J. S. DETRICK.

DRILLING MACHINE.

APPLICATION FILED MAR. 14, 1912.

1,087,646.

Patented Feb. 17, 1914.

2 SHEETS—SHEET 1.

Fig. 2.

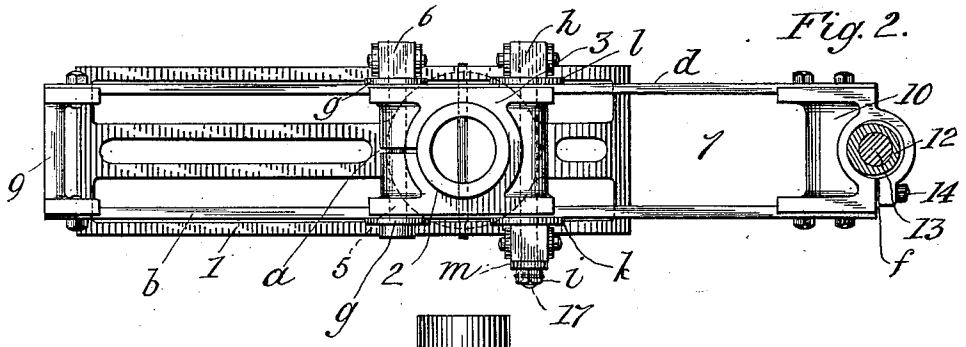
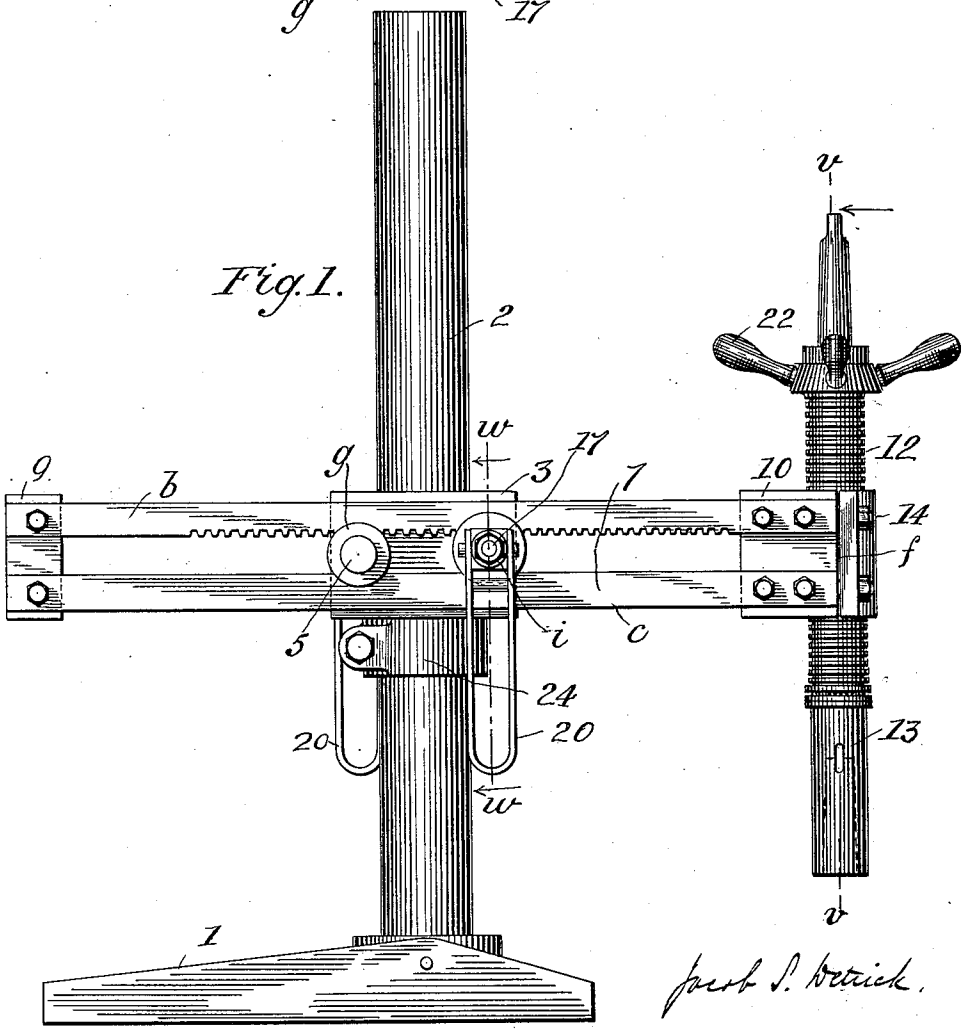


