(No Model.)

A. BALL.

SAFETY JACK FOR HOLDING DRILL RODS.

No. 326,380. Patented Sept. 15, 1885.

Fig. 1.

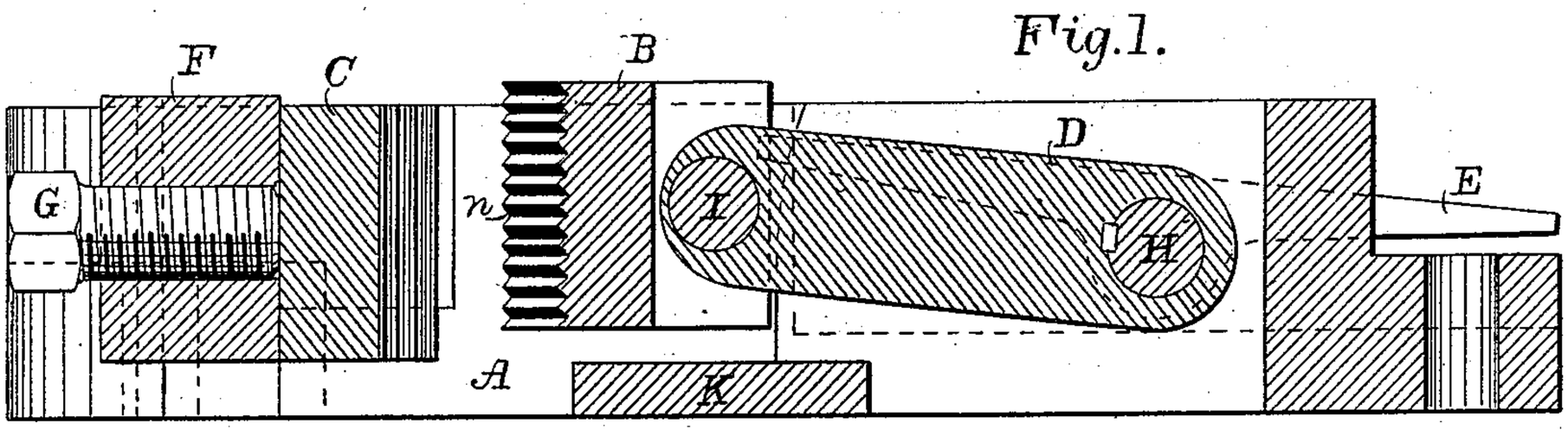
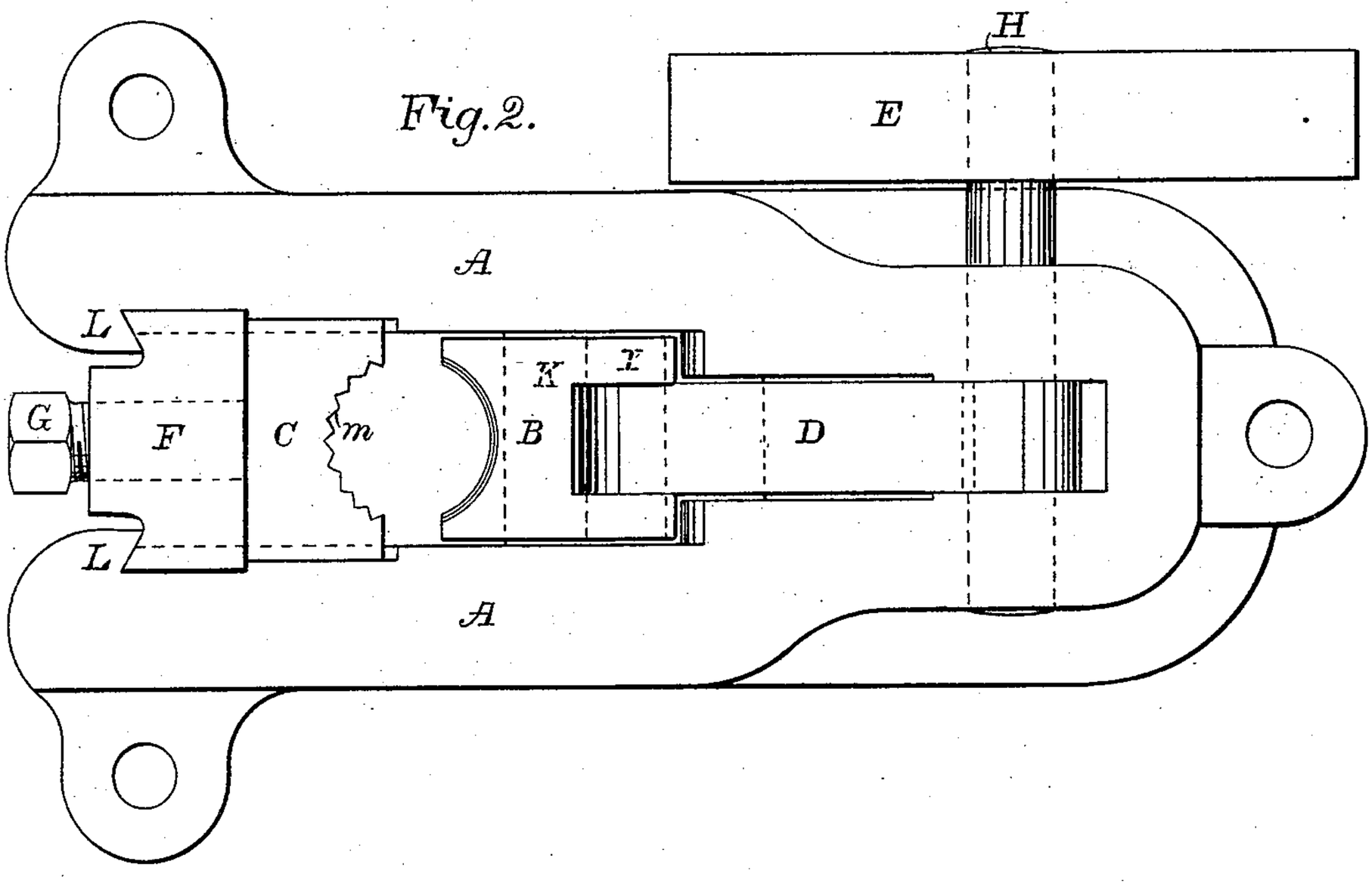


Fig. 2.



