H. J. FISCHER.

CONVEYER.

APPLICATION FILED JUNE 23, 1921.

1,415,869.

Patented May 16, 1922.

3 SHEETS—SHEET 1.

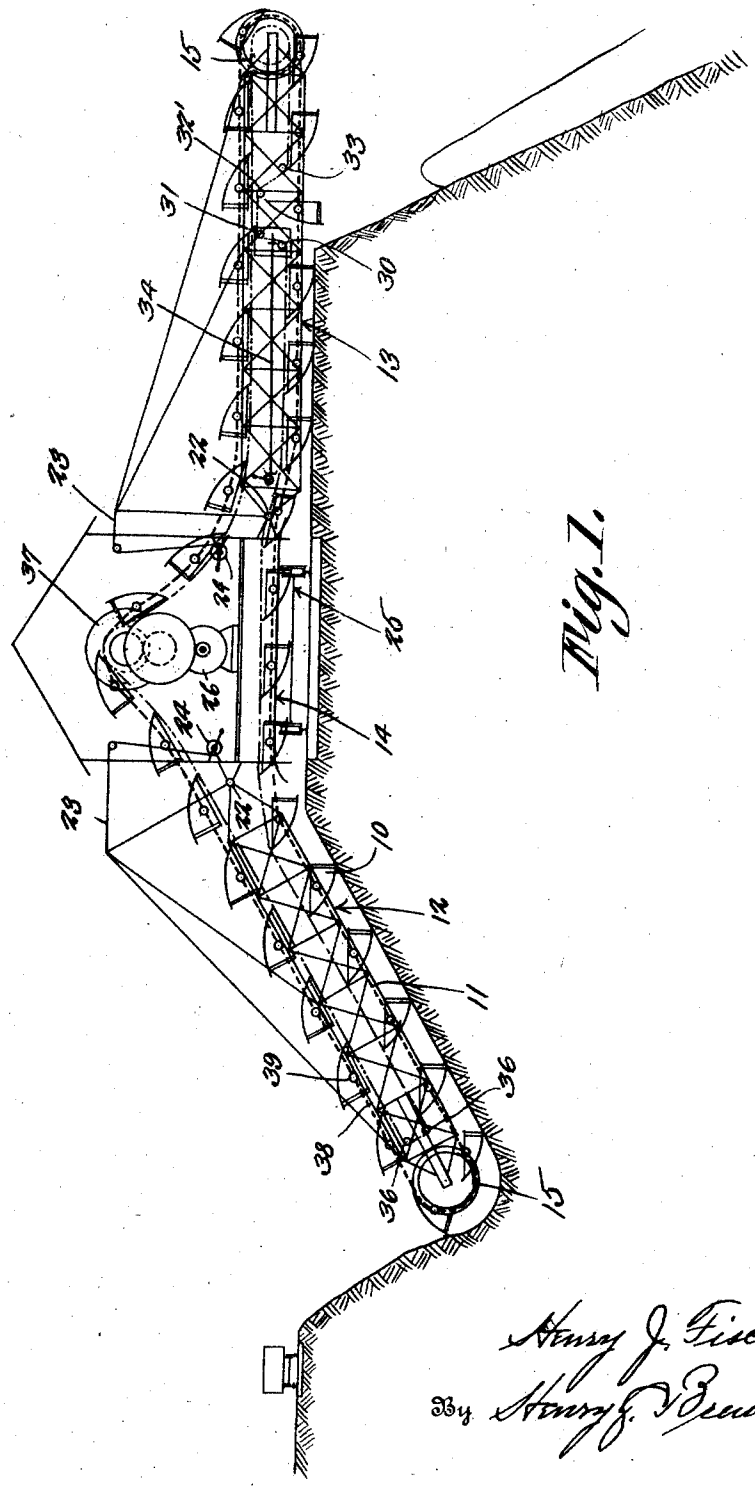


Fig. 1.

Inventor

Henry J. Fischer,

By Henry F. Bennington.

Attorney

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3 SHEETS—SHEET 2.

Fig. 2.

