Dec. 30, 1924. 1,521,158

R. KING

DRILLING DEVICE

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Fig. 1.

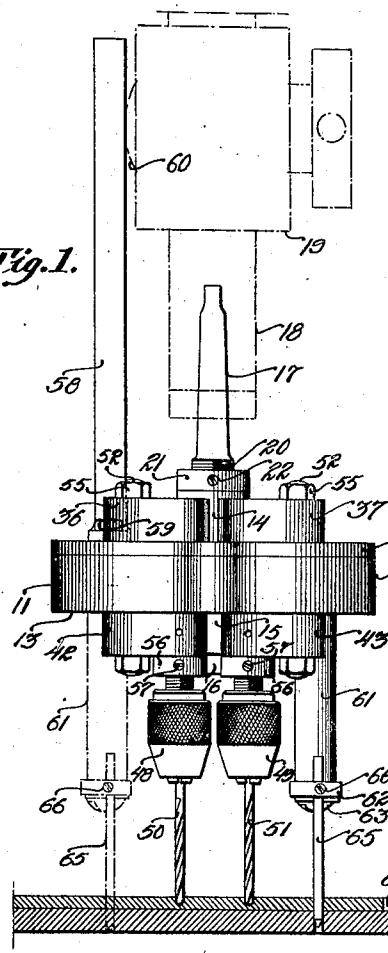


Fig. 2.

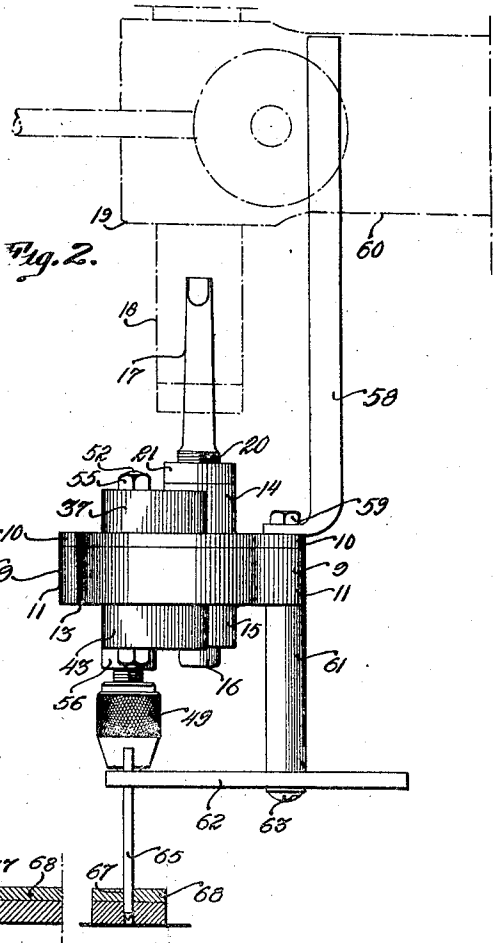
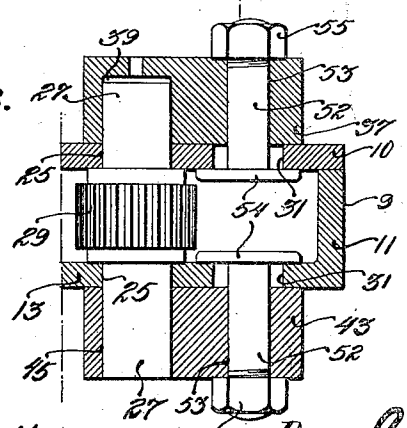


Fig. 8.



Witnesses
Geo. A. Gruss
Augustus B. Coppes

Inventor
Robert King.
By Joshua R. H. Potts
his Attorney

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Fig. 3.

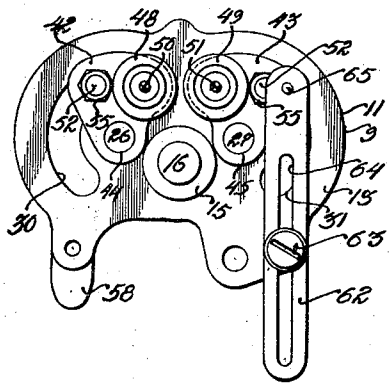


Fig. 4.

