H. D. HODGE.

POLISHING MACHINE.

APPLICATION FILED MAR. 14, 1910.

973,350.

Patented Oct. 18, 1910.

4 SHEETS-SHEET 1.

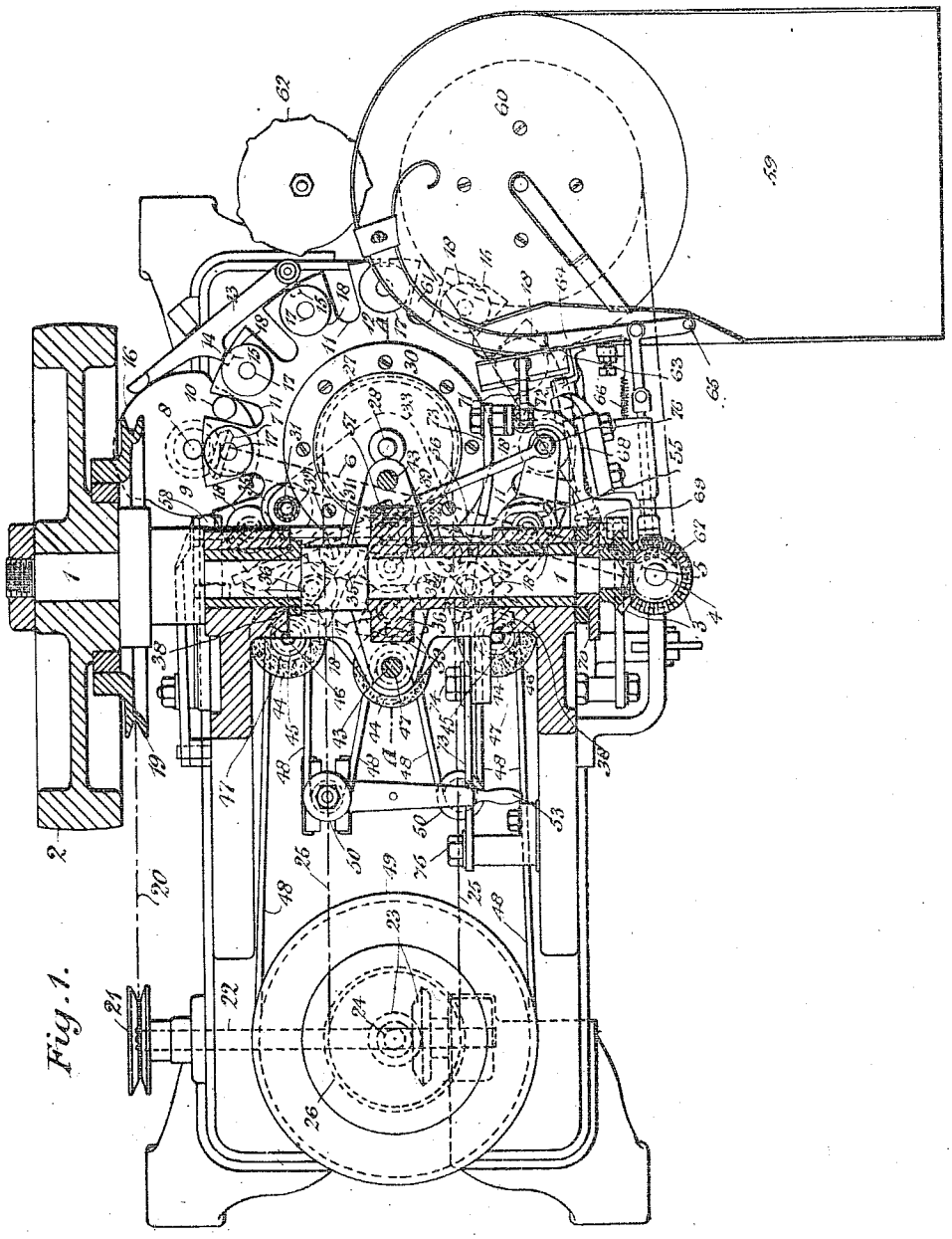


Fig. 1.

Witnesses.

