

(No Model.)

R. MEYER.
ROCK BORING MACHINE.

No. 558,652.

Patented Apr. 21, 1896.

Fig 2.

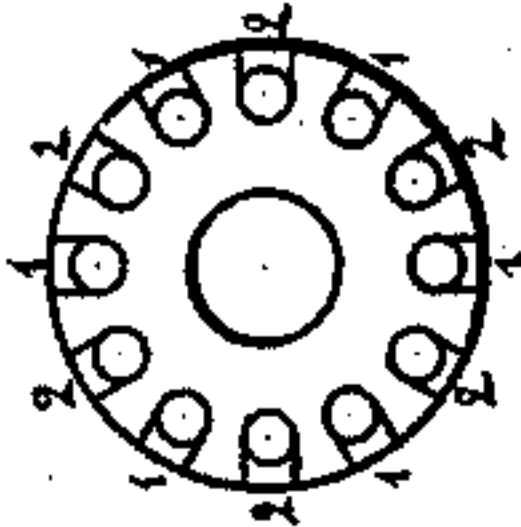
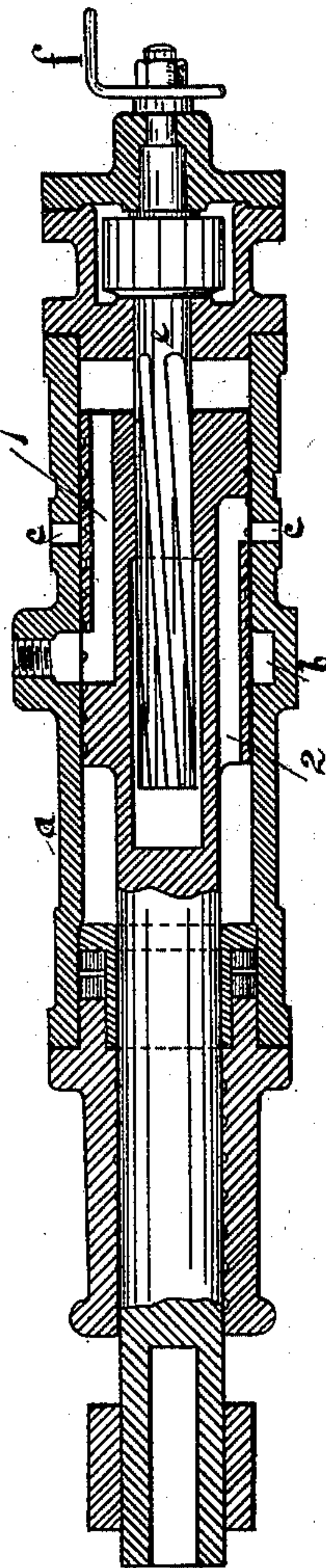


Fig 1.



Witnesses
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UNITED STATES PATENT OFFICE.

RUDOLF MEYER, OF MÜLHEIM-ON-THE-RUHR, GERMANY.

ROCK-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 558,652, dated April 21, 1896.

Application filed February 6, 1892. Serial No. 420,515. (No model.) Patented in Germany April 25, 1892, No. 62,028.

To all whom it may concern:

Be it known that I, RUDOLF MEYER, of Mülheim-on-the-Ruhr, in the Kingdom of Prussia and German Empire, have invented
5 new and useful Improvements in Rock-Boring Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

A patent for this invention has been granted
10 to me in Germany, No. 62,028, dated April 25, 1892.

This invention relates to certain new and useful improvements in rock-boring machines; and it has for its object to provide a
15 simple, efficient, inexpensive, and durable machine of the class described.

With these objects in view the invention consists in the novel features of arrangement and construction hereinafter described.

