

No. 761,408.

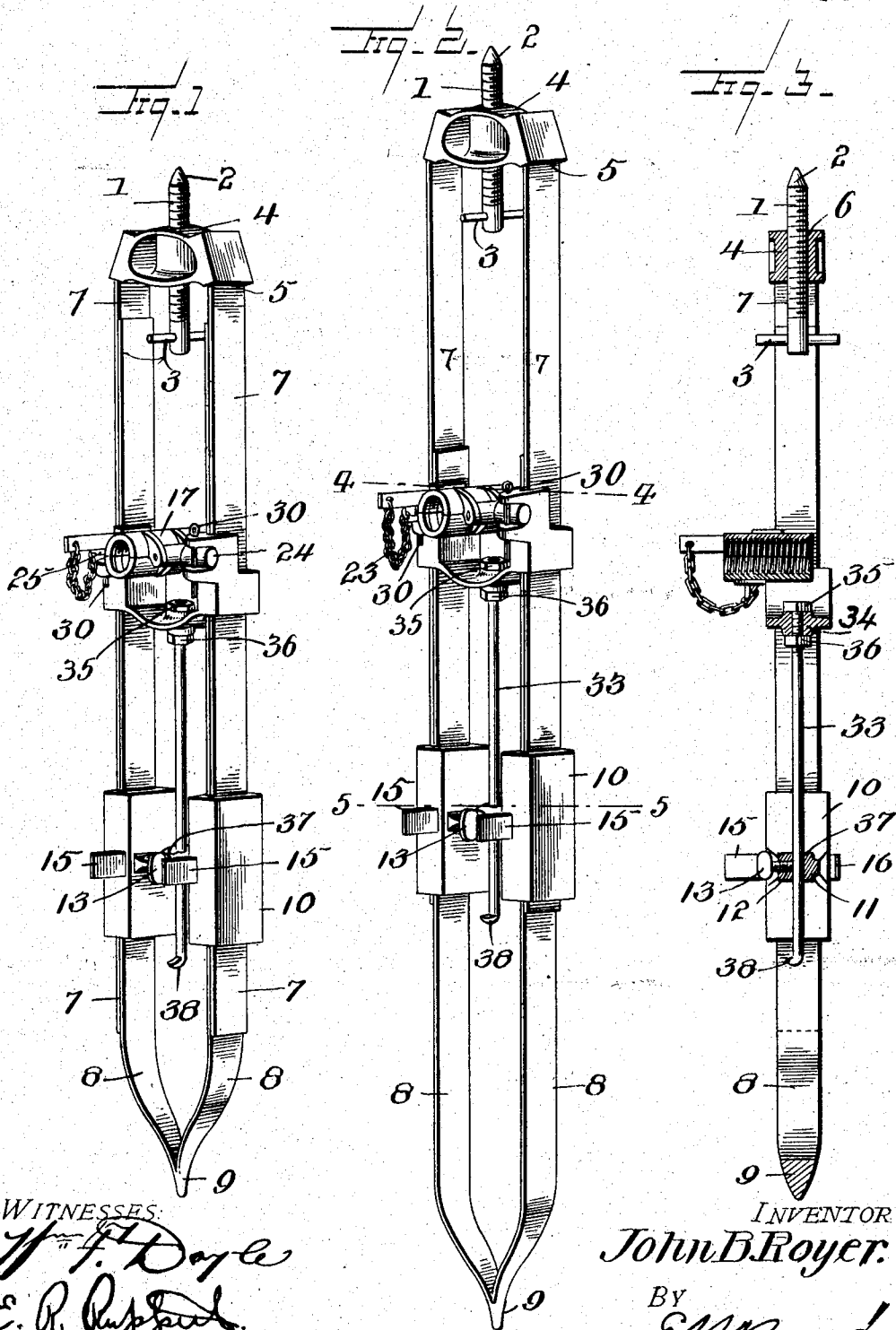
PATENTED MAY 31, 1904.

