J. H. McKENNA.

DIRT LOADING MACHINE.

APPLICATION FILED APR. 11, 1917.

1,329,914.

Patented Feb. 3, 1920.

2 SHEETS—SHEET 1.

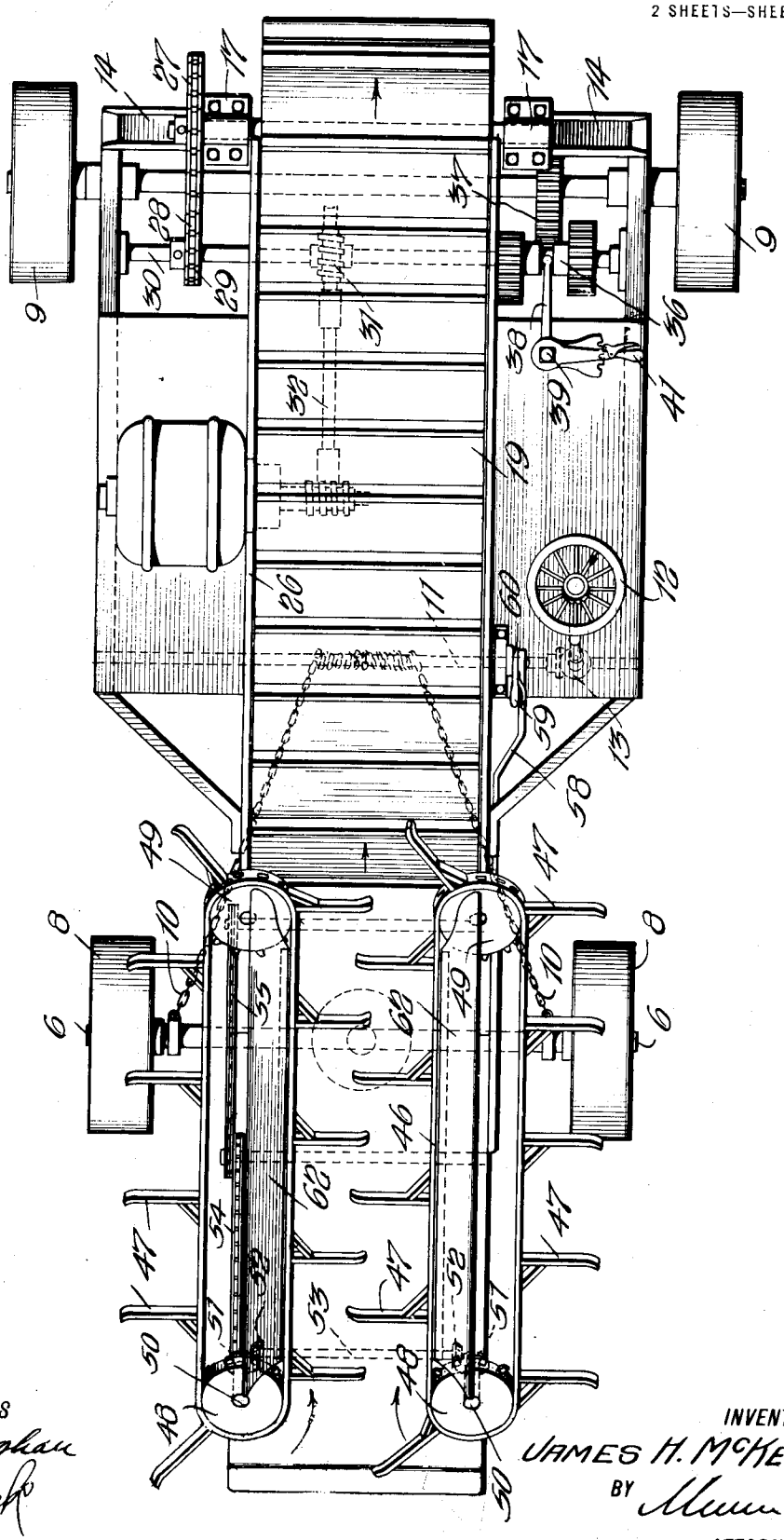


Fig. 1.

