

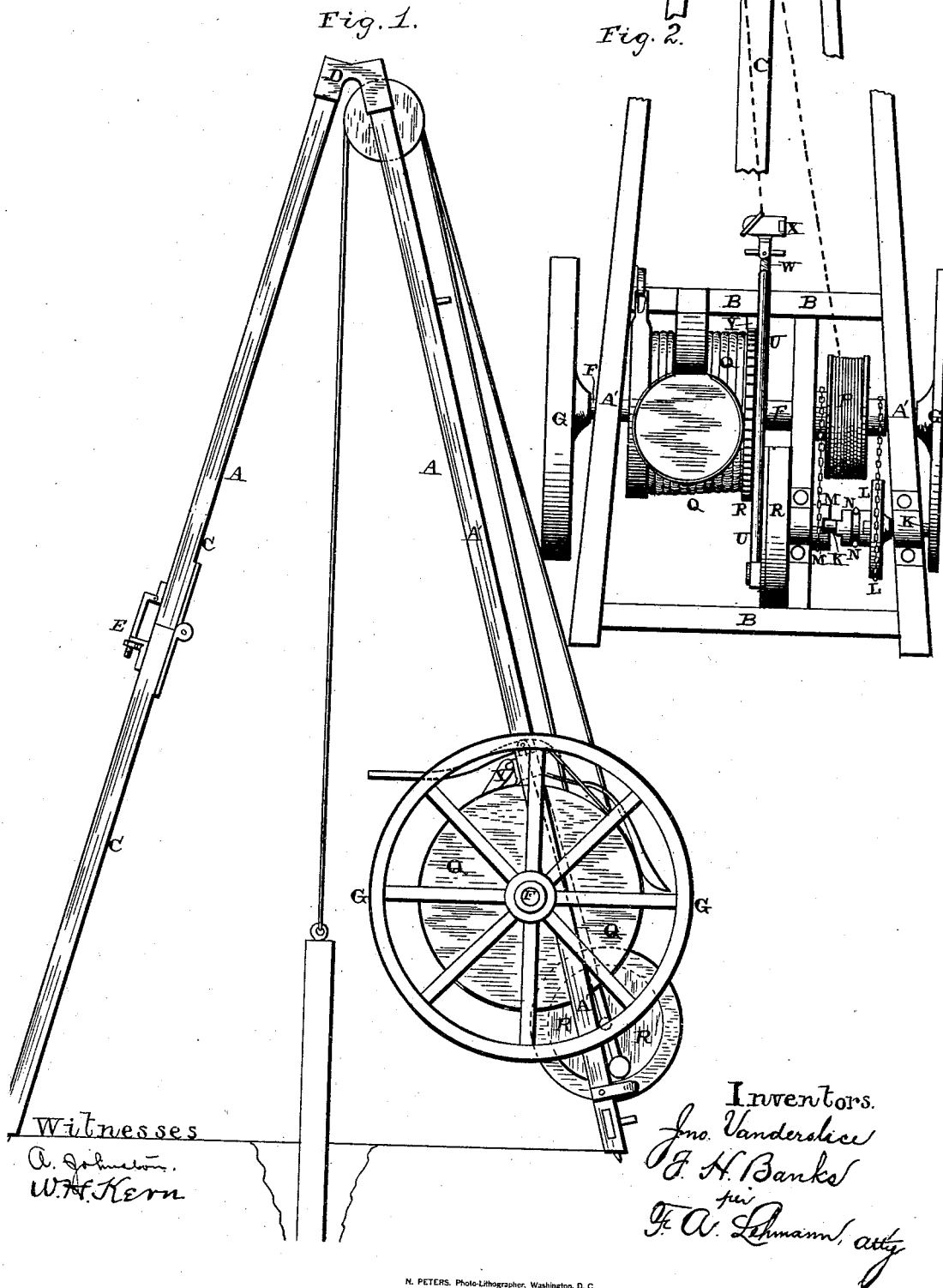
(No Model.)

2 Sheets—Sheet 1.

J. VANDERSLICE & F. H. BANKS.
WELL BORING AND STONE DRILLING MACHINE.

No. 264,799.

Patented Sept. 19, 1882.



