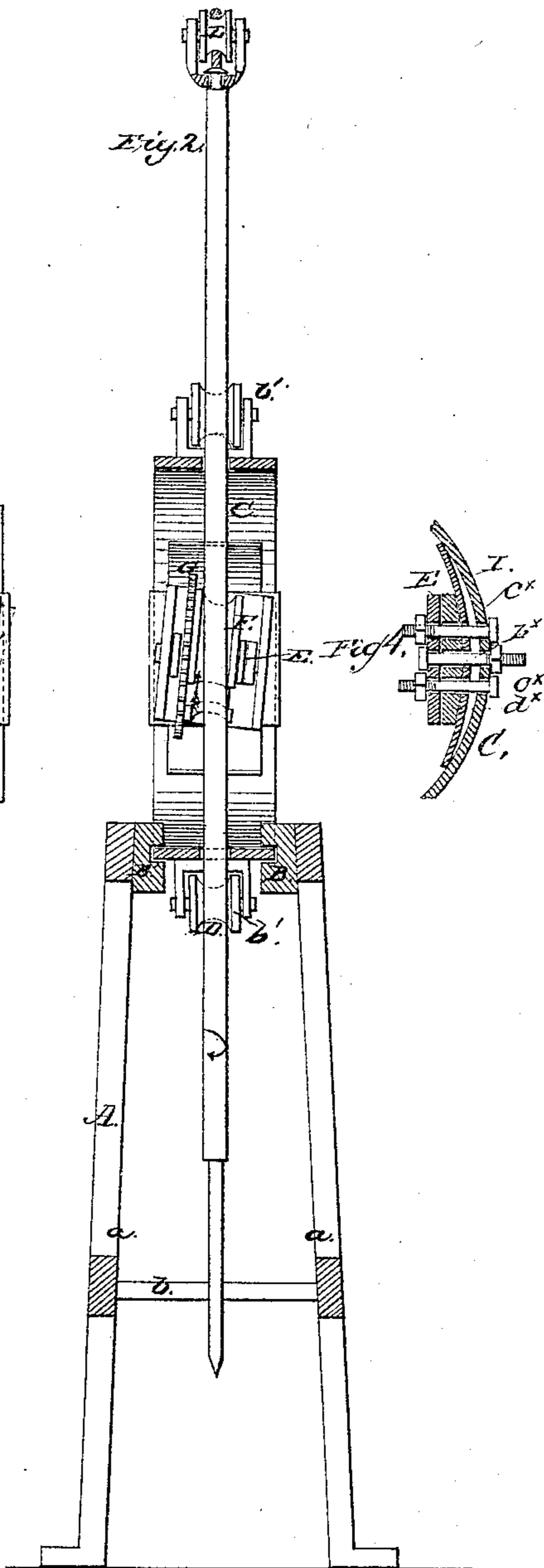
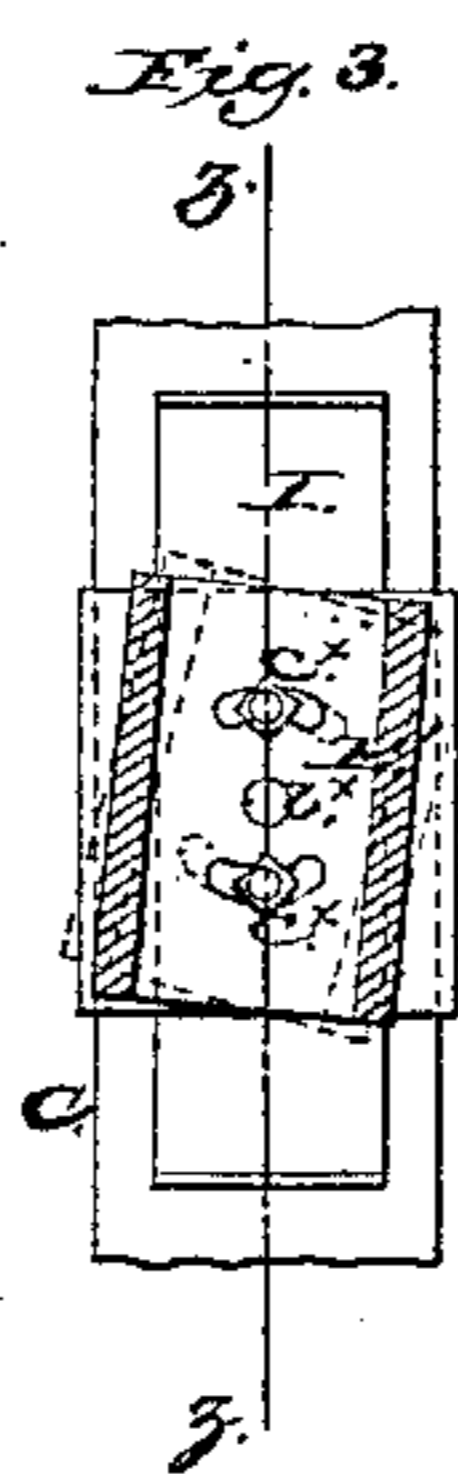