WITNESSES

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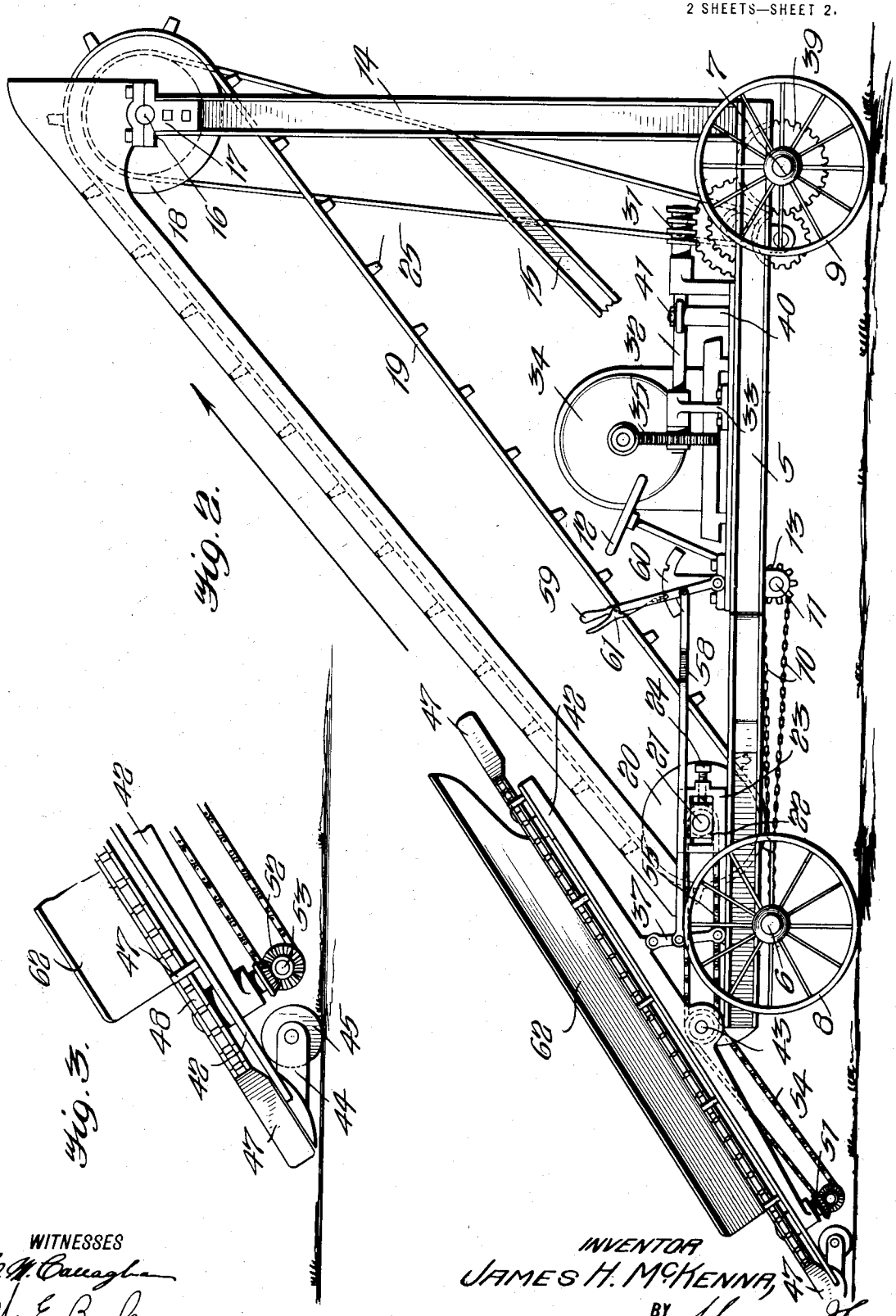


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES H. McKENNA, OF JOPLIN, MISSOURI.

