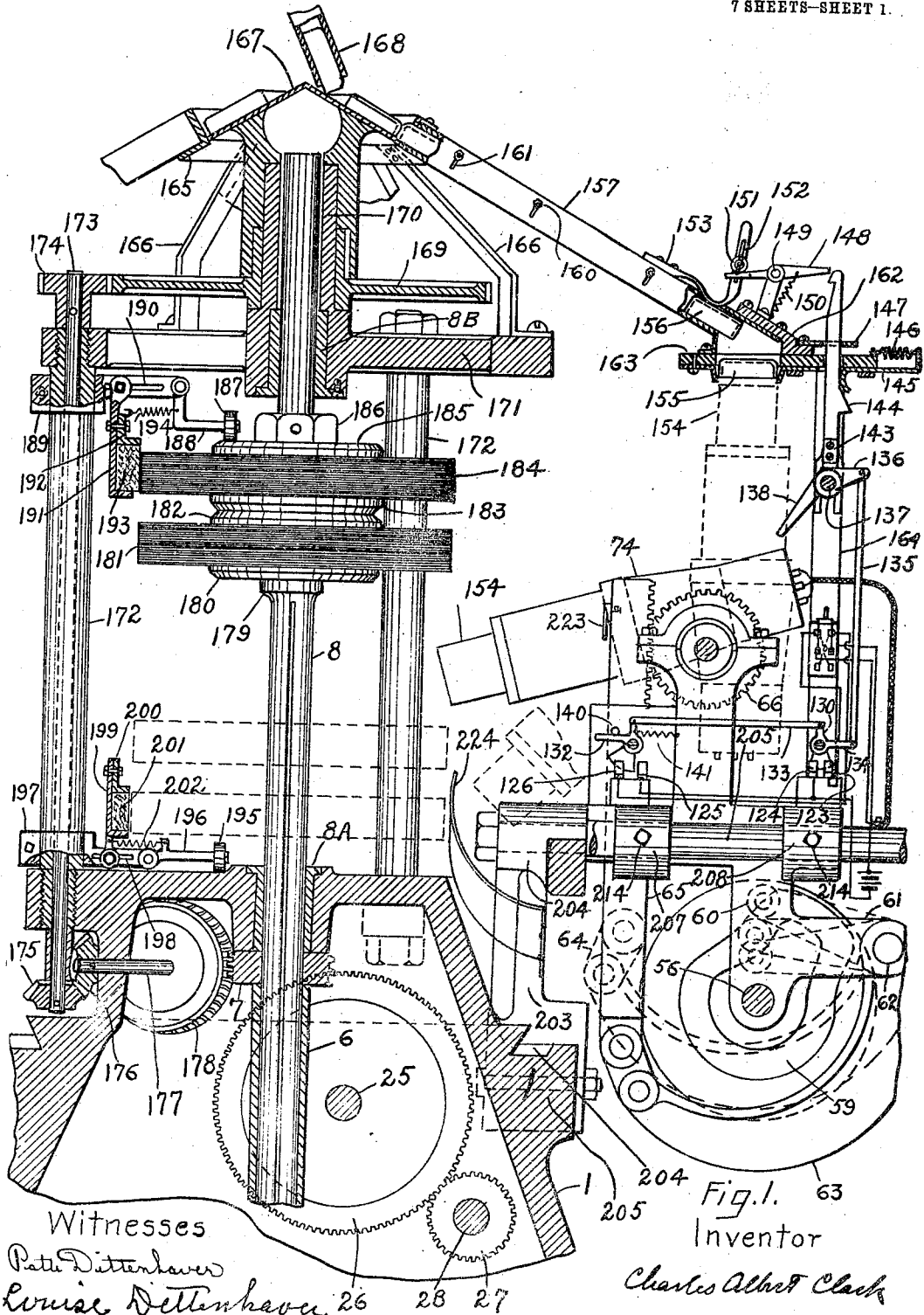


C. A. CLARK.
 AUTOMATIC BUFFING MACHINE.
 APPLICATION FILED JUNE 15, 1911.

1,012,814.

Patented Dec. 26, 1911.

7 SHEETS-SHEET 1.



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7 SHEETS-SHEET 2.

