

April 22, 1941.

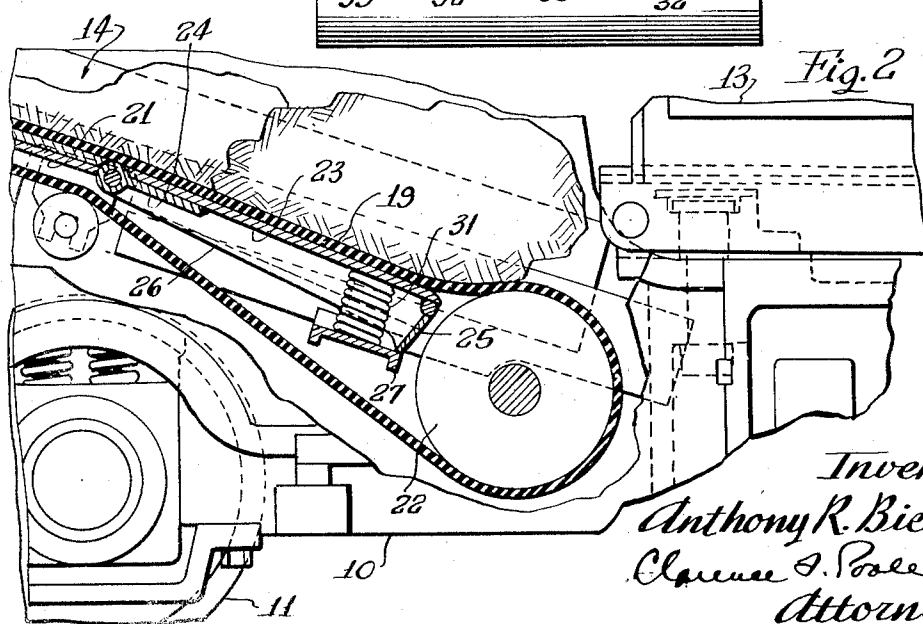
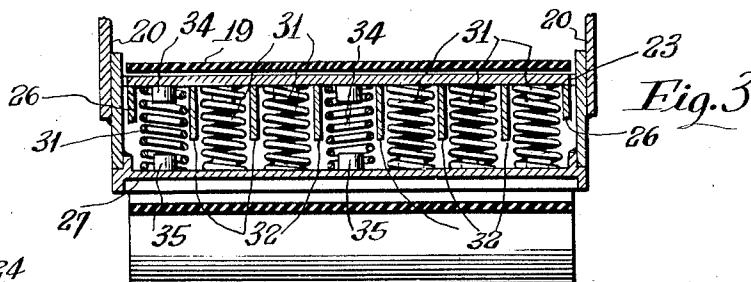
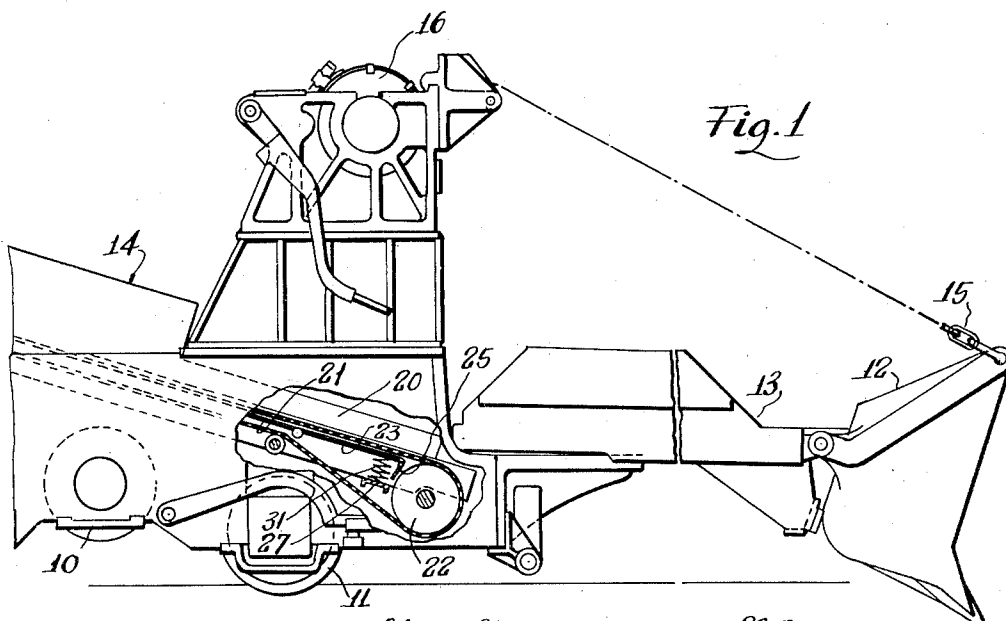
A. R. BIEDESS

