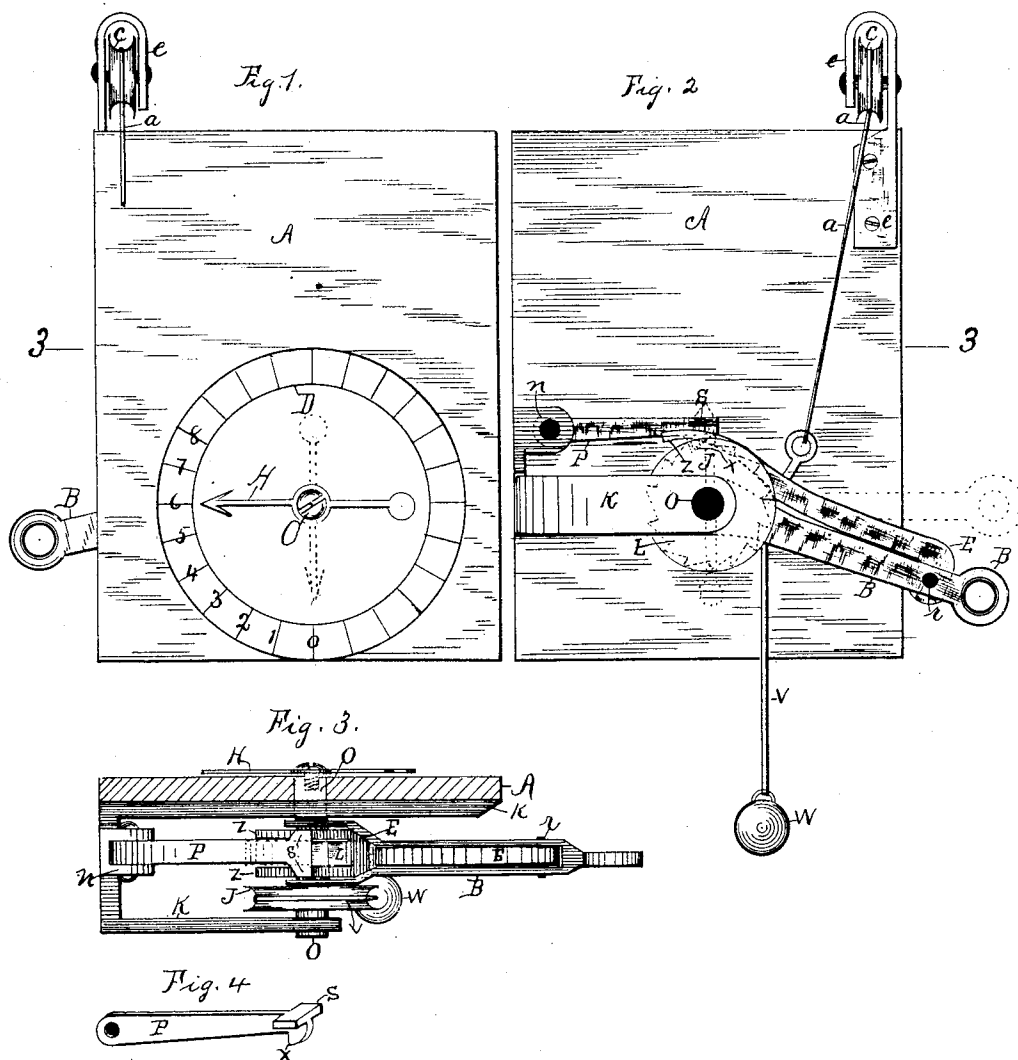


(No Model.)

B. GATELY & D. SKINNER.
MINER'S REGISTER.

No. 480,843.

Patented Aug. 16, 1892.



Witnesses
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MINER'S REGISTER.

SPECIFICATION forming part of Letters Patent No. 480,843, dated August 16, 1892.

Application filed April 29, 1892. Serial No. 431,114. (No model.)

To all whom it may concern:

Be it known that we, BARNA GATELY and DAVID SKINNER, citizens of the United States of America, residing at Braidwood, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Miners' Registers, of which the following is a specification, reference being had therein to the accompanying drawings and the letters of reference thereon, forming a part of this specification, in which—

Figure 1 is a face view. Fig. 2 is a back view. Fig. 3 is a horizontal section taken on line 3 3 of Figs. 1 and 2, and Fig. 4 is a perspective view of one of the pawls.

This invention relates to certain improvements in miners' registers, which improvements are fully set forth and explained in the following specification and claim.

