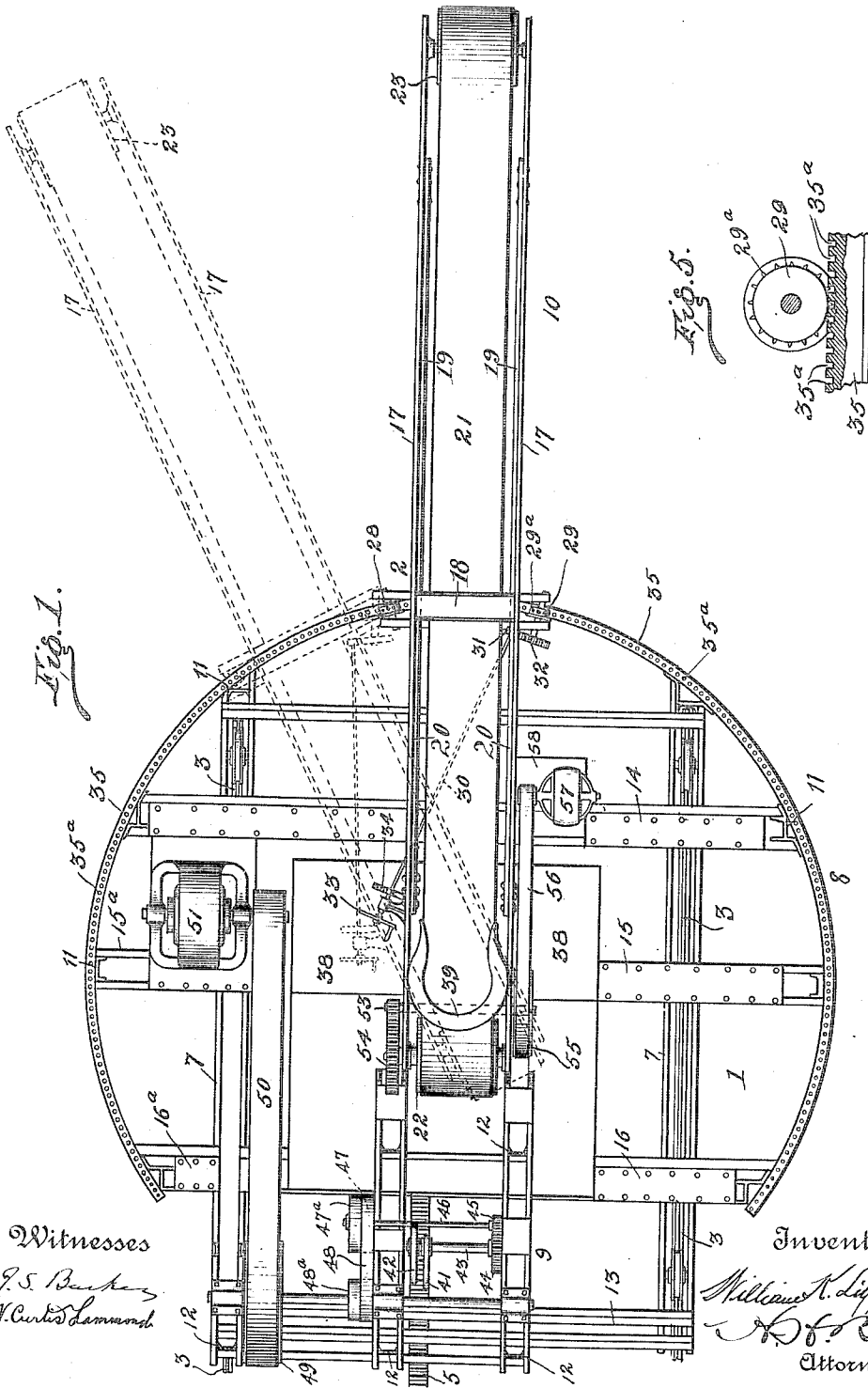


W. K. LIGGETT.
CARRIER OR CONVEYER.
APPLICATION FILED NOV. 29, 1905.

1,044,547.

Patented Nov. 19, 1912.