DIRT-LOADING MACHINE.

1,329,914. Specification of Letters Patent. Patented Feb. 3, 1920.

Application filed April 11, 1917. Serial No. 161,153.

To all whom it may concern:

Be it known that I, JAMES H. McKENNA, a citizen of the United States, and a resident of Joplin, in the county of Jasper and State of Missouri, have made certain new and useful Improvements in Dirt-Loading Machines, of which the following is a specification.

One of the principal objects of my invention is to provide an improved dirt loading machine for use particularly in mines, whereby the dirt will be quickly and effectively loaded on to the cars from the floor of the mine.

Another object of the invention resides in the provision of a dirt loading machine having improved devices for lifting the dirt from the mine floor and for disposing the dirt into the car, the machine being designed with particular reference to advantages of simplicity, durability, efficiency in operation, and economy in manufacture and maintenance.

Another object of my invention is to provide an improved machine of the class described, having an adjustable plate provided with carrier devices for initially lifting the dirt and placing the same upon the conveyer of the machine.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination, and arrangement of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings in which like characters of reference indicate like parts throughout the several figures, of which:

Figure 1 represents a top plan view of a machine constructed according to my invention.

Fig. 2 represents a side elevational view, and

Fig. 3 represents an enlarged side elevational view of the lower portion of the plate.

In carrying out my invention I provide a frame 5 equipped adjacent its ends with front and rear axles 6 and 7 respectively on which the ground wheels 8 and 9 respectively are journaled. The front axle is pivotally mounted on frame 5, and to it are connected the ends of a chain 10, which at its intermediate portion is wrapped around a shaft 11 mounted on the frame, and which is adapted to be turned in one direction or another for swinging the axle 6 upon its pivot whereby to guide the machine. The shaft 11 is operated from a steering wheel 12 through the medium of bevel gears 13. The shaft 6 is shorter than the shaft 7. At its posterior portion the frame is widened as shown in Fig. 1. At the rear end of the machine is arranged a mast including the upright beams 14 which are connected together by suitable braces, and which are supported by braces 15 connected with the frame and with the beams. At their upper ends these beams support a transverse shaft 16 journaled in bearings 17 and fixed on the shaft is a drum 18 over which a conveyer belt 19 runs. This belt at its lower end runs over a drum 20 fixed on a shaft 21, whose ends are journaled in blocks 22, which blocks are slidably mounted in the frames 23 secured upon the main frame of the machine. The frames 23 at their rear ends carry adjusting screws which bear against blocks 22, and through adjustment of which the tension of the belt 19 may be varied. This belt is provided with transverse spaced strips 25 which carry the dirt upwardly toward the rear end of the machine to be deposited into any suitable receptacle. The upper flight of the conveyer travels between the spaced side boards 26 which at their upper ends are supported by the mast, and whose lower ends connect in suitable manner to the main frame of the machine. The boards 26 prevent the loss of dirt from the conveyer.

On the shaft 16 is mounted a sprocket wheel 27 over which runs a chain 28, driven from a similar sprocket 29 mounted on a transversely arranged jack shaft 30 carried by the main frame 5. This jack shaft is driven through the medium of worm and wheel gearing 31 from a longitudinally arranged shaft 32 mounted in bearings 33 carried by the frame. A motor 34 is mounted on the frame, and drives the shaft 32 through the medium of a worm and wheel gearing 35. The motor is representative of any suitable motive power, such as electricity, compressed air or steam.

A suitable change speed gearing and clutch indicated usually at 36 is mounted on the jack shaft 30, and drives a gear 37 through the medium of which motion is imparted to the rear axle 7 for propelling the machine. The clutch is operated through the medium of a lever 38, mounted on a vertical shaft 39 which is carried in a bearing 40 mounted on the machine. The hand

lever 41 secured on the shaft 39 serves as means whereby the operator of the machine may control the clutch.

