

# Foster & Bailey, Stone Drill.

N<sup>o</sup> 5,951.

Patented Dec. 5, 1848.

Fig. 1

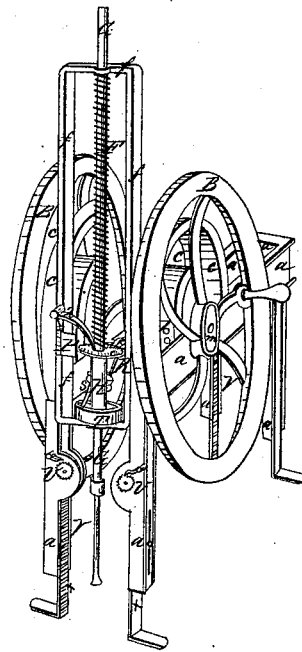


Fig. 5



Fig. 4



Fig. 2

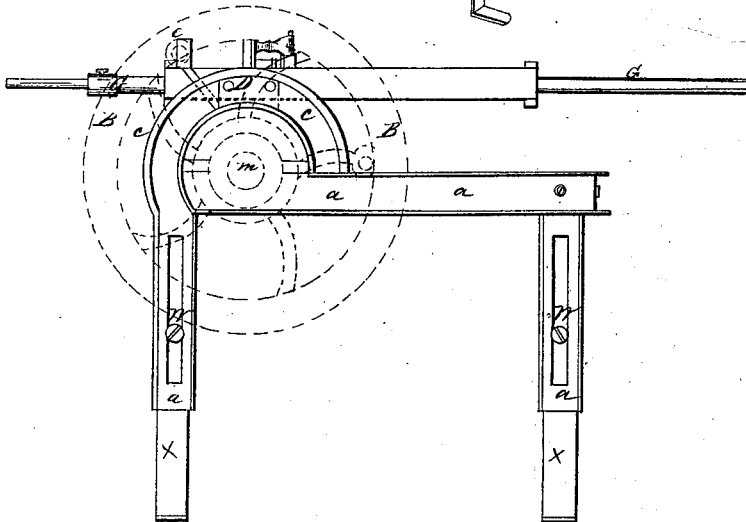
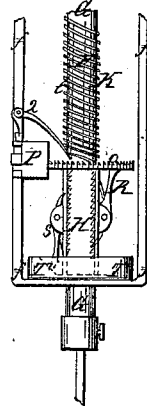


Fig. 3



# UNITED STATES PATENT OFFICE.

J. T. FOSTER AND L. R. BAILEY, OF NEW YORK, N. Y.

## ROCK-DRILLER.

Specification of Letters Patent No. 5,951, dated December 5, 1848.

*To all whom it may concern:*

Be it known that we, JOHN T. FOSTER and LYMAN R. BAILEY, of the city, county, and State of New York, have invented a new and useful Machine for Drilling or Boring Holes in Rocks; and we hereby do declare that the following is a full and exact description.

The nature of our invention consists in providing a frame of metal or any other material most convenient and said frame made with an arch on it, in which is a curved groove or slot, in the which is a curved sliding box attached to a drill stock, by which a spindle and chisel can be made to drill holes in rocks at any angle and operate either horizontally or perpendicularly. Also in employing a percussion and reactive force to the operation of drilling by combining a spiral spring with the drill stock and spindle and operating the same by a cam fixed on an axle of one or two power wheels, by the which contrivance a force is brought to bear upon the drilling of rocks in a far more effectual and economical manner than any heretofore known.

The nature of this invention also consists in the peculiar feeding gear, as it is technically termed, by which the drill is allowed to exert the full force applied without jarring the machinery of the machine, so as to prevent the breaking of chisels, events which are common to the present known modes of drilling, causing frequent and expensive delays.

The nature of the invention also consists in having adjustable legs attached to the frame of the machine to accommodate the machine to uneven ground on which to stand and also in providing a jointed curved chisel to excavate a greater diameter of bore at the bottom of holes for the purpose of more effectual explosions than by the present known plan for this purpose.

