said disk from the said friction wheel, said stop arm adapted to move said bell-crank-lever into contact with said disk and to enter a slot in the said disk and stop said disk from rotating.

15. In a machine of the character described, the combination of a hat holder adapted to receive a hat, a vertical shaft carrying said hat holder, bearings in which said vertical shaft is mounted, a disk on said vertical shaft, means for driving said disk when the vertical shaft is in its lower position, a bell-crank-lever adapted to raise said disk off the driving means, a stop arm adapted to bring said bell-crank-lever into action with said disk, means actuated by the hat upon said hat holder to shift said bell-crank-lever and allow said disk to contact with the driving means.

16. In a machine of the character described, the combination of a hat holder, a vertical shaft carrying the same, bearings in which said vertical shaft is slidably mounted, a disk on said vertical shaft, a driven shaft adapted to rotate said vertical shaft when the latter is in its lower position, a cam shaft driven by said driven shaft, a cam on said cam shaft to raise and lower said vertical shaft, a stop arm, a cam on said cam shaft to act upon said stop arm, means actuated by said stop arm to disconnect said disk from the driving means, oscillating vertical shafts having arms thereon, said arms carrying devices for cleaning a hat, arms on said oscillating shafts connected by a bar, a bracket connected at one end to one of said latter arms, a roller on said bracket, a cam

on said cam shaft to act upon said roller and withdraw said arms carrying the cleaning devices away from said hat holder.

17. In a machine of the character described, the combination of a hat holder adapted to receive a hat, means for rotating said hat holder, arms carrying devices for cleaning said hat, fingers pivotally mounted in bearings, said fingers adapted to strike the hat and loosen it from said hat holder, and means for operating said fingers after said cleaning devices have performed their operations.

18. In a machine of the character described, the combination of a hat holder adapted to receive a hat, means for rotating said hat holder, oscillating shafts carrying arms, devices upon said arms for cleaning the hat, fingers pivotally mounted in bearings, an arm on one of said oscillating shafts adapted to move said fingers when said shaft is turned to withdraw the arms carrying said cleaning devices away from said hat and said fingers having free ends adapted to strike against the lower side of the hat and release the same from said hat holder.

19. In a machine of the character described, the combination of a casing, an upper compartment in said casing, a lower compartment in said casing, a fan in said lower compartment, a perforated pipe arranged in the said upper compartment of said casing and a tube connecting said perforated pipe with said fan, a discharge pipe from said fan and means contained in said casing for cleaning a hat.

20. In a machine of the character described, the combination of a casing, an upper compartment in said casing containing means for cleaning a hat, a lower compartment in said casing containing means for operating said means for cleaning the hat, a vertical shaft slidably mounted in said casing, a hat holder on said shaft, means normally holding said hat holder above the top of the said upper compartment, means for lowering said hat holder into said upper compartment and means for raising said hat holder above said upper compartment after said hat has been cleaned.

In testimony whereof I affix my signature in presence of two witnesses.

CONRAD S. SCHWARZ.

Witnesses:

JOSEPH T. TAYLOR,  
M. R. CLEELAND.