WITNESSES

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SAFETY-JACK FOR HOLDING DRILL-RODS.

SPECIFICATION forming part of Letters Patent No. 326,380, dated September 15, 1885.

Application filed December 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BALL, of Claremont, in the county of Sullivan and State of New Hampshire, have invented a new and Improved Safety-Jack for Holding Drill-Rods; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the course of raising and lowering drill-rods for deep holes it is necessary, after raising or lowering two or three lengths (say twenty or thirty feet) of drill-rods, to disconnect and take off or put on fresh lengths of rods and then reconnect with the hoisting apparatus. It is important to have secure apparatus for grasping the rods that are in the hole pending these changes, and also for safety in case of a breakage outside of the hole. My invention provides this.

In the accompanying drawings, Figure 1 shows a sectional view, and Fig. 2 shows a top view, of my invention.

In the different drawings like letters indicate corresponding parts.

A is the main piece or body of the jack.

B is the back block or link-block, and is one of the two blocks whose surfaces grasp the rods. The inner face, where it is to come in contact with the rod, is cut around or notched, as at *n*. (I prefer it as shown, although it can be cut the other way, or both ways, at the same time.)

C is the front block, and is the other of the two blocks whose surfaces grasp the rods. The inner face, where it is to come in contact with the rod, is cut or notched, as at *m*. (I prefer it as shown, although it can be cut the other way, or can be cut both ways at the same time.)

D is a link connected to the back block, B, with the pin I, and at the opposite end with the foot-shaft H. This shaft H is splined to D, so that it cannot revolve on it, but revolves or oscillates as the block B is lowered or raised.

E is the foot-lever. It is fastened to foot-shaft H, and by placing the foot on the end of the lever opposite the block B the block will be raised, and by placing the foot on the other end of the lever the block will be lowered or forced down.

F is a nut-block fitting into A, and with a screw-thread through it for the set-screw G, which passes through it, and can be brought against the block C with great force, clamping the drill-rod so that it cannot be turned when the lengths above are being uncoupled, and so that it cannot drop through into the hole. It requires no fastening.

G is a set-screw to be operated by a wrench.

K is a connecting-bar, and holds the two arms A A parallel.

L L are hooked shoulders in the nut-block F and frame A A, and which keep the block F from spreading the frame-arms A A.

The operation of my device is as follows: It being understood that the jack-frame is properly secured to the timbers or platform surrounding the hole, and that the drill-rods are already extending up through the opening between the blocks B and C, when the drill-rods are being drawn up from the hole, (the method is substantially similar in lowering,) after the desired length (usually twenty or thirty feet) is drawn up, the back block, B, is brought down into position opposite the front block, C, and the set-screw G is turned till the block C is firmly clamped. The weight of the rods is then allowed to come upon the jack and the lengths above the jack are unscrewed and taken off, and the lifting device is reattached to the rods in the hole and the same drawn up a little, just enough to start the jack. Thereupon the block C is released by turning back the set-screw G, the foot of the operator is placed on the foot-lever, and the back block, B, is raised just clear of the rod. If anything should break or give way, so that the rods would tend to fall, the operator, by moving his foot, drops the back block, and the rod is caught and held.

The block F can be made of wedge shape instead of with the screw G, and the front block, C, can in that case be adjusted by driving or partly removing F, or a wedge can be inserted between F and C; but for many obvious reasons I prefer the set-screw. The block F is easily removed when desired, which is one of

its advantages, as when thus taken out, together with the block C, the jack may readily be removed for repairs, or otherwise, without disturbing the drill-rods, and as readily replaced. Moreover, the shoulders L L need not be hooked; but great strength and advantage is thereby gained.

I am aware that hinged tube-clutches are old; that a corrugated concave pressure-block combined with a set-screw, bearing at its inner end against said block, is not new; and that tube-clamps have been constructed with two concave clamping-jaws hinged to a pair of arms hinged to a pair of adjustable plates, and with means for opening and closing the jaws; and, therefore, I do not broadly claim the same; but

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

1. The combination of the two concaved clamping-blocks, one having a movement back and forth in a horizontal plane and the other an upward diagonal movement, substantially as described.

2. The combination of the concaved block B, shaft H, and the intermediate link, D, connected to the former at one end and connected to the latter at the other end by a spline, substantially as described.

3. The combination of the concaved block B, the link D, the shaft H, splined to said link, and the foot-lever E, mounted at its center upon one end of said shaft, substantially as and for the purpose set forth.

4. The combination, with the grooved frame A A, of the concaved block C, and the nut-block F, with shoulders L L, substantially as and for the purpose set forth.

5. The combination of the frame A A, concaved block C, nut-block F, and screw G, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT BALL.

Witnesses:
FRANK A. BALL,
JOHN R. SHAW.