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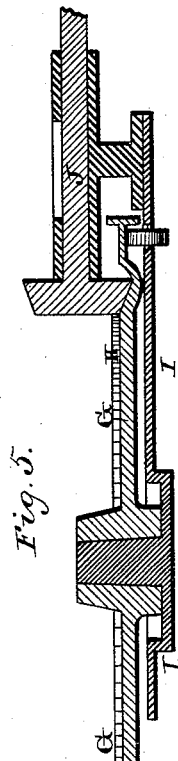
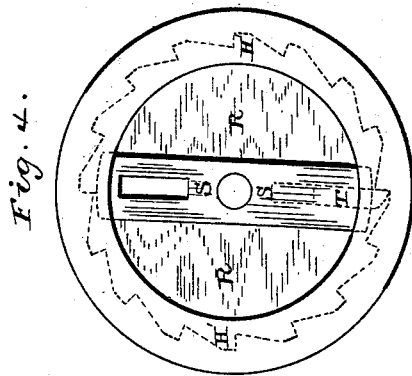
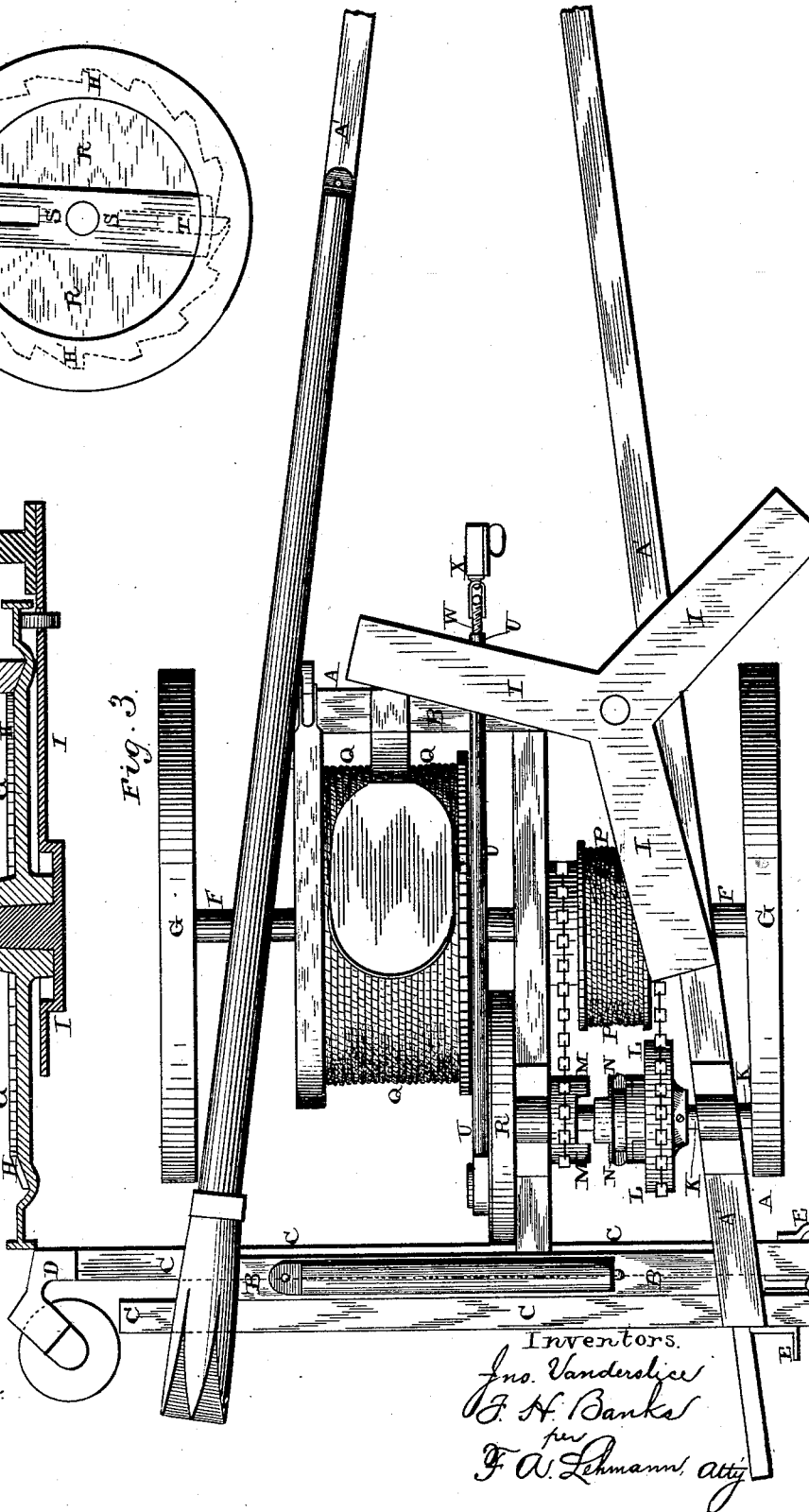