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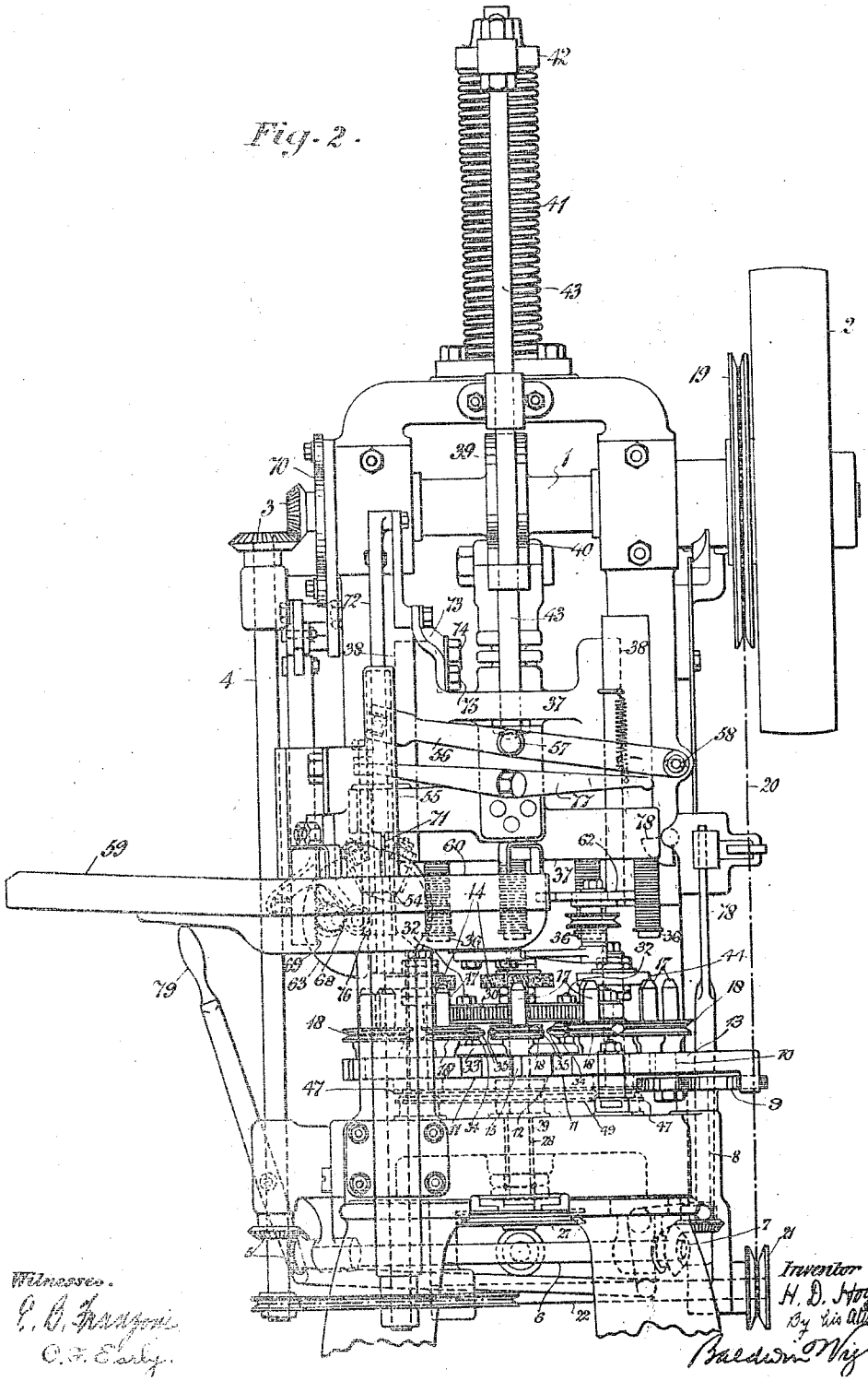
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4 SHEETS-SHEET 2.

Fig. 2.



Witnesses.

