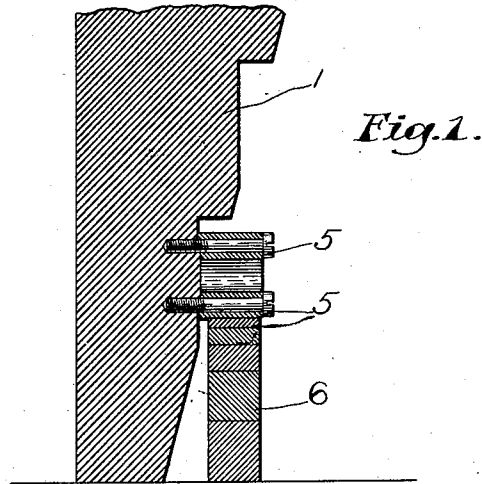
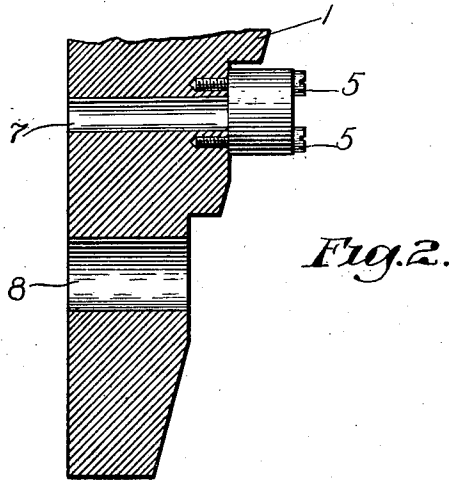
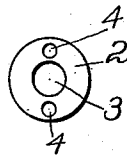


No. 861,891.

PATENTED JULY 30, 1907.

H. S. PLANT.
JIG BUTTON.

APPLICATION FILED NOV. 8, 1906.



Witnesses
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Fig. 3.

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UNITED STATES PATENT OFFICE.

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JIG-BUTTON.

No. 861,891.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed November 8, 1906. Serial No. 342,472.

To all whom it may concern:

Be it known that I, HENRY S. PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Jig-Buttons, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to jig buttons employed accurately to locate in metallic work the position whereat it is desired to drill or bore a hole.

By my invention, I am enabled to dispense with many of the steps of the usual operation incident to the use of jig buttons, as will be fully described hereinafter and to save about one half the time formerly required to complete the work. Not only am I enabled to save such time but I avoid by the use of my jig button the liability of slippage of the button during the various stages heretofore incident to this class of work as will be made fully apparent.

In order that the principles of the invention may be understood, I have in the accompanying drawing disclosed one type or embodiment thereof wherein,

Figure 1 is a sectional view through the work and the jig button embodying my invention, size blocks being represented as positioned beneath the button, so that the vertical position thereof may be accurately determined; Fig. 2 represents in section the work having in the lower portion thereof a finished counterbored opening, and having in the upper portion thereof a bored hole, and the jig button screwed to the face of the work in proper position relative to such bored hole; and Fig. 3 is an end elevation of a preferred form of jig button embodying my invention.

In machine work, it frequently becomes necessary to locate the position where a hole is to be bored within one quarter of a thousandth of an inch. It will thus be apparent that only by the practice of the utmost nicety of measurement can the desired results be secured. In locating the position for the drilling of holes in metal work, jig buttons have long been employed, but, so far as I am informed, the usual mode of operation involving the use of a jig button is substantially as follows:

The button ordinarily employed is a cylindrical metallic member having a central axial opening there-through, the said opening being materially larger than the diameter of the screw, whereby the button is to be applied to the work, to permit of the exact adjustment of the button before the screw is tightened. The workman drills and taps in the work a hole for securing the button located as near as possible to the proper position, determining this with his surface gage. Then the button is fastened to the work by the screw passed through the axial opening in the button and into the hole in the work, but the screw is not tightened in position. Then by the use of size blocks or a height gage the workman

accurately determines the proper distance of the hole required in the work for two adjacent edges of the work. That is to say, the work is placed upon a base plate and by size blocks or height gage the hole required in the work is located with reference to its distance from the base plate with the work in this position. Then the work is turned upon the adjacent face and the position of the required hole measured again. During these measurements the button may be nicely adjusted relative to its screw by slightly tapping it with a hammer. This stage of the operation being completed, the work is strapped in a lathe or it is placed upon the platen of a milling machine or drill. If the work be positioned in a lathe and is rotated therein, an indicator is employed to determine if the button rotates truly.

