

(No Model.)

S. SWANSON & E. ESPEE.
ARTESIAN WELL REAMER.

No. 471,153.

Patented Mar. 22, 1892.

Fig. 1.

Fig. 2.

Fig. 4.

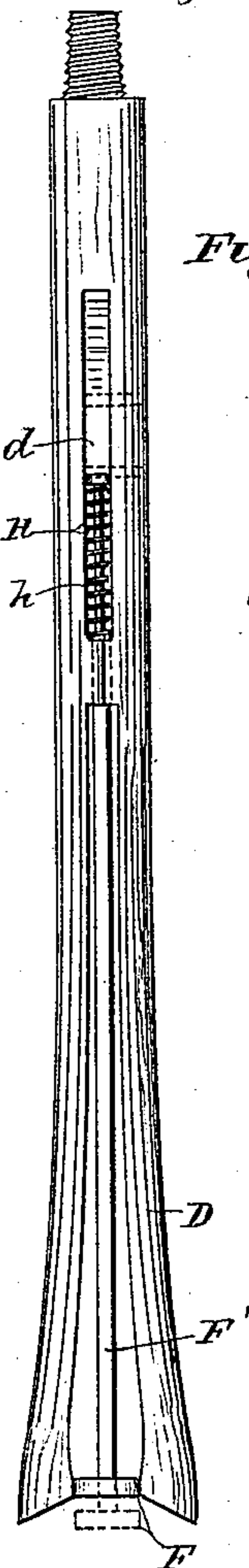
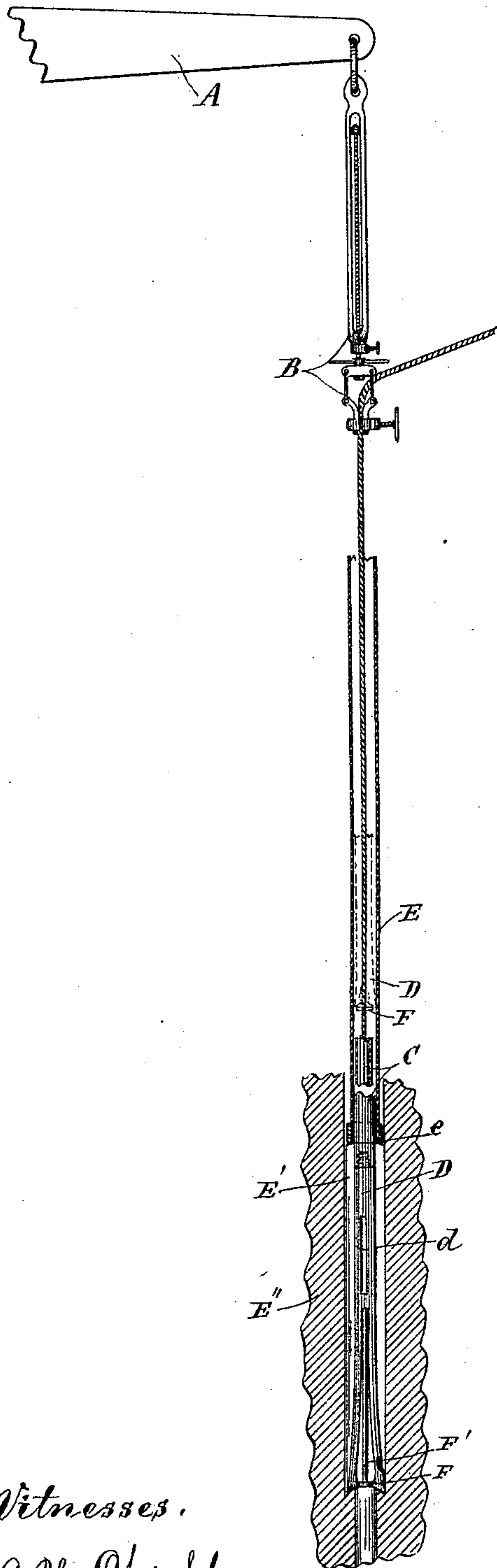
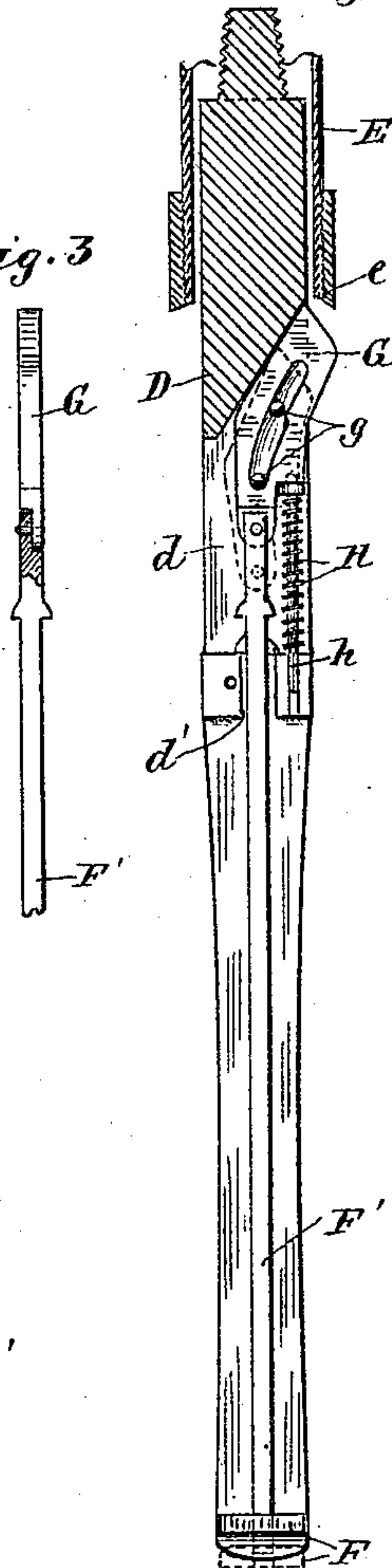