2,239,076

MUCKING MACHINE

Filed Dec. 23, 1938

2 Sheets-Sheet 1



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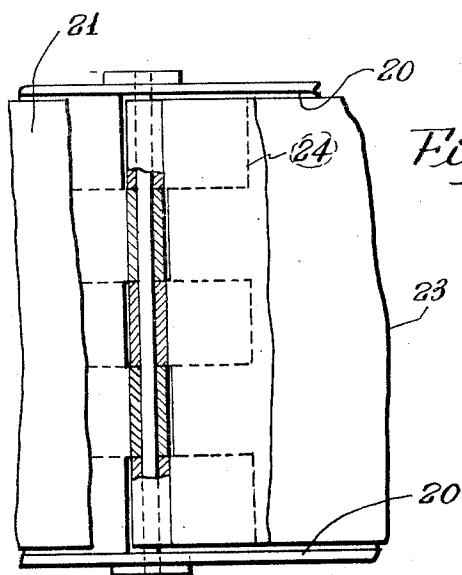
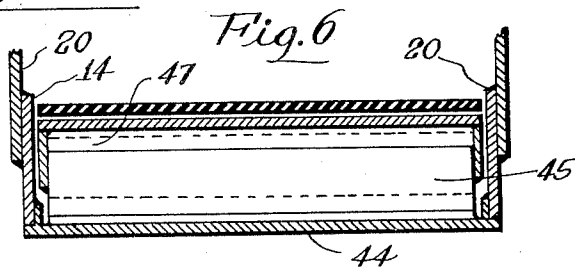
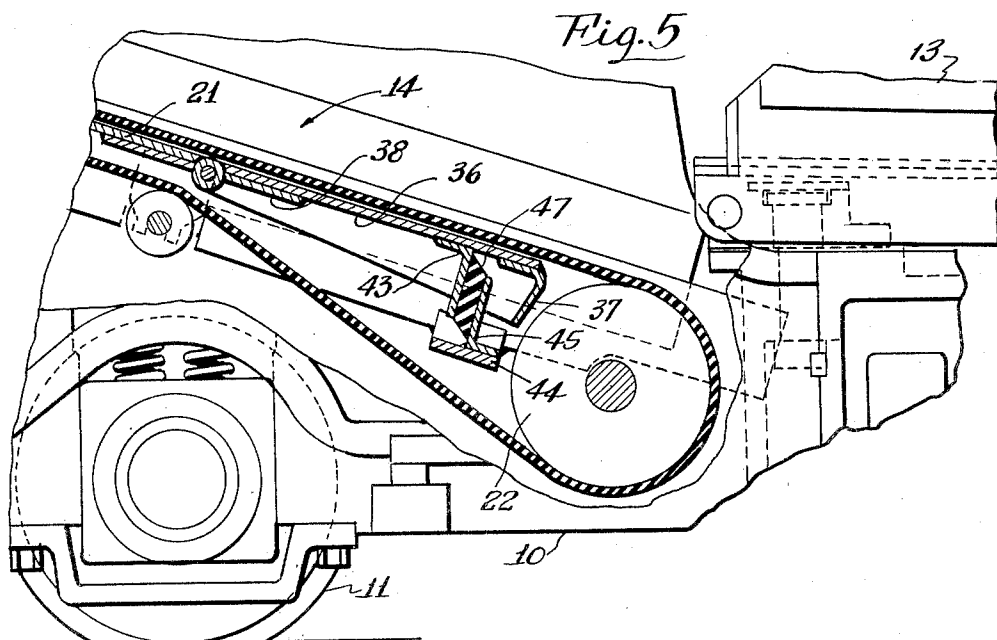
A. R. BIEDESS

2,239,076

MUCKING MACHINE

Filed Dec. 23, 1938

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,239,076

MUCKING MACHINE

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Application December 23, 1938, Serial No. 247,354

3 Claims. (Cl. 198—184)

This invention relates to improvements in mucking machines adapted for use in shoveling muck or rock in tunnels and mines.

