

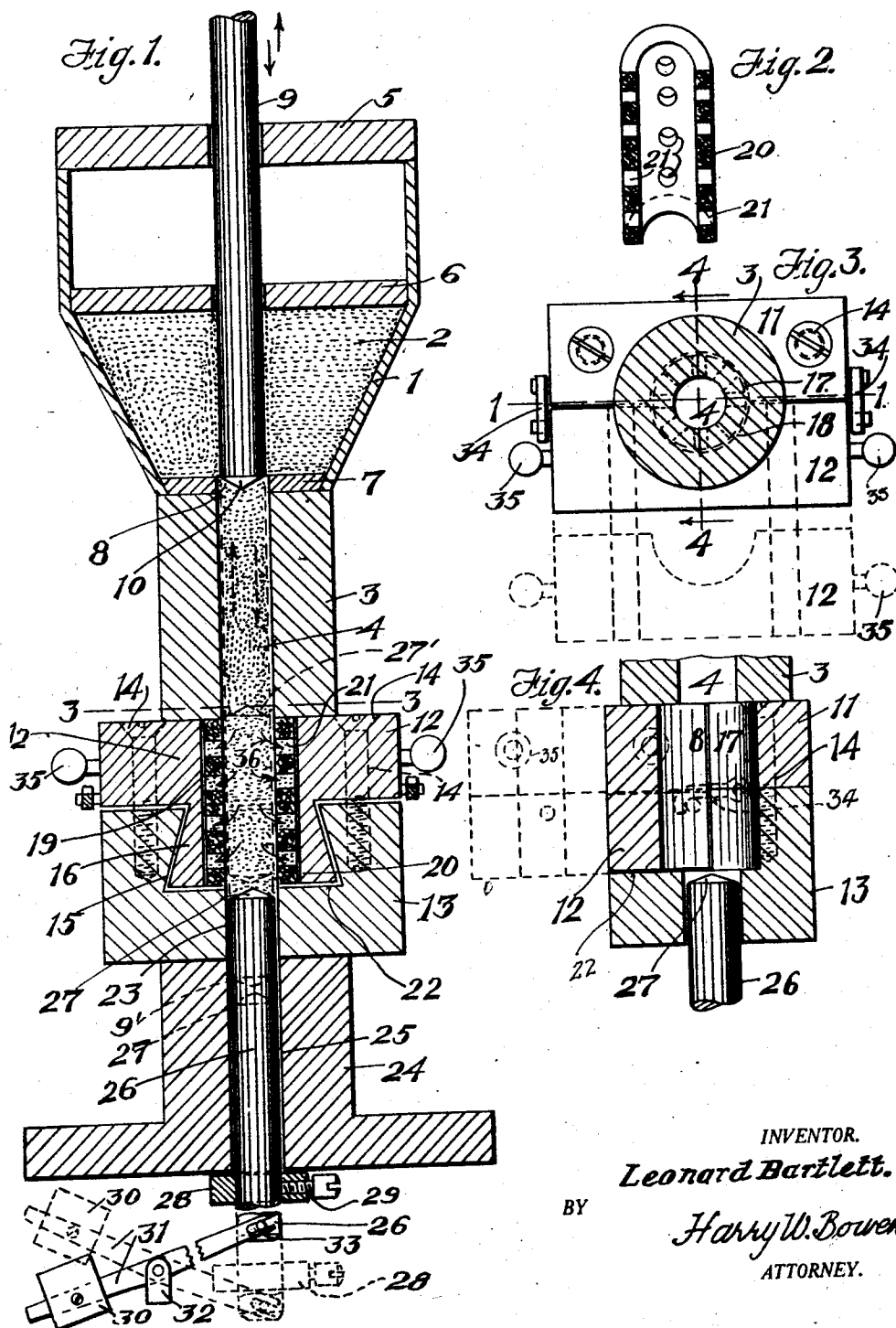
Sept. 8, 1925.

1,553,129

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MACHINE FOR INSERTING GRAPHITE COMPOSITION IN OILLESS BEARINGS

Filed Dec. 23, 1924



UNITED STATES PATENT OFFICE.

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MACHINE FOR INSERTING GRAPHITE COMPOSITION IN OILLESS BEARINGS.

Application filed December 23, 1924. Serial No. 757,770.

To all whom it may concern:

Be it known that I, LEONARD BARTLETT, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Machine for Inserting Graphite Composition in Oilless Bearings, of which the following is a specification.

