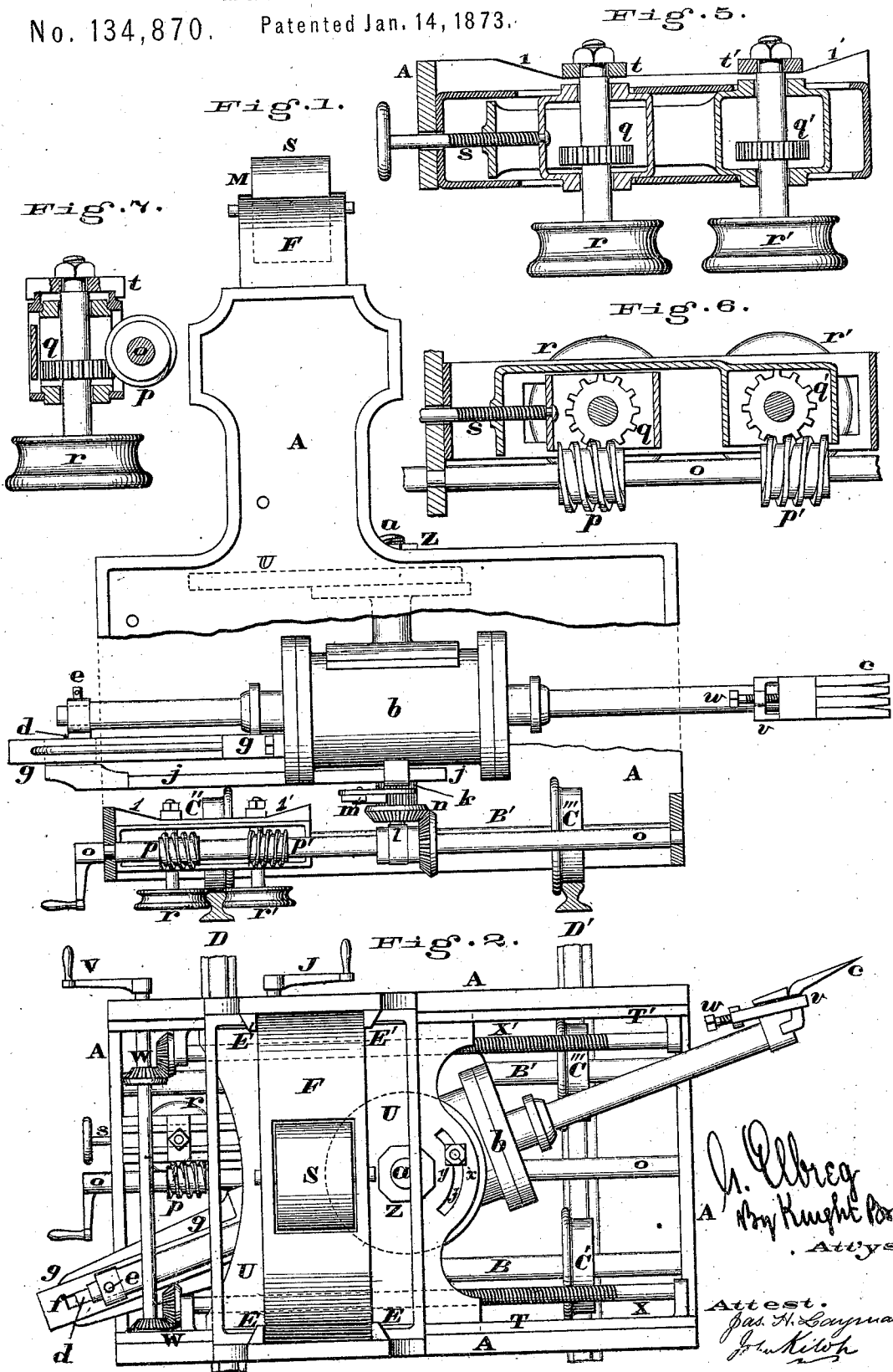


G. ELBREG.
Machines for Mining Coal.

No. 134,870. Patented Jan. 14, 1873.