2 SHEETS-SHEET 1.



Witnesses
J. S. Benson
N. Curtis Lammond

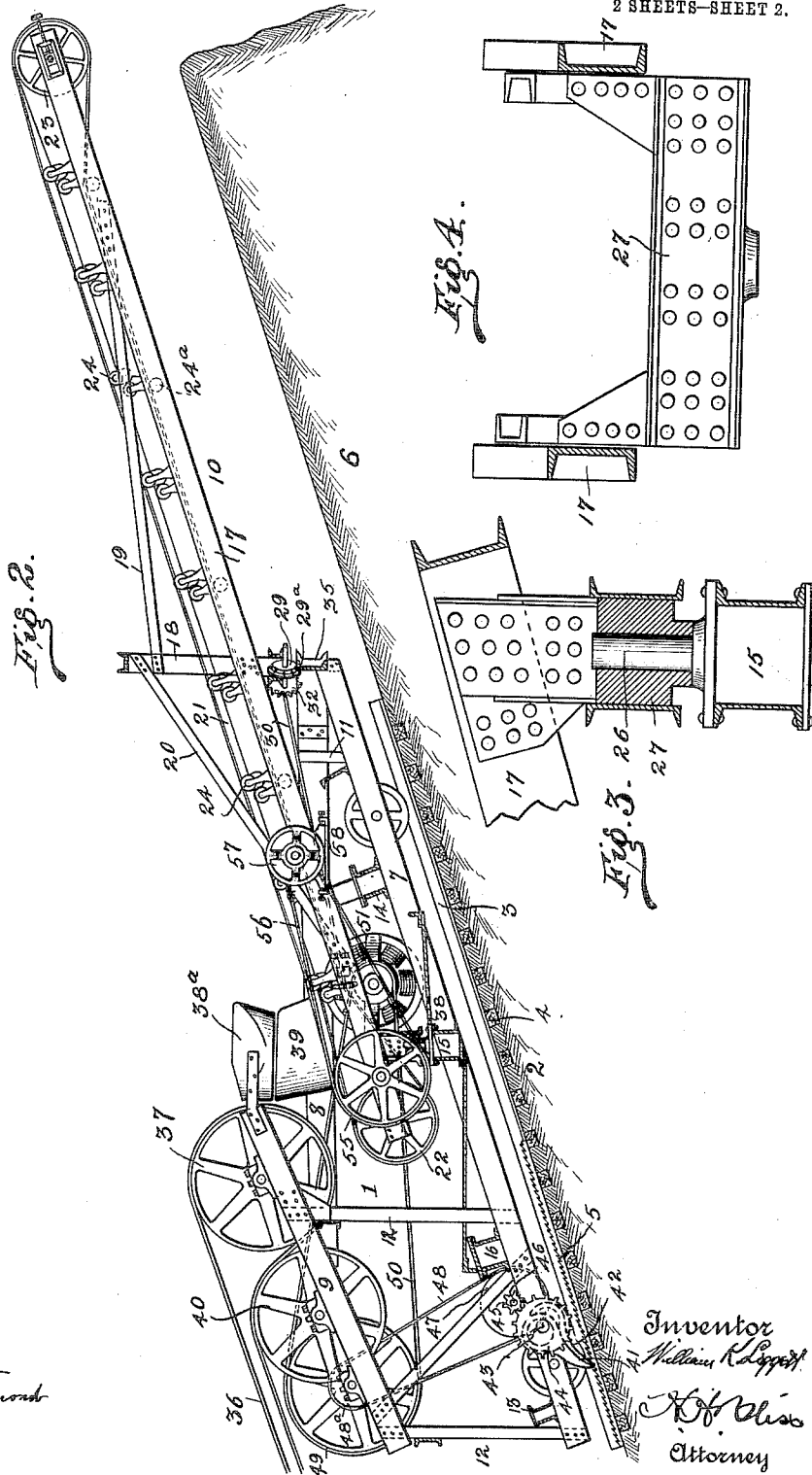
Inventor
William K. Liggett
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Attorney

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J. S. Barker
H. Carter Hammond

Inventor
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H. W. Bliss
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UNITED STATES PATENT OFFICE

WILLIAM KELSEY LIGGETT, OF COLUMBUS, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO THE JEFFREY MANUFACTURING COMPANY, A CORPORATION OF OHIO.

