

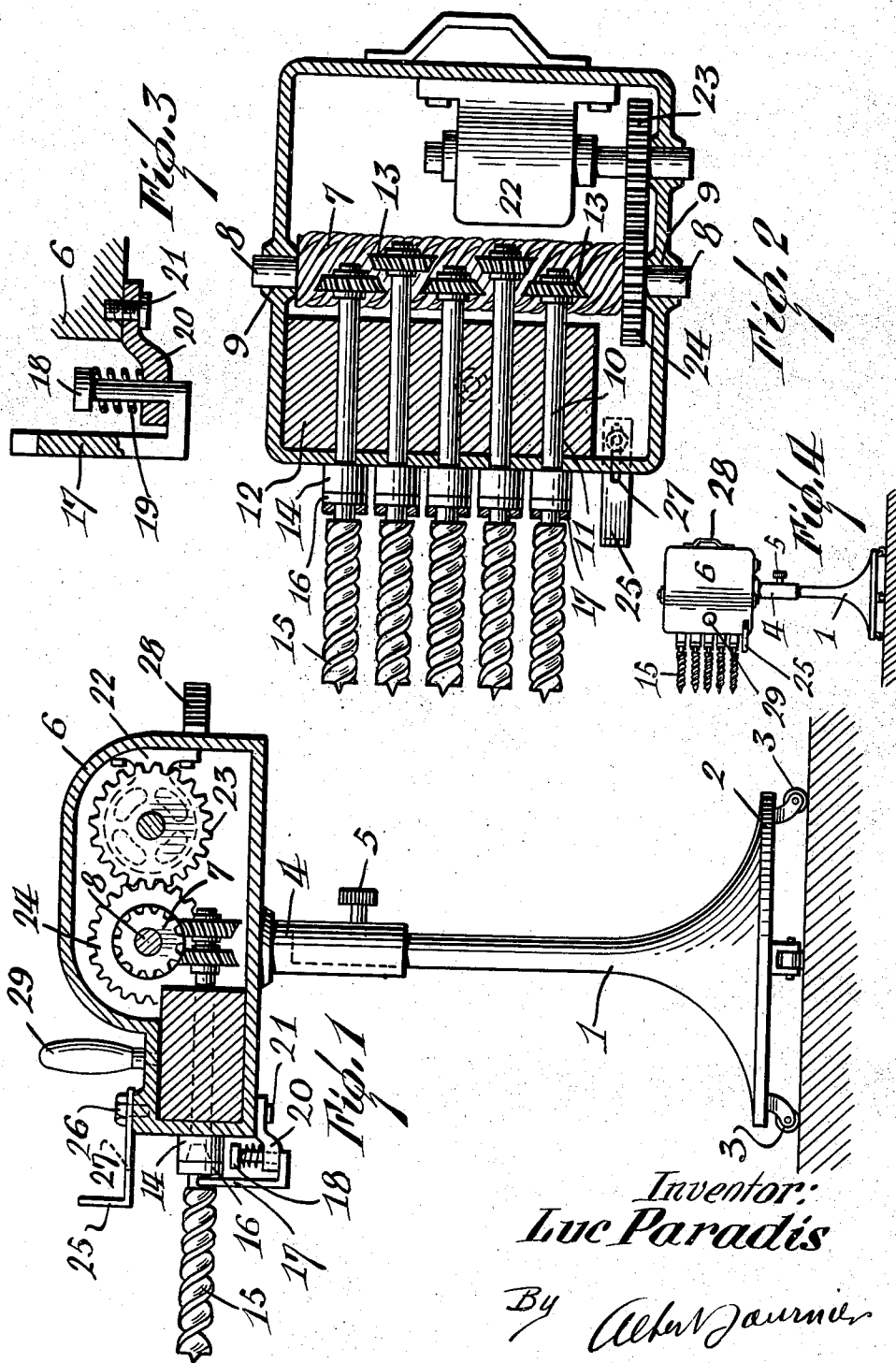
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DRILLING MACHINE

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DRILLING MACHINE

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2 Claims. (Cl. 144—110)

The present invention pertains to a novel multiple drilling machine.

The principal object of the invention is to provide a drill press in which the drills are very close to each other.

Another object of the invention is to provide a multiple drill press permitting easy and rapid changing of the number of drills. Still another object of the invention is to provide a drill press of the character described which is adjustable to any level and which can be mounted in any direction. A further object of the invention is to provide a machine of the character described which is easily controlled and adjusted.

In the accomplishment of these objects, spindles of the drills are provided with conical gears engaging with a large helicoidal screw. These gears are staggered, that is, they are placed alternately on opposite sides of a plane passing through the axis of the helicoidal screw and on the same side of a perpendicular axial plane. This construction is very advantageous for boring the holes for receiving the locks inserted in doors. It is well known that considerable time is ordinarily required in placing a number of doors in a large building. The present invention results in important economies in this class of work. Other uses of the invention and the manner in which the several objects are accomplished will appear as the description proceeds.