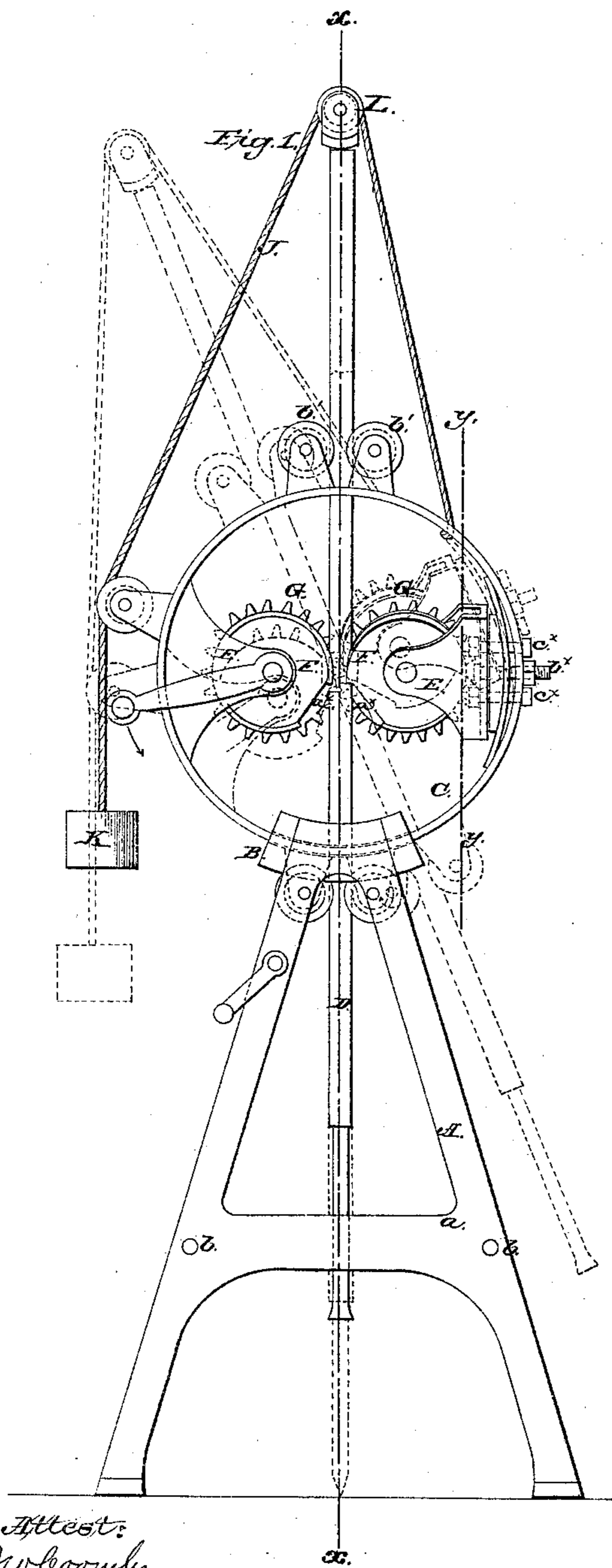


