

J. C. Osgood, Stone Drill.

N^o 16,652.

Patented Feb. 17, 1857.

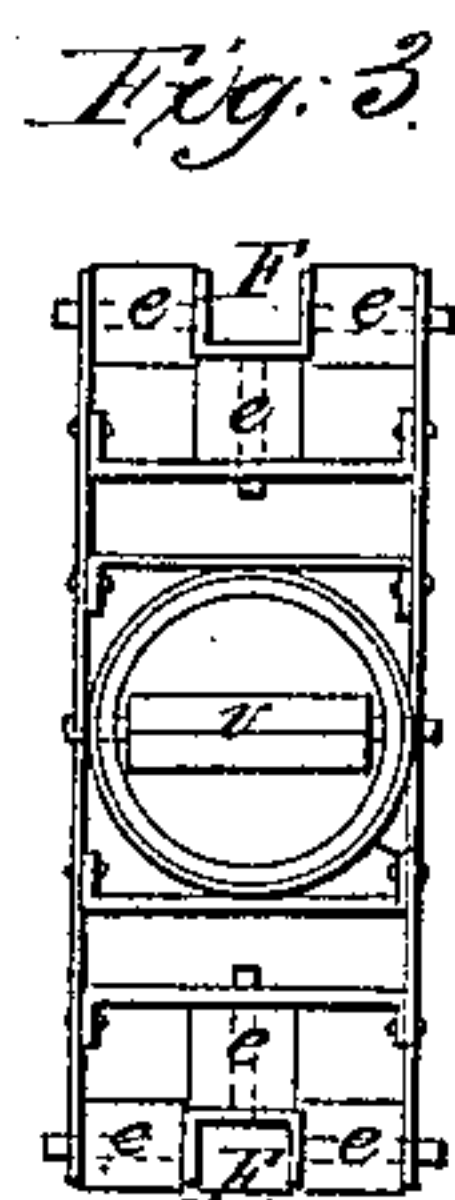
