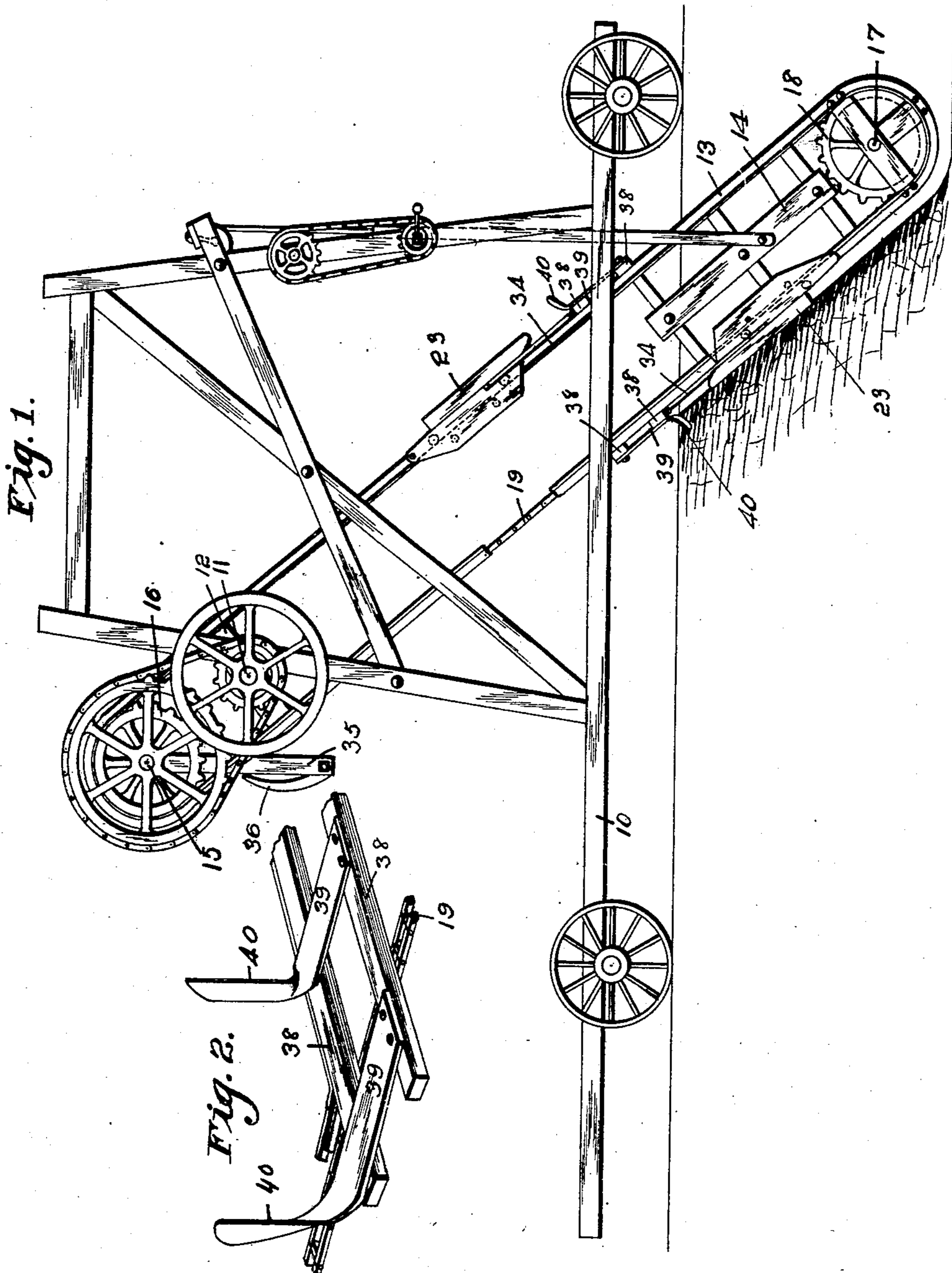


I. N. LONG.
CONVEYER FOR DITCHING MACHINES.
APPLICATION FILED MAY 22, 1908.

912,390.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 1.