This invention relates to improvements in machines for inserting a graphite lubricating compound in the openings of a tubular member of what is known as oilless bearings which bearings are designed to take the place of the ordinary bearings that require lubrication either by the use of oil or grease cups. Heretofore, it has been a common practice to insert the plugs or the graphite lubricating compound in the openings one at a time. This process is slow and not altogether satisfactory. The present invention relates to a device for filling all of the openings of the bearing member at the same time by means of a plunger which passes through a suitable hopper that is filled with the graphite compound material, and, as it passes through this hopper a definite quantity of the material is carried forward into the interior of the bushing. The material is then subjected to lateral or radial pressure by the plunger which forces the material radially or laterally outward into the openings. Means are provided also for readily inserting and removing an empty and a filled bearing member, whereby the time involved in the operation of inserting the graphite compound is materially lessened. These and other objects will appear in the body of the specifications and will be specifically pointed out in the claims.

Referring to the drawing:

Fig. 1 is a vertical sectional view taken on a plane indicated by the line 1—1 of Fig. 3, through the axis of the plunger and the bearing member in which the graphite compound is being inserted. Also showing the lower cooperating plunger for exerting a pressure in the opposite direction.

Fig. 2 is a detail sectional view of the oilless bearing prior to the insertion of the graphite compound or plugs of filling material in the openings.

Fig. 3 is a plan view on a plane represented by the line 3—3 of Fig. 1 showing in section the upper guide block in which

the plunger moves, and, in dotted lines, the bearing to be filled with the graphite compound, also the movable part of the bearing holder member which receives the empty bearing shell.

Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 3 looking in the direction of the arrows showing a portion of the two parts of the bearing holder member that retains the bearing in place while the openings therein are being filled with the graphite compound, that is to say, the fixed and movable portion of the holder.

Referring to the drawings in detail:

1 designates a suitable hopper in which the graphite compound is placed, the compound being indicated at 2. This hopper rests upon the plunger guide block 3 which is formed with an opening or passage way 4. It is provided with the two plunger bearing members 5 and 6 and the bottom part 7 having the outlet opening 8 for the compound 2. 9 is a plunger that is reciprocated by any suitable means in the hopper which is located in the bearing members 5 and 6, as shown. The lower end of the plunger 9 passes downward through the opening 8 with its lower end formed with a conical shaped surface as indicated at 10. Located below or at the lower end of the plunger guide block member 3 is the bearing clamping member for receiving the empty shell or bearing that is to be filled. This member comprises a fixed part 11 and the movable part 12. The fixed part 11 is secured to the base piece 13 by means of the screws indicated at 14. The base piece 13 is formed with a dove tail shape guide way 15 in which is located the corresponding shaped portion 16 of the movable member 12 of the bearing clamping block. The members 11 and 12 are each formed with a semi-circular shaped recess 17 and 18 that match with each other to form the circular opening 19, see Fig. 1, in which is inserted or placed the bearing member 20 to be filled, a sectional detail view of which is shown in Fig. 2. This member is formed with the radially arranged openings 21 which are to be filled with the graphite compound shown in the supply hopper at 2. The bearing member 20 is preferably composed of a fibrous substance, or, it may be of metal or an alloy of different metals. The lower end of the

bearing 20 rests, while being filled, upon the bottom surface 22 of the dove tail groove 15 of the base piece 13. The base piece is formed with an opening 23 that is in line with the opening in the upper plunger guide block 3 and the axial line of the bearing member 20. The base piece 13 rests directly upon the lower plunger guide block 24 which block serves to support the whole apparatus which is formed with the plunger receiving opening 25. 26 is a reciprocated plunger in the opening 25. Its upper end is formed with a conical shaped end 27. Adjustably attached to this plunger is a collar 28 having a set screw 29 in order that the upper travel of the plunger may be limited. It is normally moved upward by means of the weight 30 which is attached to the lever 31. This lever is pivoted to a fixed support 32 and pivotally connected to the plunger 26 with the slot pin construction 33.

The movable part 12 of the bearing clamping member is secured to the fixed part 11 by means of the two latches 34 which retains the part 12 in the position shown in full lines in Fig. 3 when the graphite compound material is being inserted in the bearing box 20.