Heretofore, one of the disadvantages of mucking machines of the type disclosed by the Mosier Patent No. 1,514,008, which have been extensively used for shoveling muck or rock in tunnels or mines, is that the conveyer belt is disposed a substantial distance beneath the scoop and travels upwardly along a solid bottom of the conveyer frame so that heavy pieces of rock frequently weighing more than two tons each, dropping directly from the scoop down the chute formed by the boom onto the conveyer belt, cause great damage to the belt and decrease the life thereof to such an extent that belt replacement is the chief factor to consider in the upkeep of the machine.

The principal object of my invention is to remedy this difficulty in a simple, novel and efficient manner by providing a resilient shock absorbing means at the point of discharge from the scoop to the belt, for supporting the belt at the receiving end of the conveyer, which will yield upon loading of the belt, as in cases where heavy pieces of rock are dropped thereon, and thus lessen the liability of damage to the belt.

Other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a view in side elevation of the front part of a mucking machine constructed in accordance with my invention, with certain parts broken away and certain other parts shown in substantially longitudinal section;

Figure 2 is an enlarged fragmentary view in side elevation of the mucking machine at the receiving end of the conveyer, with certain parts shown in longitudinal section in order to more clearly illustrate the details of my invention;

Figure 3 is a transverse sectional view taken through the conveyer at the receiving end thereof and drawn to substantially the same scale as Figure 2;

Figure 4 is a fragmentary plan view drawn to a slightly larger scale than Figure 3 and illustrating certain details of my invention not shown in Figure 3;

Figure 5 is a fragmentary view in side elevation drawn to substantially the same scale as Figure 2, illustrating a modified form in which my invention may be embodied, with certain parts broken away and certain other parts shown in longitudinal section; and

Figure 6 is a transverse sectional view taken through the conveyer shown in Figure 5, at the receiving end thereof, and drawn to substantially the same scale as Figure 5.

In the drawings, the form of machine illustrated, having my invention embodied therein, is constructed along lines somewhat similar to those shown in the aforementioned Mosier Patent No. 1,514,008, so will only herein be described in so far as is necessary to make my present invention clearly understandable. Said machine includes a truck or main frame 10 mounted on track wheels 11, 11. A scoop 12, transversely pivoted on the forward end of a boom 13, is disposed in advance of said main frame. Said boom is herein shown as being of a channeled construction so it may form a chute for guiding material discharged from said scoop onto the receiving end of an inclined elevating conveyer 14. The forward end of said main frame forms a support for said boom, and a pivotal connection is provided between said boom and the forward end of said main frame to permit upward swinging movement of said boom and scoop for discharging material from said scoop downwardly along said boom onto the conveyer and to permit swinging movement to one side or the other of the track for picking up material from either side of the track.

The scoop 12 and boom 13 are swung from side to side or elevated to a discharge position by means of a pair of flexible chains 15, 15 wound on winding drums 16, 16, and independently driven from a suitable motor on the truck 10, in a manner which is not herein shown or described since it is no part of my present invention.

The conveyer 14 is herein shown as being a belt conveyer of an ordinary type and includes a belt 19 trained between the sides 20, 20 of the conveyer frame downwardly beneath a bottom plate 21, connecting said sides together, and around a direction changing roller 22 mounted at the forward end of the machine. From said direction changing roller 22, said belt is movable upwardly along the bottom plate 21, to the rear of the machine, for moving material upwardly along the conveyer frame and discharging it into suitable receptacles; such as, mine cars or the like. The drive to said conveyer is not herein shown or described since it is no part of my present invention.

With reference now in particular to the novel features of my invention and the means at the receiving end of the conveyer forming a support for the belt, for decreasing the shocks imparted to the belt upon the discharge of large pieces of

rock thereon from the scoop 12, a resilient member or plate 23 is mounted beneath the belt at the receiving end thereof and, as herein shown, forms an extension of and is pivotally connected to the forward end of the bottom plate 21 by means of a hinge member 24. Said plate is herein shown as extending forwardly from said hinge member to a point adjacent the roller 22. Said plate is provided with a depending forward end 25 which provides a smooth forward surface at the forward end of said plate, to prevent injury to the belt, and is also provided with outer depending sides 26, 26 extending rearwardly from said depending forward end and having the lower sides thereof inclined in an upward direction towards said plate. Said depending end is also adapted to engage a cross supporting member 27, extending across the conveyer frame and mounted between the sides 20, 20 thereof, and serve as a stop to limit downward movement of said plate.