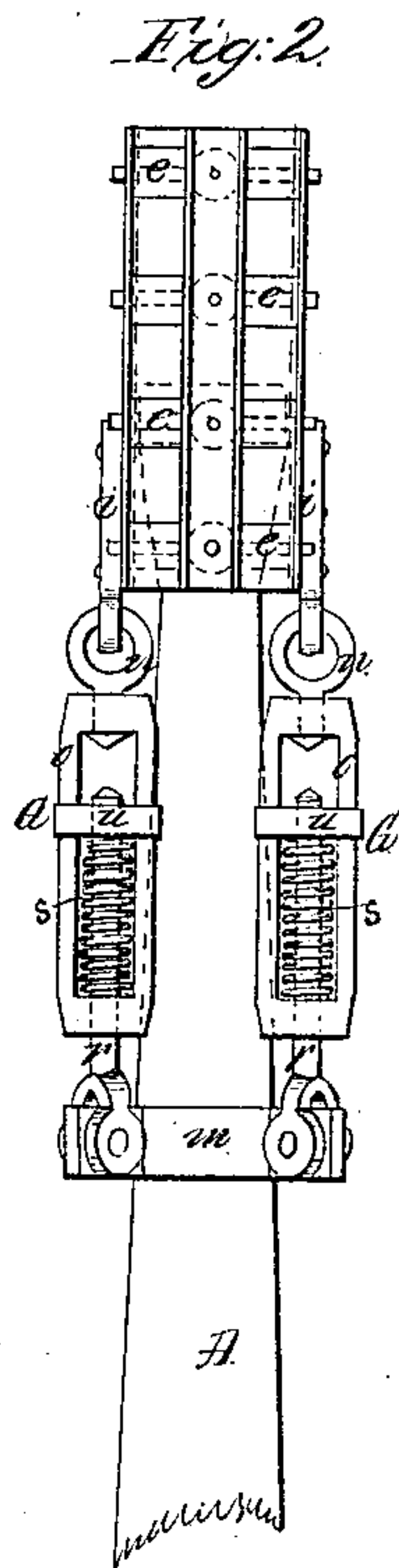
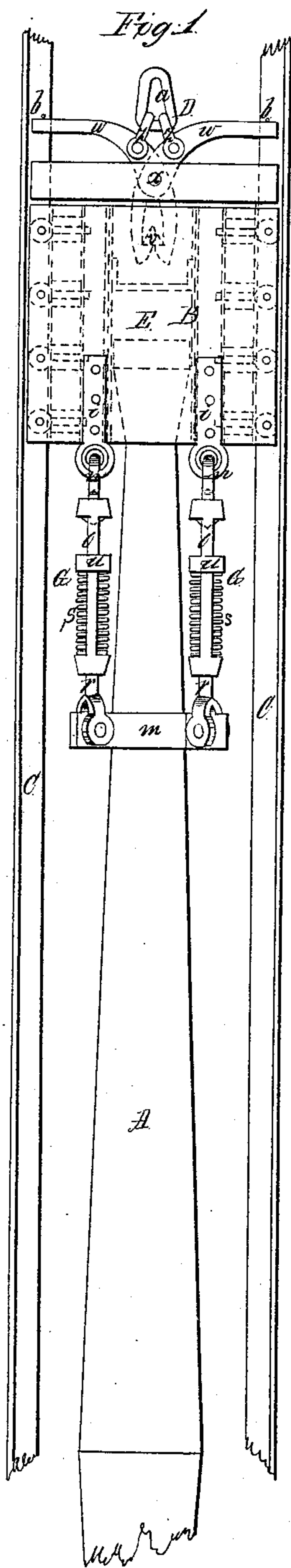
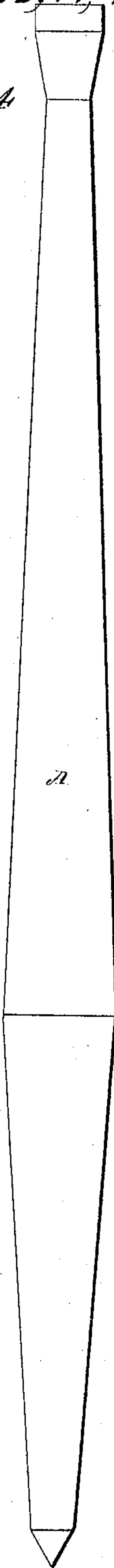