G. Elbreg
Atty.
Attest.
Geo. H. Gayman
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Machines for Mining Coal. *Fig. 9.*
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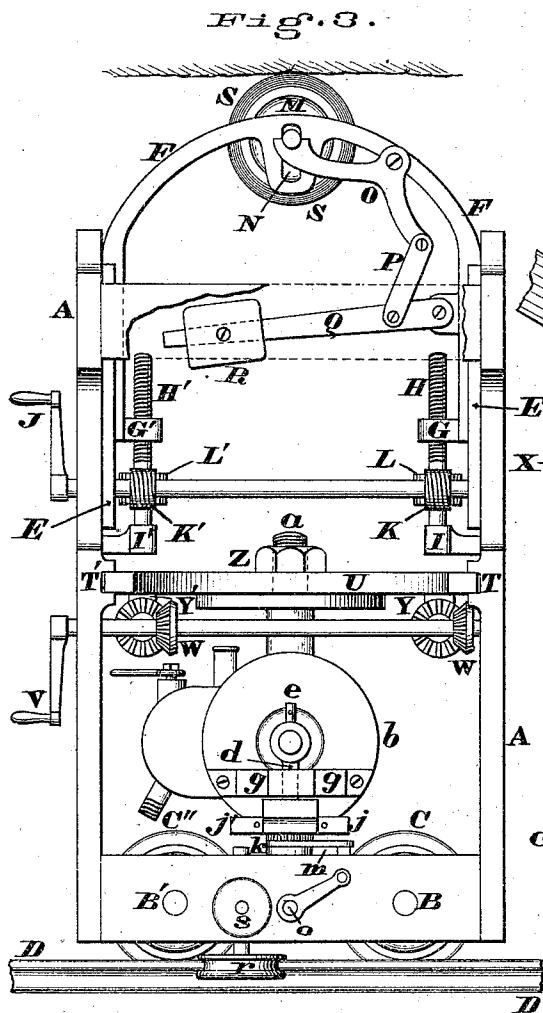


Fig. 4.

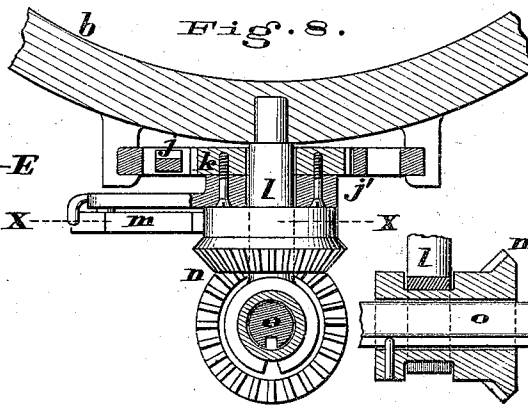
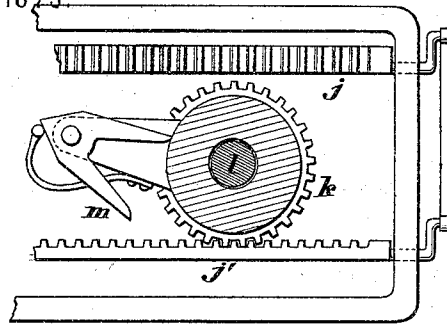
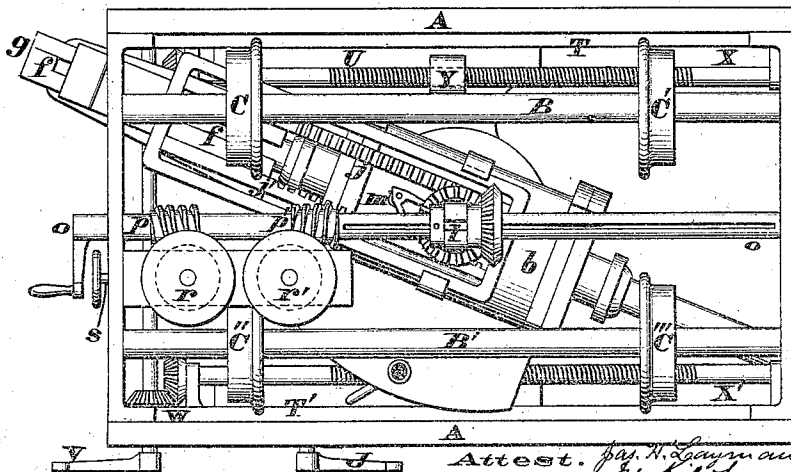


Fig. 10.

