

(No Model.)

H. RICHTER, Jr.
DRILL.

No. 586,064.

Patented July 6, 1897.

Fig. 1,

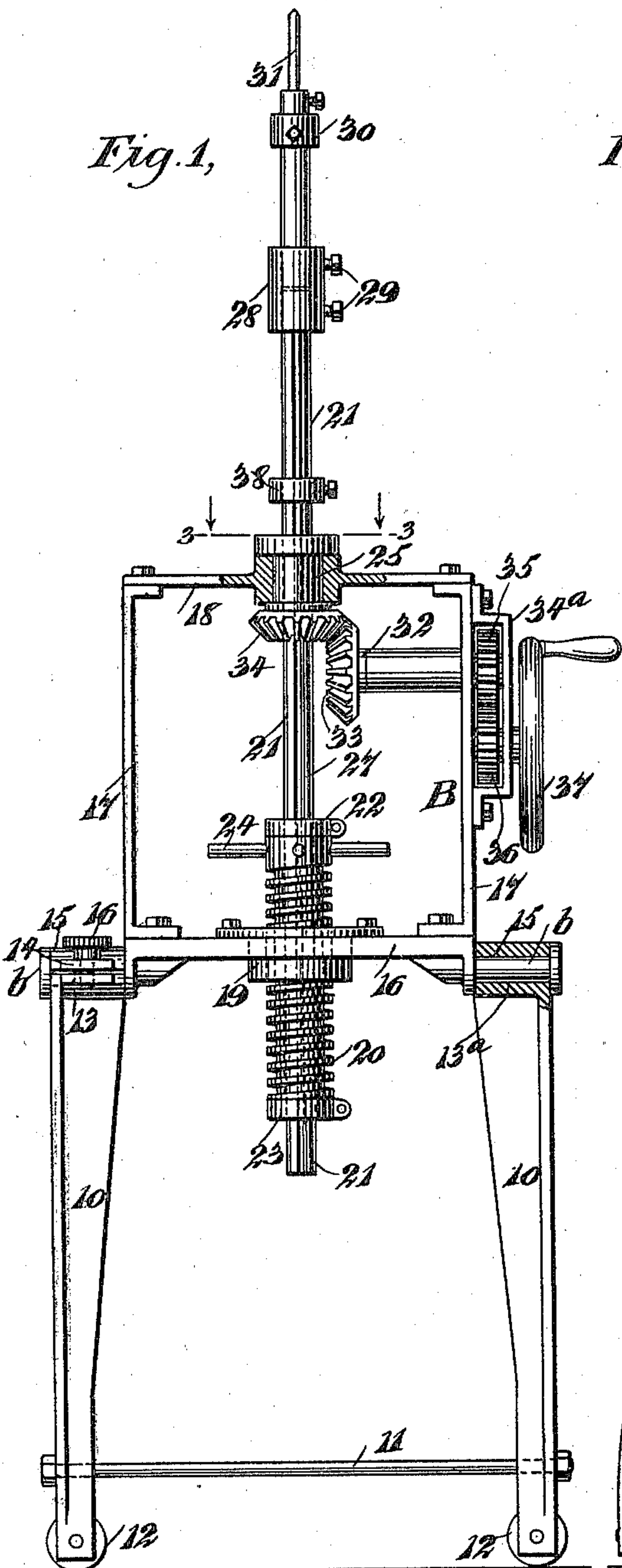
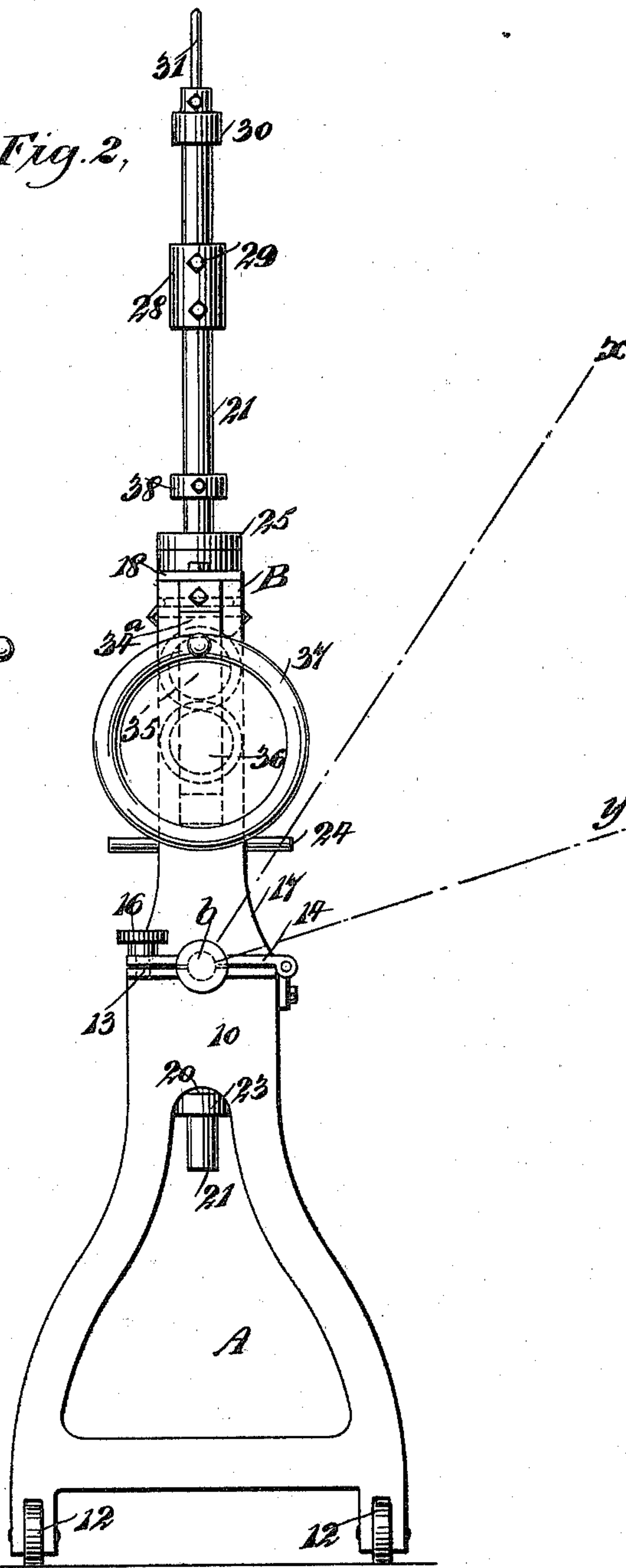