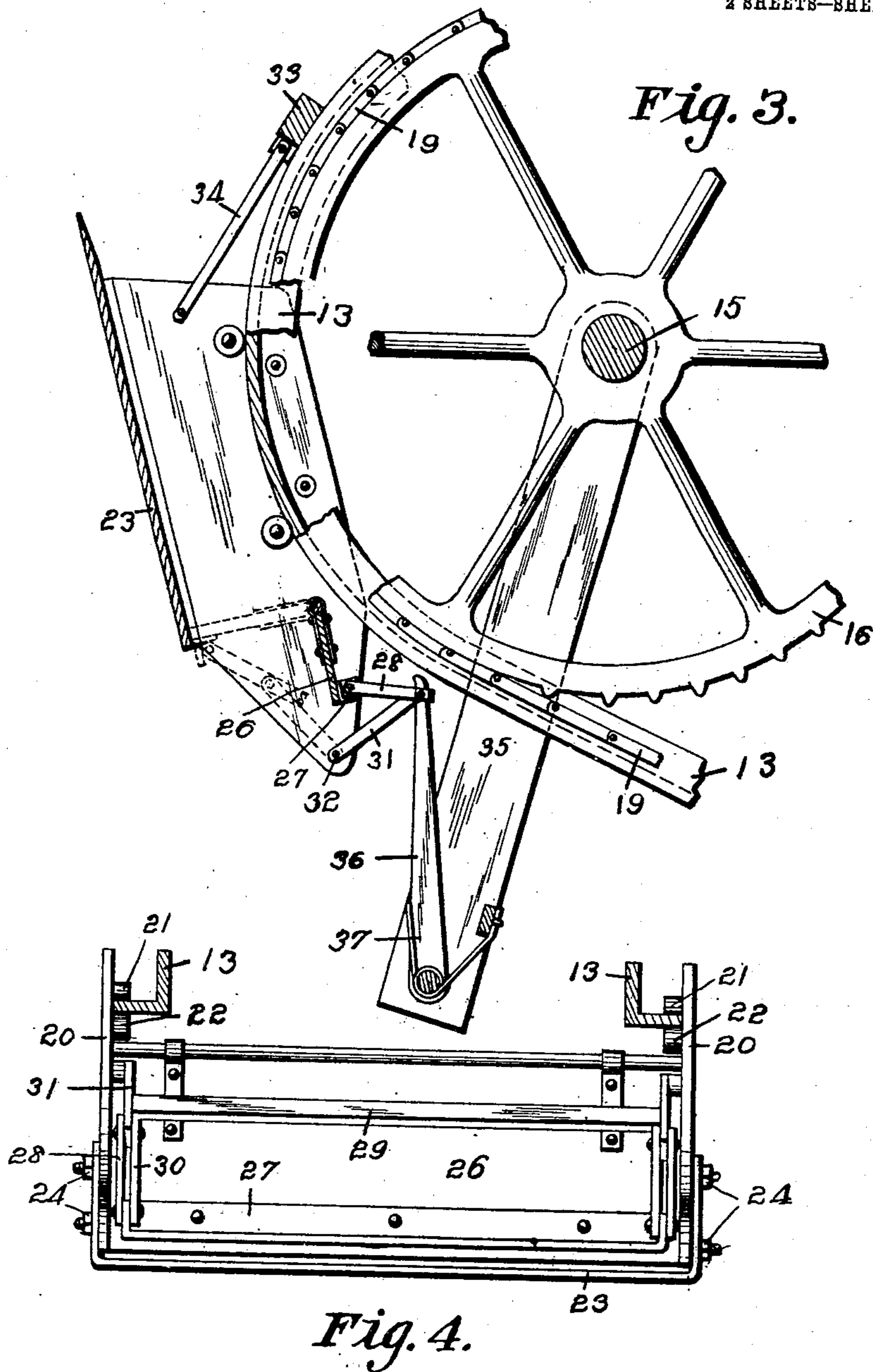
Witnesses.
F. C. Dahlberg
A. L. Haguer

Inventor.
I. N. Long,
by Orwig & Lane Attys

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UNITED STATES PATENT OFFICE.

ISAAC N. LONG, OF MARSHALLTOWN, IOWA.

CONVEYER FOR DITCHING-MACHINES.

No. 912,390.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed May 22, 1908. Serial No. 434,369.

To all whom it may concern:

Be it known that I, ISAAC N. LONG, a citizen of the United States, residing at Marshalltown, in the county of Marshall and State of Iowa, have invented a certain new and useful Conveyer for Ditching-Machines, of which the following is a specification.

The object of my invention is to provide a conveyer of simple, durable and inexpensive construction, and of light weight, adapted for use in connection with a ditching machine, and so arranged that it will readily and easily remove material from a ditch and automatically dump it at an elevated point with a minimum of applied power.

