(No Model.) 3 Sheets—Sheet 1.

A. BALL.

CHANNELING MACHINE.

No. 457,504. Patented Aug. 11, 1891.

Fig. 3.

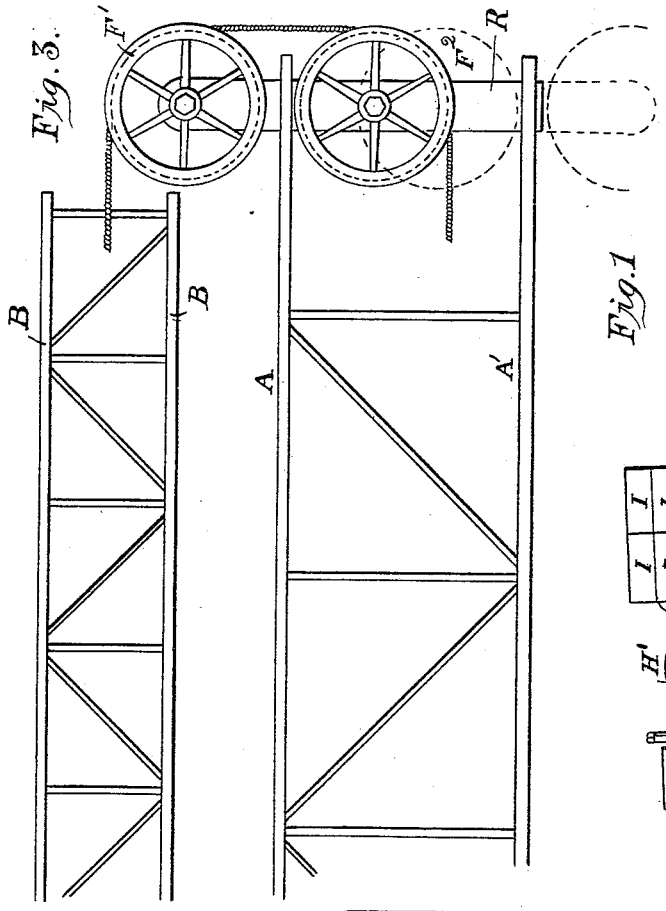
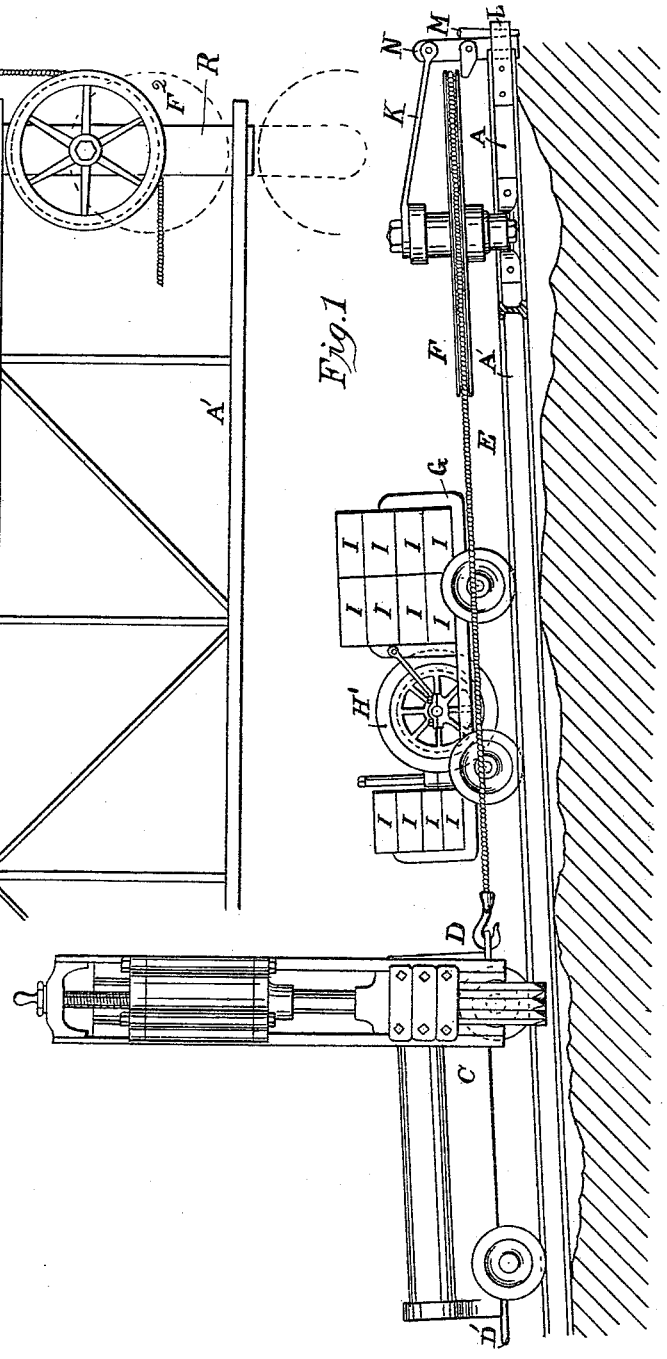


