J. CHABALA.

MINE APPARATUS.

APPLICATION FILED FEB. 9, 1918.

1,271,277.

Patented July 2, 1918.

2 SHEETS—SHEET 1.

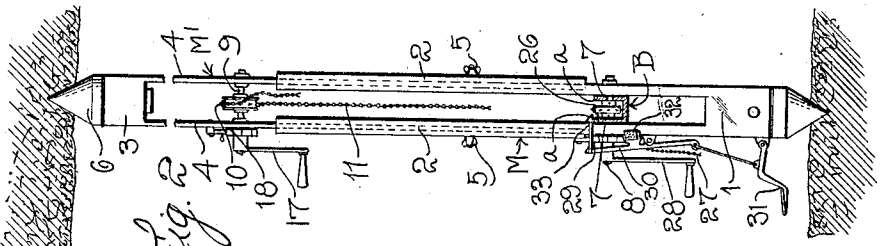


Fig. 2

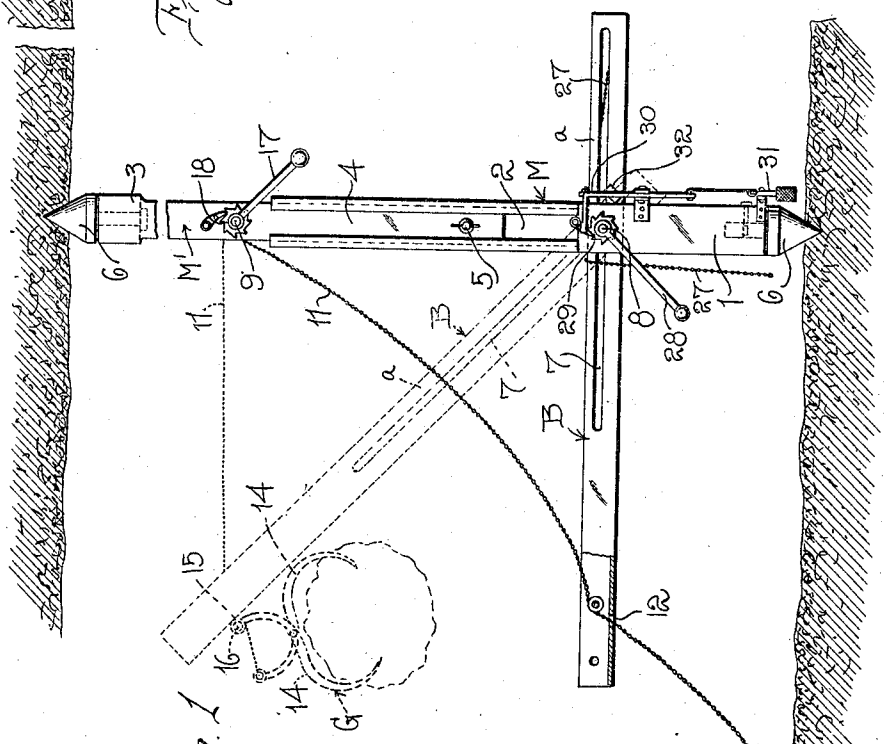


Fig. 1

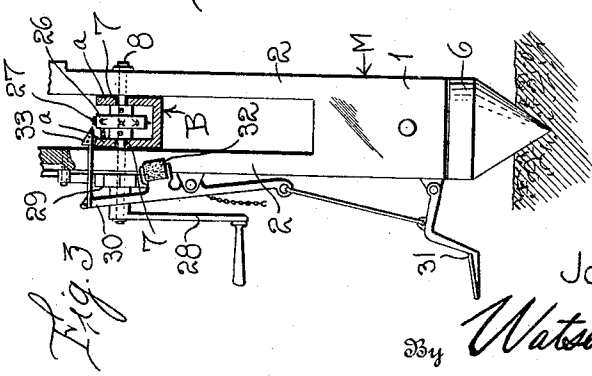


Fig. 3

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Fig. 4

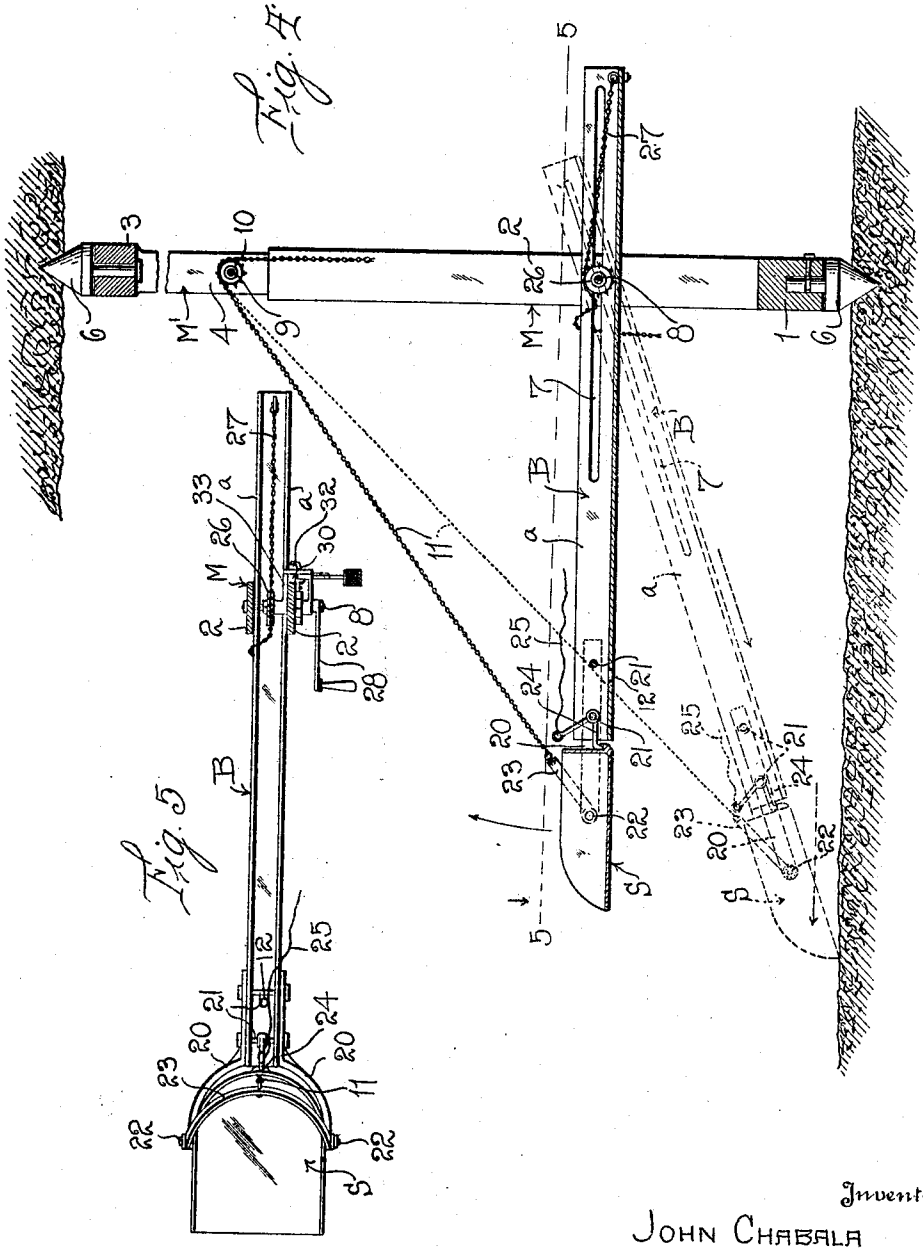


Fig. 5

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UNITED STATES PATENT OFFICE.

JOHN CHABALA, OF CUDDY, PENNSYLVANIA.

MINE APPARATUS.

1,271,277. Specification of Letters Patent. Patented July 2, 1918.

Application filed February 9, 1918. Serial No. 216,277.

To all whom it may concern:

Be it known that I, JOHN CHABALA, a citizen of the United States, residing at Cuddy, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Mine Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in mine apparatus and it is an object of the invention to provide a novel and improved device whereby slate or other refuse may be removed with convenience and facility from a face or the like of a mine tunnel and delivered to a "gob" or "goave" or other desired location.

The invention also has for an object to provide a novel and improved device of this general character including means whereby the load may be readily pulled to a predetermined point and then elevated as the occasion of practice may require.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved mine apparatus whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in elevation of a mine apparatus constructed in accordance with an embodiment of my invention in applied position, with a portion broken away;

Fig. 2 is a view in front elevation of a device as disclosed in Fig. 1; with the vertically swinging beam shown in section;

Fig. 3 is an enlarged fragmentary view partly in rear elevation and partly in section of a device as herein embodied;

Fig. 4 is a view partly in elevation and partly in section of my improved apparatus as herein disclosed, and assembled for use as a shovel; and

Fig. 5 is a sectional view taken substantially on the line 5—5 of Fig. 4.

