Feb. 6, 1934. F. B. PEEBLES 1,945,754

TRAVERSE ROPE TAKE-UP

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Fig. 1

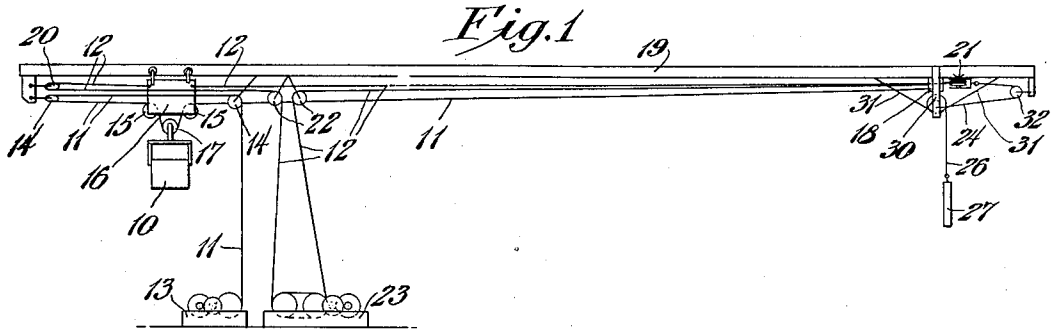


Fig. 4

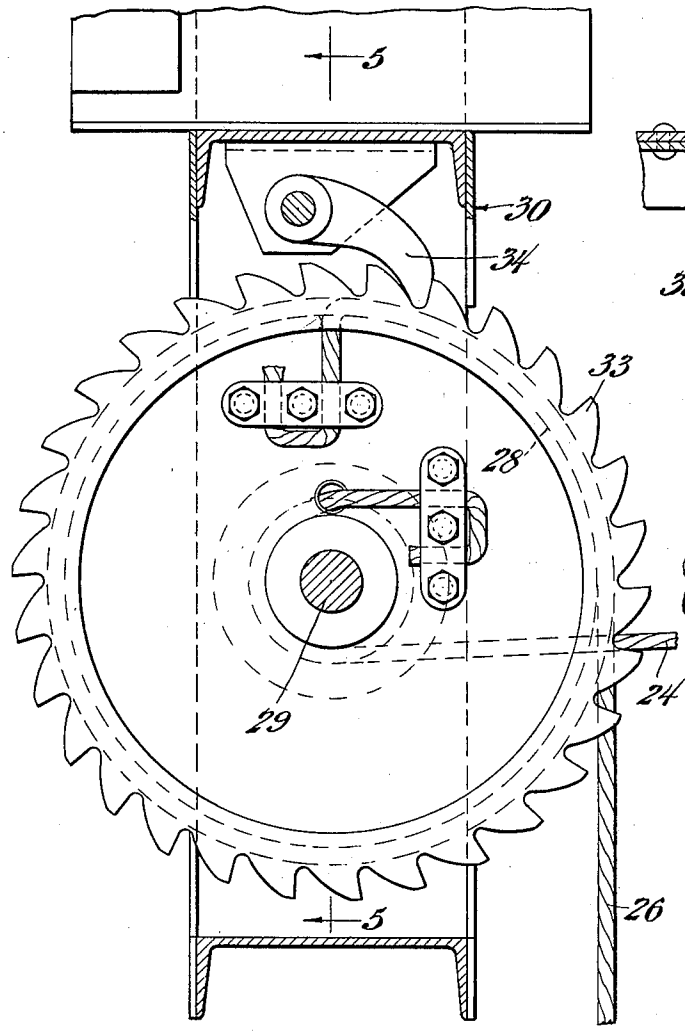
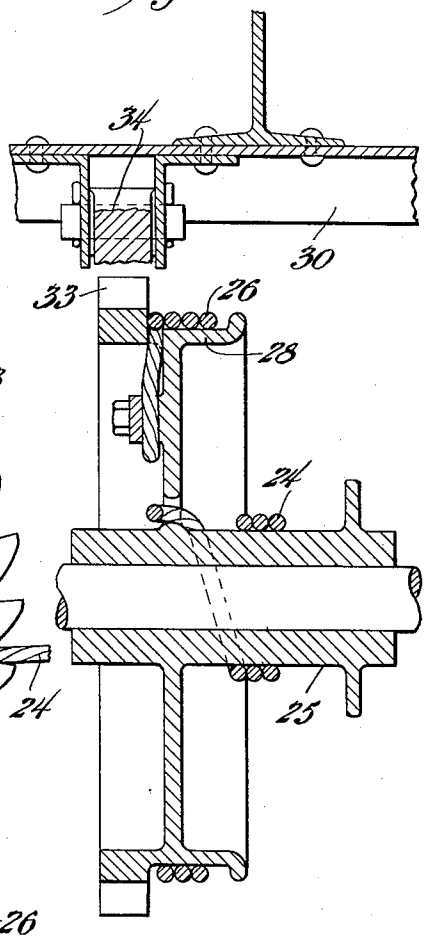