If the work be placed upon the platen of a milling machine or drill, the indicator is rotated around the button for a similar purpose. After the position of the button has been tested by the indicator, the screw is withdrawn from the button, the work remaining strapped to the lathe or upon the platen of the milling machine or drill. Then the hole is drilled and bored. It will be apparent that the screw hole first formed in the work to position the button may not have been concentric with the hole as drilled, and hence it becomes necessary to bore the same. If, in undergoing these operations, the work moves upon the face plate, the hole is inaccurately positioned, and this frequently occurs. Moreover, the strapping of the work in position requires considerable time that I am enabled to save. The final step in the operation is that of counterboring the hole to the proper size.

A jig button constructed in accordance with the present type or embodiment of my invention has a central or axial hole and two diametrically disposed holes extending length wise through the button and located between the periphery thereof and the said central hole and preferably of smaller diameter than said central hole. In the preferred manner of use of the said button I first mark a point on the work from two edges thereof, according to the drawing that is to be followed, to locate approximately the desired hole, then I lay off on the work a circle with dividers, using as a radius the distance from the center of the central hole of the button to the center of either of the side holes. I then drill and tap in the work two holes upon the circumference of this circle, the said holes being diametrically disposed. The button is then secured to the work by screws passing through the two side holes in the button and into the corresponding holes in the work, the said screws being materially less in diameter than the side holes in the button, so that the button may be adjusted. Then in a manner similar to that previously described, as by the use of size blocks or a height gage, the hole to be formed in the work is located relative to two edges of the work. After this has been accurately done, the

said two screws are tightened. The work, having the jig button secured thereto, is then taken to a drill and positioned upon the bed plate thereof. A drill may be employed of the full size of the hole in the button and
 5 the drilling is carried far enough to "spot" the work, then such drill is withdrawn and a reamer size drill is employed whereby the hole may be drilled right through the work. Then the hole is suitably reamed. After reaming, the button is taken off and a counter-
 10 bore is employed, the counterbore removing, in its operation, the two screw holes by which the jig button was secured in position

It will be apparent that by the mode of operation thus described, I avoid, first, the necessity of strapping
 15 the work to the lathe or drill; second, indicating the button to see if in the lathe the button rotates truly; third, I avoid the possibility of moving the piece on the machine after it has been strapped thereon and thus inaccurately locating the final hole in the work, in which
 20 possibility lay one of the most serious defects of the old manner of operation; and fourth, I avoid the boring and second drilling. Moreover I do not need to employ either a lathe or a milling machine. In the use of former buttons, it has been customary to bore through the
 25 work several times, owing to the tendency of the tool to spring.

In the practice of my invention, I am enabled to save one half the time employed in the use of jig buttons such as I have referred to as in ordinary use.

30 Referring to the drawings, the work is indicated at 1. A jig button embodying my invention is indicated at 2, and is shown as provided with a central axial opening 3 and diametrically disposed openings 4 located between said central axial opening and the periphery of
 35 the button. The screws whereby the button is preferably secured to the work are indicated at 5 and are shown as less in diameter than the button, so that the latter may be adjusted after the position thereof has

been properly determined as by the use of size blocks 6 or by a surface gage. In Fig. 1, the button is represented as secured to the work, the latter now being in condition to be removed to the drill. In the upper portion of Fig. 2 at 7, the hole is represented as drilled, but not bored, and hence the screw holes by means of which the button is secured to the work still exist. In
 45 the lower portion of Fig. 2 at 8, the hole is represented as counterbored or finished, the screw holes being therefore removed during the counterboring.

Having thus disclosed one type or embodiment of my invention, I wish it to be understood that although I 50 have specifically described a method of operation involved in the use of the improved jig button, that descriptive terms are therein used not in a limiting sense, but merely for the purpose of making the mode of operation of the jig button clear, and that the scope of the 55 invention is set forth in the following claims.

Claim.

1. A jig button having a substantially central axial opening and one or more openings eccentric thereto in combination with a fastening or fastenings adapted to enter said eccentric opening or openings and having button engaging provisions whereby the button may be secured to the work, said fastening or fastenings being of such size as to permit relative lateral play of the button with respect to the fastening or fastenings. 60

2. A jig button for use in metal or other work comprising a metallic body having a central axial opening and two diametrically disposed openings located between said axial opening and the perimeter of the button, whereby said button may be secured to the work. 70

3. A jig button for use in metal or other work comprising a metallic body having a central axial opening and two diametrically disposed openings located between and at equal distances from the center of said axial opening.

In testimony whereof, I have signed my name to this 75 specification, in the presence of two subscribing witnesses.

HENRY S. PLANT.

Witnesses:

EVERETT S. EMERY,
 IRVING N. TOWNSEND.