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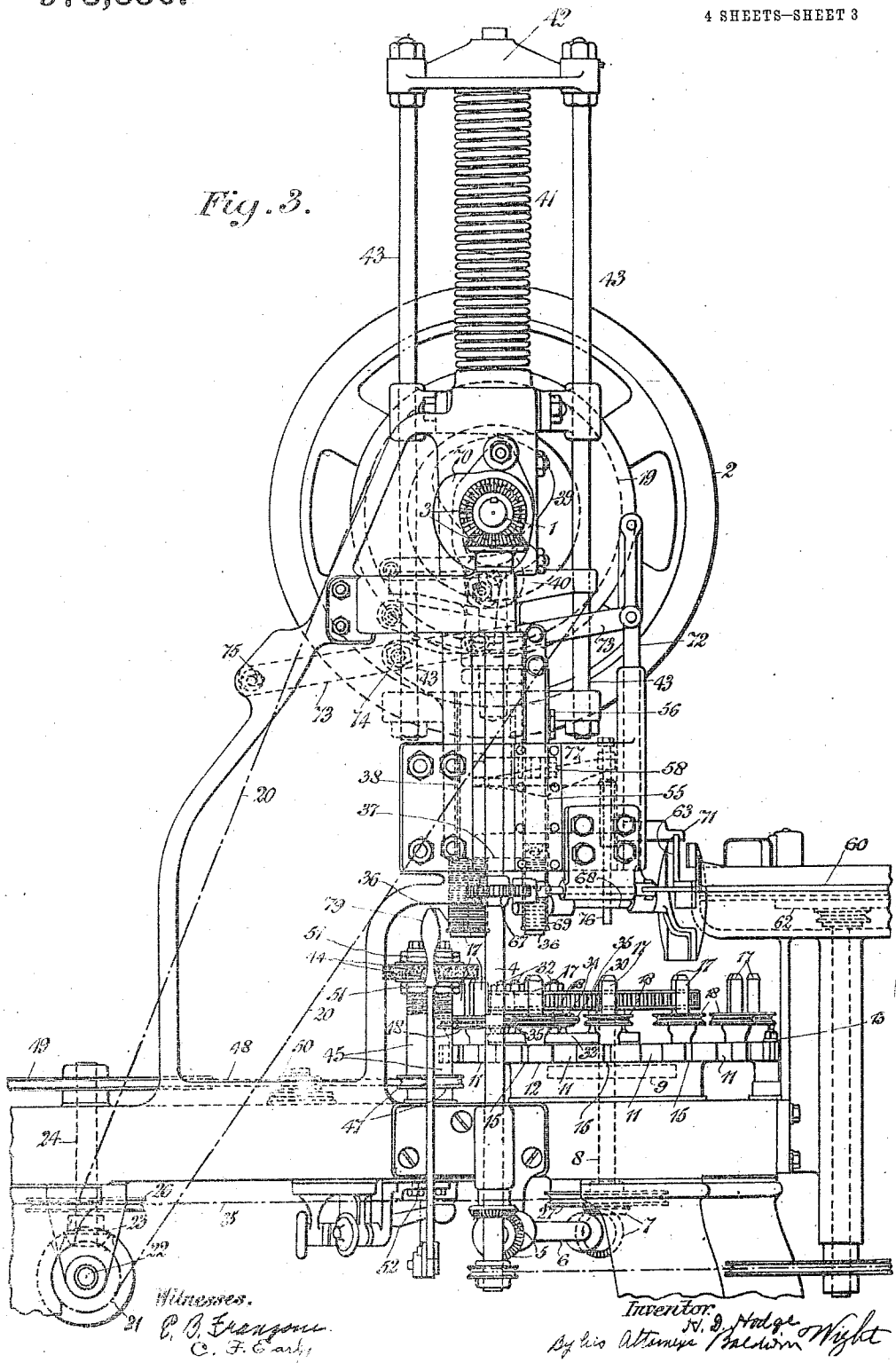
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4 SHEETS—SHEET 3

Fig. 3.



Witnesses.
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4 SHEETS—SHEET 4.

Fig. 4.

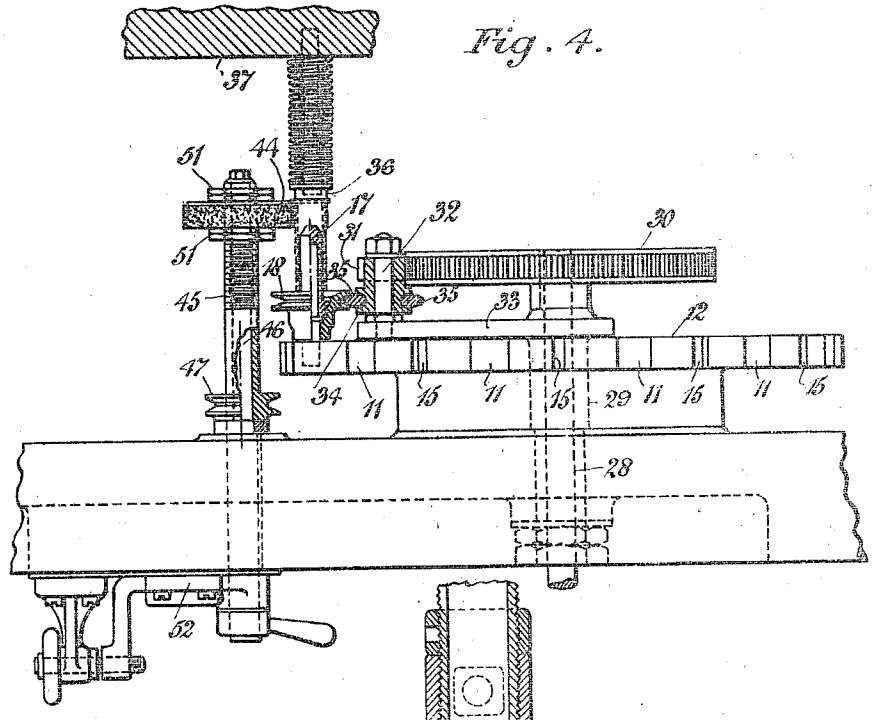
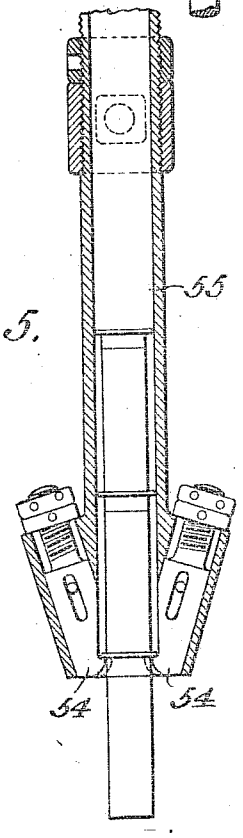