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN VANDERSLICE AND FRANK H. BANKS, OF PHOENIXVILLE, PA.

WELL-BORING AND STONE-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 264,799, dated September 19, 1882.

Application filed July 6, 1882. (No model.)

To all whom it may concern:

Be it known that we, FRANK H. BANKS and JNO. VANDERSLICE, of Phoenixville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Well-Boring and Stone-Drilling Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to an improvement in well-boring machines; and it consists, first, in a frame which is so constructed that it forms part of the derrick when the machine is erected ready for use, and which forms shafts in which to hitch a horse when the machine is ready to be transported from one place to another; second, in the combination of a rotating ratchet-disk, a tumbling-bar, a catch in one end, and an adjustable pin on the side of the other end, by means of which the length of the stroke is increased or diminished, and a connecting-rod to which the drill-rope is secured, whereby the drill is given nearly two strokes to every revolution of the disk; third, in the axle upon which the road-wheels are placed when the machine is being transported from place to place, and which also serves to hold the two drums upon which the drill and sand-pump ropes are wound; fourth, the combination of the connecting-rod, which is made hollow and internally screw-threaded, and which is made in two parts at its upper end, so that it can be opened to allow the screw to which the rope is secured to be quickly adjusted; fifth, in the combination of the drum around which the drill-rope is wound, and which has teeth formed on one of its flanges, with a ratchet which catches in the teeth and holds the drill in any position or prevents it from falling in case any part gives way; sixth, in a road-wheel having cogs formed on one side, and which is adapted to be removed from the axle and converted into a horse-power to operate the machine; seventh, in the arrangement and combination of parts which will be more fully described hereinafter.

Figures 1 and 2 are side elevations of the machine when erected ready for use. Fig. 3

is a plan view of the machine when it is ready to be moved away. Fig. 4 is an enlarged view of the ratchet-disk. Fig. 5 is a detail view.

A represents the frame of the machine, and which consists of the two bars or beams A', which are united together by the cross-pieces B near their lower ends. When the machine is erected ready for use these two beams form two posts of the derrick, as shown in Figs. 1 and 2, and when the machine is ready to be moved they form shafts, in which a horse is to be hitched for the purpose of drawing the machine along, like a cart. By means of this construction the machine is ready to be set up for work at any minute, and then can be hauled away by the same horse that works the horse-power for operating the drill. The other part of the derrick consists of the jointed bar C, which has the cap-piece D for the purpose of connecting the parts of the derrick together when the machine is erected ready for use. This bar has its two parts hinged together, and is provided with a screw-coupling, E, so that the two parts can be locked rigidly in place after the derrick is erected. The joint in the bar enables the operator to fold it so that it may be placed upon the machine when the same is to be transported. In the cap-piece D are journaled the two pulleys over which the drill and sand-pump ropes pass.

Secured to the under side of the two bars or beams is the axle F, upon which the two road-wheels G are placed in the usual manner. When the machine is ready for use these wheels are raised above the ground and are not brought into use at all; but when the machine is to be moved they support the whole machine, as is shown in Fig. 3. One of these wheels is not intended to be removed from the axle at any time, while the other wheel, having the cogs H formed on one side, is to be removed and placed upon the base or casting I, which has a spindle formed upon its center, upon which the wheel is journaled. This base is also provided with suitable friction-rollers to bear against the under side of the wheel, and thus keep it always level, and suitable rollers to bear upon the top of the wheel and keep it down in position. Upon one side of the base is also formed a journal for the shaft J, which is provided with a pinion to engage with the cogs on the side of the wheel. This shaft J is

connected, either directly or indirectly, with the shaft K, which is journaled upon the frame, and upon which is placed the two pulleys L M, the clutch N, and the ratchet-disk. From the pulley L passes a chain which operates the sand-pump reel P, and from the pulley M runs a chain which operates the drill-rope drum Q. By shifting the clutch either one of the pulleys can be brought into play, so as to operate either the drum or reel, as may be desired.