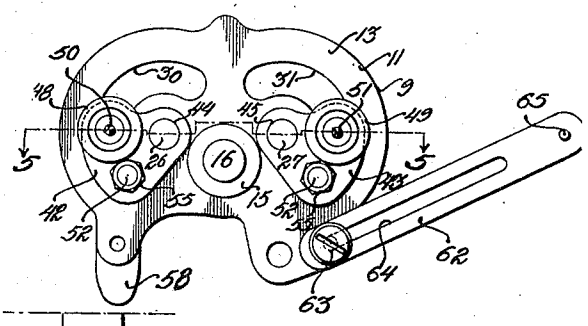
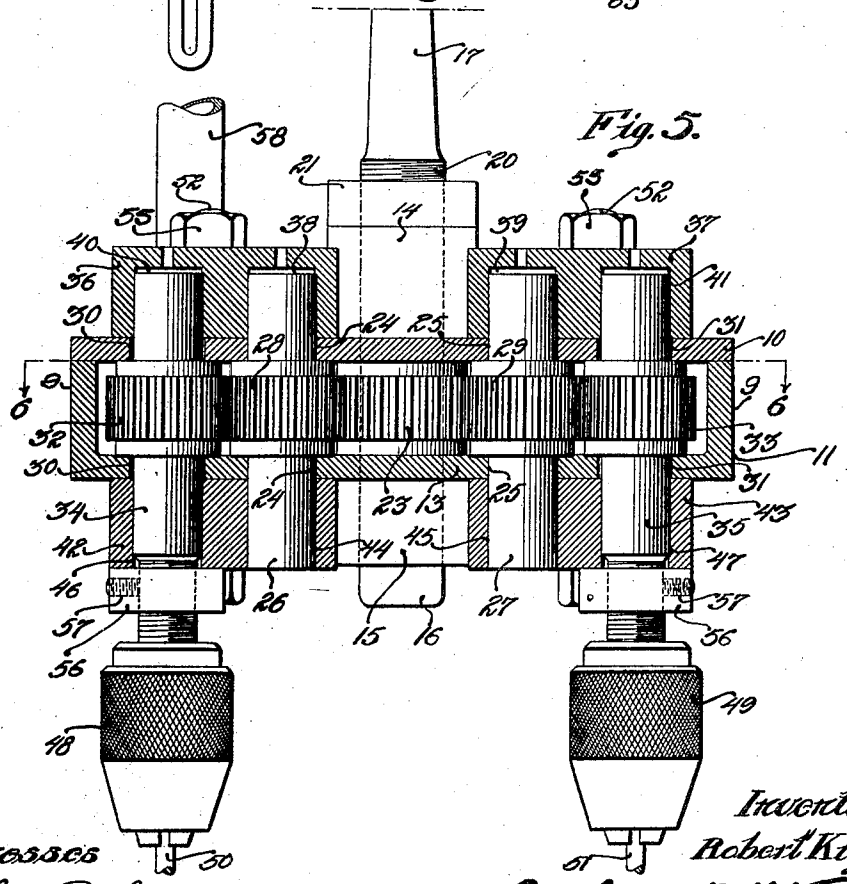


Fig. 5.



Witnesses
Geo. A. Gruss
Augustus B. Loppes

Inventor
Robert King
By Joshua R. H. Potts
his Attorney

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R. KING

DRILLING DEVICE

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Fig. 6.