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

HOWARD DOUGLAS HODGE, OF WALTHAM ABBEY, ENGLAND, ASSIGNOR TO NOBEL'S EXPLOSIVES COMPANY, LIMITED, OF GLASGOW, SCOTLAND.

POLISHING-MACHINE.

973,350. Specification of Letters Patent. Patented Oct. 18, 1910.

Application filed March 14, 1910. Serial No. 549,291.

To all whom it may concern:

Be it known that I, HOWARD DOUGLAS HODGE, manager of Waltham Factory, Nobel's Explosives Co. Ltd., a citizen of the United States, residing at Joyce House, Waltham Abbey, Essex, England, have invented a new and useful Polishing-Machine, of which the following is a specification.

The object of this invention is to provide an improved machine for polishing or buffing cylindrical articles and more especially for buffing the metal heads of cartridge shells. With this object I provide a horizontal table to which a step by step movement of rotation can be imparted and from which stand up a number of pins on which the articles or shells can be placed. The articles are thus carried past buffing wheels or cylinders which are caused to rotate and while the articles are passing the buffing wheels, they also are caused to rotate in the same sense as the wheels. A gate or carrier having buffing fingers depending from it is also caused to descend at intervals so that the ends of the articles rotating beneath the fingers may thus be polished.

The accompanying drawings show a machine made in accordance with this invention for buffing cartridge shells.

Figure 1 is a plan, Fig. 2 a front view and Fig. 3 a side view. Fig. 4 is a section to a larger scale on the line A—A Fig. 1. Fig. 5 is a detail view of the devices for picking the cartridge shell from its supporting pin.

1 is the main shaft of the machine driven by a belt pulley 2 and driving by bevel gear 3 a vertical shaft 4 which in turn by bevel gear 5, cross shaft 6 and gear 7 drives a vertical shaft 8 on which is a disk 9 carrying a wheel 10 which takes into radial slots 11 in the horizontal table 12 which is thus moved step by step in an anti-clockwise direction. In order that the table may be locked fast in between the steps, a locking arm 13 is pivoted beside the table and a tooth 14 on this arm takes into notches 15 in the side of the table. The arm is forced into engagement by a spring not shown but is moved out of engagement at the proper time by a cam surface 16 on the disk 9 acting upon its nose as is clearly to be seen in Fig. 1.

The table 12 carries a number of studs on which can turn pins 17 each of which has fast upon it a deeply grooved pulley 18. The shells to be buffed may be placed upon these pins by an operator or may be automatically placed upon them by the mechanism to be described later.

On the main shaft 1 is a belt pulley 19 a belt 20 from which passes over a pulley 21 on a shaft 22 which by bevel gear 23 drives a vertical spindle 24. A belt 25 passes from a pulley 26 on the spindle 24 to a pulley 27 on a spindle 28 passing up through a fixed bush 29 on which the table 12 turns, the spindle 28 being co-axial with the table see Fig. 4.