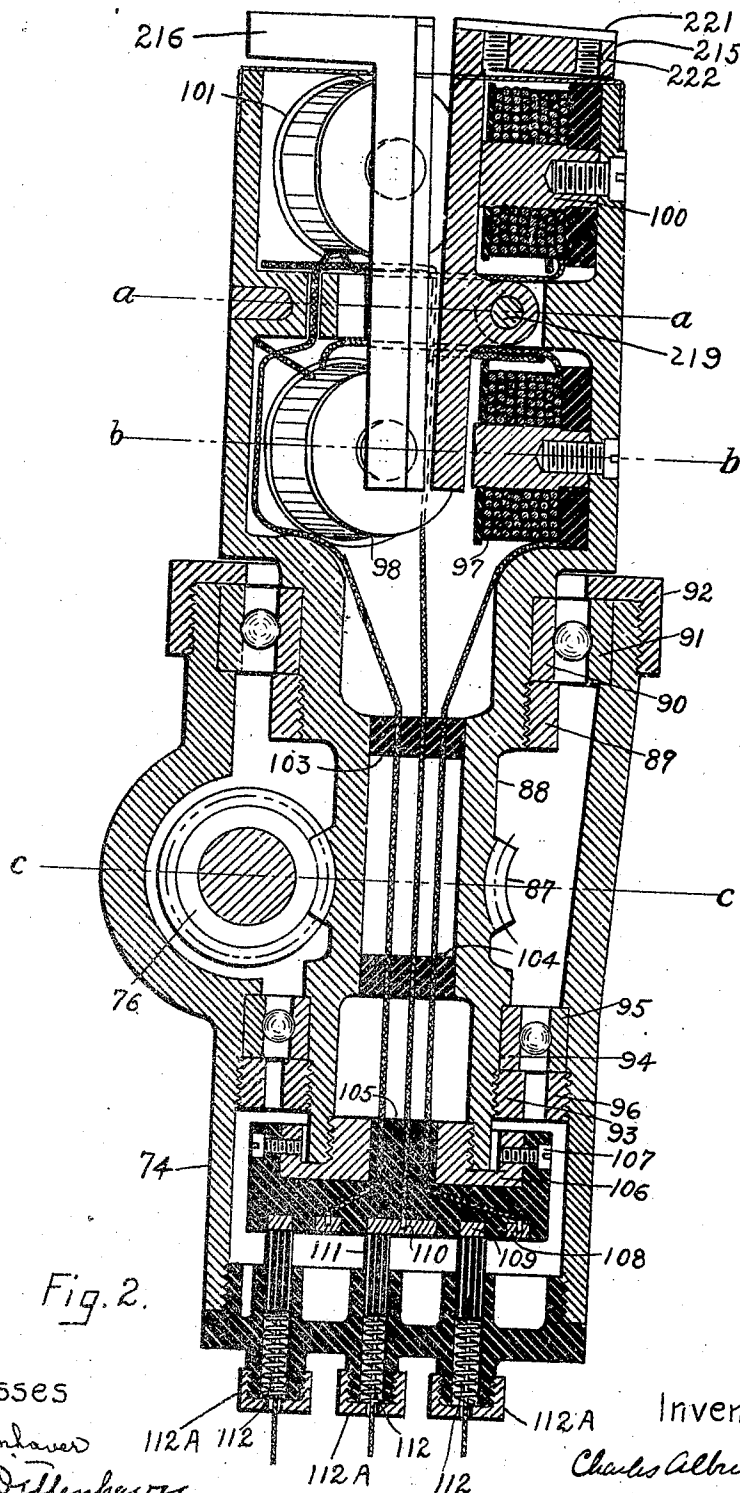


Fig. 2.

Witnesses

Patric Dutton

Ernest Dillenhaver

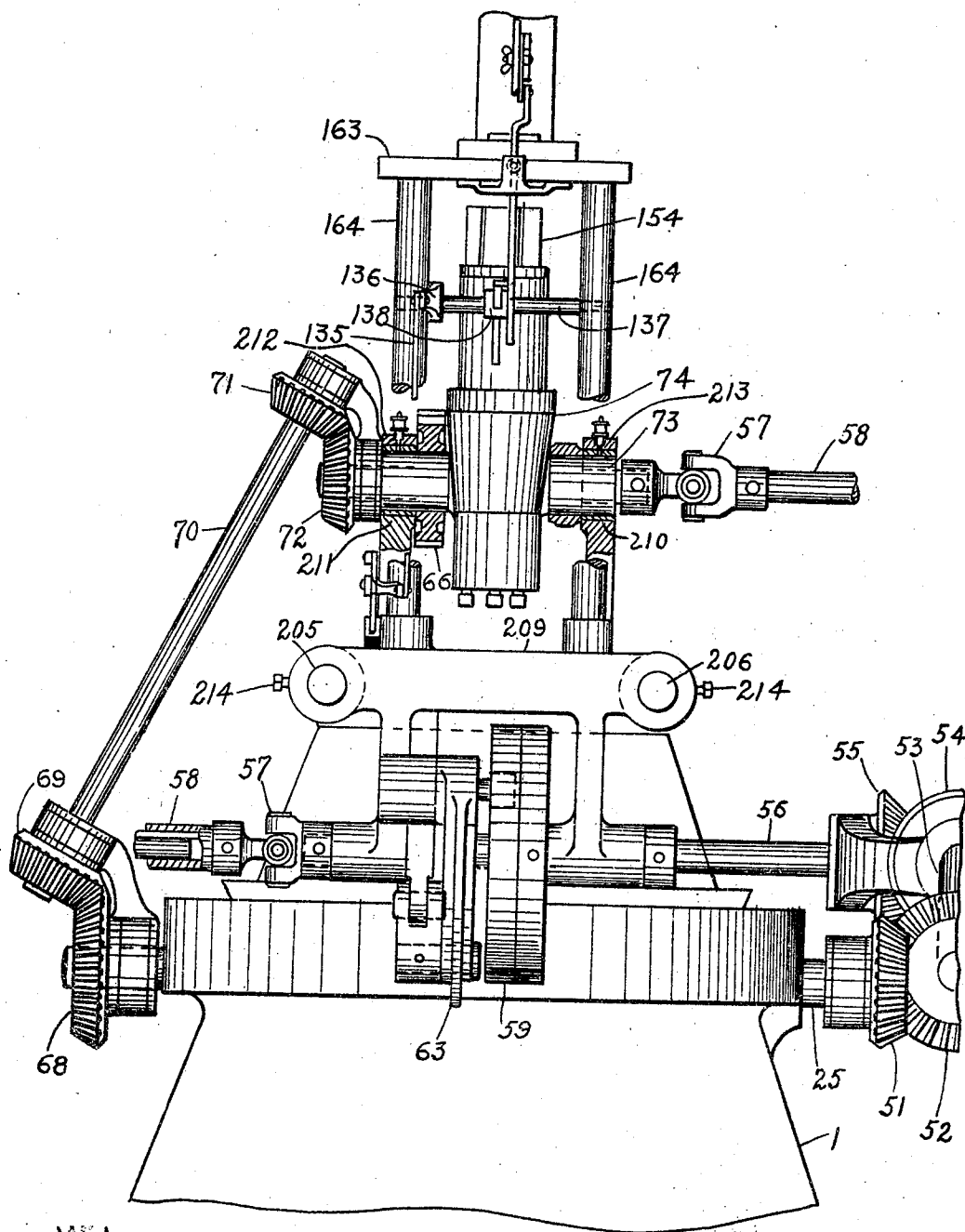
Inventor

Charles Albert Clark

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Patented Dec. 26, 1911.
7 SHEETS-SHEET 3.