# A. Bigelow, Stone Drill.

N<sup>o</sup> 32,957.

Patented July 30, 1861.



Attest:  
J. W. Coombs  
A. B. Hayth

Inventor:

A. Bigelow

# UNITED STATES PATENT OFFICE.

A. BIGELOW, OF HAMILTON, PROVINCE OF CANADA WEST.

## ROCK-DRILL.

Specification of Letters Patent No. 32,957, dated July 30, 1861.

*To all whom it may concern:*

Be it known that I, A. BIGELOW, of Hamilton, in the county of Wentworth and Province of Canada West, have invented a new and Improved Rock-Drill; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1. is a side view of my invention. Fig. 2. a vertical central section of the same, taken in the line  $x, x$ , Fig. 1. Fig. 3, a section of the same, taken in the line  $y, y$ , Fig. 1. Fig. 4. a section of Fig. 3, taken in the line  $z, z$ .

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved rock drill of that class in which cams are employed for lifting the drill.

The invention consists in having the cams so arranged as to be adjustable and capable of being placed in an inclined position so as to give the drill a rotary as well as an up and down movement.

The invention also consists in having the cams placed in a circular frame through which the drill rod passes all being so arranged as to admit of the drill working in a vertical or in inclined positions as circumstances may require.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A. represents a framing which may be constructed of two A-shaped side-pieces  $a, a$ , connected by cross bars  $b$ . To the upper end of each side piece  $a$ , there is attached a segment guide bar B. Between the bars B. B. there is fitted a circular bar or frame C. This frame C. is allowed to turn between the bars B. B., and the drill rod D. passes through it and between guide rollers  $b'$ .

To the inner side of the circular frame C. there are attached at opposite points two sockets E. E' in each of which a cam F. is placed. These cams may be described as being circles with a segment cut off or removed, as shown at  $a^x$ , and they are placed sufficiently near together as to grasp the drill rod D. and elevate it, the peripheries of the cams F. being grooved to receive the rod D. The rod D. of course is released from the "bite" of the cams F. and falls as

soon as the flat or plane surfaces  $a^x$ , of the cams, come opposite each other.

The two cams F. F. are connected together by gears G. G. to insure a simultaneous movement of both cams, and to maintain a proper relative position of them; and power is applied to the axis of one of the cams F.

One of the sockets (E'.) is secured to the inner sides of the frame C by means of a screw  $b^x$ , and set screws  $c^x$ , also pass through the frame A. into said socket for the purpose of securing it, either in a vertical or in an inclined position the screw  $b^x$ , being the center on which the sockets E. turn. By adjusting the sockets E. in an inclined position the drill rod D. will be turned as it is raised so that the drill H. will strike in a fresh place at each stroke.

I would remark that the socket E'. instead of being attached directly to the circular frame C. is secured to a plate  $d^x$ , which bears against a spring I.; the spring I. admitting of the socket E'. and its cam yielding or giving to a certain extent, and the plate  $d^x$ , admitting of the socket E'. being freely turned or adjusted. The other socket E. may be stationary as one inclined or oblique cam will be sufficient to give the rotary movement to the drill rod, still both sockets may be made adjustable if desired.

When the frame C. is so adjusted that the drill rod D. will be in a vertical position the drill rod will descend by its own gravity with a requisite degree of force, but when it is necessary to incline the drill rod, a cord J. having a weight K. attached to its end is placed over the pulley L. at the top of the drill rod. The weight K. compensates for the friction attending the descent of the drill when in an inclined position and also for the partial support it has while in that position. The cord J. may be readily cast off from pulley L. when the application of the weight K. is not necessary. Thus it will be seen that by this simple arrangement the cams F. F. are made to perform a double function; to wit, elevating the drill rod and at the same time rotating it, and by having the cams placed in the circular adjustable frame C., as shown, the drill rod may be placed at any desired angle, and made to operate perfectly well by the application of the weight K.

I do not claim broadly and separately the cams F. F. for raising the drill rod D. for they have been previously used; but

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

1. Having one or both of the cams F.  
5 fitted in adjustable sockets E. substantially as shown to admit of the placing of one or both cams in an oblique position for the purpose of rotating as well as lifting the drill rod D. as set forth.
- 10 2. Placing the cams F. within an adjustable circular frame C. through which the drill rod D. passes, said frame C. being fitted between guides B. B. at the upper end of

frame A. and arranged substantially as shown, to admit of the ready adjustment of the drill rod D. from a vertical position to  
15 any degree of inclination desired.

3. In combination with the adjustable circular frame C. cams F. and drill rod D. the cord and weight J. K. applied substantially  
20 as and for the purpose specified.

A. BIGELOW.

Witnesses:

JAMES LAIRD,  
G. W. REED.