Referring to the operation of the machine device. It is assumed that the movable member 12 of the bearing clamp is drawn back into the dotted line position shown in Fig. 3 by the operator grasping the two knobs or handles 35. The bearing box 20 is then placed on the surface 22 of the member 13. The movable member 12 is then moved forward into the full line position where it is retained by the latches 34. The plunger 9 is now operated in an upward and downward movement by any suitable means and carries with it a quantity of the graphite compound from the hopper 1. This material is forced down through the passage way 4 and into the interior of the bearing box 20. The graphite compound is forced laterally into the openings 21 indicated by the arrows 36. This lateral pressure is produced by the conical shaped end 10. The plunger 9 as it moves downward carries with it the graphite compound which is at the same time forced against the upper conical shaped end of the lower plunger 26 so that there is imparted to the compound a double lateral pressure effect. It should be understood that the plunger 26 is normally retained in the dotted line position 27' so that as the plunger 9 moves downward a reactionary force is exerted in an upward direction by the plunger 26 due to the weight 30 which is attached to the plunger 26. The plunger 9 forces the plunger 26 downward to the position indicated at 9' which is below the lower end of the bearing box 20 which is being filled. A continued upward and downward movement of the plunger 9 serves

to continually force the graphite compound into openings 21 until they are completely filled and the inner surface of the bearing 20 is also smoothed off by the action of the plungers 9 and 26. After the openings in the bearing box 20 is filled, the latches 34 are then lifted and the movable member 12 is drawn outward into the dotted line position which member travels in the dove tail groove 15. The filled box is now removed and a new bearing box is then inserted and the operation is repeated as before.

It will therefore be seen that I have produced a very simple and efficient machine for rapidly inserting the plugs of graphite compound material in the openings 21 of the bearing box 20, and, also that each of the openings is filled under substantially the same lateral pressure throughout the length of the bearing box due to the fact that the plunger 26 is initially in the position 27' and as it is forced downward by the plunger 9 uniform lateral pressure is transmitted to the graphite compound.

What I claim is:

1. A device for inserting a lubricating material in the openings of an oilless bearing, comprising in combination, a holder for the bearing, a hopper in which the supply of lubricating material is placed, a plunger for removing some of the material from the hopper and transferring it to the interior of the bearing and means for permitting the plunger to exert a uniform pressure on the material in the bushing and throughout its length for forcing the material laterally into the openings of the bearing.
2. In combination, a hopper to contain a lubricating substance, a plunger in the hopper, means for reciprocating the plunger in the hopper to remove a quantity of the substance, a holder for a tubular bearing member having openings in its wall, a second plunger below the tubular member but normally entering the tubular member which second plunger is forced downward as the first mentioned plunger conveys the lubricating substance to the interior of the tubular bearing member.
3. Means for inserting a graphite lubricating substance in a tubular member having openings to receive the substance comprising a plunger for conveying the substance to the interior of the member and a device for yieldingly opposing the movement of the plunger in the tubular member.
4. A device for the purpose described comprising a two-part holder for a one piece tubular member having lateral openings through the wall of the same, means for conveying a dry powder like lubricating substance to the interior of the said member, movable and yieldable means for preventing the said substance from being driven axially through the member whereby the

substance is driven laterally into the openings of the member.

5. In combination, a hopper for containing a graphite lubricating substance, means therein for removing a definite quantity of the substance and conveying it to the interior of a bearing member, means at the lower end of said member for yieldingly opposing the substance conveying means when the lubricating substance is being conveyed into the interior of the bearing member.

6. A device for the purpose described, having in combination, a hopper to receive a graphite compound, a plunger reciprocable therein, means for retaining a bearing box to be filled with the compound in line below the plunger, means for subjecting the graphite compound to lateral pressure, whereby the same is forced into the openings of the bearing box.

7. In a device for inserting a lubricating graphite compound into the openings of a perforated bearing box, means for conveying the compound into the interior of the box, means for subjecting the material in the box to a constantly yielding pressure throughout the length of the box, whereby the filling material is inserted in the openings under a uniform yielding pressure.

8. The method of inserting a granular substance into the openings of a bearing box which consists in suitably supporting the box, then forcing the material into the interior of the box against a yieldable and

movable member that is normally located within the box, whereby the material is forced radially outward, through out the length of the box, as described.

9. In combination, a fixed and movable member, each formed with a recess which registers to form an opening to receive a bearing box which is formed with openings in its side, means for forcing a lubricating powder like material into the box, means for exerting pressure in an opposite direction to the said means whereby the material is forced radially outward under a yielding pressure and into the openings.

10. The method of filling a plurality of openings in the wall of a tubular member which consists in retaining the member in a suitable position, then conveying to the interior of the member the filling material, against a yieldable and movable member which is located within the tubular member.

11. A device for the purpose described comprising, in combination, a two part clamping member for a tubular bearing formed with openings, plunger means for conveying the filling material to the interior of the bearing to be filled, a movable plunger cooperating with said plunger, each plunger having a conical shaped end for subjecting the material there between to lateral or radial pressure for forcing the material into the openings of the tubular bearings.

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