Witnesses
Pat. Dittenbaver
Louise Dittenbaver

Fig. 3.

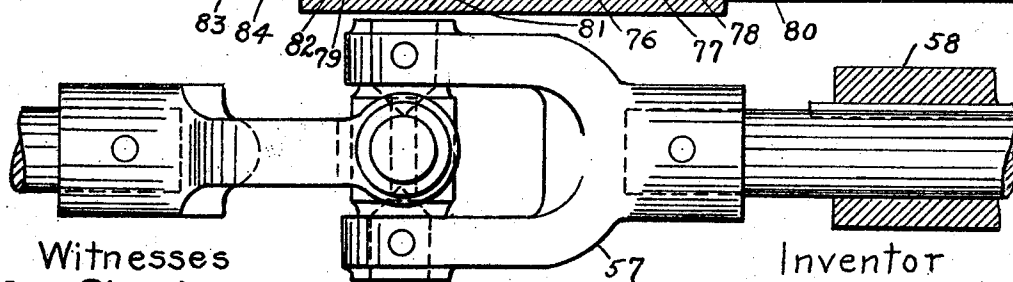
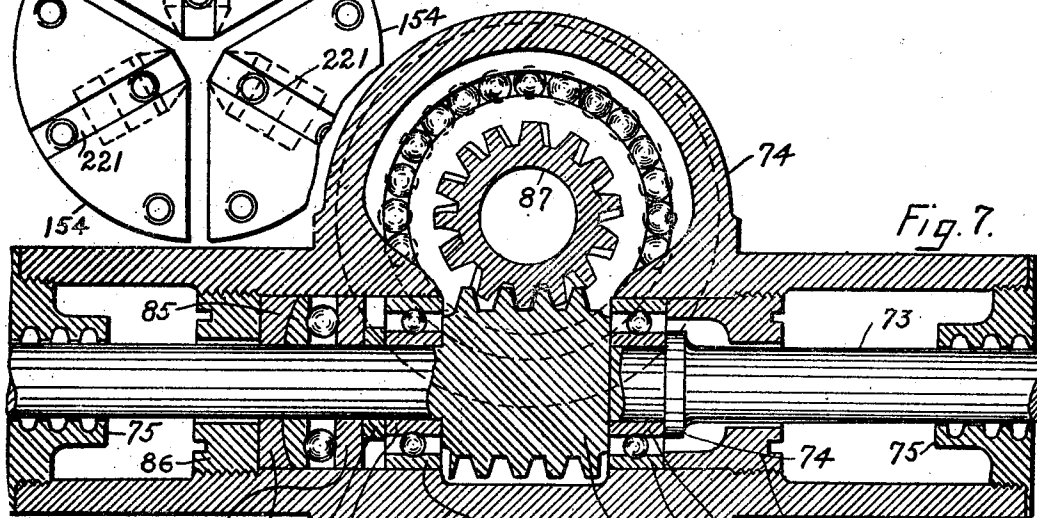
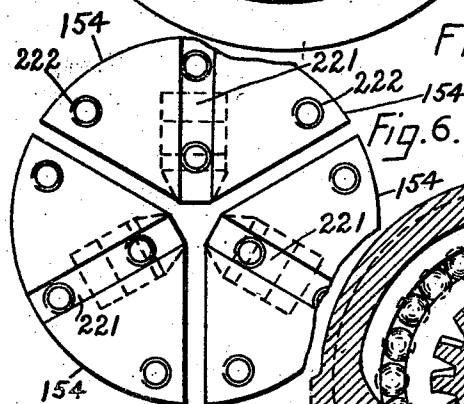
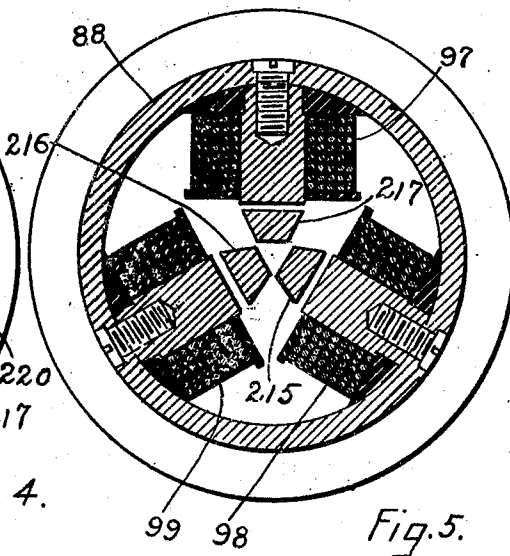
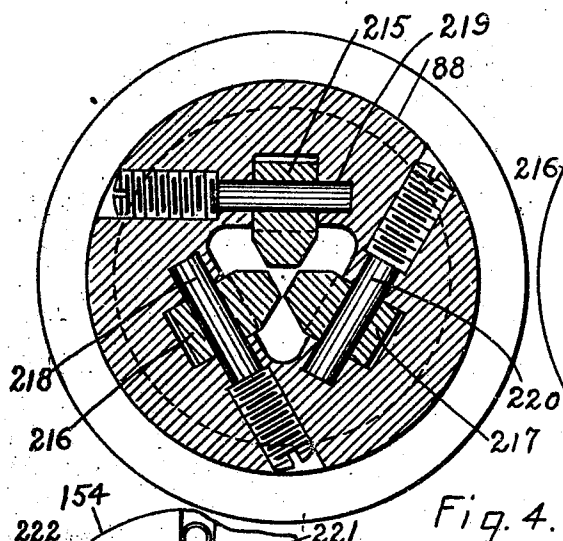
Inventor
Charles Albert Clark

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 APPLICATION FILED JUNE 15, 1911.