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

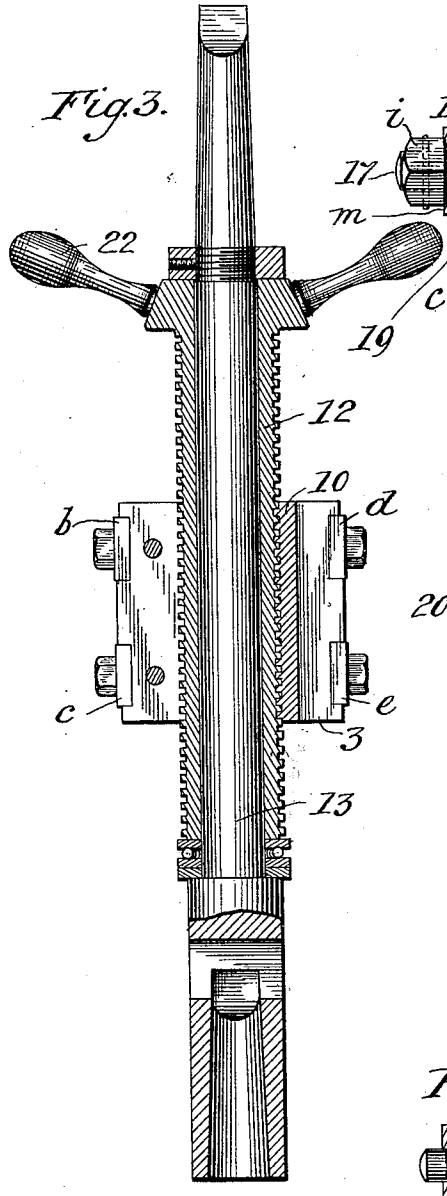


Fig. 4.

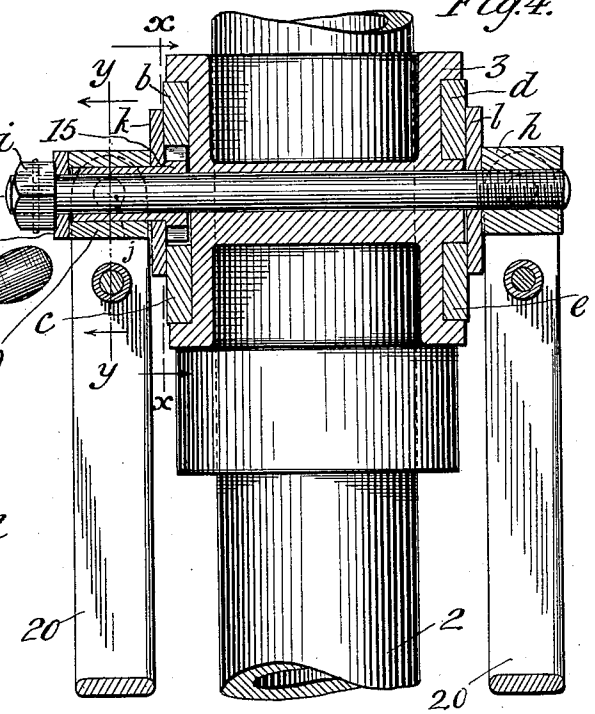


Fig. 5.

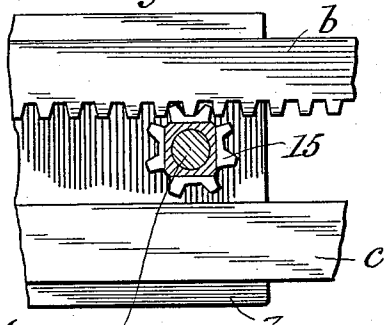
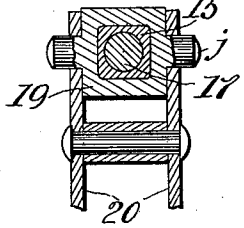


Fig. 6.



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JACOB S. DETRICK, OF BALTIMORE, MARYLAND.

DRILLING-MACHINE.

1,087,646. Specification of Letters Patent. Patented Feb. 17, 1914.

Application filed March 14, 1912. Serial No. 683,911.

To all whom it may concern:

Be it known that I, JACOB S. DETRICK, of the city of Baltimore and State of Maryland, have invented certain Improvements in Drilling-Machines, of which the following is a specification.

In the description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, and in which,—

Figure 1 is an exterior side elevation of the improved drilling machine, and Fig. 2 a top view of the same. Fig. 3 is an enlarged section taken on the broken line *v* in Fig. 1. Fig. 4 is an enlarged section taken on the broken line *w* in Fig. 1. Fig. 5 is a section taken on the broken line *x* in Fig. 4; and Fig. 6 is a section taken on the broken line *y* in Fig. 4.

Referring now to the drawings, 1 is the base of the machine, and 2 a vertical column, preferably of tubular form, secured to the base 1.