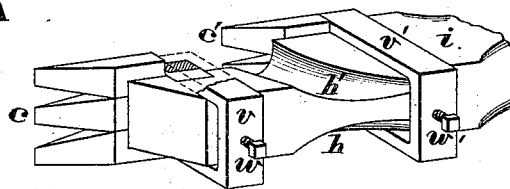
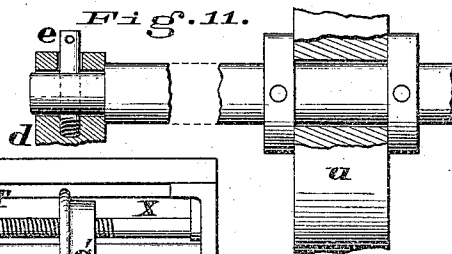


Fig. 11.



G. Elbreg
By Knight & Co.
Attys.

Attest. *per H. L. Loomis an.*
Notary Public

UNITED STATES PATENT OFFICE.

GEORGE ELBREG, OF BRAZIL, INDIANA.

IMPROVEMENT IN MACHINES FOR MINING COAL.

Specification forming part of Letters Patent No. 134,870, dated January 14, 1873.

To all whom it may concern:

Be it known that I, GEORGE ELBREG, of Brazil, Clay county, Indiana, have invented a Coal-Mining Machine, of which the following is a specification:

Nature and Objects of my Invention.

My invention consists in certain improvements in those coal-mining apparatus which comprise one or more chisels or picks adapted to cut channels or grooves in the coal-bed by the action of compressed air or other suitable moving force; and consists, as to its first part, in a provision for bearing down or holding the machine firmly against vertical disturbance. The second part of my invention consists in an automatic provision for imparting the necessary lateral shift to the machine, and consequently to the picks, at the intervals of every stroke. The third part of my invention relates to a new and useful construction of pick-stock.

General Description.

Figure 1 is a side elevation of a machine embodying my improvements, a portion of the frame being broken away. Fig. 2 is a top view of the machine, the pick being in its right-hand position. Fig. 3 is a rear elevation of the machine. Fig. 4 is a bottom view of the machine. Fig. 5 is a longitudinal section through the boxes of the shifting-wheels. Fig. 6 is a horizontal section of the same. Fig. 7 is a transverse section through one of the boxes. Fig. 8 is a vertical section of the shifting mechanism. Fig. 9 is a horizontal section in the line *xx*, Fig. 8. Fig. 10 is a perspective view of my duplex cutter. Fig. 11 is a partially-sectionized elevation, showing the devices for reversal of pick.

The frame or housing A for the various operative parts has journaled longitudinally in its lower part two longitudinal shafts, B B', to which are attached flanged wheels C C' C'' C''', designed to rest upon and be guided by rails D D', which are to be secured athwart the chamber-floor. Vertical guides E E' in the frame receive and hold an arched beam, F, which is capable of being elevated or depressed and retained to any desired position by the following means: Lugs G G', projecting horizontally from said beam, have screw-threaded perforations to receive rods H H', whose lower