On the spindle 28 is a spur wheel 30 gearing with a series of pinions 31 free to turn on studs 32 on a plate 33 carried by the bush 29. Each of these pinions 31 has fast with it a pulley 34 provided with a driving band 35 of rubber or the like and as the table 12 rotates the pulleys 18, fast with the pins 17 supporting the shells, come into contact with these bands 35 as seen in Figs. 1 and 4 and are thus caused to rotate rapidly. While the shells are thus rotating on their own axes their ends are buffed by spring fingers 36 carried by the gate 37 which is moved down in guides 38 at the proper times by a cam 39 on the main shaft 1 acting upon a roller 40 carried by the gate. A spring 41 acting on a crosshead 42 connected by rods 43 to the gate raises the gate when the cam 39 permits. In the machine illustrated there are four buffing fingers and consequently four driving pulleys 34 but this number may of course be varied if desired. At the same time the cylindrical part of the shell is polished by a series (three in the machine shown) of buffing wheels 44 carried on sleeves 45 on pins 46. These sleeves have pulleys 47 fast on them and around these pulleys passes an endless band 48 which also passes over a driving pulley 49 on the spindle 24 and over guide pulleys 50 as clearly seen in Figs. 1 and 3. The result of this arrangement is that the buffing wheels are rapidly rotated in the same direction as are the shells which are thus efficiently polished. In order that the machine may be adapted to buff shells in which the metallic part is of varying length, buffing wheels of varying depth are provided and the wheels required are clamped upon the sleeves 45 by nuts 51 working on screw threads cut on the sleeves. The pins

46 are preferably carried by adjustable slides 52 so that they can be set in toward or away from the table 12. One of the guide pulleys 50 is preferably also adjustable by means of a handle 53 so that the band 48 may be readily tightened. The cartridge shell is now picked off its pin by catches 54 at the mouth of a vertical tube 55 shown separately in Fig. 5 moved through the gate by a lever 56 pivoted to the gate at 57 and slotted to embrace a pin 58 on the frame. As the gate descends the tube descends with it and also moves through it, owing to the rocking of the lever about the pin 58 the sum of these movements being sufficient to enable the catches to pass beneath the rim of the cartridge head. As the gate rises the shell is picked off its pin and on the next descent of the gate is pushed up into the tube by the succeeding shell and is eventually led by a flexible tube from the top of the tube 55 to a convenient receptacle.

The drawings show the machine fitted with means for automatically putting the shells on to the pins 17. Such means, together with the pick off and trip mechanism for stopping the machine should the pick off fail to act are precisely similar to the corresponding parts most fully described in the specification No. 937,604. The main features are as follows:—59 is a table on which the shells are placed head downward and from which they slide on to a rotating table 60 which carries them to a guideway 61 at the mouth of which is an agitating wheel 62. The shells arrive at the end of this guideway in single file and present themselves before a segment 63. In order to give a definite feed of the shells one by one an arm 64 is pivoted at 65 just above the table. This arm is pulled by a spring 66 into the position in which it is seen in Fig. 1 but is intermittently pushed forward by a cam 67 on the shaft 4. As it moves forward a shell comes in front of the jaws at the end of the arm and when the spring 66 pulls the arm back, the shell is brought in front of the segment 63. Such an arm renders the feed of the shells more certain. The segment 63 is carried by a shaft 68 rocked by a rack 69 reciprocated by a cam 70 on the main shaft. The movement of the segment inverts the cartridge and turns it head downward over a pin 17 on to which it is pressed by a presser foot 71 carried by a rod 72 moved up and down by a lever 73 pivoted to the gate at 74 while its rear end embraces a pin 75 on the frame. With this automatic feed it is necessary to stop the machine should the pick off fail to act. This is effected as in the specification already referred to by an inspector punch 76 carried by the gate and actuating a rocking lever 77 which actuates the trip lever 78 which can also be actuated by the handle 79.

What I claim is:—

1. In a machine for polishing or buffing cylindrical articles, the combination of rotating buffing wheels, a step by step rotating table carrying the articles past such wheels, means for simultaneously rotating the articles about their axes and means for bringing buffing fingers down upon the ends of the articles while they are rotating during the stoppages of the table.

2. In a machine for polishing or buffing cylindrical articles, the combination of rotating buffing wheels, a step by step rotating table, pins carried thereby, pulleys on the pins, driving pulleys adapted to engage and rotate the pulleys on the pins and means for rotating such driving pulleys.

3. In a machine for polishing or buffing cylindrical articles, the combination of rotating buffing wheels, a step by step rotating table, pins carried thereby, pulleys on the pins, driving pulleys adapted to engage and rotate the pulleys on the pins, means for rotating such driving pulleys, and means for bringing buffing fingers down upon the ends of the articles while they are rotating.

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Witnesses:
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