In the embodiment of my invention as disclosed in Figs. 1 to 3, M and M′ denote coacting members of a standard and the member M consists of a head 1 and the parallel arms 2 extending therefrom, each of said arms 2 being of a channel formation in cross section. The member M′ includes a head 3 and the parallel arms 4 extending therefrom. The arms 4 are telescopically engaged within the arms 2 of the member M so that said members M and M′ may be longitudinally adjusted one relative to the other. Threaded through the arms 4 of the member M′ are the binding or holding screws 5 coacting in a conventional manner with the arms 2 of the member 1 so that the members M and M′ may be locked in their various relative adjustments. Each of the heads 1 and 3 has in swivel engagement therewith an anchoring member 6 adapted to penetrate or otherwise engage either the bottom or roof of a mine tunnel so that the standards may be maintained in proper position within the tunnel and preferably vertically disposed. The swivel engagement of the anchoring members 6 permits the connected members M and M′ to have rotary movement for a purpose which will hereinafter be more fully referred to.

Extending between the arms 2 of the member M adjacent the lower portions thereof is a vertically swinging beam B herein disclosed as substantially U-shape in cross section with its side flanges *a* preferably upwardly directed. Said side flanges are provided with the longitudinally disposed slots 7 through which extends the shaft 8 rotatably suported by the arms 2. The shaft 8, when in contact with the forward ends of the slots 7 serves as a fulcrum to permit vertical swinging movement of the beam B.

Rotatably supported by the arms 4 of the member M′ adjacent the upper or outer ends thereof is a shaft 9 and fixed to said shaft 9 intermediate the arms 4 is the chain block wheel 10. Disposed over the block wheel 10 is a chain 11 of predetermined length and which is disposed through an opening 12 formed in the base portion of the beam B adjacent the forward end thereof.

G denotes a grapple comprising the pivotally connected crossed arms 14 and to the rear end portion of one of said arms is connected the chain 11, said chain being also connected with a pulley or roller 15 mounted upon the lateral extension 16 carried by the adjacent end portion of the second arm 14.

The device as hereinbefore described is particularly well adapted for use in connection with heavy blocks of slate such as are often encountered in mining. When it is desired to remove a block of slate from the face or the like of a mine, the tongs are caused to straddle said block and the shaft 9 is properly rotated under the influence of the crank 17 or its equivalent. The strain imposed upon the arms 14 of the grapple G by the chain 11 will cause said grapple to properly grip the block of slate and as the shaft 9 is continued to rotate, said block of slate will be dragged along the bottom of the tunnel to a point adjacent the forward end of the beam B and will then be raised from the bottom of the tunnel. A conventional type of pawl and ratchet as indicated at 18 serves to hold the shaft 9 against retrograde movement. Continued rotation of the shaft 9 incidental to the contact of the grapple G with the under surface of the beam B results in the upward swinging movement of the forward end of the beam to the height desired. The members M and M′ may then be swung laterally so that the block of slate carried by the grapple may be dropped within a "gob" or "goave" or the like. It will be self-evident that by reversing the rotation of the shaft 9 the arms 14 of the grapple G may be readily disengaged from the block of slate.

After the blocks of slate have been removed from the face or the like of a tunnel and it is desired to remove the fine particles of dirt or other refuse, the chain 11 is disengaged from the grapple G and the shovel S secured to the forward end portion of the beam B. The shovel S is of the well known scraper type and is mounted for swinging movement between the arms 20. The rear end portions of the arms 20 are arranged in parallelism and are disposed longitudinally of the beam 1 and in contact with the outer faces of the side flanges *a*. The arms 20 are secured to the beam B or more particularly the flanges *a* thereof by the bolts 21 arranged in spaced relation longitudinally of the beam B.

Suitably secured to the trunnions 22 of the shovel S is the upstanding bail 23 with which the chain 11 is adapted to be connected so that the beam B may be moved upwardly after the shovel S has been loaded.

Pivotally engaged with one of the bolts 21 is a latch member 24 coacting with the shovel S to hold the same against swinging or dumping movement relative to the arms 20. Engaged with the latch is a flexible member 25 of suitable length and which permits the operator to release the latch when it is desired that the load carried by the shovel S be dumped after said shovel has been suitably elevated or positioned.

Fixed to the shaft 8 between the arms 2 of the member M and between the side flanges *a* of the beam B is the chain block 26 over which is directed the chain 27 secured to the rear end portion of the beam B. Upon proper rotation of the shaft 8 through the medium of the crank 28 or the like, the beam B will be moved forwardly to properly force the shovel S into the material to be transported and the slots 7 in the flanges *a* of the beam B are of sufficient length to permit this operation.

