(No Model.)

G. H. SUMMERS, A. J. KINGS & L. Q. HARDESTY.

DRILL OPERATING DEVICE.

No. 473,202. Patented Apr. 19, 1892.

Fig. 1.

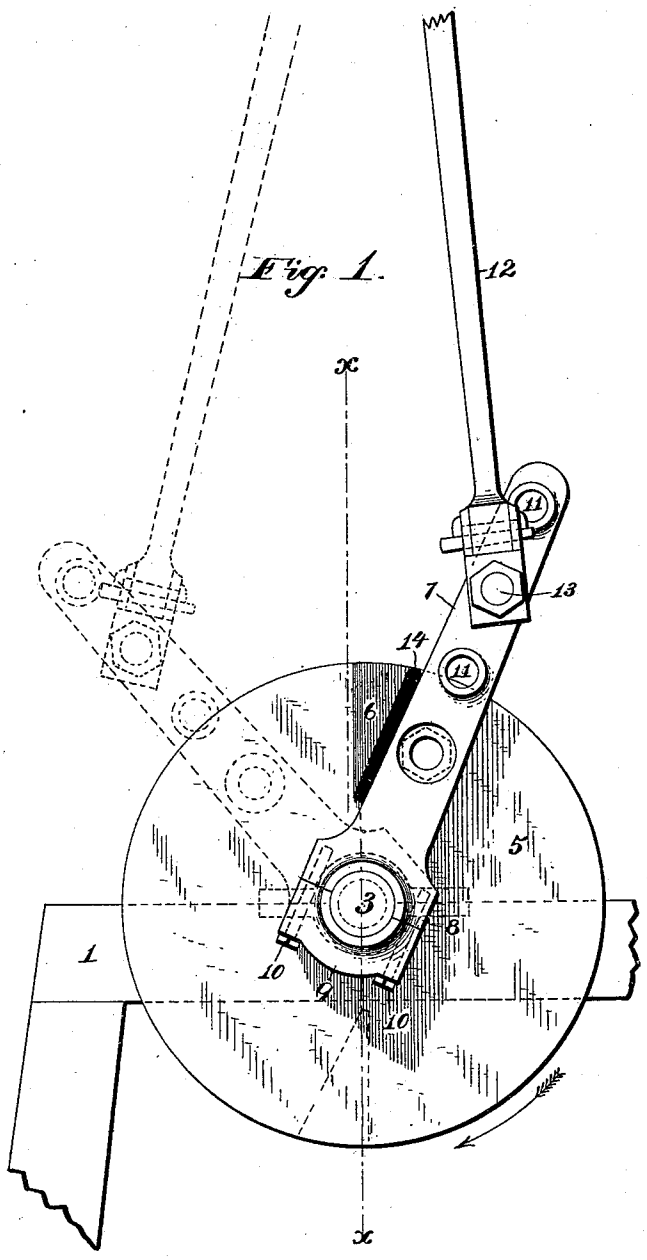
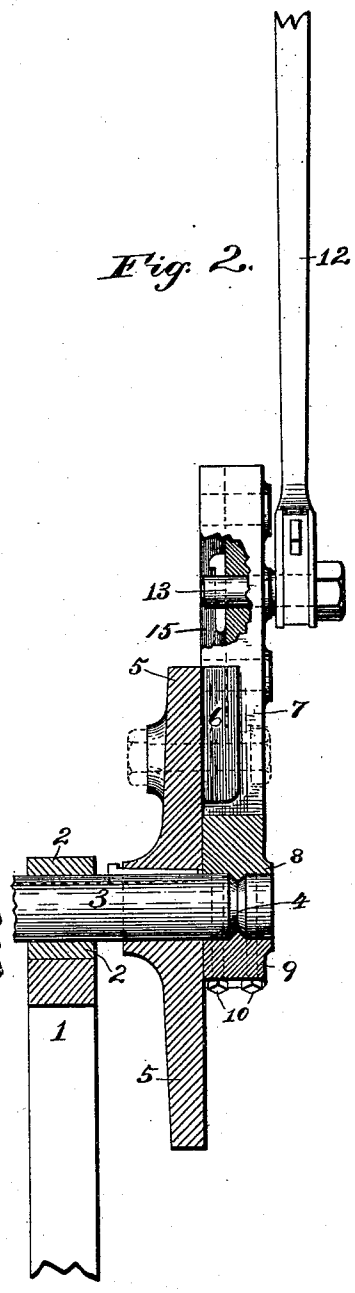


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE H. SUMMERS, ANDREW J. KINGS, AND LORIN Q. HARDESTY, OF MITCHELL, SOUTH DAKOTA.