Fig. 5



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Fig. 2

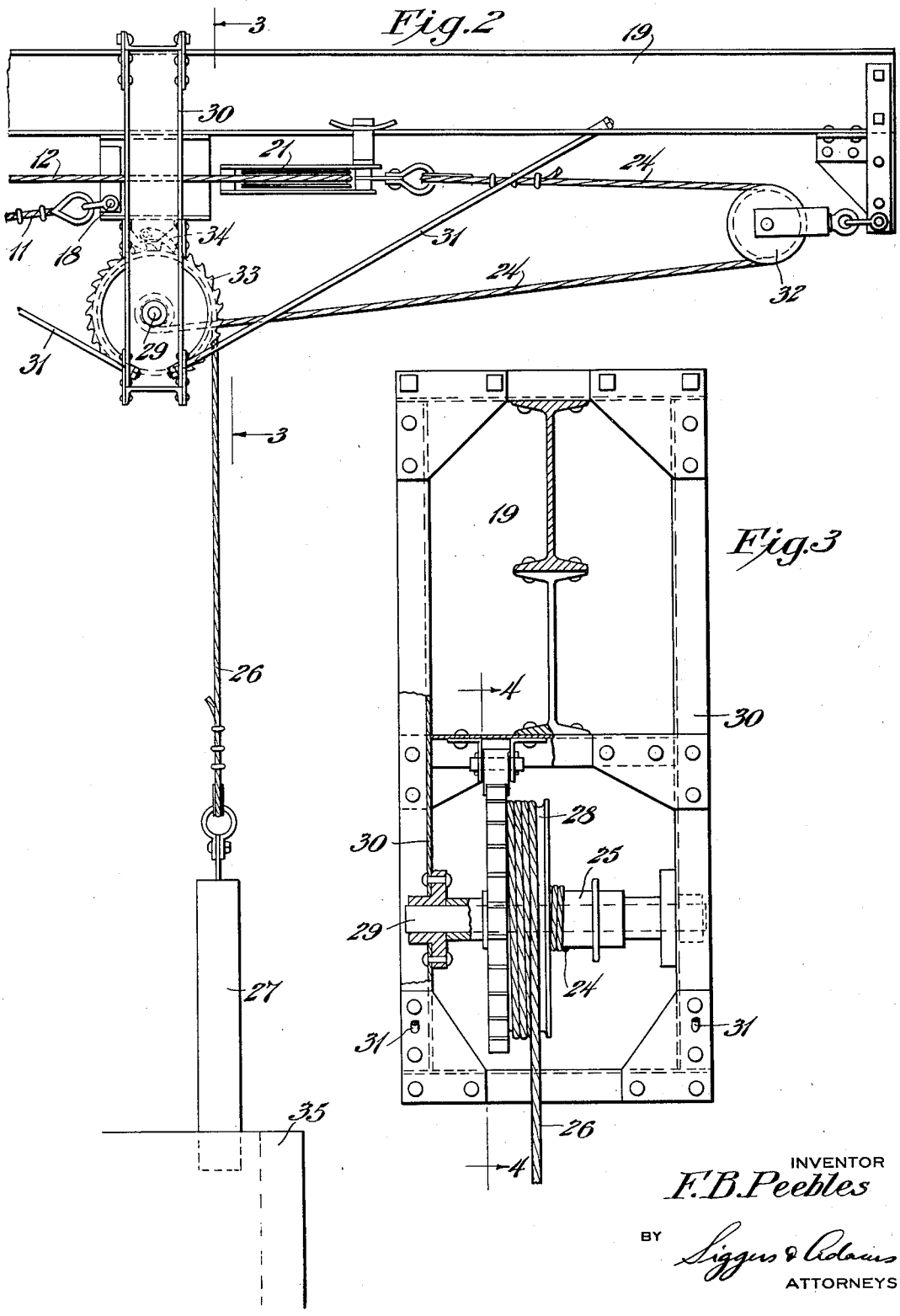


Fig. 3

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Patented Feb. 6, 1934

1,945,754

UNITED STATES PATENT OFFICE

1,945,754

TRAVERSE ROPE TAKE-UP

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Application May 13, 1931. Serial No. 537,170

1 Claim. (Cl. 104—196)

This invention relates to trolley bucket installations and, among other objects, aims to provide improved means for automatically taking up slack and maintaining a predetermined tension in the trolley traverse rope so as to minimize whipping of the rope and also slippage of rope on the driving drum.