1,012,814.

Patented Dec. 26, 1911.

7 SHEETS—SHEET 4.



Witnesses
 Petri Dittenlaver
 Louise Dittenlaver

Fig. 8.

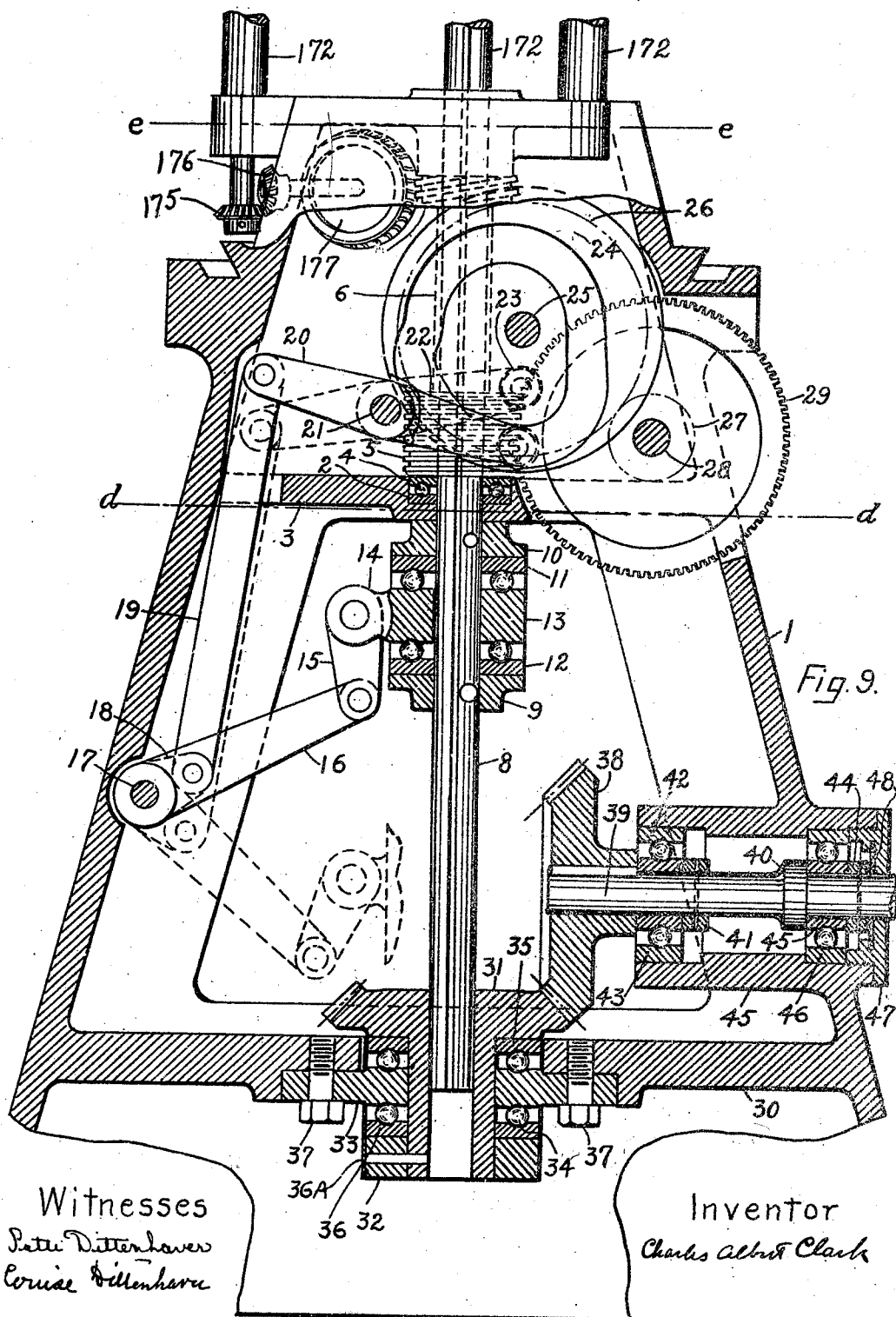
Inventor
 Charles Albert Clark

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C. A. CLARK.
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APPLICATION FILED JUNE 16, 1911.

Patented Dec. 26, 1911.

7 SHEETS-SHEET 5.



1,012,814.

C. A. CLARK.
AUTOMATIC BUFFING MACHINE.
APPLICATION FILED JUNE 15, 1911.

Patented Dec. 26, 1911.