A plurality of compression springs 31, 31 are herein shown as being interposed between the top of the cross member 27 and underside of the hinged plate 23. Said springs are mounted between longitudinally extending parallel spaced spacing members 32, 32 which are secured to and depend from the plate 23 (see Figure 3). Said springs also encircle retaining lugs 34 depending from the underside of said plate and retaining lugs 35, 35 projecting upwardly from the cross supporting member 27. Thus, when a heavy piece of rock is discharged from the scoop 12 along the boom 13 onto the belt 19, the plate 23 supporting the receiving end of said belt will give against the compression springs 31, 31, as illustrated in Figure 2, and lessen the shock to the belt and thus decrease the liability of injury thereto.

With reference now in particular to the modified form of my invention shown in Figures 5 and 6, in this form of the invention, a plate 36 having a depending forward end 37 is hinged to the forward end of the bottom plate 21 of the conveyer on a hinge member 38. A transversely extending angle iron 43 having one depending leg is herein shown as being secured to the bottom of the plate 23 on its other leg. A cross supporting member 44 extends transversely across the frame for the conveyer and is secured to opposite sides of the frame, just rearwardly of the roller 22. Said cross member has an angle iron 45 secured thereto on one of its legs, the other leg of which angle iron projects upwardly from said cross member in a plane parallel to the plane of the depending leg of the angle 43. A resilient member 47, made from a suitable resilient material, such as rubber, extends along and is bonded to the forward side of the depending leg of the angle iron 43 in a suitable manner, and the opposite side of said member is bonded to the rear side of the upwardly extending leg of the angle iron 45. Said resilient member is so arranged that its upper and lower sides are at parallel angles, inclined with respect to the plane of movement of the plate 36, so that a load on said plate causing pivotal movement thereof will put a shearing stress on said member. Thus, when heavy rock is discharged from the scoop along the boom 13 onto the belt 19, the

load on the plate 36 will tend to shear the rubber member 47, which will yield, and upon relief of the loaded condition of the belt, said member will regain its natural shape and return the plate 36 to a normal position, as shown in Figure 5.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting myself to the specific embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. In a conveyer of the type adapted to carry and have heavy rock discharged directly thereon, an endless conveyer belt, a frame along which said belt moves including a bottom plate forming a support for the underside of the upper run of said belt, and means to lessen the shock to said belt upon the dropping of heavy material thereon including a member transversely hinged to the forward end of said bottom plate and forming a continuation thereof, said hinged member forming a support along which the belt moves at the receiving end of the conveyer, and yieldable means engaging said hinged member and forming a support for the forward end thereof, permitting yieldable movement of said member about its axis of connection to said bottom plate upon the discharge of a heavy load onto said belt.

2. In a conveyer of the type adapted to carry and have heavy rock discharged directly thereon, an endless conveyer belt, a frame along which said belt moves including a bottom plate forming a support for the underside of the upper run of said belt, and means to lessen the shock to said belt upon the dropping of heavy material thereon including a member transversely hinged to the forward end of said bottom plate and forming a continuation thereof, said member forming a support along which the belt moves at the receiving end of the conveyer, and a compression spring having supporting engagement with the forward end of said member and permitting yieldable movement thereof in a downward direction upon the discharge of a heavy load onto said belt.

3. In a conveyer of the type adapted to carry and have heavy rock discharged directly thereon, an endless conveyer belt, a frame along which said belt moves including a bottom plate forming a support for the underside of the upper run of said belt, and means to lessen the shock to said belt upon the dropping of heavy material thereon including a member transversely hinged to the forward end of said bottom plate and forming a continuation thereof, said member forming a support along which the belt moves at the receiving end of the conveyer, a transversely extending rigid member disposed beneath the forward end of said hinged member, and a rubber member connected between said rigid member and the forward end of said hinged member, to form a yieldable support therefor.

ANTHONY R. BIEDESS.