ends rest in steps I I' that project from the frame. A winch, J, journaled horizontally in the frame, has worms K K', which mesh in worm-wheels L L' on the rods H H', so that by turning of said winch to the right or left the beam F is elevated or depressed. The beam F has an opening at top for a roller, M, whose journals occupy short vertical slots N in said beam, through which they project, and the ends of said journals which protrude beyond the beam rest upon the short arm of a bell-crank or bent lever, O, the extremity of whose long arm is connected, by means of a link, P, with the bar Q, that is hinged to the frame and carries an adjustable weight, R, whose downward stress thus becomes effective to press the roller M firmly upward against the roof of the chamber or gallery, so as to hold the machine firmly in place. The periphery of the roller M is preferably encircled by a band or tire, S, of India rubber. Slight irregularities in the height of the ceiling will be at all times automatically compensated by the weighted and self-pressing roller M, and greater irregularities are provided for by the winch and screw-threaded rods which support the roller-bearing beam F, and by which it is rendered capable of being elevated or depressed by hand, as already explained. Horizontal ways or guides T T' in the frame serve to hold and guide in the longitudinal direction a carriage, U, which is capable of being either fed forward or retracted by means of a winch, V, that operates through bevel-wheel W, screws X X', and screw-threaded lugs Y Y', projecting from the under side of the carriage. Secured to the under side of the carriage U by a nut, Z, and trunnion *a*, or other means that will permit its horizontal oscillation, is a "direct-acting" steam or compressed-air cylinder, *b*, of any approved construction—such, for example, as that known as the "Cameron." The forward end of the piston-rod of this cylinder is armed with a congeries of picks or chisels, *c*, suitable for chipping an under bearing or other channel in the coal-bed to be operated on. The said rod is preserved from rotation about its axis by means of a tongue, *d*, attached by pin *e* to its rear end, and which tongue occupies a groove, *f*, in a guide-bar, *g*, that extends rearwardly from the cylinder-head; but said rod with its attached

picks may easily be semi-rotated, so as to assume a reverse position, upon withdrawal of said pin *e*, which is of course reinserted after the reversal has been effected. My preferred form of pick is shown in Fig. 10, in which *c* and *c'* represent two congeries of chisels secured in two distinct planes, a suitable chipping distance apart, and as nearly as possible coincident with the axis of the rod. Channels *h h'* in the side of the head or stock *i* enable the escape of the chips from the forward set of picks. To the tongue *d* are attached racks *j j'*, either of which, meshing with a pinion, *k*, that is journaled on a stud, *l*, projecting from the under side of the cylinder and in line with the trunnion *a*, operates, through duplex pawl *m* and bevel-gearing *n*, to impart a slow intermittent rotation to the rod *o* and worms *p p'*, which mesh in wheels *q q'* on shafts of flanged horizontal wheels *r r'*, that are caused to embrace one of the ground rails *D D'* by means of screw *s*. Heads *t t'* on the upper ends of the shafts of wheels *q q'*, moving onto inclined planes *1 1'*, on the retraction of the screw *s*, cause the said wheels to assume an upward motion in the act of separation, so as to clear any frog or cross-track in removing the machine from one part of the mine to another. *u* represents a portion of the piston-head. *v v'* are yokes, and *w w'* are screws, by which a set of picks is screwed to the stock or head. A bolt, *x*, nut *y*, and slot *z* enables the cylinder to be firmly held to its angular adjustment.

From the above-described preferred form of my invention I reserve the right to vary in

non-essential particulars; for example, a spring regulated by a screw or otherwise may be employed, instead of the weight *R*. The roller *M* may be of wood, leather, or vulcanite, and the India-rubber tire be dispensed with. A duplex ratchet-pawl may take the place of the duplex friction-pawl *m*. One or more additional sets of the picks may be employed over those described.

Claims.

I claim herein as new and of my invention—

1. The described combination of automatic and hand operated devices *E F G H I J K L M N O P Q R S*, or their equivalents, for obtaining a continued upward stress or pressure against an irregular roof or ceiling of a mine, substantially as set forth.

2. The devices *j j' k l m n o p p' q q' r r' s*, or their equivalents, for automatically shifting the apparatus to the right or left at the intervals of the strokes, substantially as set forth.

3. In combination with the elements *q q' r r' s*, the heads *t t'* and inclined planes *1 1'*, as and for the object explained.

4. The described combination of devices *h h' i v w v' w'* in a double-headed pick-stock, as set forth.

In testimony of which invention I hereunto set my hand.

G. ELBREG.

Attest:

GEO. H. KNIGHT,
JAMES H. LAYMAN.