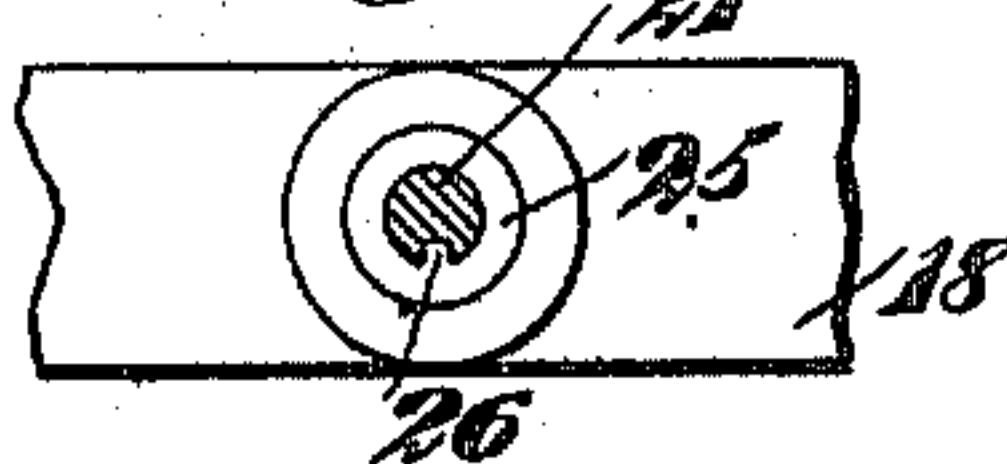
Fig. 2,



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Fig. 3.



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DRILL.

SPECIFICATION forming part of Letters Patent No. 586,064, dated July 6, 1897.

Application filed February 24, 1896. Serial No. 580,436. (No model.)

To all whom it may concern:

Be it known that I, HERMAN RICHTER, Jr., of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Drills, of which the following is a full, clear, and exact description.

The object of my invention is to construct a drill especially adapted for overhead work and to provide a base having a rolling support upon which the drill-shaft is adjustably secured, the drill-shaft being constructed in sections and provided with couplings whereby it may be given any necessary length to reach a ceiling of any height, the base of the said machine resting upon the floor.

Another object of the invention is to provide a feed for the said shaft operated at the base of the machine and a driving mechanism for the drill that may be readily operated by a person standing on the floor.

It is another object of the invention to provide a means whereby the frame in which the drill-shaft is sustained may be given any desired angle to drill or bore a hole at an inclination.

A further object of the invention is to provide the shaft with a gage through the medium of which the operator may determine the depth to which the drill has entered a given piece of work.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the machine, parts being in section. Fig. 2 is a front elevation of the machine, and Fig. 3 is a horizontal section taken on the line 3 3 of Fig. 1.

In carrying out the invention the base of the machine consists of legs 10, usually two in number, connected by braces 11 of any description, and the legs are made wider at the bottom than at the top, being provided at their lower ends with rollers 12, in order that the machine may be readily moved from place to place. A forwardly-extending horizontal

table 13 is formed at the upper end of each leg, and in each table a transverse groove 13^a is produced in its upper face, ordinarily at the center, and above each table a clamp 14 is placed hinged to the table at one end and provided with a transverse groove 15 in its under face, adapted to coincide with the groove 13^a in the table, and the free ends of the clamps are secured to the table by means of a set-screw 16 or an equivalent device, whereby pins or studs *b*, formed upon a frame B and resting in the bearings provided by the grooved surfaces of the clamps on the tables, may be firmly and rigidly held in their bearings when occasion may demand, and whereby, further, the pins may be loosened and the frame B carried to any desired angle—as, for example, to the angles expressed by the broken lines *x* and *y* in Fig. 2.