7 SHEETS—SHEET 6.

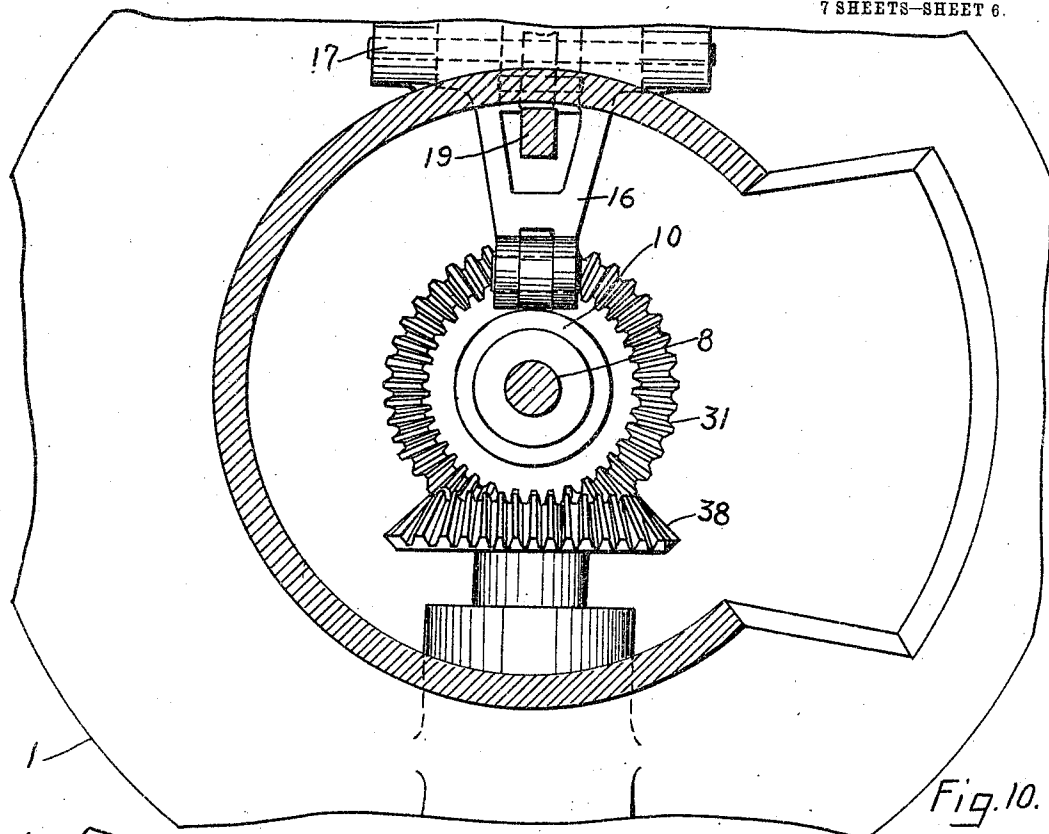


Fig. 10.

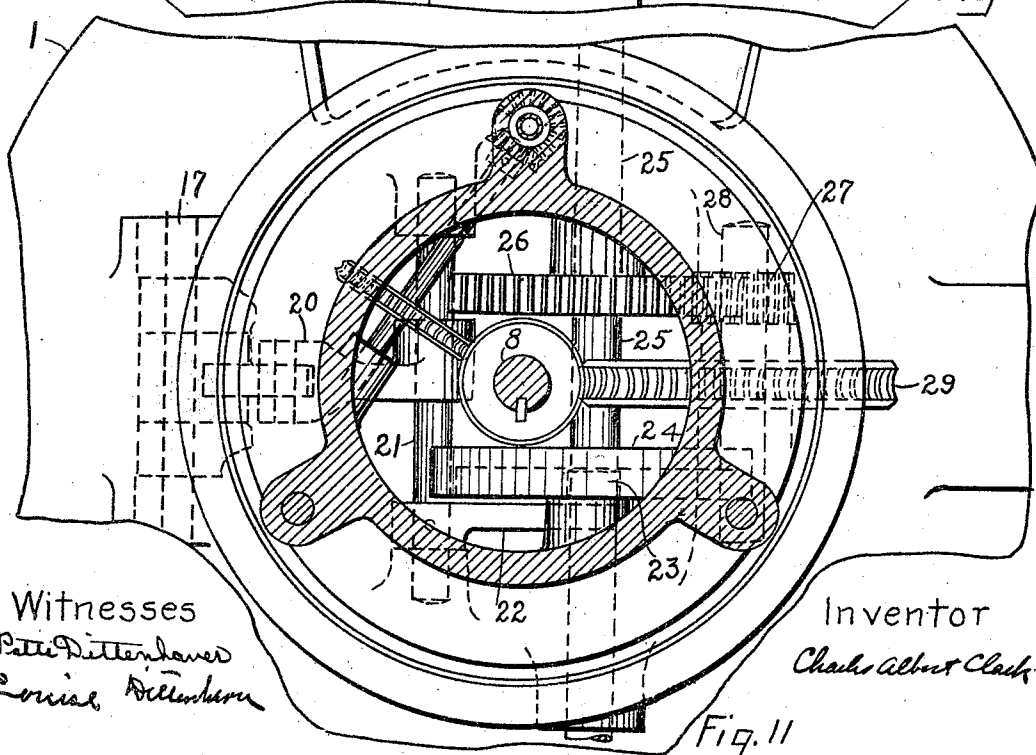


Fig. 11

Witnesses
Peter Dittenhofer
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Inventor
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1,012,814.

C. A. CLARK.
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APPLICATION FILED JUNE 15, 1911.

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7 SHEETS—SHEET 7.