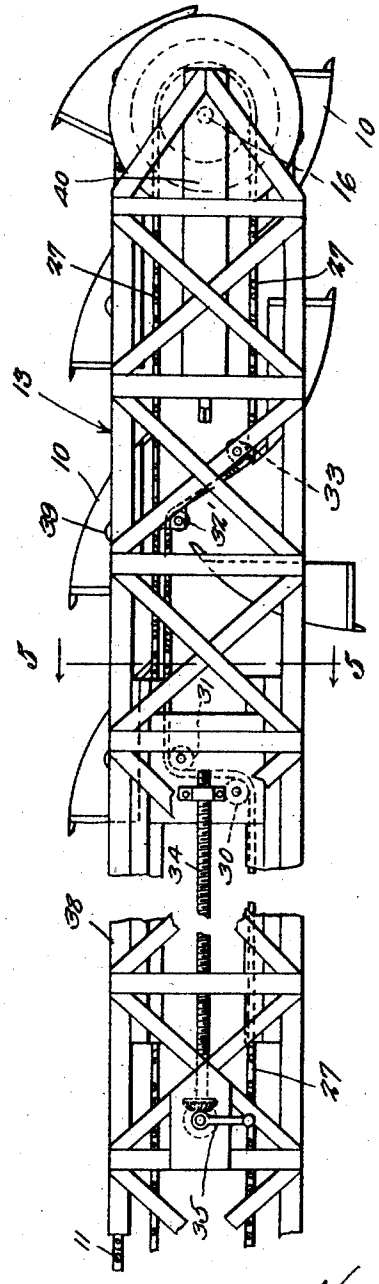
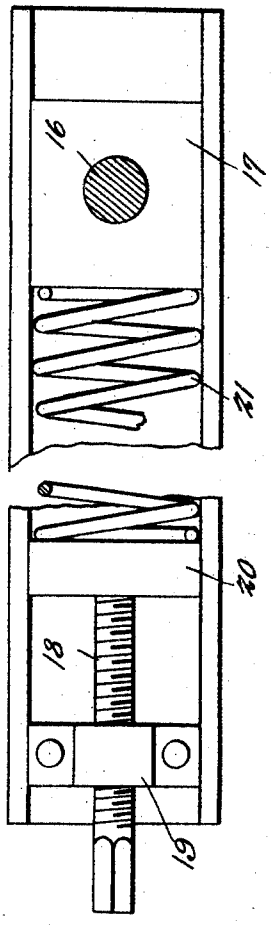


Fig. 3.



Inventor

Henry J. Fischer,

By Henry J. Bennington.

Attorney

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3 SHEETS—SHEET 3.

Fig. 4.

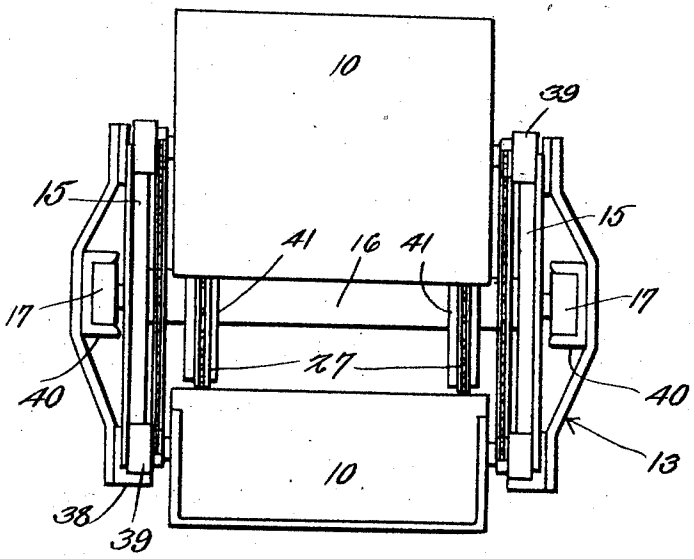
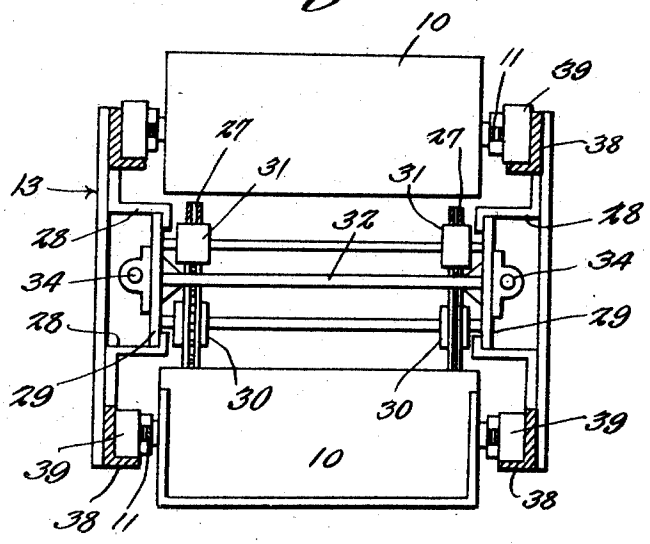


Fig. 5.



Inventor

Henry J. Fischer

By Henry F. Pennington

Attorney

UNITED STATES PATENT OFFICE.