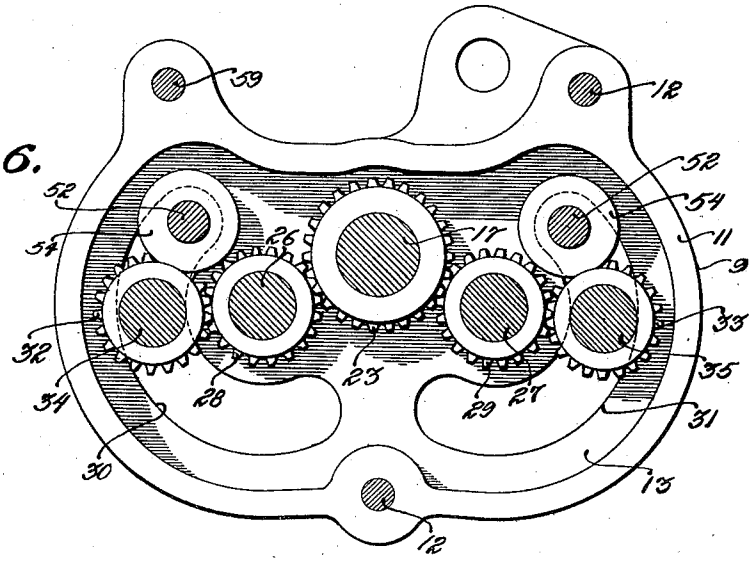
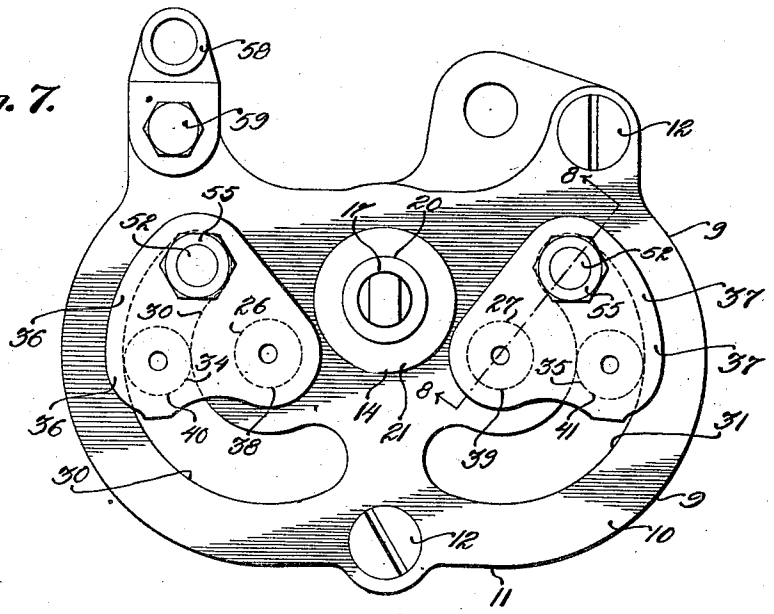


Fig. 7.



Witnesses
Geo. A. Gruss
Augustus B. Coppes

Inventor
Robert King.
By Joshua R. H. Potts
his Attorney

Patented Dec. 30, 1924. 1,521,153

UNITED STATES PATENT OFFICE.

ROBERT KING, OF PHILADELPHIA, PENNSYLVANIA.

DRILLING DEVICE.

Application filed November 26, 1921. Serial No. 517,999.

To all whom it may concern:

Be it known that I, ROBERT KING, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Drilling Devices, of which the following is a specification.

One object of my invention is to provide a device of simple and durable construction by the use of which a number of holes can be simultaneously drilled; the arrangement being such that the drilling elements can be readily adjusted so that the holes can be drilled at different distances apart.

Another object is to so construct my improved device that it can be readily attached to and operated by a drill press or practically any power operated apparatus having a rotatable member.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a front elevation of my improved device showing the same in operative position on a drill press; a part of the drill press being illustrated in dot-and-dash lines; the device being shown in position relative to a piece of work and how the same drills holes in spaced relation to other holes previously drilled.

Figure 2 is a side view of Figure 1,

Figure 3 is an inverted plan view of said device; the drill parts being illustrated in the same position as illustrated in Figures 1 and 2,

Figure 4 is an inverted plan view showing the parts moved into another position so as to drill holes at a greater distance apart,

Figure 5 is an enlarged section taken on the line 5—5 of Figure 4,

Figure 6 is a section taken on the line 6—6 of Figure 5,

Figure 7 is a top plan view of said device with the parts in the position occupied in Figures 4 and 5, and

Figure 8 is an enlarged fragmentary section taken on the line 8—8 of Figure 7.