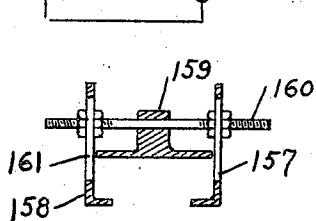
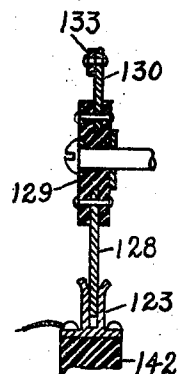
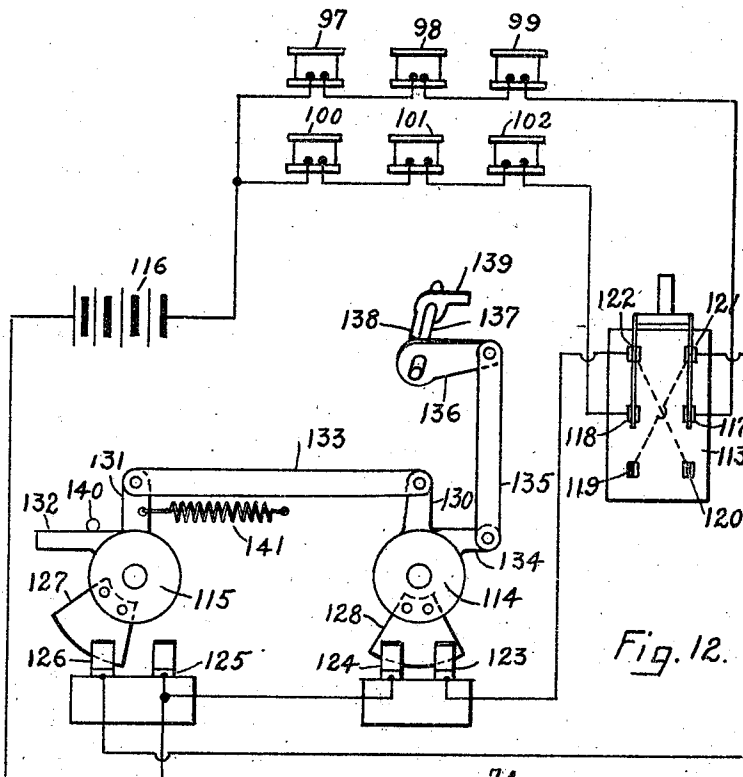


Fig. 15

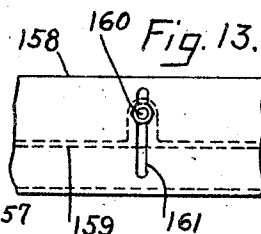


Fig. 16

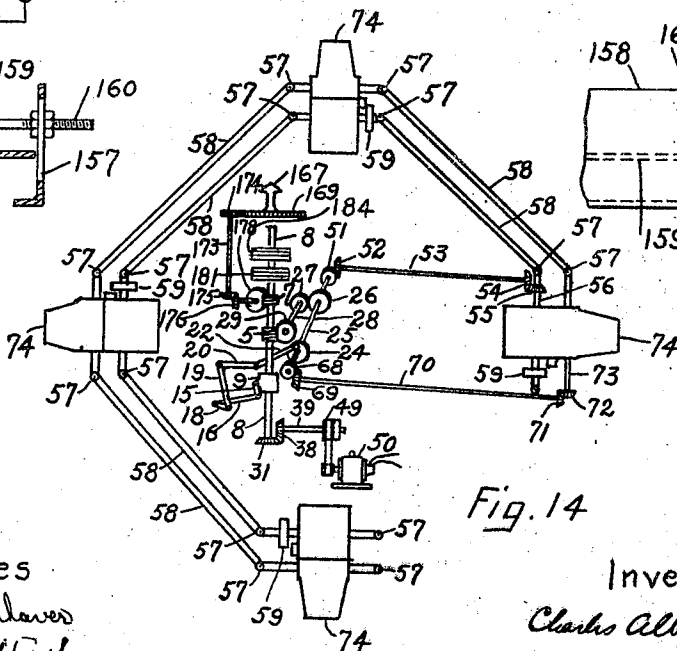


Fig. 14

Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES ALBERT CLARK, OF TOLEDO, OHIO.

AUTOMATIC BUFFING-MACHINE.

1,012,814.

Specification of Letters Patent.

Patented Dec. 26, 1911.

Application filed June 15, 1911. Serial No. 633,437.

To all whom it may concern:

Be it known that I, CHARLES ALBERT CLARK, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Automatic Buffing-Machine, of which the following is a specification.

My invention relates to an automatic buffing machine comprising a vertical shaft carrying two separate buffing wheels in close proximity to each other, said wheels held in a fixed position on the main shaft which is splined and movable by means of a cam. Said shaft with its ball bearings and wheels is revoluble within a frame carrying worms, gears, arms and bearings. Attached to this frame at the periphery are one or more frames each carrying a revoluble head. This head consists of a fixed casing with trunnions and fixed gear attached to the same, meshing into a cam operated rack driven by a flexible shaft, universal joints and gears, from the main shaft carrying the buffing wheels. This ball bearing head casing carries within itself a reversible electrically operated chuck, driven by a worm and shaft running through the center of the trunnions, said shaft driven by universal joints, flexible shaft and gears from the main shaft. By means of universal joints as many separate heads may be connected up as desired, but the power is only transmitted to the first unit, being connected to each other by universal joints and splined, sliding, adjustable shafts. Lime and tripoli, either in block, paste or semi-liquid form is applied automatically by the action of the buffing wheels themselves, which back into a roll held revoluble on the end of a lever, which lever is pivoted on a clamp fastened to one of the posts supporting the feeding mechanism. This clamp is made with a slot radial to the center of the machine and at the extreme end of this slot bearing arm is a pivot for the operating roll arm which is connected by a spring to the arm, said arm in said slot and so made as to hold firmly the block, paste or semi-liquid which is made for buffing. The feeding mechanism of the machine is adjustably connected to the electric reversing switches so that when the head is in position to feed, the jaws are held in the proper position whereby a cap or piece 155, Fig-