The shaft 8 is held against retrograde movement through the medium of the conventional pawl and ratchet as indicated at 29. In order to throw the pawl into inoperative postion when it is desired to permit the beam B to fall downwardly, I provide the vertically disposed member 30 mounted for rocking movement and suitably supported by one of the arms 2 of the member M and which is moved upwardly under the influence of the foot pedal 31. The member 30 is also provided with the brake 32 adapted to frictionally engage the side flange *a* of the beam B to retard the downward movement of the beam. The member 30 is also provided with a finger or extension 33 which engages beneath the chain 27 upon upward movement of the member so that said chain will be disengaged from the block wheel 26 so that the shaft 8 will not rotate as the beam B drops down and thereby eliminates any possibility of injury by the crank 28.

From the foregoing description, it is thought to be obvious that a mine apparatus constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. An apparatus of the class described comprising a supporting standard, a beam coacting with said standard and mounted for longitudinal movement independently of the standard, load carrying means coacting with an end portion of the beam, a rotary member supported by the standard and provided with operating means, a pulling member secured to the beam and engageable with the rotary member whereby the beam is moved longitudinally upon rotation of the rotary member in one direction, means for disengaging the pulling member from the rotary member, a holding member co-

acting with the rotary member for normally holding the same against rotation in one direction, and means operating in unison with the last named means for disengaging the holding member from the rotary member when the pulling member is disengaged from the rotary member.

2. An apparatus of the class described comprising a supporting standard, a beam coacting with said standard and mounted for longitudinal movement independently of the standard, load carrying means coacting with an end portion of the beam, a rotary member supported by the standards and provided with operating means, a pulling member secured to the beam and engageable with the rotary member whereby the beam is moved longitudinally upon rotation of the rotary member in one direction, a member engaged with the standard and mounted for rocking movement, a finger carried by said rocking member and coacting with the pulling member upon movement of the rocking member in one direction for disengaging said pulling member from the rotary member, a holding member coacting with the rotary member for normally holding the same against rotation in one direction, and means carried by the rocking member for disengaging the holding member from the rotary member when the pulling member is disengaged from the rotary member.

3. An apparatus of the character described comprising a supporting standard, a beam coacting with said standard and mounted for swinging movement longitudinally of the standard and for longitudinal movement independently of the standard, load carrying means coacting with an end portion of the beam, a rotary member supported by the standards and provided with operating means, a pulling member secured to the beam and engageable with the rotary member whereby the beam is moved longitudinally upon rotation of the rotary member in one direction, a member engaged with the standard and mounted for rocking movement, a finger carried by said rocking member and coacting with the pulling member upon movement of the rocking member in one direction for disengaging said pulling member from the rotary member, and a braking element carried by the rocking member and engaging the beam to retard the movement of the beam when the pulling member is disengaged from the rotary member.

4. An apparatus of the character described comprising a supporting standard, a beam coacting with said standard and mounted for swinging movement longitudinally of the standard and for longitudinal movement independently of the standard, load carrying means coacting with an end portion of the beam, a rotary member supported by the standards and provided with operating means, a pulling member secured to the beam and engageable with the rotary member whereby the beam is moved longitudinally upon rotation of the rotary member in one direction, a member engaged with the standard and mounted for rocking movement, said rocking member upon movement in one direction coacting with the pulling member for disengaging the pulling member from the rotary member, and a braking element carried by the rocking member and engaging the beam to retard the movement of the beam when the pulling member is disengaged from the rotary member.

5. An apparatus of the character described comprising a supporting standard, a beam coacting with said standard and mounted for swinging movement longitudinally of the standard and for longitudinal movement independently of the standard, load carrying means coacting with an end portion of the beam, a rotary member supported by the standard and provided with operating means, a pulling member secured to the beam and engageable with the rotary member whereby the beam is moved longitudinally upon rotation of the rotary member in one direction, a member engaged with the standard and mounted for rocking movement, said rocking member upon movement in one direction coacting with the pulling member for disengaging the pulling member from the rotary member, and a braking element carried by the rocking member and engaging the beam to retard the movement of the beam when the pulling member is disengaged from the rotary member, a holding member coacting with the rotary member for normally holding the same against rotation in one direction, and means carried by the rocking member for disengaging the holding member from the rotary member when the pulling member is disengaged from the rotary member.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN CHABALA.

Witnesses:
WILLIAM PHILLIPS,
PHILIP GREEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."