Dec. 29, 1925. 1,567,075

J. S. PATES

TIPPLE SCREEN CLEANER

Filed Oct. 23, 1919

FIG. 1.

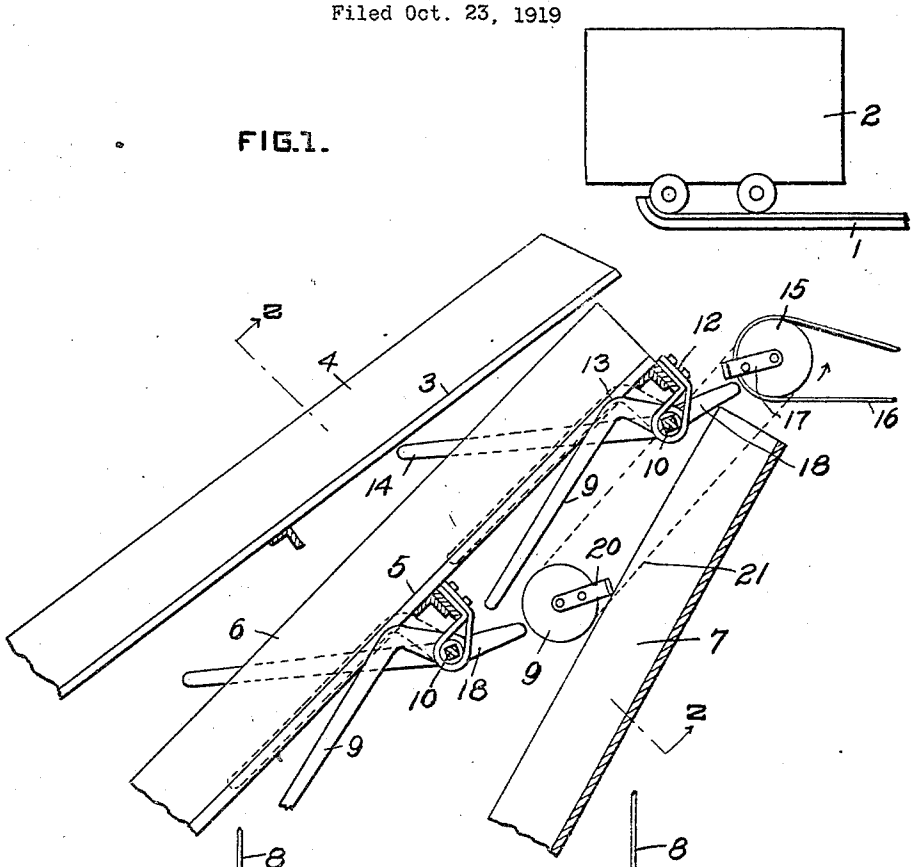
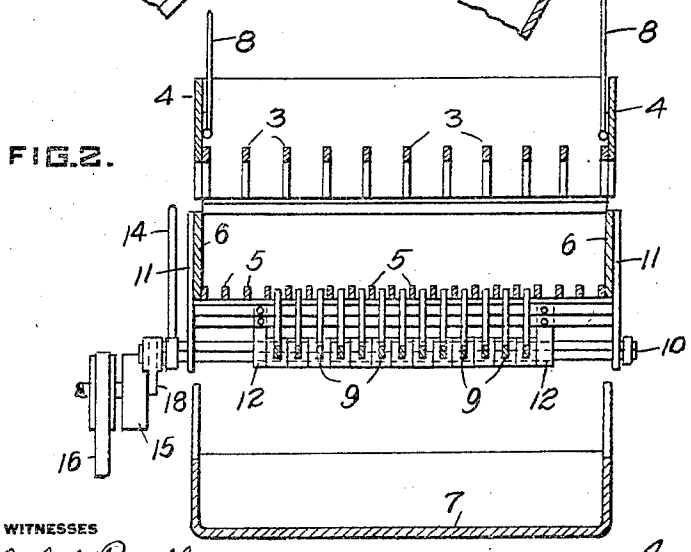


FIG. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES S. PATES, OF PITTSBURGH, PENNSYLVANIA.

TIPPLE-SCREEN CLEANER.

Application filed October 23, 1919. Serial No. 332,711.

To all whom it may concern:

Be it known that I, JAMES S. PATES, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have made a new and useful Improvement in Tipple-Screen Cleaners, of which the following is a specification.

My invention comprises a device for cleaning the screens used at coal mine tipples. The main object is to prevent the accumulation and packing of coal on the screen which would otherwise prevent functioning of the latter. Other objects are to mount such a device so that it will be protected from the dumping of the load in the tipple car or conveyor and to provide for the automatic operation of the device. Shaker mechanisms of various designs are used at present to maintain a screening surface but such devices are expensive to install and operate and often require repair. One of the objects of my invention is to provide a simple, rugged device economical to apply and operate and not likely to get out of order.