Fig. 1



WITNESSES:
Arch. M. Catlin
Fred Torrey

INVENTOR:
Albert Ball
by
Benj. R. Catlin ATTORNEY

(No Model.) 3 Sheets—Sheet 2.

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CHANNELING MACHINE.

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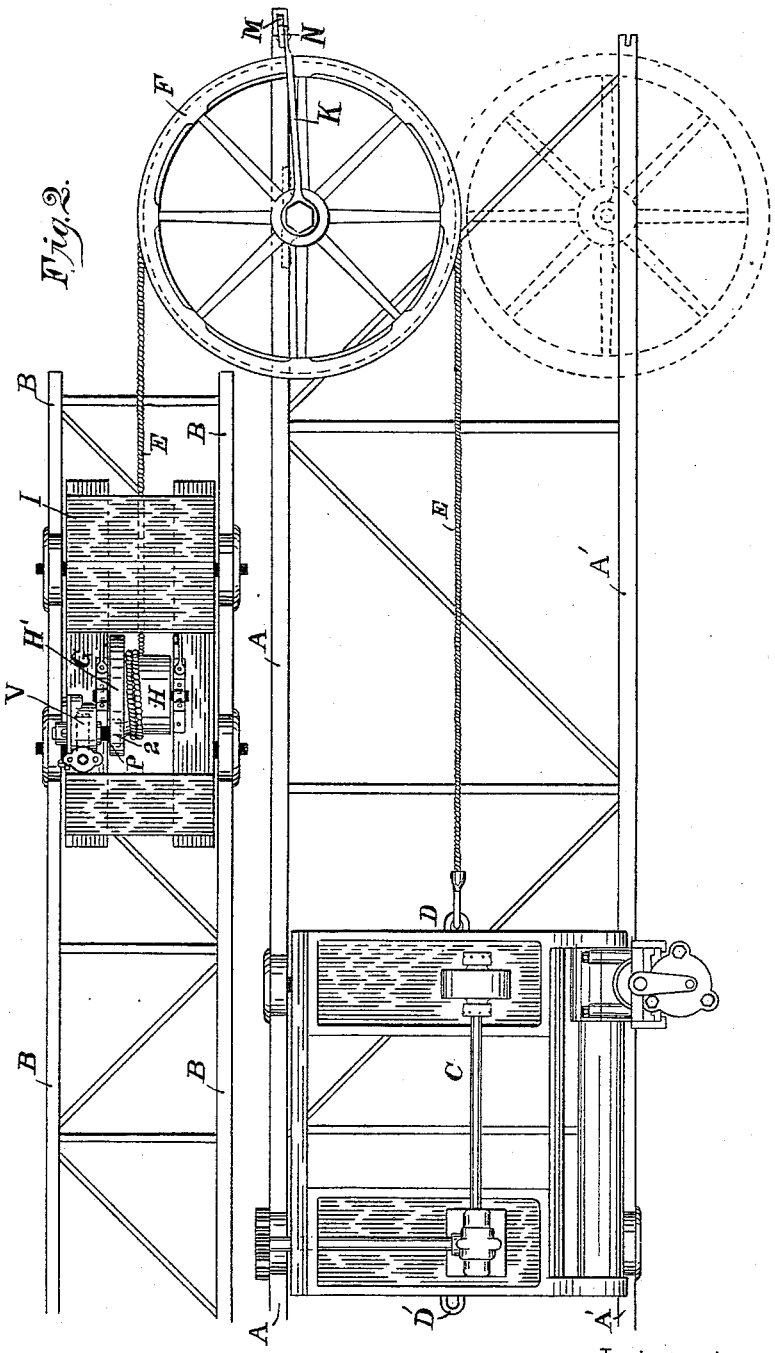
Fig. 2.