CARRIER OR CONVEYER.

1,044,547.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed November 29, 1905. Serial No. 289,632.

To all whom it may concern:

Be it known that I, WILLIAM KELSEY LIGGETT, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Carriers or Conveyers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in carrier or conveyer apparatus, it relating more especially to such mechanism when intended for use in distributing a mass of material over a wide area; as, for example, in forming piles of waste stuff such as culm or broken or ground rock and the refuse of mills.

Figure 1 is a plan view of a conveying and delivering apparatus embodying my improvements. Fig. 2 is a side elevation, parts of the framework being in section. Fig. 3 is a detail view showing the pivotal mounting of the carrier frame. Fig. 4 is a cross sectional view of the carrier frame and shows the journal upon which it is mounted. Fig. 5 is a detail view showing engagement of the carrier operating wheels with the curved track.

The mechanism illustrated comprises as an entirety a portable structure 1 and a track structure 2, the latter having guide rails 3 supported upon cross ties or sleeper bars 4. Between the track rails 3 there is a rack rail 5 having ratchet teeth.

The machine shown is as a whole designed for use upon an inclined base such as the side of a slope or hill or pile of waste material, such as culm or sand or waste rock of the sort obtained in mining and in reducing ores and the like.

The portable structure indicated by 1 comprises several frame elements secured together, one at the base being indicated by 7, this conforming to the direction of travel of the machine, another at 8, which is at an angle to that at 7, and is adapted to support the adjustable part of the frame; a third at 9 adapted to support some of the power shafts and their wheels, and a fourth at 10 designed to support the delivering carrier or belt.

The base frame 7 is formed of longitudinal sill bars of suitable number which are joined together by cross girts as shown at

13, 14, 15, 16. From these there are up- rights or standards as at 11, 12 for carrying the frames 8 and 9. The cross bars of the base frame are extended laterally as shown at 15^a, 16^a to support other parts of the structure.

The delivery apparatus proper is carried by the frame 10 and comprises longitudinal bars 17 with suitable cross connecting devices, together with truss posts 18 and truss rods 19 and 20. Upon this frame there can be supported (to attain some of the objects of the invention) any suitable carrier. I prefer an endless carrying belt such as a rubber conveyer as shown at 21, which at the inner or lower end is mounted upon the driving pulley 22 and at the outer end upon the idler guide pulley 23, there being a series of sets of troughing rolls at 24, 24 under the operative or outgoing part of the belt and a series of idler rollers 24^a under the incoming or returning part.

The framework of this carrier is at points near the lower end mounted upon a turntable or pivot mechanism. This may be of any suitable character. At present I prefer one having the base support formed by the cross bars 15 which carry the upward rising pivot 26 to which there is fitted a journal 27 carried by the adjustable frame.

The weight of the upper part of the delivering carrier and its frame is taken upon standards or legs provided with wheels 28, 29. These are fitted to a curved track 35 which is supported upon the laterally projecting parts of the cross rails 15^a, 16^a and upon the upper or forward end of the base structure 1. This track rail is shown as formed of a rolled channel arm bent to conform to the necessary curve. The wheels 28 and 29 are set with their axes inclined to each other so that they will properly follow this curved track. Power can be applied to either or both of these wheels to effect the adjustment of the movable frame. As shown, there is a shaft 30 extending backward along the frame to the platform 38. At the front end of the shaft there is gearing 31, 32 by which the wheel 29 can be rotated, and when it is rotated the delivering carrier and its frame will be moved to one side or the other around the pivot at 26. Power can be applied by an operator through the crank wheel or hand wheel at

33; and the shaft 30 can be locked against accidental rotation by means of the pawl and ratchet at 34.

To prevent the adjustable frame from being accidentally moved out of any desired position, as, for instance, by a wind of sufficient force, the rail 35 is provided with a series of indentations, or apertures, 35^a, and with these pins or teeth 29^a formed on or inserted into the periphery of the wheel 29 engage. Other devices equivalent to those just described can be employed. This together with the ratchet lock at 34 insure the holding of the frame in any position after it has been adjusted.