J. B. ROYER.
MINE DRILL.

APPLICATION FILED FEB. 8, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

W. F. Doyle
E. R. Rufford

INVENTOR

John B. Royer

BY

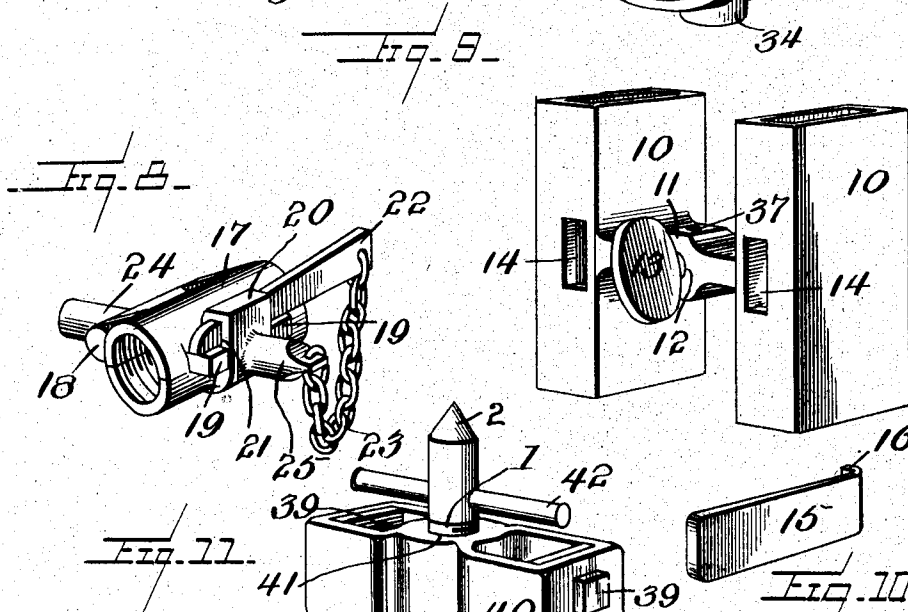
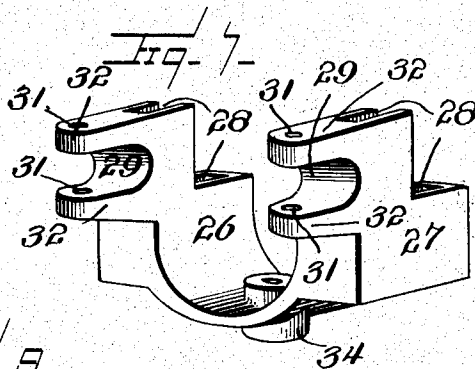
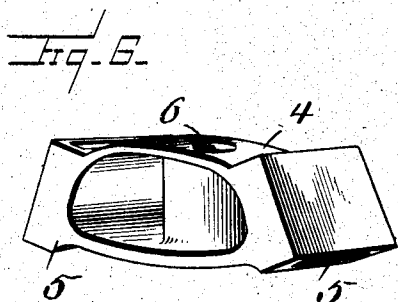
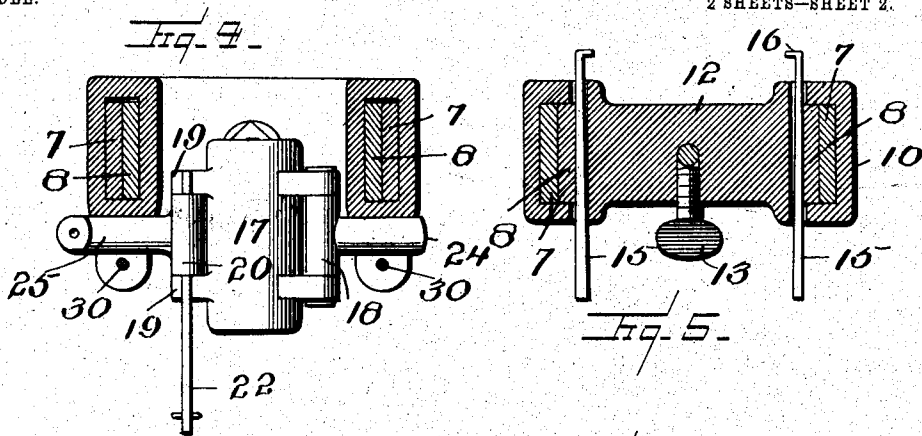
E. M. Bond
Attorney

J. B. ROYER.
MINE DRILL.

APPLICATION FILED FEB. 8, 1904.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES
H. F. Doyle
E. P. Rufford

INVENTOR
John B. Royer
 BY
E. M. Bond
 Attorney

UNITED STATES PATENT OFFICE.

JOHN B. ROYER, OF LEETONIA, OHIO.

MINE-DRILL.

SPECIFICATION forming part of Letters Patent No. 761,408, dated May 31, 1904.

Application filed February 8, 1904. Serial No. 192,575. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. ROYER, a citizen of the United States of America, and a resident of Leetonia, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Mine-Drills, of which the following is a specification.

This invention relates to certain new and useful improvements in mine-drills of that class in which provision is made for the lengthening or shortening of the same to accommodate it to the varying conditions under which it may be desired to use it and in which the gear-box is mounted upon trunnions or the like.

The present invention has for its objects, among others, to provide a machine of this character which shall have the maximum amount of adjustment to accommodate mines of various heights without the employment of any loose parts, such as extension-rods, or without the necessity for the use of a wrench or screw adjustments; also, to provide a construction in which provision is made for ready adjustment of the gear-box, dispensing with notched standards, which have been heretofore suggested, but not found practicable.

The invention has for a further object to so secure the gear-box in place that it cannot accidentally fall out and get lost when the machine is not in use, the machine being "self-contained."