3 is a bored head situated upon, and adapted to slide vertically on and swing around the column 2. In order that the head 3 can be securely fastened to the column 2, and independent movement of the same prevented after it has been placed at the desired position, it is slitted at one side thereof to render it slightly compressible, and provided with a through clamping bolt 5 and a nut 6, as best shown in Fig. 2 in which figure the slit is denoted by *a*.

7 is a horizontal radial arm constructed in part of the bars *b*, *c*, *d* and *e*. The bars *b* and *c* are vertically spaced to form a pair, as are also the bars *d* and *e*, and the pairs at one end are connected by the block 9, and at the other end by the block 10 which is interiorly threaded to form a holder for the threaded sleeve 12 in which the drill spindle 13 is adapted to be rotated. To compensate for wear of the threads, the block 10 is slitted at *f* so that it can be closed when necessary by means of the bolts 14.

The arm 7 constructed as described, is adapted to slide horizontally in a rabbeted portion of the head 3; and as the bolt 5 is provided with washers *g* which overlap portions of the outer surface of the bars *b*, *c*, *d* and *e*, the tightening of the said bolt serves not only to clamp the head 3 to the column 2, but also to secure all the said bars to the head, thereby preventing independent movement of the arm with respect to the head.

To adapt the machine to the various purposes for which it is applicable, it is necessary that some means should be had to produce endwise movement of the arm 7 to change the radial distance of the drill spindle 13 from the column 2; and to this end, the inner edge of the bar *b* of the arm 7 is provided with rack teeth which are in mesh with a pinion 15.

The pinion 15 is bored to receive a transverse shaft 17 which extends entirely through the head 3, and at one end is fitted with a tightening nut *h*. The other end of the shaft is also provided with a nut *i* which as it is pinned to the shaft, serves only as a collar.

The exterior surface of the hub of the pinion 15 is made square (see Figs. 5 and 6), and upon it is placed a wrench 19 having trunnions *j* which carry a swinging handle 20. This form of wrench is also utilized with respect to the nuts 6 and *h* which have to be repeatedly set up or slackened, and is found convenient, but it does not enter into the present invention.

The nut *h* like the nut 6 serves to clamp the bars *b*, *c*, *d* and *e* of the arm 7 tightly against the head 3, through the direct agency of the washers *k* and *l*, the wrench 19, the washer *m* and the pinned nut *i*, but does not place any strain on the pinion 15, for the reason that the pinion proper is thinner than the depth of the rabbet in the head 3, and its length including the hub, less than the distance between the bottom of the rabbet and the inner surface of the washer *m;* and it will be understood that as the side of the head 3 through which the shaft 17 passes is not split, the tightening of the nut *h* does not clamp the head to the vertical column 2.

The sleeve 12 is provided with a suitable handle 22 whereby it can be turned to raise and lower the drill spindle which at its upper end is adapted for attachment to any suitable driving mechanism, and at its lower end bored and otherwise fitted to receive a drill.

It will be understood that upon the nut 6 being slackened the head 3 can be easily elevated by hand, and also turned circumferentially; and its position with respect to height, is temporarily preserved, or until

the said nut 6 is set up, by having the loose split collar 24 on the column 2 brought against its under side and tightened.

An important feature of the invention consists in having the longitudinal axis of the arm 7 and the vertical axis of the drill spindle, on a common radial line extending from the center of the column 2, thereby preventing transverse tilting of the arm 7 due to pressure against its under side when the machine is in operation.

I claim as my invention:

1. In a drilling machine, a base, a vertical column erected on the base, a centrally bored rotatable head situated upon and adapted to have a movement longitudinally of the column, an arm embodying a pair of vertically separated bars situated on either side of the head and susceptible of a horizontal movement independently of the same, the said bars being coupled together and independently of the head, a bolt which passes through the head and the space between the vertically separated bars carrying washers which overlap the adjacent edges of the bars for the purpose described, and an interiorly threaded block situated between the two pairs of bars, combined with a threaded sleeve within the interiorly threaded block, and a drill spindle adapted for rotation within the threaded sleeve, substantially as specified.

2. In a drilling machine, a base, a vertical column erected on the base, a centrally bored rotatable head situated upon and adapted to have a movement longitudinally of the column, an arm embodying a pair of vertically separated bars situated on either side of the head and susceptible of a horizontal movement independently of the same, the said bars being coupled together and independently of the head, a bolt which passes through the head and the space between the vertically separated bars carrying washers which overlap the adjacent edges of the bars for the purpose described, and an interiorly threaded block situated between the two pairs of bars, combined with a loose split collar provided with a tightening bolt, situated on the column and underneath the head, a threaded sleeve within the interiorly threaded block, and a drill spindle adapted for rotation within the threaded sleeve, substantially as specified.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."