Referring to the drawings, 9 represents a casing or gear box which includes a removable top in the form of a plate 10 which is secured to the hollow base 11 of the box by screws 12. The bottom 13 is arranged parallel with the top 10 and said top and base have bosses 14 and 15 which are bored in vertical alignment to provide a bearing for the lower portion 16 of an actuating shank 17; said portion 16 extending entirely through the casing and having an upper end portion adapted to engage within a rotatable securing member 18 which forms a part of the drill press 19 as illustrated; said upper part of the spindle being tapered so as to be secured by a jam fit within the member 18. The shank 17 has a screw threaded portion 20 upon which is mounted a collar 21 adapted to rotatably contact with the upper surface of the boss 14. The collar 21 can be secured to the part 20 by a set screw 22.

The portion 16 of the shank 17 has a master spur gear 23 secured thereto at a position within the casing 9 and preferably provided with hub portions as illustrated which rotatably engage with the inner surfaces of the top and bottom. The casing 9 is bored through the top and bottom to provide vertically aligned bearings 24 and 25 for two upright shafts 26 and 27; having pinions 28 and 29 secured thereto; said pinions being located within the casing and meshing with the master gear 23. It will be noted that the pinions 28 and 29 are in set position relative to the master gear 23. The pinions 28 and 29 are preferably provided with hub portions similar to the hub portions of the master gear 23. The top and bottom of the casing have slots 30 and 31; the slot 30 in the bottom 13 being directly under the slot 30 in the top and in like manner the slot 31 in the bottom 13 is directly under the slot 31 in the top 10. The slots 30 are concentric to the axis of the pinion 28 and holes 24 and the slots 31 are concentric to the axis of the pinion 29 and the holes 25 as shown in Figures 3, 4, 6 and 7.

Planetary pinions 32 and 33 mesh with the pinions 28 and 29. These planetary pinions have spindles 34 and 35 which extend through the slots 30 and 31. A pair of bearing members 36 and 37 are positioned above the casing and have cylindrical cavities 38 and 39 extending upwardly from their bottom surfaces into which the upper end portions of the shafts 26 and 27 fit so that said bearing members swing on the shafts 26 and 27 as pivots and concentric to the axis thereof. These members 36 and

37 have other cylindrical cavities 40 and 41 which extend upward from their lower surfaces directly over the slots 30 and 31 in the top 10 of the casing 9; said cavities 40 and 41 serving as bearings in which the upper ends of the spindles 34 and 35 fit. I also preferably provide below casing 9 a pair of bearing members 42 and 43 having holes 44 and 45 in which the lower ends of the shafts 26 and 27 fit. These bearing members 42 and 43 also have holes 46 and 47 through which extend the lower parts of the spindles 34 and 35 having chucks 48 and 49 secured thereto; said chucks being capable of holding drills or similar tools 50 and 51.

Thus the members 36 and 42 can swing on the shaft 26 as a pivot and the members 37 and 43 can swing on the shaft 27 as a pivot to allow the spindles 34 and 35 to move bodily in paths respectively concentric with the axis of the shafts 26 and 27; the planetary pinions 32 and 33 always keeping in mesh with the respective pinions 28 and 29. Thus the drills 50 and 51 can be moved toward or from each other into various positions.

In order to hold said drills in any desired position I provide the following means. Bolts 52 extend through slots 30 and 31, and holes 53 in the various bearing members 36 and 37, 42 and 43 and have heads 54 adapted to engage the inner surfaces of the top 10 and bottom 13. Nuts 55 are provided on the bolts and when tightened serve to pull the various bearing members into clamping engagement with the casing 9 and thereby prevent pivotal movement of the bearing members. The spindles 34 and 35 at a position below the bearing members 42 and 43 have thrust collars 56 secured thereto preferably by set screws 57.

When using the device in connection with a drill press or similar apparatus, I provide a post 58 which is secured to the casing 9 by a bolt 59 and is adapted to engage the arm 60 of the drill press and prevent rotation of the casing when the shank 17 is rotated during the action of the device.