The device is simple in its construction, not liable to get out of order or damaged, and permits of being made very light with the same strength.

I aim, further, at improvements in the details of construction whereby not only are better results in use obtained, but the machine as a whole made compact, easy to operate, and quickly adjusted.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a perspective view of the mine-

drill in compact form for use in low mines. Fig. 2 is a similar view with the same partly distended as for use in higher mines. Fig. 3 is a substantially central longitudinal section through Fig. 1. Fig. 4 is a horizontal section taken on the line 4 4 of Fig. 2. Fig. 5 is a horizontal section taken on the line 5 5 of Fig. 2. Fig. 6 is a detail perspective view of the upper casting. Fig. 7 is a detail perspective view of the middle casting. Fig. 8 is a detail perspective view of the gear-box removed. Fig. 9 is a perspective view of the lower casting. Fig. 10 is a perspective view of one of the wedges removed. Fig. 11 is a perspective detail of the upper head-casting of modified form.

Like numerals of reference indicate like parts throughout the several views.

Referring now to the details of the drawings, 1 designates the trunnion-screw, pointed at its outer end, as at 2, and provided at its inner end with a suitable handle 3.

4 is the trunnion-head in which the said trunnion-screw is mounted, this trunnion-head casting being provided with the sockets 5 to receive the standards. These sockets are disposed at an angle to the axis of the screw, as seen clearly in Figs. 1, 2, and 6, which prevents them from the tendency of pushing through, and a better hold is thus provided, a little riveting being all that is necessary to hold them firmly in position. The trunnion-screw is adjustable in the screw-threaded central portion 6 of the casting 4, as seen in Fig. 3.

7 7 are the outside standards, secured in the sockets 5 of the casting 4, their upper ends being inclined or offset, as will be readily understood from Figs. 1 and 2, for the purpose above specified. These standards may be of any desired length and dimensions.

8 8 are the inside standards, which may also be of any desired length and material and dimensions. These inside standards are brought together at their outer ends to form the trunnion-point 9, as seen clearly in Figs. 1 and 2.

10 designates the standard-clamps. They are adapted to receive the overlapped portions of the standards, as shown, and are connected by the transverse portion or member 11, which is provided with the screw-threaded boss 12, 100

in which is adjustably engaged the thumb-screw 13.

The standard-clamps 10 are provided with the horizontal or transverse openings 14 for the reception of the wedges 15, which are employed to hold the standards in their adjusted positions. These wedges have their thinner ends bent or turned at substantially a right angle to the length thereof, as seen at 16, to prevent them from falling clear out when loosened. While this means of adjustment and of securing the standards in their adjusted positions is preferred, any other suitable means may be substituted.

17 is the gear-box. This may be of any well-known or approved form of construction, in this instance being shown as formed of two parts hinged together, as at 18, the one part being formed at the side opposite its hinge with the lugs 19 and the other part at the corresponding side with the member 20, which is provided with a socket 21 to receive the key 22, which serves to hold the two parts of the gear-box in closed position. This key in the present instance is shown as a wedge which rests upon the lugs 19 and is shown as having secured to one end a chain or flexible connection 23, the other end of which is secured to the outer end of one of the trunnions of the gear-box. These trunnions 24 and 25 are formed on the lower portion of the gear-box, and the said gear-box is detachably mounted in the gear-box bracket 26, which is shown detached in Fig. 7. This bracket is formed with the two side portions 27, which are provided with the vertical passages 28, in which are received the inside and outside standards, as seen in Figs. 1, 2, and 4. These side portions 27 are formed with the semicircular bearings 29, as seen best in Fig. 7, in which the trunnions of the gear-box are mounted for free movement. These bearings are adapted to receive the said trunnions, which are held therein against displacement by suitable means, as the cotter-pins 30, which pass through vertical openings 31 in the lugs 32 of the gear-box bracket, as will be clearly understood from Figs. 1, 2, and 7.

The gear-box and its bracket are adapted to be quickly and easily adjusted on the standards and held in such adjusted position. In this instance this provision is had in the adjusting-rod 33, the one end of which is held in a boss 34 on the gear-box bracket and provided with nuts 35 and 36 above and below the same, as seen best in Fig. 3, the other end of this adjusting-rod being passed through an opening 37 in the cross member 11 of the standard-clamps, being held in its adjusted position by suitable means, as the thumb-screw 13, as seen clearly in Fig. 3. The rod 33 has a head or hook or the like 38, formed at its end, as seen in Figs. 1, 2, and 3, to prevent its sliding entirely through the hole in the member 11.