20 In the accompanying drawings, forming part of this specification, and in which like letters and figures of reference indicate corresponding parts, Figure 1 is a longitudinal section, and Fig. 2 is a transverse section, of
25 my improved rock-drilling machine.

a is the motor-cylinder, formed with a central annular inlet-passage *b* for motive fluid, said inlet-passage extending entirely around the piston. The motor-cylinder is also provided with an annular series of exhaust-openings *c*, arranged at equidistant points in the cylinder-wall. A piston *d* is designed to reciprocate within the cylinder *a*. This piston
35 *d* is provided with two sets of passages 1 and 2 alternately and symmetrically formed in the piston, as shown in Fig. 2. The supply-passages 1 extend through the piston from the space at the rear thereof to a point on its periphery near the forward end of the piston,
40 and the supply and exhaust passages 2 extend through the piston from the space at the forward end thereof to a point on the periphery of the piston near the rear end thereof. As thus arranged the supply-passages 1 and supply and exhaust passages 2
45 are caused to alternately communicate with the annular inlet-passage *b* to admit motor fluid to each end of the cylinder. The exhaust from both sides of the cylinder takes
50 place through the exhaust-openings *c*. When the piston is at the limit of its back stroke,

the supply and exhaust passages 2 communicate with the exhaust-openings *c*, and the motor fluid from in front of the piston passes through said passages and exhaust-opening
55 and is allowed free exit to the atmosphere. Upon the arrival of the piston at the terminal of its back stroke the supply-passages 1 are brought to register with the inlet-passage *b* and motive fluid is admitted to the
60 rear end of the cylinder to drive the piston forward. As the limit of its forward stroke is reached the piston uncovers the exhaust-openings *c* and the motive fluid is exhausted
65 directly through the exhaust-openings without first passing through an intermediate passage, as is the case when the piston reaches the limit of its back stroke. In consequence
70 of this, and owing to the fact that the use of separate distributing mechanism is avoided, greater efficiency is obtained in a simpler
75 manner than has heretofore been possible in drilling-machines.

The drill is attached to the outer end of the piston-rod of the piston *d* in the usual manner.
75

A rifled bar *e*, which fits in a suitable recess in the piston, automatically effects the gradual rotation of the drill or tool during
80 drilling by means of a ratchet (not shown) and pawls.

Should jamming of the drill occur in consequence of the automatic rotating mechanism of the same becoming hindered or interrupted by accumulation of drill-dust in the
85 drill-holes, or by the drill striking into fissured rock, the necessary rotation of the drill can be effected by the operator by means of a handle *f*, secured to the end of the rifled bar *e*, which extends through the end cover of the
90 machine.

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

1. In a percussive rock-drill, the combination of the motor-cylinder having an inlet-
95 passage and exhaust-passages arranged at one side of the inlet-passage, a piston within the cylinder provided with supply-passages extending through the piston from the space in the rear thereof to a point on its periphery
100 near its forward end, and supply and exhaust passages extending through the piston from

the space in front of the piston to a point on its periphery near the opposite end of said piston, substantially as described.

2. In a percussive rock-drill, the combination of the motor-cylinder having an inlet-passage and exhaust-passages arranged at one side of the supply-passages, a piston within the cylinder provided with supply-passages extending through the piston from the space in the rear thereof to a point on its periphery near its forward end, and supply and exhaust passages extending through the piston from the space in front of the piston to a point on its periphery near the opposite end of said piston, and means for imparting a step-by-step rotary motion to the piston, substantially as described.

3. In a percussive rock-drill, the combination of the motor-cylinder having an inlet-passage and an annular series of equidistantly-spaced exhaust-passages at one side

of the inlet-passage, a piston within the cylinder provided with two sets of alternately-arranged and equidistantly-spaced passages, one set of which constitute supply-passages and extend through the piston from the space in the rear thereof to a point on its periphery near its forward end while the remaining set which constitute both supply and exhaust passages extend through the piston from the space in front thereof to a point on its periphery near the opposite end of said piston, and means for imparting a step-by-step rotary motion to the piston, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

RUDOLF MEYER.

Witnesses:

CURT FROSONG,
KLINGHAMMER.