DRILL-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 473,202, dated April 19, 1892.

Application filed July 2, 1891. Serial No. 398,298. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. SUMMERS, ANDREW J. KINGS, and LORIN Q. HARDESTY, citizens of the United States, residing at Mitchell, in the county of Davison and State of South Dakota, have invented a new and useful Drill-Operating Device, of which the following is a specification.

This invention relates to an attachment to that class of drilling-machines in which the drill is driven by its own weight and performs its functions.

The objects in view are to provide an attachment adapted to elevate the drill, release the same to fall by its own weight, and by its construction to prevent all jarring or sudden strains being imparted to the drilling-machine.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claim.

Referring to the drawings, Figure 1 is an elevation of an attachment constructed in accordance with our invention. Fig. 2 is a vertical longitudinal section of the supporting-frame, the mechanism appearing in side elevation.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the frame-work for supporting the attachment, which frame-work may be of any suitable construction and is provided with a pair of bearings 2.

In the bearings 2 is mounted the drive-shaft 3, leading from the mining-machine, said shaft being provided with an annular groove 4. Upon the shaft and rigid therewith is a disk 5, the same being located at one side of the annular groove 4 and designed to rotate with the shaft as the latter is operated by the machine. The face of the disk 5 is provided with a lug 6, the opposite edges of which converge.

7 designates an arm or lever, which is provided at its inner end with a half-box 8, embracing the shaft opposite the groove 4 therein and at one side of the disk 5. The opposite side of the shaft is embraced by the half-box 9, which is connected to the half-box 8 of the arm or lever by means of a pair of bolts 10, passing through the two half-boxes. The half-boxes are internally convexed to fit the groove 4. By this construction it will be seen that the lever or arm 7 is perfectly free to revolve upon and independent of the shaft 3, while at the same time it is barred from any longitudinal movement upon the shaft. At intervals the lever 7 is provided with bolt-receiving openings 11.

12 designates a connecting-rod adapted to be connected in any suitable manner with the drill-rod, the lower end of the rod being connected by a wrist-pin 13 to any one of the openings 11.

The arm 7 is provided upon its rear side with a longitudinal groove 15, which registers with a slot formed in the rear end of the bolt 13, through which latter is passed the key 17, the same resting in the groove.

In operation the shaft 3 of the mining-machine is slowly rotated in the direction indicated by the arrow, and as the disk is fast thereon it is likewise rotated, and through the medium of its lug 6 engages and carries with it the loose arm or lever 7, thus drawing down the rod 12, and of course the rope to which it is attached, and elevating the drill, as will be apparent. When the disk has carried the arm or lever past the dead-center, the weight of the drill will be exerted in an unobstructed manner upon the rod 12 and the arm or lever, and the two will be swung around in their continued rotation until in alignment, in which position they will remain until the lug 6 again arrives in operative contact, when the operation is repeated. It will be obvious that by changing the location of the pin 13 to the various holes 11, not only may the drill be elevated with less power, but the fall of the rod will be regulated. It will be seen that the elevation and fall of the drill will not impart any sudden wrenching or straining to the drilling machinery, and that we accomplish the above in a cheap and economical manner.

It will be seen that this mechanism may be employed as a pipe-driver or for other similar purposes, and in the former instance the change required would simply be the substitution of the weights for the drill-rod.

The face of the lug is preferably provided with a rubber block 14 or other desired form of cushioning device.

It will be understood that the drill-rod used may be of any material or construction, and in case a hollow rod is employed the apparatus will be used in connection with the well-known jetty or hydraulic process of drilling.

Having described our invention, what we claim is—

In an attachment of the class described, the combination, with the drive-shaft 3, having the annular groove 4, and the disk 5 at one side of the groove provided with the stop 6 and fixedly mounted upon the shaft, of the grooved lever 7, having a series of perforations and terminating at its inner end in the half-box 8, the companion half-box 9, the two being internally convexed to fit the groove 4, the bolts 10, passing through the half-boxes, the rods 12, and the wrist-pin 13, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

GEORGE H. SUMMERS.
ANDREW J. KINGS.
LORIN Q. HARDESTY.

Witnesses:
A. X. REGAN,
J. M. ADAMS.