No. 678,045. Patented July 9, 1901.

W. SELTNER.

MINING MACHINE.

(Application filed Oct. 15, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

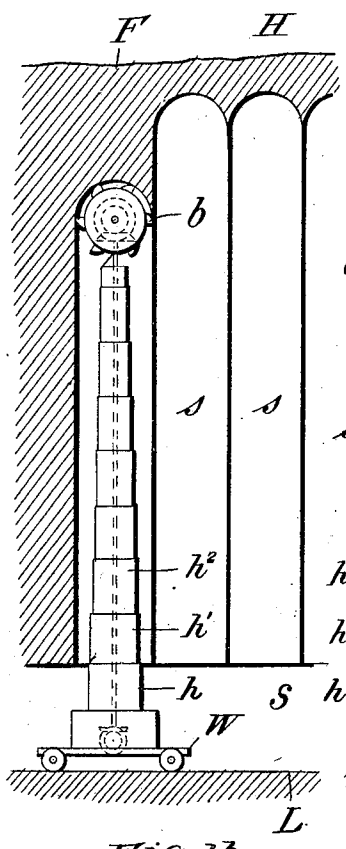


Fig. 1a.

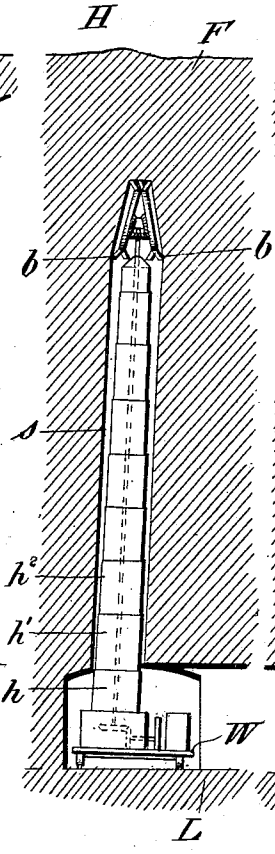


Fig. 2.

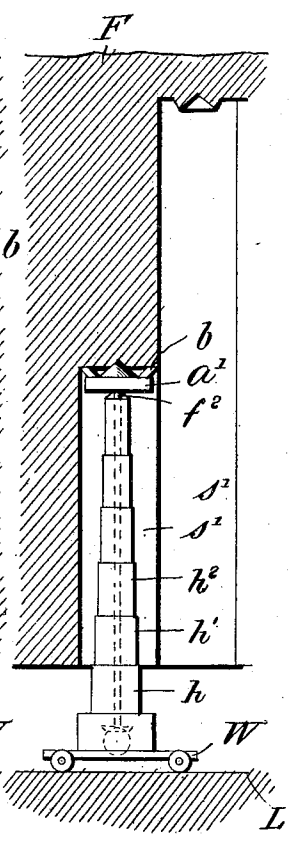


Fig. 1b.

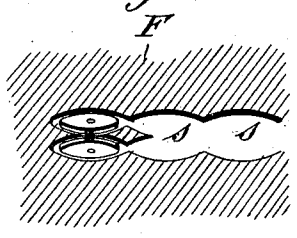
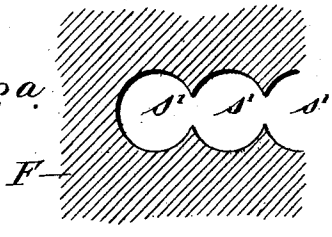


Fig. 2a.



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Fig. 3.

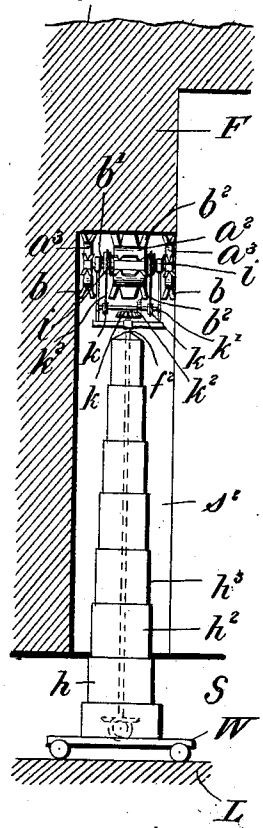


Fig. 4.

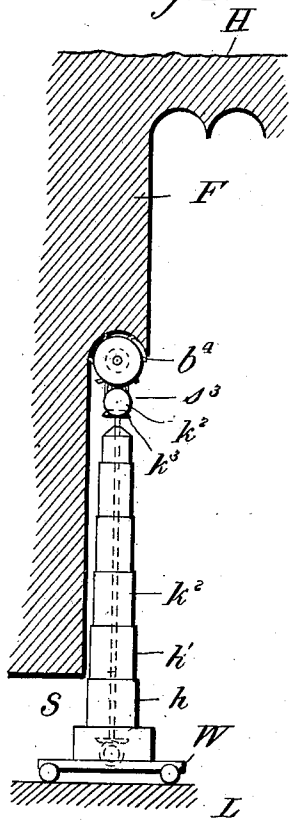


Fig. 5.