The carrier just described can be used as a distributing device for finally depositing material which is brought from some remote point. For instance, waste rock or culm may be brought from a relatively low point on carriers or belts such as shown at 36. The one illustrated passes around the wheel 37 and returns over an idler wheel at 40. The material brought up by this carrier is delivered in the chute 38^a which in turn directs it into a hopper 39 so arranged as to cause the material to be deposited upon the belt 21. The chute 38^a and the hopper 39 are so positioned with respect to the axis around which the adjustable frame turns that in whatever position the latter may have been put it will still receive the material from the carrier 36.

When it is desired to cause the entire apparatus to advance along the track structure 2 it can be done by the means illustrated. At 41, 42 there are alternately acting pawls carried by eccentric devices on the shaft 43, each of these pawls being adapted to engage with the teeth on the rack 5. The eccentric carriers for the pawls are arranged with different radial relations to their driving shaft so that when one is inactive the other will be active. This shaft 43 carries a gear wheel 44 which is driven by the pinion 45 on the shaft 46. On this shaft there are a loose belt wheel 47 and a rigid belt wheel 47^a. 48 is a belt adapted to engage with these and to be shifted from one to the other and to be driven by the belt wheel 48^a on one of the shafts on frame 9. This shaft also carries the belt wheel 49 which receives power through the belt 50 from the motor or engine at 51, the latter being suitably mounted upon the base part of the frame. The operator shifts the belt 48 whenever it is desired to cause the advance of the apparatus as an entirety along the track.

The delivering and distributing conveyer 21 is driven as aforesaid by the roller or pulley 22 which receives its power through the gearing 53—54. On the shaft of the wheel 53 is a belt pulley 55 which through a belt 56 receives power from the motor 57. The latter is supported upon a platform 58 which

is secured to the frame 10 of the adjustable carrier.

The mechanism constructed in the way described can be operated in a manner which is obvious upon inspection of the drawings. A sufficient length of the track structure 2 is properly laid upon the inclined surface of the bed 6 which may be regarded as a pile of waste rock, culm, or the like. The apparatus for receiving, delivering and distributing the material is then put in position, as shown, and the primary carrier 36 set in operation. The material brought up by it is delivered to the chute and hopper at 38, 39 and by these to the carrier 31 which carries it to and drops it over the drum or roller at 23. When a sufficient amount has been piled at a given point the operator by means of the hand wheel 33 and the shaft 30 shifts to the right, and subsequently to the left, the distributing carrier, until the material has filled up the available space. Then the operator shifts the power devices so that the pawls 41, 42 are put in motion and the apparatus is forced up the track 5 far enough to provide sufficient receiving space for a new series of operations.

It will be understood that the track-way 2 is constructed along the surface of the dump at such an angle that the curved track 35 is maintained in a substantially horizontal position. The pin 26 will be vertical and the whole carrier frame can be swung with very little expenditure of power as it remains at the same level throughout its motion.

What I claim is:—

1. In an upward inclined conveying and carrying apparatus, the combination of a portable frame adapted to travel on inclined planes, a primary conveyer or carrier more or less supported upon the said frame, and a laterally adjustable secondary carrier supported on said frame and arranged to receive material from the primary carrier and so supported that its outer or delivery end will swing in a horizontal plane, substantially as set forth.

2. In a conveying or carrying apparatus, the combination of a main frame having an inclined base element, a horizontally disposed element providing a horizontal guideway, a frame element 9 above the base element, transporting wheels on the base element, frame moving mechanism on the base element, a laterally adjustable conveyer frame having supports engaging said horizontal guideway, and a primary carrier partially supported on the elevated frame element 9, substantially as set forth.

3. In a conveying apparatus adapted to travel on inclined planes, the combination of an inclined main frame, a supporting wheel mounted in the said frame near its rear end, an endless conveyer engaging with said

3 wheel, a horizontal curved track carried by the main frame in front of the conveyer supporting wheel, and a laterally adjustable delivery carrier pivotally supported near the said wheel and bearing intermediate its ends upon the said curved track, substantially as set forth.

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

WILLIAM KELSEY LIGGETT.

Witnesses:

F. R. WILLSON, Jr.,
J. WEBSTER.