In the accompanying drawings showing a preferred embodiment of the invention,—

Fig. 1 is a diagrammatic view in elevation of a trolley bucket installation and showing the rope take-up;

Fig. 2 is an elevation on a much larger scale of the right hand end of Fig. 1 showing the take-up;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 2 and drawn on a still larger scale;

Fig. 4 of a sectional view taken on the line 4—4 of Fig. 3 but drawn on a larger scale; and

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Referring to Fig. 1 of the drawings, the automatic take-up device is there shown applied to a typical trolley bucket installation. Such installations include generally a bucket 10, a hoist rope 11 supporting the bucket and a traverse or trolley rope 12 for effecting horizontal movement of the bucket. The hoist rope 11 is wound on the drum of a hoisting unit 13 and passes over idler sheaves 14 on the track, over sheaves 15 on the trolley 16 and under the bucket sheave 17 and is dead-ended as at 18 to the track 19 along which the trolley travels. The weight of the bucket always maintain this rope taut, except when the bucket is supported from below. On the other hand, the trolley rope 12 has its ends secured to the opposite ends of the trolley and is guided by idler sheaves 20, 21 and 22 to the power unit 23, being wrapped around two grooved drums thereof to assure the utmost traction possible, as shown, for example, in the Harding application, filed May 27, 1927, Ser. No. 194,842, assigned to the assignee of this application.

In such installations, however, slippage of the trolley rope on the drums of the trolley unit frequently occurs and the horizontal portions of the trolley rope have a tendency to whip when the trolley is suddenly started or stopped, causing various operating difficulties. This has overcome to a certain degree by attaching a cable to the sheave 21, which is slidably mounted on the track, guiding the cable over a sheave at the end of the track and securing a weight to the lower end of the cable, as disclosed in the Harding Patent No. 1,631,030. It has been found, however, that a relatively large weight is required which occasionally causes this cable to break, whereupon the weight falls to the ground, sometimes causing damage. Furthermore, the weight of the trolley rope will cause the sheave 21 to slide along the track and slacken the trolley rope to such an extent that the installation cannot be operated until the broken cable is replaced. With the present device, not only is a much smaller weight required, thereby reducing the tendency toward breakage in the weight cable but also the traveling sheave 20 is held in position to prevent the trolley rope from becoming so slack that the installation is made inoperable, in case the weight cable breaks.

To this end, a cable 24 is connected to the slidable sheave 21 and is wound on a relatively small drum 25 while another cable 26 having a depending weight 27 is wound on a relatively large drum 28 integral with or secured to drum 25. As best shown in Figs. 2 and 3, the integral drums 25 and 28 are journaled on a shaft 29, journaled in the side members of a frame 30 secured to and depending from the track 19 near the sheave 24. The frame 30 is preferably braced by means of the rods 31 extending between the lower portions of the frame and the track. The cable 24, in this instance, extends rearwardly from the sheave block 21 and passes around a guide sheave 32 carried by the track and thence forwardly to the drum 25. It will be seen that weight 27 will tend to rotate the drum 28 clockwise and thereby wind the cable 24 on drum 25, and move the sheave block 21 toward the rear end of the track as the cable 12 stretches. Thus the cable 12 is maintained under constant tension.

In order to prevent the trolley rope 12 from slackening should the weight cable break, the periphery of the drum 28 is provided with ratchet teeth 33 adapted to be engaged by a pawl 34 pivoted on the frame 30. Thus the cable 24 on drum 25 cannot unwind, and a new weight cable can be installed without shutting down the plant.

Installations of this kind are usually mounted over material-storing bins or silos. The upper portion 35 of a bin is shown in Fig. 2 to show the position of the take-up device relative to the bins. It will be noted that the drums are so located that the weight 27 descends into a bin, so that should the cable 26 break, the weight would fall into the bins and not cause any damage as might happen should it fall outside the bins. Moreover, as the drum 28 is several times larger than the arm 25, it is apparent that the weight 27, and also its cable, may be relatively small as compared with an in-

stallation wherein the weight cable is connected directly to the slidable sheave. Hence, the danger of the cable 26 breaking is minimized.

Obviously, the present invention is not restricted to the particular embodiment thereof herein shown and described.

What I claim is:—

An automatic slack take-up device for the traverse ropes of trolley bucket systems comprising, in combination, a relatively large drum having a pawl and ratchet permitting rotation thereof in one direction only; a relatively small drum coaxial with and secured to the large drum; a freely rising and descending weight; a cable attached to the large drum and supporting the weight so that the weight tends to rotate the large drum in the direction permitted by the pawl and ratchet; another cable attached to the smaller drum and adapted to be wound thereon by the descent of the weight; and means connecting the last-mentioned cable with the traverse ropes.

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