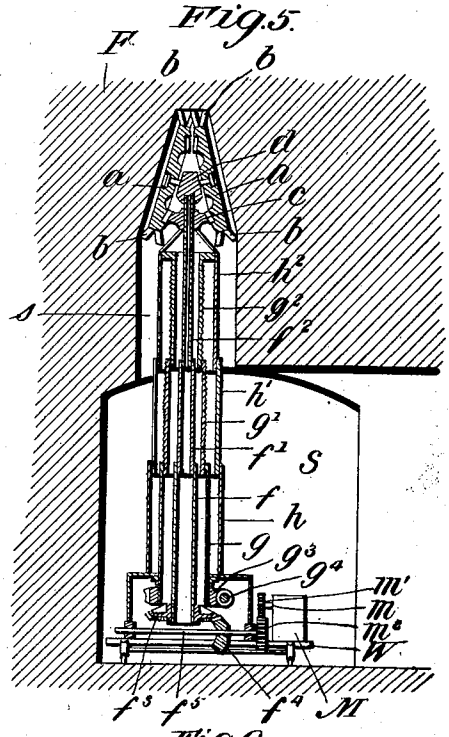


Fig. 6.

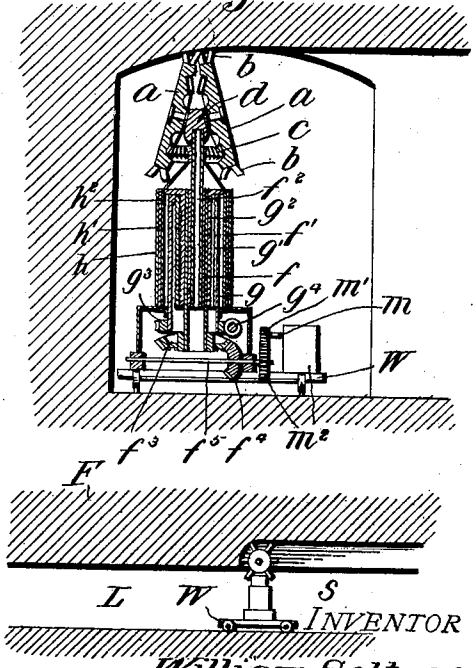


Fig. 3a.

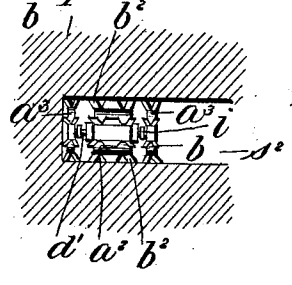


Fig. 4a.

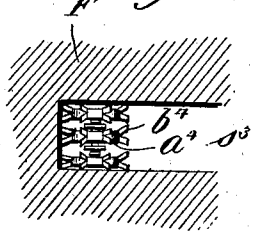


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILHELM SELTNER, OF SCHLAN, AUSTRIA-HUNGARY.

MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 678,045, dated July 9, 1901.

Application filed October 15, 1900. Serial No. 33,168. (No model.)

To all whom it may concern:

Be it known that I, WILHELM SELTNER, engineer, a subject of the Emperor of Austria-Hungary, and a resident of Schlan, Bohemia, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Mining-Machines, of which the following is a specification.

My invention relates to an improved mining-machine for channeling overhead the material on which it is adapted to operate.

My improvement comprises a movable platform, a telescoping cylinder, a telescoping rotatable pole or rod carried by the telescoping cylinder, a cutter-head carried by the pole or rod and geared thereto, means for rotating the telescoping cylinder for projecting and retracting the pole or rod with the cutter-head, and means for rotating the pole or rod to operate the cutter-head, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved mining-machine located within a drift and provided with a cutter-head for excavating vertical channels. Fig. 1^a is a rear elevation thereof. Fig. 1^b is a detail horizontal section of a drift, showing the elliptical form of connected channels excavated by the cutter-head. Fig. 2 is a side elevation of my mining-machine provided with another form of cutter-head for excavating vertical channels. Fig. 2^a is a detail horizontal section of a drift, showing the circular form of connected channels excavated by this cutter-head. Fig. 3 is a side elevation of my mining-machine provided with another form of cutter-head for excavating vertical channels. Fig. 3^a is a detail horizontal section of a drift, showing the rectangular form of connected channels excavated by this cutter-head. Fig. 4 is a side elevation of my mining-machine provided with still another form of cutter-head for excavating vertical channels. Fig. 4^a is a detail horizontal section of a drift, showing the square form of connected channels excavated by this cutter-head. Fig. 5 is a vertical transverse section of the mining-machine having the form of cutter-head shown in Fig. 1, the cutter-head being raised. Fig. 6 is a similar view showing the cutter-head lowered. Fig. 7 is a side elevation of my mining-machine provided with a cutter-head for cutting overhead longitudinal channels.