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Fred Torrey

INVENTOR:
Albert Ball
by
Benj. R. Catlin ATTORNEY

(No Model.) 3 Sheets—Sheet 3.

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Fig. 4.

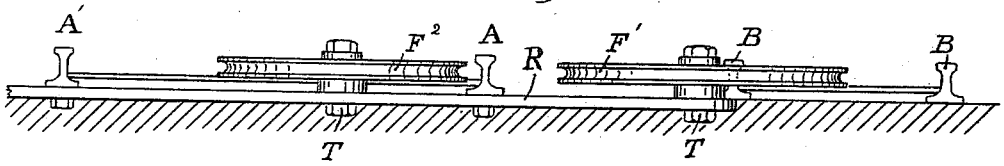
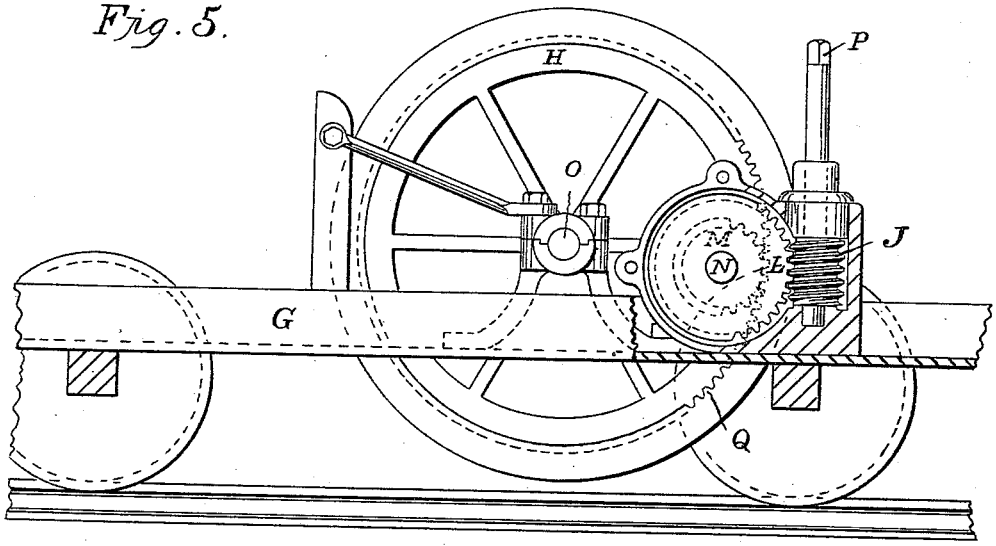


Fig. 5.



WITNESSES:
Arch. M. Cattin.
S. H. Voyles.

INVENTOR:
Albert Ball
by
Benj. R. Catlin

UNITED STATES PATENT OFFICE.

ALBERT BALL, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO THE SULLIVAN MACHINE COMPANY, OF SAME PLACE.

CHANNELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,504, dated August 11, 1891.

Application filed December 2, 1890. Serial No. 373,359. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BALL, a resident of Claremont, in the county of Sullivan and State of New Hampshire, have invented certain new and useful Improvements in Channeling-Machines; and I 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 the same.

Heretofore channeling and like machines have been mounted upon a car adapted to run on a track laid upon the rock to be drilled.

The object of the present invention is to provide such a machine with devices which adapt it for use upon rock inclined to the horizon; and it consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a side elevation partly in section. Fig. 2 is a plan, and Fig. 3 is a partial plan, of a modification. Fig. 4 is an end elevation of the construction shown in Fig. 3; and Fig. 5 is a side elevation, partly in section, of means for moving the counterbalancing and drill cars.

Reference-letters A A′ indicate a track adapted to receive a gang-drill car. C indicates such a car carrying a drilling-machine and provided with staples, hooks, or rings D D′ for the attachment of a suitable rope or cable E, preferably made of wire.

B B indicates a subsidiary track, and G a counterbalancing-car connected to car C by the rope E, which passes around the sheave F. As shown in Fig. 1, this sheave has a vertical axis, the lower end of which has a bearing in a bracket secured to the inside of rail A, a part of rail A′ being broken away to permit said bearing to be seen. The upper end of this shaft is conveniently held in a bearing connected by a brace K to a suitable post N. A strap (denoted by L) is secured to the end of rail A in such manner as to form a socket for the post.

