

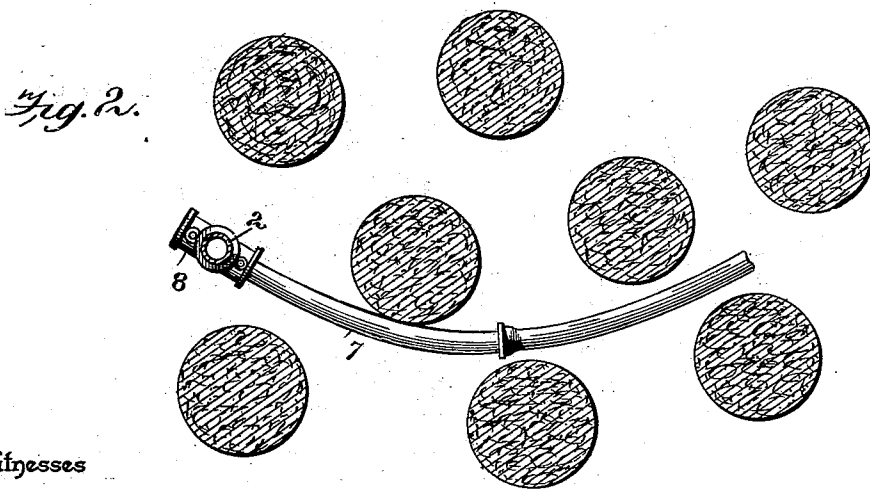
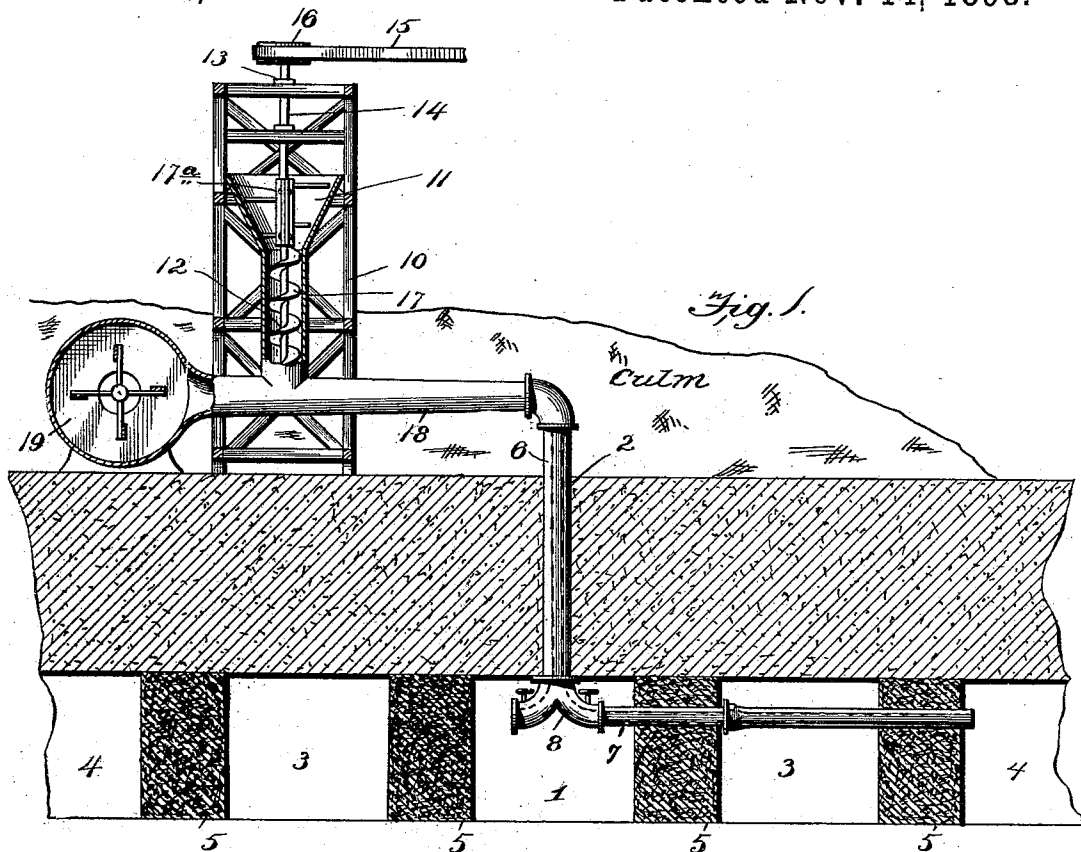
(No Model.)

R. Y. MITCHELL.

METHOD OF RECOVERING LOST COAL FROM MINES, &c.

No. 508,523.

Patented Nov. 14, 1893.



Witnesses

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METHOD OF RECOVERING LOST COAL FROM MINES, &c.

SPECIFICATION forming part of Letters Patent No. 508,523, dated November 14, 1893.

Application filed November 30, 1892. Serial No. 453,637. (No specimens.)

To all whom it may concern:

Be it known that I, RANSOM Y. MITCHELL, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented a new and useful Method of Recovering Lost Coal from Mines and Utilizing Waste or Culm, of which the following is a specification.