Fig. 4



UNITED STATES PATENT OFFICE.

JASON C. OSGOOD, OF TROY, NEW YORK.

MACHINERY FOR EXCAVATING ROCK.

Specification of Letters Patent No. 16,652, dated February 17, 1857.

To all whom it may concern:

Be it known that I, JASON C. OSGOOD, of Troy, in Rensselaer county, and State of New York, have invented certain new and useful Improvements in Machinery for Excavating Rock Under Water or other Analogous Purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, through letters of reference marked thereon, forming part of this specification, in which—

Figure 1, represents a front elevation of my chisel, with all its attachments forming the head, together with the ways on which it is operated, the interior parts of the head being represented by dotted lines. Fig. 2, represents a side elevation, of the upper part of the chisel, and the head, the interior being also represented, in a similar manner to that in Fig. 1. Fig. 3, represents a top view of the head and Fig. 4, a detached view of the chisel.

The same letters occurring in the several figures, indicate corresponding parts.

In excavating rock under water in the ordinary way, an enormous expense is incurred in the construction of coffer dams, and in the consumption of powder for blasting; the production of machinery, that will accomplish this object, without resorting to either of the above mentioned modes, constitutes my invention, which consists, in the use of a heavy chisel operated mechanically, by steam or other power.

The greatest difficulty to be overcome, is in adapting to the chisel a head, for the purpose of guiding it up and down on the ways, that will bear the repeated concussion without injury, either to itself or the ways; for this purpose I first used a wooden one, but this being solid and rigidly attached to the chisel, received, with the utmost severity, every shock, and was thereby soon battered to pieces, thus causing continual expense in renewing them; to supply a head that will yield in every direction, so that it may not be affected by such concussions, constitutes the second part of my invention. The third part consists in so constructing the spring turn buckles, by which the head and chisel are connected, as that the thread of the screw and nut are relieved from all lateral strain, and the screw can easily be tightened or loosened without the use of a wrench.

To enable others to make and use my im-

provement, I will proceed to describe its construction and operation: The general operation of my machine resembles that of a pile driver, and consists of a chisel (A), attached to a head (B), which guides it up and down on the ways (C), and is raised and loosed, by means of the monkey (D). The chisel (A) is of the form of a double pyramid, with their bases coming together, consequently it tapers each way to the ends; the length of the side of the base, compared with that of the other end of each pyramid, being in about the proportion of 5 to 2, consequently their areas and strength, will be as about 6 to 1; this I find to be the best proportion to prevent deflection from concussion. The point at which a straight bar of equal thickness from end to end will bend first, when struck endwise, is at about one third of its length from the point of concussion, I therefore designate that, to be the largest part of my chisel, (or the base of the two pyramids above described) this also being the point, at which the weight is most effective, and presents the most suitable form, for penetrating the rock. The head (B) is constructed of metallic plates riveted or bolted together, in suitable form, as represented in the drawing, with a cylindrical chamber, to receive a rubber or other elastic packing (E) as near its center as possible; the head of the chisel is of the form of a frustum of a cone inverted, the base of which fits loosely into the packing chamber, and rests against the packing; the conical form of the chisel head, admits of it swinging sidewise in any direction. On each side of the head is a vertical channel (F) which slides on the ways (C), these channels are also supported on rubber or other springs (e), both edgewise and sidewise, and are retained in their position, by guide rods passing through said springs into slots in the face and back plates, which admit of their yielding in any direction; this head is then secured to the chisel, by spring turn buckles (G), connected with the cleats (i) on the head, and hinged to the collar (m), which is attached firmly to the chisel; these turn buckles consist of a link (n) at the upper end, connected to the cleats (i), to which the loop or strap (o) is attached in such manner that it will revolve thereon; the screw (r) is hinged to the collar (m) on the chisel, and passes freely through an eye in the lower end of the strap (o), through

a spiral wire or other spring (*s*), and enters a nut (*u*), which is made to slide longitudinally within the strap, so that by rotating the strap the nut is screwed down to
 5 compress the spring, which may thus be tightened to any desired degree; the head, being thus attached to the chisel, is enabled to yield in any direction. The head (B) is also fitted with a triangular bar (*v*) trans-
 10 versely across it, capable of rotating on its trunnions at each end, so that in whatever part the shears or monkey may strike, they will open and grasp it, for the purpose of raising the chisel.

15 The monkey is composed of two curved shears (*w*) crossing each other, with a pin (*x*) passing through them, so that they are capable of opening and closing; a link (*z*) is attached to each shear above the joint, by
 20 which they are connected to a larger link (*a*) at the end of a chain, in such manner that the shears close at the lower end by their own weight, and the greater the weight grasped by them, the tighter it will be held;
 25 the upper arms of these shears turn off in a horizontal direction, and are forked at the

end to span the ways (*c*) so that by inserting a pin (*b*) through the ways at any point, from which it is desired to drop the chisel, the upper ends of the shears coming
 30 in contact therewith, causes them to open at the lower end, and loose the head, while, by this arrangement, there is no possibility for the monkey to become wedged and hang in
 35 the ways.

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

1. I claim the spring head (B) or its equivalent in combination with the chisel
 40 operating in the manner substantially as set forth.

2. The arrangement of the spring (*s*) within the loop or strap (*o*) of the turn-
 45 buckle in combination with the sliding nut (*u*) in the manner herein described.

In testimony whereof I hereunto subscribe my name this day of December 1856.

J. C. OSGOOD.

Witnesses:

WM. M. SMITH,
 JOHN S. HOLLINGSHEAD.