I preferably provide a hanger 61 secured to the casing and having a pivotally mounted gaging arm 62 held by a screw 63 passing through a slot 64. The gaging arm has vertically adjustable pins 65, which may be set in any desired position by a set screw 66. As shown in Figure 1, the gaging pin 65 may be inserted in previously drilled holes 67 in the article to be drilled, such as the article 68, so that by adjusting the gaging pin in set relation to the drills, the drilling of any number of holes in the work may be done without laying-out the work with spacing marks.

By providing the gaging arm with a slot 64, the gaging pin can be moved into alignment with both of the drills irrespective of the distance apart of said drills. For example, Figure 3 shows a construction in which the drills are close together with the gaging pin in line therewith and spaced a distance from the nearest drill which is similar to the distance between the drills. Figure 4 on the other hand shows the drills having been moved apart and the gage arm extended to allow its gaging pin to be positioned in alignment with the drills and also a distance from the nearest drill equal to a distance between the drills.

In actual practice I have found that with the use of the device as above described articles can be quickly drilled with holes in predetermined spaced distance apart or in various positions relatively to each other.

It will be further noted that one of the drills can be moved independently of the other. In other words, if it is desired to swing one drill and not to swing the other, the same can be done since said drills are independent of each other in so far as the swinging action is concerned.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A drilling device comprising a slotted casing; spindles extending through the slots and carrying gears within the casing; shafts extending through the casing each carrying a gear meshing with a gear on a spindle; bearing members for each spindle, positioned upon the casing, and pivoted upon the adjacent shaft; means for locking the bearing members in their adjusted positions, and a common gear for rotating the shafts.

2. A drilling device comprising a slotted casing; spindles extending through the slots and carrying gears within the casing; shafts extending through the casing each carrying a gear meshing with a gear on a spindle; bearing members for each spindle, positioned above and below upon the casing, and pivoted upon the adjacent shaft; means for locking the bearing members in their adjusted positions and a common gear for rotating the shafts.

3. A drilling device comprising a slotted casing; spindles extending through the slots and carrying gears within the casing; shafts extending through the casing each carrying a gear meshing with a gear on a spindle; bearing members for each spindle, positioned upon the casing and pivoted upon the adjacent shaft; bolts taking through the

bearing members and into the casing for locking the bearing members in adjusted position, and a common gear for rotating the shafts.

4. A drilling device comprising a casing having corresponding arcuate slotes in its upper and lower sides; spindles extending through the slots and carrying gears disposed within the casing; shafts having parts extending above and below the casing and carrying gears meshing with the gears on the spindles; bearing members for each spindle above and below the casing pivoted upon the adjacent shaft; bolts extending through each bearing member and into the casing for holding the bearing members in adjusted positions, and a common gear for rotating the shafts.

5. A drilling device comprising a slotted casing, a master gear having hubs abutting the inner faces of the casing; shafts extending through the casing and having gears meshing with the master gear, the gears having hubs abutting the inner faces of the casing; drill spindles extending through the slots and each carrying a gear meshing with a gear on a shaft; bearing members for each spindle pivoted upon the adjacent shaft, and means for locking the bearing members in adjusted positions.

6. A drilling device including a drill spindle; a support for the spindle, and a pin mounted on the support for adjustment in a horizontal plane and parallel to the drill spindle for gaging the distance for drilling holes.

7. A drilling device including a drill spindle; a support for the spindle; an arm mounted on the support for adjustment in a horizontal plane and a pin mounted on the arm for adjustment parallel to the drill spindle for gaging the distance for drilling holes.

8. A drilling device including a drill spindle; a support for the spindle; a slotted arm mounted on the support for adjustment in a horizontal plane, and a pin mounted on the arm for adjustment parallel to the drill spindle for gaging the distance for drilling holes.

9. A drilling device including a drill spindle; a support for the spindle; a hanger secured to the support; an arm mounted on the hanger for adjustment in a horizontal plane, and a pin mounted on the arm for adjustment parallel to the drill spindle for gaging the distance for drilling holes.

Intestimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT KING.

Witnesses:
ELIZABETH GARBE,
CHAS. E. POTTS.