M is a wedge to secure the post in its socket.

By preference the sheave F and its axis are detachably supported on rail A, in order that it may be applied in similar manner to the opposite rail, as will be desirable when the subsidiary track and counterbalancing-car are placed on the opposite side of the main track. Such optional location of the sheave F is indicated by dotted lines in Fig. 2, and a similar arrangement is indicated in Fig. 4 or by dotted lines in Fig. 3, wherein the sheaves are supported upon a beam R.

H is a drum supported upon the counterbalancing-car and adapted to receive the end of rope E, which is thus indirectly connected to the car. This drum is provided with journals, and may be turned in any suitable manner. As shown, P indicates a shaft adapted to receive a crank and provided with a worm J, which drives a spur-gear L on the shaft N, which also carries a pinion M, meshing with an internal gear Q in the head of the drum H. The particular means of revolving the drum is not of the gist of the improvement, and any suitable devices may be employed for the purpose.

I I indicate portable weights of convenient size and form, whereby the weight of the counterbalancing-car and its load can be conveniently varied at will, according to the exigencies of particular cases, the number of weights required varying according to the weight of machine.

In Fig. 3 is indicated a modification of the sheave arrangement, according to which two sheaves F′ and F² are used. These have bearings secured to a beam R, and are arranged below the top of the rail, so that the drilling-machine can run over them and the channeling continued to the end of the track or close up to a wall. In such case the cable E can be run under the body of the drill-car and attached to a ring underneath or to the ring or staple D′ at the opposite end. The drum H is used to shorten or lengthen the rope E to correspond with the length of the channel to be cut, and it can also be used for moving the drill-car when desired by blocking the wheels of car G and suitably revolving the drum.

By the use of the above-described counterbalancing-car the drilling-machine can be worked up or down steep inclines as easily and freely as on the level. It can also be worked close to a wall. It will of course be understood that the drill-car is provided, as is usual, with an engine adapted to move it forward and back. Such engine will move the car up or down hill as readily as on a level,

provided the drill-car be suitably counterbalanced, substantially as herein set forth.

It will be apparent that the distance of the subsidiary from the main track can be varied, the sheave F being suitably enlarged, or the distance between the axes of the sheaves F′ and F², if such are employed, being varied; and, further, it is not essential in every case that the subsidiary track be parallel with the main track. It will also be understood that a single sheave can be arranged below the track to permit the drilling-machine to move over it when it is desired to work up to a wall or to the end of the track, as described in connection with sheaves F′ and F².

Neither the number nor arrangement and location of the sheaves nor the special construction of other details are of the gist of the main improvement, and they may be varied by skilled mechanics without departing from the invention, provided substantially the same mechanical principles and modes of operation are preserved.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. The combination of the channeling-machine, the main track, the car carrying the machine, and mechanism for counterbalancing the car and machine, substantially as set forth.

2. The combination of the channeling-machine, the main track, the car carrying the machine, and mechanism for counterbalancing the car and machine, consisting of a subsidiary track, a counterbalancing-car, a connecting-rope, and an intermediate sheave, substantially as set forth.

3. The combination of the channeling-machine, the main track, the car carrying the machine, and mechanism for counterbalancing the car and machine, consisting of a subsidiary track, a counterbalancing-car, a connecting-rope, and an intermediate sheave, said car having means at each end for attaching the rope, substantially as set forth.

4. The combination of the channeling-machine, the main track, a car adapted to carry the machine, mechanism for counterbalancing the machine and its car, consisting of a counterbalancing-car, connecting-rope, and movable sheave, said sheave being adapted to be secured on or near either side of the track, substantially as set forth.

5. In combination, the channeling-machine, the main track, the counterbalancing-car, the connecting-rope, and guiding sheave or sheaves arranged below the upper surface of the track, whereby the drill-car can run to the end of the track, substantially as set forth.

6. The combination of a channeling-machine, a main track, a car adapted to carry the machine, a counterbalancing-car, and portable weights whereby the machine and its car can be counterbalanced to different weights of machines, substantially as set forth.

7. In combination, a channeling-machine, a main track, a car adapted to carry the machine, a counterbalancing-car, a connecting-rope, an intermediate sheave, and a drum to which the rope is secured and about which it is adapted to be wound, whereby either the counterbalancing-car or the drill-car can be moved, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALBERT BALL.

Witnesses:
GEO. O. BALL,
STELLA A. FOSTER.