A further object is to so arrange the bucket with relation to its supporting track that it may be readily and easily attached thereto or removed therefrom and when attached, it will be firmly held in proper position with relation to the track, and further to provide improved means for automatically discharging the contents of the bucket.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of a part of the ditching machine with my improved conveyer applied thereto. Fig. 2 shows an enlarged, detail, perspective view of a part of one of the conveyer chains with the cutting blades for loosening earth attached thereto. Fig. 3 shows an enlarged, detail view, partly in section of one of the conveyer buckets and the supporting wheel over which the bucket passes at the upper end of its movement, and connected parts, and Fig. 4 shows a rear elevation of the bucket with its rear end in a closed position. Said view also shows the supporting tracks in position relative to the bucket.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the frame of the ditching machine. Mounted upon the frame is a shaft 11, upon which the conveyer tracks are pivotally supported by means of a brace 12. These tracks are formed of two angle bars 13, each comprising an upper and lower straight member, and a curved upper end and a curved lower end, so that a continuous track is provided, said bars being parallel with each

other throughout their entire length, and being connected with each other by the brace 12 and by the supporting frame 14. At the upper end of the track, is a shaft 15 upon which two sprocket wheels 16 are mounted and at the bottom of the track is a shaft 17 on which the sprocket wheels 18 are mounted. Two sprocket chains 19 are passed around said wheels 16 and 18, the conveyer box being attached to said sprocket chains as will, hereinafter, appear.

Suitable means are provided for rotating the shaft 15 to advance the sprocket chains 19, and suitable means are also provided for raising and lowering the lower end of the tracks. These means, however, form no part of my present invention and are, therefore, not herein specifically shown or described.

The conveyer buckets of which there may be one or more, each comprise two flat side members 20 each having on its inner face two pairs of rollers 21 and 22 designed to engage the tracks 13 in the manner shown in Fig. 4. Each bucket also comprises a bottom piece 23 with its side edges inclined upwardly at right angles to the bottom, and detachably connected with the side 20 by means of the bolts 24. In this way the sides are held in proper position with relation to each other and also with relation to the tracks 13. I connect the buckets with the tracks by first placing the sides in proper position relative to the tracks and then connecting the bottom piece with the sides.

Mounted between the sides 20 at a point above the rear end of the bottom 23, is a shaft 25 having attached to it, a bucket end 26 capable of swinging downwardly to position adjacent to the rear end of the bottom to close the rear end of the bucket and also capable of swinging upwardly to position substantially parallel with the bottom to open the rear end of the bucket. Attached to the rear of the bucket end 26, is a bar 27 having pivoted to each end a link 28 and a cross bar 29, the said cross bar having ends 30 parallel with the links 28. Pivoted between the links 28 and the parts 30, are the links 31 which are also pivoted to the sides of the bucket at 32. The links are so arranged and proportioned that when the end 26 is in its closed position, the links 28 and 31 will be in line with each other, as shown by dotted lines in Fig. 3.

I provide for supporting the forward end of the bucket on the conveyer chains by

means of a cross piece 33 attached to both chains and connected with the sides of the bucket at the front thereof by means of the links 34.

5 Assuming that the bucket end is in its open position, it is obvious that it will so remain during the return portion of the bucket movement and then when the bucket turns around at the lower end of the supporting track, 10 the bucket end will drop by gravity to its closed position and will there be firmly held by means of the links.

I have provided for automatically opening the bucket end to thereby discharge the contents of the bucket as follows: Mounted on 15 the support 35, beneath the shaft 15, is a trip arm 36, yieldingly held by a spring 37 in a direction toward the shaft 15. The said arm is so shaped and arranged, that when 20 the forward end of the bucket strikes it, the arm will yield and permit the bucket to pass beyond it, and then, as soon as the bottom of the bucket passes beyond the end of the arm, the arm will spring upwardly and en- 25 gage the cross piece 29 and retain it until it has thrown the bucket to its open position and permitted the contents of the bucket to be discharged, after which the bucket end will be held open by gravity during the rest 30 of its upward movement around the sprocket wheels 16, and also during its return movement to the lower end of the supporting track, whereupon the bucket end will automatically close as before described.

35 In order to facilitate the work of the bucket, I have attached to the conveyer chains 19, in front of each bucket, two cross pieces 38, on one of which, I have fixed a number of cutting blades 39, with their ends 40 projecting outwardly from the sprocket chains, provided with cutting edges 40. The blades at the outer ends of the cross piece are, preferably, so shaped that they cut 45 through the earth and move it toward the center of the ditch, while those at the central portion of the cross pieces are so shaped that they will simply loosen the earth, so that the buckets may more readily cut into it. The cross piece 38 that is not fixed to 50 the blades is provided for the purpose of forming a support for the rear ends of the blades to hold them firmly toward the earth, and the blades are not attached to said cross pieces for the reason that if so attached, 55 they could not turn around over the sprocket wheels at the end of the track.