The frame B preferably consists of a base-bar 16, to which the pins *b* are attached, side pieces 17, and a top bar 18. A nut 19 is secured in the bottom of the frame B, as shown in Fig. 1, and a tubular screw 20 is received by the aforesaid nut adapted as an adjusting device for a shaft 21, the said shaft being passed loosely through the screw from end to end, and the shaft is provided with two collars 23 and 22, bearing, respectively, against the bottom and top portions of the screw, so that when the screw is given an upward movement the shaft will be raised and whereby the shaft will be lowered correspondingly to the lowering of the screw. The screw is preferably provided with hand-bars 24 in its upper end to facilitate the rotation of the screw. The shaft does not pass directly through the upper end of the frame B, but through a sleeve 25, mounted to slide loosely in suitable bearings in the said frame, as shown in Fig. 1, and the said sleeve is provided with an interior rib or feather 26, adapted to enter a groove 27, made longitudinally in the shaft and extending usually from its lower end to a predetermined point above the top of the said frame B. In this manner the shaft is free to turn, yet it has guided end or vertical movement.

The shaft is preferably made in sections, and the sections are united by couplings 28 of any approved construction, which receive

the abutting ends of the sections of the shaft, and the shaft-sections are secured in the couplings by set-screws 29 or equivalent devices, as shown in both Figs. 1 and 2.

5 A chuck 30 is carried by the upper section of the shaft, adapted to receive the drill 31 or other form of tool. A shaft 32 is horizontally journaled in the frame B at its front side and carries at its inner end a beveled
10 gear 33, which meshes with a similar gear 34, located on the shaft 21, being likewise provided with a feather to enter the groove in the shaft, so that this gear will not interfere with the vertical adjustment of the shaft.

15 The outer end of the shaft 32 is journaled in a strap 34^a, located at the front of the machine, and a pinion 35 is secured upon the shaft 32 within the strap, meshing with a second pinion 36, operated through the medium of a hand-wheel 37 or a pulley when a
20 motor is to be connected with the machine.

A collar 38 is adjustably secured on the shaft above the sleeve 25 in the frame, and when the shaft has been adjusted to an en-
25 gagement with the article to be drilled this collar will rest upon the upper surface of the sleeve, and as the shaft is adjusted upward to continue the drilling operation the space between the under side of the collar 38 and
30 the upper surface of the sleeve 25 will indicate the depth to which the drill has traveled, so that a hole of any desired depth can be accurately made, the operator of the drill being far removed from the point of the drill.

35 It is obvious that with a machine of this character overhead borings may be produced expeditiously, conveniently, and accurately, the operator of the machine and the base of the machine itself being some distance re-
40 moved from the work, and it is, furthermore, obvious that the drill-shaft may be given any inclination that the character of the work may demand.

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

1. In a drill, the combination with a base provided with sockets or bearings in its upper end, of a frame provided with trunnions pro-

jecting from its lower end and fitting in said 50 sockets or bearings, means for clamping the trunnions of the frame for holding said frame at different angles to the base, a nut in the lower portion of the frame, a tubular screw
55 working in the nut, a drill-shaft mounted in the upper part of the frame to slide and turn, said shaft passing through the screw and having a stop above and below said screw, and means for rotating the drill-shaft, substantially as described. 60

2. In a drill, the combination with a base provided with bearings in its upper end at opposite sides, of a frame provided with trunnions projecting from its lower end and fitting in said bearings, means for clamping the 65 trunnions of the frame for holding said frame at different angles to the base, a nut in the lower portion of the frame, a tubular screw working in the nut, a drill-shaft passing through the said screw and having a collar
70 above and below the said screw, a sleeve loosely mounted in the upper part of the frame and in which the shaft is mounted to slide, but not to turn, and means for rotating the drill-shaft, substantially as described. 75

3. In a drill, the combination with a base provided with a bearing in its upper end, of a frame provided with trunnions projecting from its lower end and fitting in the said bear- 80 ings, means for clamping the trunnions of the frame to hold the said frame at different angles on the base, a nut in the lower portion of the frame, a tubular screw working in said nut, a drill-shaft passing through the screw and having a collar above and below the 85 screw, a sleeve loosely mounted in the upper part of the frame and in which the shaft is mounted to slide, but not to turn, a pinion splined to the drill-shaft below the sleeve, a transverse shaft mounted in the frame and 90 provided with a pinion meshing with the pinion on the drill-shaft, and means for operating the transverse shaft, substantially as described.

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Witnesses:

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