To enable others skilled in the art to make and use this machine we will now describe its construction and operation reference being had to the accompanying drawings making part of this specification in which—

Figure 1 is a perspective view. Fig. 2 a side or horizontal elevation. Fig. 3 a sectional view. Fig. 4 a cam and Fig. 5 a jointed curved chisel.

(A) represents the frame of the machine  
(B) the power or driving wheels.

The same letters indicate like parts on all the figures.

(C) is a grooved or curved arch, cast on the frame, or firmly attached to it by other means, it has a curved slot or groove in it, in which is nicely fitted a curved sliding box (D) capable of sliding round the whole circular part of the arch. (F) is a drill stock attached to the sliding box (D) by rivets or screws and in this manner connected with the frame. (E) is a pin for fastening the sliding box to any angle on the arch, through or by holes on the face of the arch, or the outer convex part. By moving the sliding box to any angle on the arch, the drill stock is carried to said angle also and the pin holds the sliding box and drill stock firm to the frame for the operation of drilling.

(G) is a spindle with two tiers of racks, cut on it and the chisel or drill is fixed on this spindle. This spindle passes through two openings at the ends of the drill stock, parallel to each other, answering as guides to the spindle and to give it a steady motion.

(H) is a collar or hub. It is made of metal, is hollow and the spindle (G) plays or works in and through it. By this collar the spindle is connected with the drill stock and frame. On the spindle (G) are two racks, to the teeth of one rack projecting downward and the other rack or ratchet tier, projecting upward or in a contrary direction as described by (L) Fig. 3 and (K) same figure.

(R) and (S) are two common spring pawls on (H) the collar, (which we are particular to describe minutely), these pawls catch into the teeth of the racks on the spindle through openings in (H) and thus are united or combined, the collar with the spindle. By pressing on the spring of pawl (R), the spindle can be drawn through the collar in one direction, and by pressing on the spring of (S) the spindle can be pushed through the collar in another direction to increase or diminish the point of the chisel, in distance from the object to be drilled. On one end of (H), is firmly fixed a small ratchet pinion (O) having teeth cut on its periphery and also on the side of its periphery, for the purpose of turning around the collar and spindle. This is done in the following manner: (M) is an axle on which the power wheels are fixed. This axle is confined to

the frame by solid circular boxes or gudgeons of such size as to allow the axle to revolve freely within them. On the center of this axle which extends across the frame, is fixed a cam described by Fig. 4. Now as the power wheels are propelled, the cam on the axle catches (O) and in this manner lifts up both the collar and spindle twice during every revolution of the axle and as (O) is raised and lowered, or moved backwards and forward (Q) the pallet on the drill stock gives with the motion of the pinion and (P) catches it when it comes back and thus keep moving the collar and spindle continually around which is necessary for the purpose of drilling a round hole with a chisel. Connected with the collar H is another very important arrangement, by which the spindle and drill are allowed to work freely without jarring the drill stock. It will readily be perceived that if there were not some arrangement to mitigate the force of the collar when exerted against the drill stock, the weight of the spindle and the power or force applied to it would soon shatter the drill stock to pieces, by the power applied to the spindle being spent against the drill stock, instead of the rock to be drilled. To obviate this evil and to make the drill operate smoothly and effectually, a circular cam (T) is fastened on the one end of the drill stock. This cam is solid with an opening in its center

through which the spindle passes. (Fig. 3) the sectional view represents principally this important arrangement. When the inside of (T) is struck by the spring of pawl (S) in its descent, the collar is, or rather the spindle is thrown out of gear with the collar and the spindle and chisel allowed to exert the full force that may be applied to them without jarring the drill stock, and whenever the chisel strikes the rock, (S) gears into the spindle again, and whatever reaction force there may be resulting from the action of the chisel upon the rock the spiral spring I gives or accommodates itself to said action and allows the chisel and spindle to work smoothly without jarring.

Thus we have explained the nature of our invention its construction and mode of operation.

We claim as our invention—

The combination of the collar (H) with the drill stock and spindle by the pawls (R) and (S) and the pinion (O) and the pallets (P) and (Q) for the purpose of feeding and changing gear, substantially as set forth.

February 4th, 1848.

J. T. FOSTER.  
LYMAN R. BAILEY.

Witnesses:

ROBT. MACFARLANE,  
M. McRAE.