HENRY J. FISCHER, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-SIXTH TO ROBERT H. HAASE AND ONE-SIXTH TO FREDERICK C. DETTMAR, BOTH OF BALTIMORE, MARYLAND.

CONVEYER.

1,415,869. Specification of Letters Patent. Patented May 16, 1922.

Application filed June 23, 1921. Serial No. 479,745.

To all whom it may concern:

Be it known that I, HENRY J. FISCHER, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

This invention relates to apparatus for picking up material and conveying the same to a distant point, and its object is to provide a novel and improved apparatus of this kind by which it is made possible to readily distribute material over large areas, and also to fill deep trenches, excavations, and the like.

With the object stated in view, the invention consists in a combination and arrangement of elements to be hereinafter described in detail and claimed, and in order that the same may be better understood, reference is had to the accompanying drawings forming a part of this specification.

In the drawings—

Figure 1 is an elevation of the apparatus, the showing being largely diagrammatic; Fig. 2 is an enlarged view in side elevation, showing the discharge end of the apparatus; Fig. 3 is a sectional detail showing a chain-tightening means; Fig. 4 is an end view of the parts shown in Fig. 2, and Fig. 5 is a cross-section on the line 5—5 of Fig. 2.

Referring specifically to the drawings, the conveying means of the apparatus consist of a series of buckets 10 which are carried by a pair of parallel and endless drive chains 11. The buckets are suspended between the chains, and they are connected thereto in any approved manner, a pivotal connection being provided so that the buckets may tilt to discharge their contents.

The apparatus also includes a suitable frame of skeleton construction, which is composed of end sections 12 and 13, and an intermediate section 14. At the outer extremities of the end sections of the frame are guide sprocket wheels 15 for the chains 11, and in order that the chains may be tightened, the shaft 16 of the sprocket wheels at the end of the frame section 13 is mounted in a slidably supported bearing block 17 adjustable by a screw 18 threaded through a stationary nut 19 and bearing against a slide block 20, between which latter and the bearing block is interposed a coiled spring 21 tending to constantly urge the latter in a direction to tighten the chains. If any looseness in the chains develops, it is necessary only to advance the screw 18, which advances the slide block 20 to further compress the spring 21, and the latter then advances the block 17 to take up the slack in the chains in an obvious manner.

The end sections 12 and 13 of the frame are pivotally connected to the intermediate section 14 at the points 22, so that they may be swung in a vertical direction to extend from the intermediate section with a downward incline. Fig. 1 shows the end section 12 swung down, and the end section 13 extending straight out from the intermediate section 14, but this position of the end sections may be reversed, and both of said sections may also be set inclined or to extend straight out from the intermediate section, according to the nature of the terrain or the character of the work desired to be done by the apparatus.

In Fig. 1 the inclined section 12 is the receiving end and it is shown extending into a trench, whereas the section 13 extending straight out from the intermediate section 14 is the discharging end, and is shown as discharging over the edge of an embankment.

Any suitable means may be provided for adjusting the end sections 12 and 13 as described. Fig. 1 shows hoisting lines 23 suitably connected to said sections, said lines being operated by drums 24.

The intermediate section 14 is supported by a truck or other suitable traveling support 25, the same carrying the drums 24, and also the driving means 26 of the chains 11.

In order that the material may be distributed over a large area, a means is provided for varying the point of discharge of the buckets 10, so that their discharge may take place at any point between the ends of the section 13. This control of the discharge will now be described.

As pointed out hereinbefore, the buckets 10 are pivotally supported by the chains 11 so that they may tilt to dumping position, and hence by holding the buckets so that they cannot tilt until they reach the desired point of discharge, and providing an adjustable bucket-releasing means, it is possible to permit the discharge to take place at any point along the section 13 of the frame.

The buckets 10 are so pivoted to the chains

11 that they are unbalanced and have a normal tendency to tilt to dumping position with a forward motion, and hence a means must be provided for preventing such tilting movement until the desired point of discharge is reached. This means consists of a pair of chains 27 running parallel to the path taken by the buckets, and positioned to be engaged by the rear ends thereof. At the point of discharge, the chains 27 are lead away from the buckets, and the latter now being free of said chains automatically tilt and dump their contents. The means whereby the chains 27 are lead away from the buckets are clearly shown in Figs. 2 and 5. The sides of the frame section 13 carry rails 28 on which are mounted slides 29 carrying vertically spaced guide pulleys 30 and 31. The slides 29 are connected by a cross member 32 to move as one. At the same level as the pulleys 30 and 31, are guide pulleys 32′ and 33 over which the chains 27 also pass, said pulleys 32′ and 33 being supported by the frame section 13. The slides 29 are operated by screws 34 to change their position in the direction of the length of the frame section 13, these screws being operated through a suitable gearing from a hand crank 35.