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

SWANTY SWANSON AND ELIAS ESPEE, OF MINNEAPOLIS, MINNESOTA.

ARTESIAN-WELL REAMER.

SPECIFICATION forming part of Letters Patent No. 471,153, dated March 22, 1892.

Application filed November 16, 1891. Serial No. 412,035. (No model.)

To all whom it may concern:

Be it known that we, SWANTY SWANSON and ELIAS ESPEE, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Artesian-Well Reamers; 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 appertains to make and use the same.

Our invention relates to artesian-well reamers, and has for its object to provide an improved automatic lock for holding the spring-jaws of the reamer in their expanded or open position for work below the lining-pipe, and an automatic releasing device which will restore the lock to its normal position when the reamer is raised within the pipe. To these ends we place a locking-block at the mouth of the jaws, which when the jaws are in their closed position stands slightly below the same or in the concavity or mouth of the reamer. This block we connect by an operating rod or plunger, extending between the jaws, to a cam-block working in a recess and slot of the reamer-head. A spring is applied, so that when under tension it tends to throw the cam-block, plunger, and locking-block upward and cause the free end of the cam-block to protrude through the slot in the reamer-head. When the reamer is within the lining-pipe, this cam-block is necessarily forced inward and downward, thereby setting the spring under tension. Hence whenever the reamer drops below the lining-pipe the spring will throw the cam-block and plunger upward and snap the locking-block between the inner tips of the jaws, thereby locking them in their expanded or open position. Hence the reamer will then produce a hole of uniform diameter through the rock.

Hitherto, so far as we are aware, no means has been provided for locking the jaws in their expanded or open position, and the result has been to produce holes of diminishing bore or of decreasing diameter on account of the inward spring of the jaws under the drilling action. This fact has hitherto required that the jaws be made very stiff and of such spring that they would at the beginning of the bore make a hole considerably larger than the lin-

ing-pipe. With our device the hole may be bored to the exact size of the pipe throughout the entire length of the hole. On raising the reamer the projecting end of the cam-block strikes the lower rim of the lining-pipe, and the cam-block is thereby forced inward and downward, releasing the locking-block from the jaws by throwing it below the same and again setting the spring under tension ready to snap the locking-block into its working position.

The invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a view in side elevation, the bore of the rock being shown in section, illustrating the invention at work. Fig. 2 is a side elevation of the reamer detached. Fig. 3 is a detail of the cam-block and plunger, and Fig. 4 is a central vertical section through the reamer-head.

A is the walking-beam; B, the temper-screw; C, a combined rope-socket and auger-stem, and D a reamer with spring-jaws co-operating with suitable power apparatus (not shown) for drilling artesian wells.

E represents the pipe for lining the bore or hole E', formed by the reamer in the rock E''. The head of the reamer is recessed and slotted, as shown at d, and an axial hole d' extends from said recess to the space between the shanks of the jaws.

F is the locking-block; F', the plunger, pivotally connected at its upper end to the slotted cam-block G.

H is the tension-spring, carried, as shown, by a guide-pin h, projecting downward from the cam-block G. This pin, as shown, works through a hole h' lengthwise of the reamer. Pins or bolts g, passing through the head of the reamer, work in the slot of the cam-block and serve to hold the same, together with the shape of the cam-block with reference to the recess and slot of the reamer-head, in its proper working position. The lowermost of the two pins or bolts g serve to limit the upward or locking movement of the cam-block and plunger, so as to locate the locking-block between the inner tips of the jaws under the action of the tension-spring H.

The operation of the parts is evident from

the description already given, and the advantages of the construction have already been stated.

5 It should be noted that the lining-pipe E is provided at its lower end with a strengthening-band *e*, beveled at its lower end, which, in addition to a driving-edge, constitutes the surface for acting on the cam-block when the reamer is raised into the pipe.

10 What we claim, and desire to secure by Letters Patent of the United States, is as follows:

The combination, with the spring-jaw well-reamer D, of the locking-block F, the plunger-rod F', the slotted cam-block G, working in a
15 recess and slot of the reamer-head, the spring-

guide *h*, carried by the cam-block, the spring H, encircling said guide and working between said cam-block and a shoulder of the reamer-head, and the bolts or pins *g*, working in the slot of the cam-block, the said parts being arranged and operating substantially as described.

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

SWANTY SWANSON.
ELIAS ESPEE.

Witnesses:

JAS. F. WILLIAMSON,
EMMA F. ELMORE.