ure 1 may fall into its place. The cam arm which operates the electric switch also works an adjustable release arm, said cam arm having three functions; first, to release a cap; second, to close the release arm and third to allow another cap or piece to fall into the distributor box from the chute by lifting a stop spring. I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Fig. 1 is a vertical section of part of the machine. Fig. 2 is a longitudinal section of the revoluble head. Fig. 3 is a side elevation of parts of the machine. Fig. 4 is a cross section of the revoluble head taken on line *a-a*, Fig. 2. Fig. 5 is a cross section of the revoluble head taken on line *b-b*, Fig. 2 showing magnets and magnet arms. Fig. 6 is an end elevation of the revoluble head showing three jaws. Fig. 7 is a cross section of the revoluble head taken on line *c-c*, Fig. 2 showing radial and thrust bearings and worm. Fig. 8 is a side elevation of the universal joint showing the splined sliding shaft. Fig. 9 is a vertical section of the machine showing the operating mechanism in its interior. Fig. 10 is a cross section taken at line *d-d*, Fig. 9. Fig. 11 is a cross section taken at line *e-e*, Fig. 9. Fig. 12 is a diagrammatic plan showing the electrical connections and part of the operating mechanism. Fig. 13 is a cross section of one of the sector knife switches. Fig. 14 is a diagrammatic view of the operating mechanism of the machine showing how the units are connected one to the other and the power connected to one only, from the main drive. Fig. 15 is a section of the adjustable chute. Fig. 16 is a partial elevation of the adjustable chute.

The frame 1 carries in a pocket 2 on web 3, a thrust bearing 4 on which worm 5, collar 6 and worm 7 rest. Said worm 5, collar 6 and worm 7 being splined to the main shaft 8 in bearings 8^A and 8^B, said thrust bearing 4 being used solely to take the weight of the shaft and its fixed attachments.

Pinned to shaft 8 are two collars, 9 and 10, between which are double thrust ball bearings, with upper plate 11, lower plate 12 and center plate 13, with an extended boss 14, having connected thereto lever 15, which is connected to arm 16, supported by shaft 17,

on which shaft is arm 18, connected to lever 19, which lever 19 is connected to arm 20, pivoted on shaft 21 which carries on its opposite end cam lever 22, provided at its free end with a cam roll 23. Cam roll 23 is operated by cam 24, keyed to shaft 25, which also has keyed thereto a gear 26 in mesh with pinion 27, which is keyed to shaft 28, provided with worm gear 29, said worm gear 5 being in mesh with worm 5 on shaft 8. Bevel gear 31 is held by collar 32 to web 30 of the frame by ball thrust plate 33, plates 34 and 35, balls 36 and casing 36^A by means of bolts 37. Bevel gear 31 is in mesh with 15 bevel gear 38, keyed to shaft 39.

To shaft 39 is pinned a collar 41, holding ball race 42 and 43, said race 43 being free to move. Collar 44 is pinned to shaft 39 holding ball race 45 against collar 40 on 20 shaft 39. Ball race 46 is held against the frame 1 by cap 47, said cap being provided with dust washer 48. Shaft 39 (Fig. 14) has pulley 49 keyed to same and belted to motor 50. Power is transmitted from 25 motor 50 by belt to pulley 49, through shaft 39, gear 38, gear 31, shaft 8, worm 5, worm wheel 29, shaft 28, gear 27, gear 26, shaft 25, gear 51, gear 52, shaft 53, gear 54, gear 55, shaft 56, universal joint 57, shaft 58 to 30 the second, third, etc., units driving the shaft 56 with cam 59 keyed on same. Arm 61, carrying a cam roll 60, is keyed to shaft 62 and arm 63, also keyed to shaft 62, has a link 64 connected to rack 65, which is in 35 mesh with gear 56, thus moving head 74 into its different positions. Also from shaft 25, the power is transmitted through gear 68, gear 69, shaft 70, gear 71, gear 72, shaft 73 into casing 74, protected by dust caps 75, 40 said shaft 73 having a worm 76 with ball race 78, held in position by collar 74 and worm 76, with ball race 77 held at one side only by sleeve 80. On the opposite side ball race 79 is held by ring 82 and worm 76; ball race 45 81 is free. Next to ring 82 is the ball thrust washer and race 83 with race and thrust washer 84 on opposite side of balls having a backing washer 85, all held in position by ring 86. The worm 76 transmits the power 50 to worm gear 87, which is a part of the revoluble casing 88, said revoluble casing 88 being retained in position by ball bearings. Ring 89 holding race 90 against the shoulder in the revoluble casing 88, while race 91 is 55 held against a shoulder in case 74 by cap 92. Also ring 93 holds ball race 94 against a shoulder in the revoluble casing 88, said ball race 95 is held by ring 96 against a shoulder in case 74.

60 In the forward end of the revoluble casing 88 are six electromagnets, 97, 98, 99, 100, 101 and 102, connected as shown in Fig. 12, all wires running through the hollow revoluble casing 88 held by insulated blocks 103

and 104, thence passing into insulated block 65 105, held rigid with revoluble casing 88, by metal ring 106, and set screw 107. Said insulated block 105 having three rings, 108, 109, 110 set into its face, carrying the current through carbon brushes 111, held 70 against rings 108, 109, 110 by springs 112, held in position by caps 112^A, thence out to the double throw double pole switch 113 to the quadrant switches 114 and 115, through battery or power supply switch 116. This 75 current travels in one case from battery 116, through magnets, 100, 101 and 102, switch points 118, 122, to contact points 124, back to battery or source of power. When the double throw double pole switch is re- 80 versed the current flows from battery or source of power through magnets 97, 98 and 99, switch points 117, 120, 122 to switch points 123, through 128, switch point 124 to battery. 85