The standard-clamps serve to connect the

outside standards with the inside standards and also to securely hold them together at any point of adjustment between minimum and maximum lengths of extension; also, to form a support for the gear-box bracket through the medium of the adjusting-rod 33. The sockets of the standard-clamp through which the standards pass are of sufficient length to give the standards their requisite edgewise strength, and as this standard-clamp also permits of adjustment up and down on the standards, except when the standards are extended to the maximum length, it gives still greater latitude of adjustment to the gear-box. In practice it is intended that this clamp be set at the proper position with reference to the standards to suit the mine in which the machine is being used and that this adjustment need not often be changed; but the necessary adjustments can ordinarily be made with the trunnion-screw 1 after once the standard-clamp is properly adjusted to suit the character of mine in which the drill is to be used.

The drill will work in any position, and either the point 2 or the point 9 may be turned uppermost. This screw 1, having the point 2, may be provided with any suitable means for turning it, and this means may be disposed as may be found most convenient. The gear-box is given sufficient latitude of adjustment by its adjusting-rod, which is of sufficient length to allow of all the adjustments required, and the gear-box can thus be quickly and easily adjusted, fine adjustments being provided for, as will be readily understood.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages. For instance, in Fig. 11 is shown another form of upper head-casting, which is similar to that shown in Figs. 1, 2, and 6, except that the sockets are not inclined and the upper ends of the standards 7 are received in said sockets and there secured by suitable means, as the bolts or the like 39, the casting 40 having the threaded boss 41 for the reception of the trunnion-screw 1, the handle 42 of said screw being outside the casting instead of upon the other side thereof, as in Figs. 1, 2, and 3. Other like changes I should consider as coming within the scope of my present invention.

What is claimed as new is—

1. In a mine-drill, inner and outer standards, a standard-clamp, means for adjusting the same, trunnion-points at opposite ends of the drill, and a gear-box connected with the said clamp and adjustable on the standards with or independent of the said clamp.

2. In a mine-drill, inner and outer standards, a standard-clamp receiving the same, a gear-box mounted on trunnions, and a gear-box bracket adjustably connected with said clamp.

3. In a mine-drill, a trunnion-head casting

having standard-receiving sockets disposed angularly with relation to the length of the standards, and a portion intermediate said sockets having threaded opening extending entirely therethrough.

4. In a mine-drill, a trunnion-head casting having a screw-threaded boss for the reception of the trunnion-screw, and provided with inclined standard-receiving sockets, and a trunnion-screw extending through said boss whereby it may be operated from either side of said boss.

5. In a mine-drill, a gear-box with trunnions, standards, a gear-box bracket having sockets to receive the standards and bearings for the gear-box trunnions and standard-clamps detachably connected with said bracket, and means for detachably holding the trunnions of the gear-box in said bearings.

6. In a mine-drill, a gear-box with trunnions, standards, a gear-box bracket having sockets to receive the standards, bearings for the trunnions of the gear-box, and apertured lugs for cotter-pins, and a boss for the reception of the adjusting-rod, an adjusting-rod and a standard-clamp connected with said rod.

7. In a mine-drill, the combination with the standards and their clamp, of the gear-box bracket, the gear-box mounted on trunnions therein, and an adjusting-rod connecting the gear-box bracket with the said clamp.

8. In a mine-drill, the combination with the outer standards and the casting connecting one end thereof and carrying a trunnion-screw, of the inner standards having their ends united to form a trunnion-point, and a clamp for securing the standards in their adjusted position, and means carried by said clamp for connecting the same with the support of the gear-box.

9. In a mine-drill, the combination with the standards arranged to overlap, of the standard-clamp, adjusting means therefor, the

gear-box bracket, and means for adjustably connecting the same with the said clamp.

10. In a mine-drill, the combination with the standards arranged to overlap, of a standard-clamp having sockets to receive the same, and transverse openings to receive the securing means, and wedges engaged in said openings and engaging the standards and a gear-box adjustably connected with said clamp.

11. In a mine-drill, the combination with the standards and the standard-clamp, of the gear-box bracket adjustable on the said standards, and an adjusting-rod carried by said bracket and engaged in the said clamp, and means carried by the clamp for holding said rod in its adjusted positions.

12. In a mine-drill, the combination with the standards and the standard-clamp, of wedges adapted to engage in said clamp and hold the standards in adjusted position, said wedges having their ends disposed at an angle to their length, and a gear-box adjustably connected with said clamp, as and for the purpose specified.

13. In a mine-drill, the combination with the standards and the clamp adjustable thereon, of the gear-box bracket adjustable on the standards, and an adjusting-rod held in the bracket and adjustably engaged with the clamp, the end of the said rod being provided with a lateral portion, as and for the purpose specified.

14. In a mine-drill, the combination with the trunnion-head casting having inclined sockets, of the standards the ends of which are deflected and engaged in said sockets.

Signed by me at Leetonia, Ohio, this 6th day of February, 1904.

JOHN B. ROYER.

Witnesses:

JOHN B. MORGAN,
CORA A. RANKIN.