At the forward end of frame 5 is arranged a plate 42, which plate is pivoted adjacent its central portion on a horizontal axis 43. The rear portion of the plate overhangs the lower portion of the conveyer 19, while the forward portion of the plate projects into proximity with the ground. Mounted in suitable brackets 44 secured to the under side of plate 42 in angular relation therewith, are rollers or wheels 45 adapted to limit the movement of the forward end of plate 42 toward the ground, and to travel over the ground when the plate is in the position indicated in Fig. 2.

Arranged adjacent the lateral edges of the plate and in parallel and spaced relation to each other, are the endless belts 46, which carry the spaced arms 47 adapted as the belts are driven to engage the dirt and move it upwardly over the face of the plate to deposit it upon the conveyer 19. The belts or chains 46 run over the lower and upper wheels 48 and 49 respectively. These wheels are rotatably mounted upon the plate 42, and the axes 50 of the lower wheels 48 are projected below the plate and carry beveled pinions 51. These pinions mesh with beveled gears 52 carried by a transverse shaft 53 suitably journaled beneath the plate. The shaft 53 is driven by a chain 54 from the shaft 43 forming the axis on which the plate pivots. This shaft 43 is in turn driven by a chain 55 from the shaft 21. The gears 52 are arranged in opposite relation on the shaft 53 whereby the wheels 48 will be driven in opposite direction, thus moving the opposed arms 47 on the adjacent flights of chains 46 in a common direction upwardly across the plate 42. These arms are slightly curved at their outer ends whereby to effectively engage the dirt and the arms on the opposed flights of the belts or chains are arranged in staggered relation as indicated in Fig. 1.

The plate 42 is adapted to be adjusted through the medium of the toggle links 37 which, have their inner ends pivotally connected to a rod 58. The outer ends of links 37 are pivotally connected one with the plate 42 and the other with the main frame of the machine. The rod 58 is pivotally connected with a lever 59 mounted on a toothed segment 60 and provided with the usual dog mechanism 61 for coöperating with the segment in securing the lever in adjusted position. By adjusting the lever 59 rearwardly and forwardly, the plate 42 will be moved on its pivot into the desired adjusted positions.

In operation, the dirt is engaged and pried upwardly by the lower end of plate 42 and is carried upwardly across the plate by the arms 47 and deposited upon the conveyer 19. The conveyer moves the dirt upwardly and deposits it into any suitable receptacle from whence it may be directed into the cars.

Although I have described the preferred embodiment of my invention, I may desire to make such changes in the construction, combination and arrangement of parts thereof, as do not depart from the spirit of the invention and the scope of the appended claims.

I claim:

1. In a loading machine, a frame movable over the ground, an inclined conveyer carried by the frame, a plate pivotally mounted on the frame and having a portion overhanging the conveyer, said plate also having a portion projecting toward the ground, means carried by the plate for moving dirt thereacross for depositing dirt on to the conveyer, means for driving the last said means and means for adjusting the plate upon its pivot, said adjusting means including toggle links and throw rod connecting the link.

2. A loading machine including a movable frame having a conveyer mounted thereon, a plate pivoted on the frame in advance of the conveyer and having means for engaging the dirt and depositing it on to the conveyer, and means for adjusting the plate relatively to the conveyer, said means including toggle links pivotally connected at their outer ends to the frame and plate respectively, the inner ends connected to and operated by a horizontally movable throw rod.

3. In a loading machine, a frame, a plate pivoted on the frame, endless chains mounted on the plate, horizontally disposed arms carried by the chains and having their free ends overlapping alternately beyond the longitudinal center of the plate and curved rearwardly, for picking up granular or pulverulent material and forcing the same rearwardly and upwardly longitudinally of the plate as the chains are drawn rearwardly, wheels mounted on the plate and upon which the chains are carried, pinions carried by the forward wheels of each endless chain element, a shaft journaled on the plate and having pinions meshing with the said pinions in such manner as to rotate the first-mentioned pinions in opposite directions, whereby the inner runs of the endless chains travel upwardly and rearwardly simultaneously, and means for driving the aforesaid shaft.

JAMES H. McKENNA.

Witnesses:
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