Referring to the drawings, A represents a plate, which may be made either of metal or wood and is designed to be secured to the wall in or adjacent to the engine-room at or near the entrance to a coal-mine shaft, so as to be under the observation of the engineer.

The face of said plate is provided with a dial D, over which traverses a hand H, secured on the shaft O. The dial is divided up into spaces similar to that of an ordinary clock, but is provided with numbers located at each division-mark, beginning with "0" immediately below the hand-shaft, at which character it is intended to have said hand point when the device is not in use, as shown in broken lines in Fig. 1. The other division-marks are numbered consecutively, beginning with "1" and continuing to the left of "0" on around as many numbers as there may be bell-calls agreed on or fixed by a code.

The rear end of the shaft O is journaled in the frame K, secured to the back of plate A. Said shaft has secured on it the grooved wheel J and the ratchet-wheel L, the said ratchet-wheel being located between wheel J and plate A. The grooved wheel J carries a cord V, wound around its periphery in its groove, to the lower end of which cord is attached a weight W, the use of which cord and weight is to cause the teeth of said ratchet-wheel to bear against the pawls and to return the hand H to its first position when the pawls are released from said ratchet-wheel.

B is an arm journaled at its inner end on shaft O and is forked at its inner end, so that its forks journal on said shaft, one on either side of the ratchet-wheel L, as shown in Fig. 3. The arm B is provided with a pawl E, which pawl has its outer end pivoted at *r* to near the outer end of said arm, while its inner end engages the teeth of the ratchet-wheel L to rotate it intermittently a notch at a time as the arm B is oscillated to and from the position shown in broken lines in Fig. 2 for the purpose of moving the hand H over the dial D, each movement or oscillation of said arm serving to move the hand from one figure to the next succeeding figure.

P is a detent-pawl. (Shown in perspective in Fig. 4.) Its rear end is pivoted to frame K at N. Its forward end is provided with the hook X for engaging the teeth of the ratchet-wheel L for the purpose of preventing it from turning backward when the pawl E returns for another stroke caused by the cord-and-weight mechanism V W. The pawl P has laterally-extending arms S on its forward end, which extend out over the fork Z Z of pawl E, so that pawl E will lift pawl P off said ratchet-wheel when it is desired to permit the cord-and-weight mechanism V W to return hand H to its first position.

A cord *a* is attached to the pawl E and passes over a pulley *c* at the top of plate A and extends into the engine-room, where it may attach to some part of the engine, when it begins to move will pull on said cord and permit the cord-and-weight mechanism to return the hand to its first position by reason of said cord *a* lifting said pawls off the ratchet-wheel, so that it is free to turn backward.

It is intended that a cord shall be attached to the outer end of arm B and pass over a pulley and pass down the shaft of the mine to the bottom, where it can be pulled by the men at the bottom of the shaft. It is also intended that when said arm is operated by means of pulling on said shaft-cord it will strike a bell that may be arranged near it, or said arm may have connected with it a bell mechanism, (not necessary to be shown,) by means of which the bell may make a stroke at each movement of said arm and simultaneously the pawl-and-ratchet mechanism cause the hand H to point

to the figure denoting the number of movements of arm B and bell-strokes, so that said hand registers the number of bell-strokes.

5 In operation if a miner in the shaft should desire to notify the engineer to hoist the cage he would pull on the shaft-cord connected with arm B once. That would cause the bell to strike once by reason of said arm having been moved or oscillated once to the position
10 shown in broken lines in Fig. 2, and also cause ratchet-wheel L to be turned one notch, and with it the hand H, which would be turned from "0" to "1," where it would stand until the pawls are released from the ratchet
15 by means of the engine through the medium of cord *a*, as hereinbefore stated. If the signal were to lower the cage, the shaft-cord would be pulled twice and ring the bell two strokes and move hand H over "2" on the dial, and so
20 on the number of bell-strokes would be registered on the dial by the hand, each number of strokes being a signal to the engineer to do some particular act, and should the engineer fail for any reason to hear the bell-
25 strokes or not hear them correctly the hand

will show him the number of bell-strokes without fail. One of these devices may be used at the bottom of the shaft as well as at the top, is to be operated by the engineer, so that in case the bell-stroke is not heard it will
30 be registered for the use of the miners as well as for the engineer.

It is intended to inclose the working parts of this device in a neat case, so as to keep it
35 from exposure and injury.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is as follows, to wit:

The combination of the frame A K, having dial D, shaft O, hand H, ratchet-wheel L, 40 grooved wheel J, cord and weight V W, arm B, having the pawl E, pawl P, and cord and pulley *a c*, all arranged to operate substantially as and for the purpose set forth.

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