In practical use and assuming the parts to be arranged as shown in fig. 1, it is obvious that as the forward end of each bucket 60 passes around the track at the lower end of the conveyer, the cutting edge thereof will engage the earth and the bucket will be gradually filled as it rises. The cutting blades 39 will serve to loosen the earth so 65 that the buckets may be filled with a mini-

mum of applied power. Then when the buckets reach the trip arm 36 upon passing around the curve at the upper end of the track, the bucket end will be opened automatically and the contents of the bucket dis- 70 charged, then the bucket will travel on its return trip with the end open so that any earth that might possibly adhere to the bucket, may drop out, so that each bucket may be thoroughly emptied before reaching 75 the bottom of the ditch.

By having the bucket bottom made detachable as shown, the bucket may be easily and quickly attached to the track and when 80 attached will be firmly held on the track. Furthermore, if it is desired to sharpen or repair the bucket this may easily be done.

I claim as my invention.

1. In a device of the class described, the combination of conveyer chains, a track, a 85 bucket slidably mounted upon the track, and links pivoted to the chains and to the bucket for advancing the bucket along the track.

2. In a device of the class described, the 90 combination of conveyer chains, a track, a bucket comprising two sides, two rollers on each side to engage with the track, a bottom detachably connected with the sides for holding them firmly in connection with the 95 track.

3. In a device of the class described, the combination of conveyer chains, a track comprising two angle bars spaced apart, a 100 bucket connected with the chains and comprising two flat sides, two rollers on each side to engage the angle bars, and a bottom overlapping the sides and detachably connected therewith.

4. In a device of the class described, the 105 combination of two chains, a track formed of two angle bars spaced apart, each having a parallel central portion and rounded ends to form a continuous track, a bucket having two pairs of rollers attached to each side to 110 engage said angle bars, a cross piece fixed to the chains in front of the bucket, and links pivoted to the cross piece and to the sides of the bucket.

5. In a device of the class described, the 115 combination of a bucket comprising two sides and a bottom, a bucket end hinged between the sides designed to swing from position adjacent to the bottom rearwardly and away from the bottom, two links pivoted to 120 the said end, two links pivoted to the sides and also to the aforesaid links, said links being so arranged as to stand in line with each other when the end is closed, and a cross piece extending across the rear of the bucket 125 and attached to said links near the point where they are pivoted together.

6. In a device of the class described, the combination of a bucket comprising two 130 sides and a bottom, a bucket end hinged be-

tween the sides designed to swing from position adjacent to the bottom rearwardly and away from the bottom, two links pivoted to the said end, two links pivoted to the sides and also to the aforesaid links, said links being so arranged as to stand in line with each other when the end is closed, and a cross piece extending across the rear of the bucket and attached to said links near the point where they are pivoted together, and an arm arranged in the path of the bucket and designed to engage said cross piece as the bucket moves past it to thereby open the bucket end.

7. In a device of the class described, the combination of a bucket comprising two sides and a bottom, a bucket end hinged between the sides designed to swing from position adjacent to the bottom rearwardly and away from the bottom, two links pivoted to the said end, two links pivoted to the sides and also to the aforesaid links, said links being so arranged as to stand in line with each other when the end is closed, and a cross piece extending across the rear of the bucket and attached to said links near the point where they are pivoted together, and a yielding arm arranged in the path of the bucket and designed to engage said cross piece as the bucket moves past it to thereby open the bucket end.

8. In a device of the class described, the combination of conveyer chains, a track comprising two angle bars spaced apart, each having straight central portions and rounded

ends to form a continuous track, a bucket comprising two flat sides, two pairs of rollers on each side to engage the angle bars, a bottom in the bucket, means for connecting the bucket with the chains, a bucket end pivoted to the bucket sides, two links pivoted to the bucket end and extended rearwardly, two links pivoted to the bucket sides and extended forwardly and pivoted to the aforesaid links, a cross piece connected to the links at the point where they are united, and a spring actuated arm arranged to be engaged by the bottom of the bucket at the time the bucket approaches the curved portion at the upper end of the track, said parts being so arranged that after the bottom of the bucket passes the spring arm, the cross piece will be engaged by said spring arm, and a bucket end opened thereby.

9. In a device of the class described, the combination of conveyer chains, an endless guide track, a conveyer bucket attached to the chains and sidingly mounted on the guide track, two cross pieces fixed to the chains in front of the bucket, blades fixed to the forward one of said cross pieces and projecting rearwardly over the rear one, said blades having their rear end formed with cutting edges for the purposes stated.

Des Moines, Iowa, May 8, 1908.

ISAAC N. LONG.

Witnesses:

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