S is a drift a distance underground, and F is a layer thereof to be excavated.

H is a sloping lode, and L is a horizontal lode.

My machine is mounted on a movable platform W, adapted to travel through the shift S.

g g' g^2 are sections of a telescoping cylinder, the lower cylinder-section g and intermediate cylinder-section g' being provided with internal screw-threads and the intermediate cylinder-sections g' and upper cylinder-section g^2 with external screw-threads, meshed by the internal screw-threads. The lower cylinder-section g is further provided with a worm-wheel g^3, meshed by a worm g^4, whereby the cylinder is rotated to project and retract the intermediate cylinder-sections on the lower cylinder-section and the upper cylinder-section on the intermediate cylinder-section. Within the cylinder and supported thereon is located a telescoping pole or rod having sections f f' f^2, the lower pole or rod section f extending beneath the lower cylinder-section, where it is provided with a bevel gear-wheel f^3, meshed by a bevel-pinion f^4, mounted on a shaft f^5, carrying a gear-wheel m^2, meshed by a pinion m' on a driving-shaft m, driven from a motor M. Surrounding the cylinder-section is a protecting telescoping casing having sections h h' h^2, the lower casing-section h being stationary and the intermediate casing-section h' and upper casing-section h^2 being supported on the cylinder and adjustable therewith.

c is a bevel-pinion fixed to the projecting upper end of the upper pole-section f^2, and d is a bearing for inclined bevel gear-wheels a, meshed by the bevel-pinion c and provided with cutters b, as shown in Figs. 1, 1^a, 1^b, 5, and 6. This construction and arrangement of cutter-head is adapted to excavate channels s elliptical in cross-section, as shown in Fig. 1^b.

In Fig. 2 I have shown a horizontal circular disk a' fixed to the upper pole-sections f^2, whereby channels s', circular in cross-section, are cut, as shown in Fig. 2^a.

In Figs. 3 and 3ª I have shown a cylindrical cutter-head comprising a double central disk a^2, having cutters b^2, and single end disks a^3, having cutters b^3 and mounted on an upper shaft d', carrying pulleys i, connected with pulleys k on a lower shaft k' by a band k^2. The lower shaft k' carries a bevel gear-wheel k^2, meshed by a bevel gear-wheel k^3, fixed to the upper pole-section f^2. This cutter-head excavates rectangular channels s^2.

In Figs. 4 and 4ª I show a similar construction of cutter-head and gearing, with the exception of substituting for the double central disk a^2, having cutters b^2, a single disk a^4, having cutters b^4, whereby channels s^3, approximately square in cross-section, are produced.

In Fig. 7 I have shown the machine in normal condition and moved along, so as to produce a longitudinal overhead channel.

On rotating the lower cylinder-section g in one direction by manual or motor power the first intermediate cylinder-section g' is projected upwardly, and then the next intermediate cylinder-section is projected on the latter, which in turn projects the cylinder-section thereabove. This action projects the telescoping pole or rod carrying the cutter-head and at the same time projects the protecting telescoping casing-sections. The cutting of a vertical channel being completed, the parts are retracted to normal position and the machine advanced, when the operation can be repeated and another vertical channel cut along the first channel produced. Channels are thus excavated closely adjoining one another. By this method of working the whole depth of the layer is passed through at once by the cutting-head, it being at the same time impossible that those parts of the machinery which are inside of the opening thus gained will be pressed or pushed upon by the pressure of the rock, because the cutting-tools on being withdrawn must again touch the whole opening they have created and are able to free themselves by cutting their way.

The machine may be operated in inclined position, as shown in Fig. 5.

The pole is rotated independently of the cylinder at the desired height, the sections of the pole being connected so as to turn together.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A mining-machine comprising a movable platform, a telescoping cylinder, a telescoping rotatable pole or rod, carried by the telescoping cylinder, a cutter-head carried by the pole or rod and geared thereto, means for rotating the telescoping cylinder for projecting and retracting the pole or rod with the cutter-head, and means for rotating the pole or rod to operate the cutter-head.

2. A mining-machine comprising a movable platform, a telescoping cylinder, a telescoping rotatable pole or rod, carried by the telescoping cylinder, a cutter-head carried by the pole or rod and geared thereto, a telescoping protecting-casing carried by the telescoping cylinder, means for rotating the telescoping cylinder for projecting and retracting the pole or rod with the cutter-head and casing, and means for rotating the pole or rod to operate the cutter-head.

In witness whereof I subscribe my signature in presence of two witnesses.

WILHELM SELTNER.

Witnesses:
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JAN SUVA.