The invention is fully disclosed by way of example in the following description and in the accompanying drawing in which:

Figure 1 is a vertical section of the machine; Figure 2 is a horizontal section looking upwardly;

Figure 3 is a detail section, and

Figure 4 is an elevation showing the machine mounted in a position at right angles to that in Figure 1.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The device comprises a pedestal 1 standing vertically and enlarged at the bottom to form a base 2 to which are attached rollers or castors 3. A tubular member 4 encloses the upper end of the pedestal 1 and is adjustably attached thereto by a set screw 5. The upper end of the member 4 carries a housing 6 of suitable shape.

Near the center of this housing 6 is mounted an elongated helicoidal screw 7 in a horizontal position. The journals 8 of the screw are mounted in holes 9 formed in the sides of the housing. It

will be evident that the housing 6 may be made in one or two parts, as preferred from the standpoint of manufacture, and the journals 8 may be separate members secured to the screw 7.

Perpendicular to the screw 7 are mounted several drill spindles 10 passing through apertures 11 formed in a bearing block 12 disposed in the housing 6. One end of each spindle 10, namely the upper end, carries a conical gear 13 which engages or meshes with the screw 7. Each gear 13 is offset laterally from a plane passing through the axis of the screw 7, and successive gears alternate on opposite sides of the axis, as illustrated in Figure 2, while all the gears are on one side of an axial plane perpendicular to the plane mentioned above. This arrangement permits a closer grouping of the spindles than would be possible if all the gears were in one straight line.

This alternation of the gears on opposite sides of the screw axis causes successive gears to rotate in opposite directions.

The remaining ends of the spindles 10 pass through a wall of the housing 6 and carry chucks 14 outside of the housing. The chucks are merely rings formed in the outer end with a square opening to receive the square end of a drill 15. In order to secure the square ends of the drills in the chucks 14, the former are provided with integral collars 16 which can easily be held in place by forks 17, the construction and operation of which are illustrated in Figure 3. The forks are U-shaped and terminate in heads 18. Each head bears on a spring 19 resting on a ledge 20 secured to the housing 6 by a screw 21. The forks are slidable in the ledge, and the springs 19 are adapted to be compressed by pushing on the heads 18.

Normally, since the forks are U-shaped with parallel sides, the springs raise them to a position between the twist of a drill and the corresponding collar 16. Since the forks constantly exert pressure against the drill ends by means of the springs 19, the drills are maintained in place but can turn freely. Any particular method may be employed to disengage the forks in order to replace or remove the drills 15. A pressure on the head 18 is sufficient to disengage the fork 17 from the drill and its collar.

For the purpose of rotating the screw 7, an electric motor 22 is suitably mounted on or in the housing 6. Preferably, the motor is mounted within the housing and its shaft is provided with a gear 23 meshing with a similar gear 24 fixed

on one of the journals 8 of the screw 7. Thus, the motor causes rotation of the screw 7.

For the purpose of regulating the depth of the holes formed by the drills 15, a guide or gauge 25 is utilized. The latter consists merely of an angled bracket having one end adjustably secured to the housing 6 by a stud 26, the bracket having a slot 27 receiving the stud.

The machine is adjusted in its position by means of a hollow handle 28 on its side and a stem handle 29 on its top. A different position is shown in Figure 4. The housing 6 is mounted horizontally in Figure 1 or, in other words, the drills 15 are aligned in a horizontal plane, while in Figure 4 they are aligned in a vertical plane. In the latter position the drills are adapted to form holes for positioning the lock in a door that is already hung or mounted. It will be evident by a comparison of Figures 1 and 4 that the change in position is effected by remounting the housing 6 on pedestal 1 or sleeve 4 after turning it through 90°.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing

from the scope of the invention as indicated by the appended claims.

What I claim is:

1. A multiple drill of the character described comprising a support, a helicoidal screw rotatably mounted therein, drill spindles mounted in said support at an angle to said screw and extending to said screw, conical gears on said spindles and meshing with said screw, said gears being disposed at one side of a plane passing through the longitudinal axis of said screw and successive gears alternating on opposite sides of a perpendicular plane passing through the longitudinal axis of said screw.

2. A multiple drill of the character described comprising a support, a helicoidal screw rotatably mounted therein, drill spindles mounted in said support at an angle to said screw and extending to said screw, conical gears on said spindles and meshing with said screw, said gears being disposed at one side of a plane passing through the longitudinal axis of said screw and successive gears alternating on opposite sides of a perpendicular plane passing through the longitudinal axis of said screw, said spindles being spaced apart a distance less than the diameter of said gears.

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