The ratchet-disk R has ratchet-teeth formed upon its side, its outer edge or rim, or as is here shown, according as the disk is to be used. Pivoted upon the end of the shaft J, at the center of the disk, is the tumbling-bar S, which is made hollow at one end so as to receive the pawl T, which engages with the teeth formed on the inner edge of the disk, while the other end of the rod is made too short to engage with the teeth H', but has an adjustable pin for the attachment of the connecting-rod U. This connecting-rod is attached loosely to the adjustable pin, so that the connecting-rod will operate freely. As the disk is made to revolve, the pawl T, which is beveled on one side of its outer end, catches in one of the teeth of the disk, and the rod is thus made to revolve with the disk so as to raise the drill until the rod reaches a certain point, when the weight of the drill carries the tumbling-bar on around independently of the disk, thus letting the drill fall with its full force. During the time the weight of the drill is moving the tumbling-bar the beveled end of the pawl slides freely over the ratchet-teeth without engaging with any one of them until the pawl again reaches a vertical position, when it again slides out of the end of the bar and again engages with the end of the tooth. During one half of the revolution of the disk it is carrying the tumbling-bar with it, and during the other half of its revolution the bar is carried by the weight of the drill alone, and thus for every revolution of the disk the tumbling-bar is made to operate the drill twice. As the disk is here constructed, there is a circular plate secured to its toothed side, and this plate catches over the ends of the tumbling-bar and holds it in position. As the bar moves very freely, as soon as the drill-rod is released the weight of the connecting-rod alone causes the end of the tumbling-bar to fall below the center, thus disengaging itself while the other parts of the machine are being operated.

The upper end of the connecting-rod U is made hollow and in two parts, which parts, when left free to move, spring apart far enough to allow the screw-rod W to be freely moved in and out without having to take time to adjust it by screwing it around. This screw has secured to its upper end the swiveled clamp X, to which the drill-rope is fastened. By adjusting the screw the drill is regulated with-

out having to loosen the rope in the clamp. The drum for the drill-rope has a friction-band passing around one edge, so as to regulate the descent of the drill. The other end of the drum has ratchet-teeth formed upon it, and with these teeth engages the pawl Y, so that should any part give way at any time this pawl will catch the drum and prevent the drill from falling. After the machine is done work in any one place the drill-rod, the jointed bar C, the frame upon which wheel was placed to be used as a horse-power, the connecting-rod between the machine and the horse-power, and the other parts are attached to the frame, and the horse is hitched in the shafts and the whole machine drawn away.

Instead of the beams being made to form shafts for one horse, a single beam may be used, which will answer as a tongue for two horses. Where the drill is to be operated by steam the engine will be placed in line with the disk, and then the belt will be passed around the disk. The engine can also be hitched to the axle of the machine by means of a tongue having its front end curved, and the engine can thus be drawn along behind the machine.

Having thus described our invention, we claim—

1. A well boring or drilling machine having its frame formed of the two bars or beams, which are adapted to form part of the derrick when the machine is in use and shafts for a horse when the machine is being moved, substantially as shown.

2. The combination of the two beams, the cap-piece, and the jointed bar C, substantially as described.

3. The combination of the disk provided with ratchet-teeth, the tumbling-bar S, having a recess in one end, and the ratchet T, to engage with the teeth, substantially as set forth.

4. In a well boring or drilling machine, the combination of the frame, the axle, the road-wheels, and the drum for the drill-rope and sand-pump, the drums being placed upon the same axle as the wheels, substantially as specified.

5. The combination of the drill-rope drum, having ratchet-teeth formed on one flange, and a pawl that is hung upon the frame, substantially as described.

6. A driving-wheel having cogs formed on one side, and which is adapted to be taken off its axle and converted into a horse-power, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

J. VANDERSLICE.
FRANK H. BANKS.

Witnesses:

ALBERT FITZWATER,
JOHN V. OBERHOLTZER.