My invention is illustrated in the accompanying drawings in which Fig. 1 is a longitudinal, vertical section thru the screens of a tipple to which my device has been applied and Fig. 2 is a transverse, vertical section on line 2—2 of Fig. 1.

The type of screen to which I have shown my device applied is composed of a plurality of spaced bars arranged in parallel and my cleaner consists of arms, pivotally mounted below the bars and adapted to be moved upwardly between the latter either manually or automatically. In my drawings I have shown two sets of these arms and that is my preferred construction as such an arrangement cleans a large portion of the screen and has other attending advantages. But my invention is embodied completely in a single set of these arms and such an application would be the most economical and in many instances entirely sufficient to maintain the screen in a clean condition. The degree of efficiency of the device varying with the angle of the screen, size of the latter, frequency of operation and other causes.

An unusual advantage of my device is that it may be attached to an old screen and does not require installation of complete equipment including screen and cleaner mechanism. This advantage will be appreciated when consideration is given to the many tipples equipped with old screens of the type described but lacking any adequate cleaning apparatus.

A track 1 leads from the mine and a car 2 is brought to the position shown and there dumped by any of the usual methods, the load falling onto screen 3 which is composed of a number of parallel bars turned on edge and spaced about two inches from each other. At either side of the screen vertical sides 4 confine the coal to the screen area. Hinged to sides 4 are plates 8 which may be lowered to a horizontal position covering the screen area and converting the latter into a chute which delivers the coal as it comes from the mine to bins or railway cars.

But when plates 8 are in the position shown, the larger lumps only slide down screen 3 while the smaller lumps fall thru screen 3 onto screen 5 which is similarly made but with its bars closer together. The finer coal falls thru both screens to chute 7. It will be understood that each screen and chute 7 lead to separate bins or cars so that the various sizes of coal can be marketed independently.

In nearly all screens of this type, small lumps of coal are continually being wedged between the bars of screen 5 and afford a nucleus for the collection of a mass of coal and dust which soon covers the working face of that screen and renders it inoperative.

My cleaning apparatus consists of a plurality of arms 9, each having a short portion bent at an angle thereto and fixedly mounted on a shaft 10 which is journalled in brackets 11 and 12 attached to the screen. The arms are normally positioned as shown in Fig. 1 where they lie below the top of screen 5. The arm elbows 13 are continually in mesh with the screen bars to prevent vertical disalinement of the arms and the bars. This desirable feature prevents the rough usage to which the device is subjected from rendering it inoperative.

At one end of shaft 10 is a hand lever 14 by which shaft 10 may be rotated to bring arms 9 into the position indicated by the dotted lines in Fig. 1 which will cause the arms to dislodge the mass of accumulated material and start it down the screen.

To provide means for automatically cleaning the screen, a wheel 15 is slowly rotated by a belt 16 from an individual motor or

from a pulley on some portion of the mine machinery. On wheel 15 is secured a bar 17. A cooperating lever 18 is fixed to shaft 10 and alined with the bent end of bar 17. At every revolution of wheel 15 bar 17 will engage lever 18 and cause same to rotate shaft 10 and arms 9 to the screen cleaning position. Upon release of the engagement the weight of the arms will bring them back to their original position.

The cleaning unit just described may be duplicated as often as desired and I have shown an additional unit immediately following the first one and identical with it. Wheel 19 corresponds to wheel 15 and its arm 20 is shown in a position to operate the second screen cleaning unit alternately with the first one.

A chain 21 provides a simple method of determining the relative periods of action of the two units. By means of the chain they can be made to work alternately, as indicated, simultaneously or one immediately following the other. Different sized sprockets on the two wheels will establish a variable relation between the cleaning periods which may prove advantageous. Of course, wheels 15 and 19 may be separately driven if desired.

While I have illustrated and described my device as applied to screens in use at coal mine tipples, I am aware that the use of my invention is not limited to that field and I contemplate the adaptation of my mechanism to other locations and for other materials with necessary modifications in its structure and assembly.

I claim:—

In a coal tipple, a screen composed of spaced stationary bars, inclined for the gravital movement of coal therealong, a shaft rotatably mounted in spaced relation to said bars, cleaning arms secured to said shaft, an actuating arm mounted on said shaft and a rotating member adapted to intermittently strike said arm so as to swing said cleaning arms between said bars to remove lumps of coal therefrom.

In testimony whereof, I have hereunto subscribed my hand this 16th day of October, 1919.

JAMES S. PATES.