The guide pulleys 30 and 31 lead the chains 27 in a vertical direction away from the buckets 10, and when the latter reach the gap, they are no longer held in carrying position, but are free to tilt to dumping position, as clearly shown in Fig. 2. The pulleys 33 are positioned to lead the chains 27 back to bucket-engaging position and when the buckets reach the same they are swung back to carrying position and pass in this position over the sprocket wheel 15 at the extremity of the frame section 13, and then pass to the upper run of the apparatus back to the receiving end at the extremity of the frame section 12 where they pass over the sprocket wheel 15 at this end and then to the lower run. The chains 27 run parallel to the drive chain 11 and close enough to the buckets so that they may be engaged by the rear ends of the latter, except where the hereinbefore described gap occurs, and also at the receiving end of the apparatus, at which latter are two guide pulleys 36 for spacing the chains 27 at this point from the buckets so as not to interfere with the latter as they pass the sprocket wheel 15 at this end and swing over to receiving position.

Due to the incline of the section 12 of the frame, the chains 27 are here set higher than where they run along the frame sections 13 and 14, to properly hold the buckets in carrying position as they are ascending along the section 12. Intermediate its ends, at the upper run, the chains 27 pass over drive sprocket wheels 37 obtaining power from the same source as the drive chains 11, it being understood that the two sets of chains are driven at the same rate of speed so that there is no relative sliding movement between the buckets 10 and the chains 27. If the frame section 12 is set horizontal similar to the frame section 13, it will be necessary to lower the bottom guide pulley 36 to bring the chains 27 lower down for holding the buckets 10 in proper carrying position.

The sides of the frame sections may be provided with guide rails 38 for rollers 39 carried by the pivotal connections of the buckets 10 with the chains 11. The shaft 16 is preferably supported by two bearing blocks 17 mounted on rails 40 carried by the sides of the frame section 13. At the extremity of the frame section 13, the chains 27 pass over sprocket wheels 41 carried by the shaft 16, said chains being therefore capable of being tightened by the same tightener means as that of the chains 11.

I claim:

1. A conveying apparatus comprising an endless driving element, pivoted buckets carried by said element and unbalanced to have a normal tendency to tilt to dumping position, a restraining element running parallel to the path of the buckets and engageable thereby to prevent tilting thereof to dumping position, said element having a portion which is spaced from the buckets a distance to clear the same and permit tilting, and means for changing the position of said spaced portion in the direction of the length of the apparatus.

2. A conveying apparatus comprising an endless driving element, pivoted buckets carried by said element and unbalanced to have a normal tendency to tilt to dumping position, a restraining element running parallel to the path of the buckets, and engageable thereby to prevent tilting thereof to dumping position, said element having a portion which is spaced from the buckets a distance to clear the same and permit tilting, and another spaced portion to permit tilting of the buckets at the receiving end of the apparatus to receiving position, and means for changing the position of the first-mentioned spaced portion in the direction of the length of the apparatus.

3. A conveying apparatus comprising an endless driving element, pivoted buckets carried by said element and unbalanced to have a normal tendency to tilt to dumping position, and a flexible restraining element driven parallel to the path of the buckets and engageable thereby to prevent tilting thereof, said element having a portion which is spaced from the buckets a distance to clear the same and permit tilting.

4. A conveying apparatus comprising an endless driving element, pivoted buckets carried by said element and unbalanced to have a normal tendency to tilt to dumping posi-

tion, and a flexible restraining element driven parallel to the path of the buckets and engageable thereby to prevent tilting thereof, said element having a portion which is spaced from the buckets a distance to clear the same and permit tilting, and another spaced portion to permit tilting of the buckets at the receiving end of the apparatus to receiving position.

5. A conveying apparatus comprising an endless driving element, pivoted buckets carried by said element and unbalanced to have a normal tendency to tilt to dumping position, a flexible restraining element driven parallel to the path of the buckets and engageable thereby to prevent tilting thereof, said element having a portion which is spaced from the buckets a distance to clear the same and permit tilting, and means for changing the position of said spaced portion in the direction of the length of the apparatus.

6. A conveying apparatus comprising an endless driving element, pivoted buckets carried by said element and unbalanced to have a normal tendency to tilt to dumping position, a flexible restraining element driven parallel to the path of the buckets and engageable thereby to prevent tilting thereof, said element having a portion which is spaced from the buckets a distance to clear the same and permit tilting, and another spaced portion to permit tilting of the buckets at the receiving end of the apparatus to receiving position, and means for changing the position of the first-mentioned spaced portion in the direction of the length of the apparatus.

In testimony whereof I affix my signature.

HENRY J. FISCHER.