The quadrant switches (see Fig. 13) consist of an insulated block 129, holding quadrant of metal 128 or 127, also having arms 130, 131, 132, 134 with connecting link 133 and 135, a lever 136 pinned to shaft 137, 90 having cam arm lever 138 with cam 139 pinned to shaft 137. The whole movement is operated in one direction by lever 138, being moved by the head 74, and in the opposite direction by the adjustable post 95 223, on rack 65, moving lever 132, held by spring 141, against stop pin 140, the normal position of the mechanism as shown against pin 140 as in Fig. 12 and Fig. 1. Lever 144 has a fork at one end fitting over shaft 137, 100 having an adjustable projection 143, which is in contact with cam 136, but fast to fork 144. On the opposite end of fork 144 there is a notch which catches lever 148 on the downward movement of fork 144 only. Said 105 lever 148 is pivoted at 149, held by spring 150, against an adjustable stop 151, adjustable in slot 152, in spring arm 153. When lever 138 is moved by head 74, cam 136 is moved up against arm 143 moving with it 110 the fork 144, which is held by guide 147, said fork 144 having an inclined surface working on lever 145, which is held in a closed position by spring 146 normally. This movement of lever 145, allows a cap 115 or piece 155 to be dropped on chuck jaws 154, the cap 156, being held from moving by spring 153 until fork 144 drops back, which it cannot do until head leaves the loading position, then upon the fork 144 120 dropping to its normal position, the notch in fork 144 catches lever 148, forcing up spring arm and spring 153, allowing cap or piece 156 to drop into place of cap or piece 155. These caps come down an adjustable chute, 157, composed (see Fig. 15 and Fig. 16) of sides 157 and 158 and top 159 held by adjustable bolts, 160 being adjustable

in slots 161. These chutes may be used independently with each unit, being held to the unit by arm 162 on plate 163, supported by posts 164. In case several units are to be used together handling the same kind of pieces the chutes 157 are adjustably held in position by arms 166 (Fig. 1) so holding ring 165 against the periphery of the revolving cone 167, which acts as a carrier of caps 10 or pieces from the main chute 168. This revolving cone 167 is made revoluble by being keyed to gear 169, held in bearing 170, which is part of plate 171, supported by posts 172, one of which is hollow to receive shaft 173, having gear 174, pinned on one end and gear 175 on the other end. Meshed with gear 175 is gear 176, pinned to shaft 177, having a worm gear 178, in mesh with worm 7, splined to shaft 8. Shaft 8 has a shoulder 179, against which washer 180, buffing wheel 181, washer 182 and 183, buffing wheel 184, washer 185, and held by locked nut 186. When these buffing wheels move upward to their normal position washer 185, comes in contact with roll 187 on arm 188, pivoted on an adjustable clamp 189, said clamp having a slot 190 in which is adjustably pivoted arm 191, having an adjustable clamp piece 192, holding buffing compound 193 against wheel 184, by spring pressure through spring 194, said spring fastened between arms 188 and 191. When buffing wheels are down, washer 180 comes in contact with roll 195, on arm 196, pivoted on an adjustable pivoted arm 199, having an adjustable clamp 200, holding the buffing compound 201 by spring pressure against wheel 181 by spring 202 between lever 196 and arm 199.

Each unit machine is held to frame 1 by arms 203, one of which is shown in Fig. 1, said arms being adjustably bolted to frame 1, held by bevel groove 204 and bolts 205, one of which is shown in Fig. 1. This arm 203 has two bosses 204 into which is bolted shafts 205 and 206, passing through bosses 207, 208 on frame 209, which frame has bearings 210 and 211 and bearing caps 212 and 213, said shafts making the unit adjustable to and from the buffing wheels by set screws 214. The electric clutch has three arms 215, 216 and 217, shown in Fig. 4, Fig. 5, and Fig. 6, said arms being pivoted by removable studs 218, 219, 220. The outer ends of these chuck arms have a slot 221, screw holes 222, said screw holes used to bolt on such additional pieces, shown in Fig. 3 as 154, as may be required by the nature of the piece to be buffed. The caps or pieces, when the head is in the release position, or dis-

charge position, will slide down the chute 224 to a receptacle not shown.

I claim:

1. The combination of a vertically moving set of revolving buffing wheels, a moving and revolving head, an automatic electric chuck, revolving within the head, a casing carrying the revolving chuck and head, and a means for moving the casing with its moving parts holding the article to be buffed.

2. The combination of a pair of vertically driven and vertically moving buffing wheels which feed themselves with their proper buffing compound, an automatic self feeding revolving and movable head carried in a casing moved in conjunction with the buffing wheels.

3. The combination of vertically driven, vertically moving compound self feeding buffing wheels, an electric automatic revolving chuck and head carrying an article to be buffed, a swinging casing operated in conjunction with the buffing wheels said casing automatically discharging and charging the automatic electric chuck.

4. The combination of a pair of revolving and movable buffing wheels on a vertical shaft, feeding themselves automatically with the compounds for buffing, two or more revolving electrically controlled chucks carrying articles to be buffed, each a separate unit in itself, capable of adjustment to and from the said wheels, means for driving the heads of each unit and operating the casing either separately or together, an adjustable independent automatic chute for each unit automatic in its action.

5. The combination of twin buffing wheels vertically revoluble and movable by and through two or more revolving electrically controlled heads held in a casing supported in a detachable and adjustable frame said frame carrying an adjustable automatic chute for feeding articles to be buffed and an adjustable chute for carrying away the finished goods.

6. The combination of vertically driven and movable buffing wheels, a frame carrying the same with means for holding and driving a core distributor, means for holding one or more independent chuck carrying heads, each with its automatic chuck and means for carrying the power from the main vertical shaft to each unit.

CHARLES ALBERT CLARK.

Witnesses:

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