My invention relates to a method for recovering lost coal in mines, that is those portions of the veins that are left intact to form the pillars of the mine, and, furthermore, to a method for utilizing the culm or dust usually wasted.

With these objects in view the invention consists in depositing into a chamber the culm, whereby the same forms a support for the roof of the chamber and subsequently in removing the original pillar of said chamber; and it furthermore consists in thus treating successively a series of chambers and pillars beginning with that chamber at the outer end of the series and ending with that chamber adjacent to the point of entrance or introduction of the said culm, or nearest the shaft of the mine.

Referring to the drawings:—Figure 1 is a sectional view of a mine, the vein of coal having been removed leaving merely the empty chambers and at intervals the pillars formed of those portions of the veins that are left intact, in connection with an apparatus for practicing my method. Fig. 2 is a horizontal sectional view through the mine.

Like numerals of reference indicate like parts in both the figures of the drawings.

1 designates a central chamber, which we will suppose for instance is located either at the shaft of the mine or directly under the opening or hole 2 drilled through the strata of rock above. At opposite sides of the central chamber are intermediate chambers 3, in this instance, and beyond those are what I will term end-chambers 4. The chambers 1, 3 and 4 are divided by intermediate pillars 5, which as is well known by those conversant with mining, are produced by means of leaving intact at intervals the coal vein, such pillars serving in connection with the usual props formed of wood, and not herein shown, to support the roof of the mine and prevent its caving.

In the accompanying illustration I have shown a mine after the deposits have been exhausted in the chambers, and such mine is shown surrounded by vast quantities of culm or dust that goes to waste. In such instance my method becomes useful, and the following is one mode of practicing the same:—A pipe 6 is passed through the drilled hole or shaft as the case may be, and the upper end of the pipe extends above the surface of the ground, while the lower end extends into the central-chamber 1. A branch pipe 7 is connected by a T-coupling 8, in this instance, to the pipe 6 and extends along the floor of the mine avoiding the series of pillars 5 and terminates finally in the adjacent end-chamber 4. This branch-pipe is preferably formed in detachable sections, as shown, each section being sufficiently long to traverse a chamber. The T-coupling has its branches provided with gate valves, which serve to close that branch not connected with the pipe 7. A tower or other suitable support 10 is located upon the surface of the ground adjacent to the drilled hole 6, and supports a hopper 11 terminating at its lower end in a reduced cylindrical chute 12. Above the hopper in the framework of the tower, bearings 13 are formed, and in these bearings there is located a vertical rotatable shaft 14, which may be driven by any suitable mechanism, in this instance by a belt and pulley 15 and 16, respectively, the belt leading from any suitable source of motive power. The shaft extends down into the chute 12 and within the latter is provided with a feed-screw or worm 17, and above the same in the hopper with agitating arms 17^a.

18 designates a horizontally-disposed blow or blast pipe, which communicates between its ends with the lower end of the chute 12. One end of the pipe 18 is connected with the upper end of the pipe 6, while at the other end there is located a blast or blower 19.

If desired the pipe 6 may be omitted and the blast-pipe and pipe 7 simply connected with the drill-hole. The pipe 18 is larger at that end at which the blower is located than at that end connected to the pipe 6, or in other words, is slightly tapered.

This completes the construction of the apparatus, and the operation of the same, in connection with my method is as follows: The

culm or dust is fed into the hopper 11, and by the screw 17 is deposited regularly and in desired quantities into the blow or blast-pipe 18. The dry culm is here met by a blast of air from the blower 19 and is conducted from the pipe 18 into the pipe 6 down into the mine where the current of air forces the culm through the branch-pipe 7 to the outer or end chamber 4, which is thus filled with culm. The chamber 4 is thus as nearly as possible filled, when it will be seen that by removing the branch pipe of the chambers adjacent thereto, so that in this instance the branch-pipe would terminate in the chamber 3, the pillar of coal may be mined and the roof will be supported by the deposit of culm. In addition to this I may employ some minor roof-supports or props, though nothing in comparison to the number now required. In addition to the culm, I preferably add water sufficient to dampen the same and cause it to pack solid. By thus blowing water and culm together into the mine, the mixture will go from fifty to one hundred feet beyond where the blast of air is spent. When the end-chamber has thus been filled and its pillar mined, the same operation is repeated with the chamber 3, which is then filled, its pipe-section removed, and its pillar mined; and finally the central chamber is reached, which is likewise

treated, after which the branch-pipe 7 is connected to the opposite branch of the T-coupling and the operation repeated at the opposite side of the mine.

It will thus be seen that I have provided a method for recovering coal that is now lost, also of utilizing and getting rid of the vast accumulations of culm that are so troublesome in mining-districts after the merchantable coal has been removed therefrom. A further advantage is that the culm being deposited in the mines will in course of time crystallize, and thus the vein of coal be renewed, and in after years can again be mined.

Having thus described my invention, what I claim is—

The herein described method of recovering lost coal in mines and utilizing culm, which consists in filling said chamber from top to bottom with an admixture of culm, and water, allowing the same to set, and subsequently removing or mining the pillar, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

RANSOM Y. MITCHELL.

Witnesses:

ED. V. BOPE,
S. H. VAIL.