

March 15, 1960

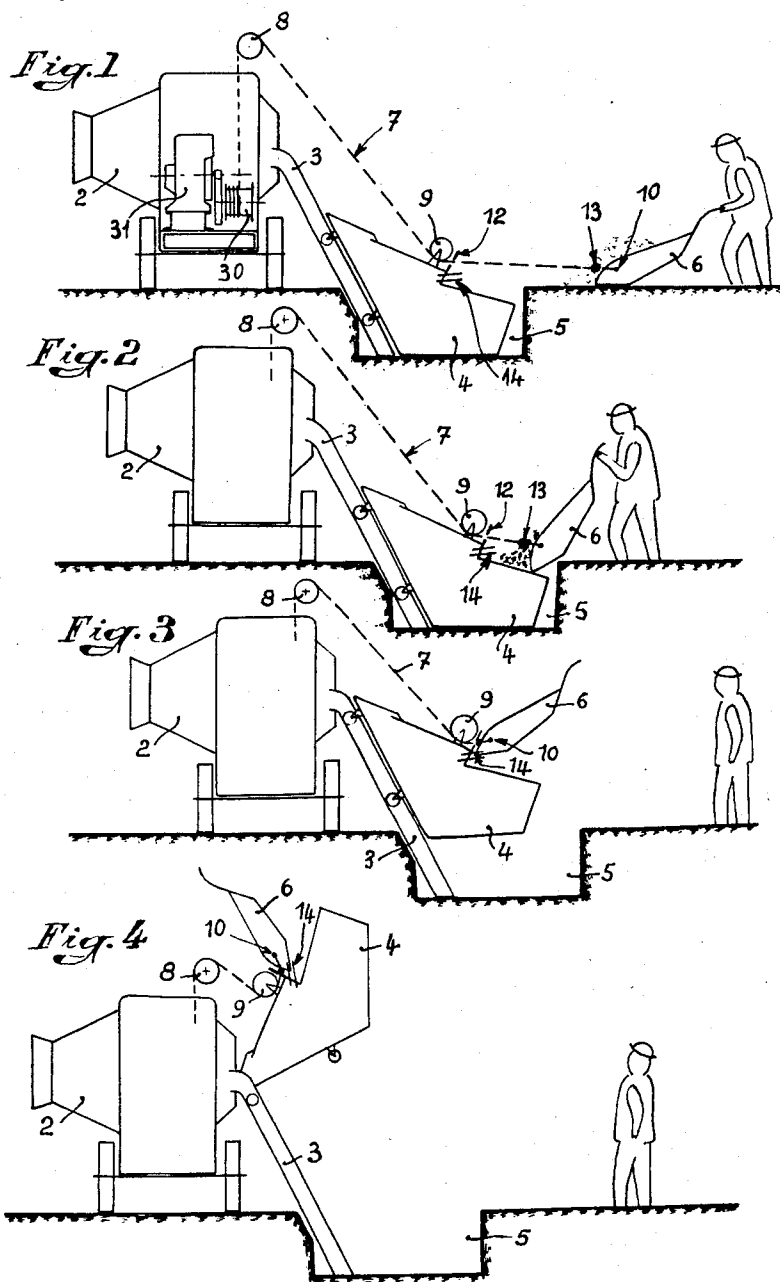
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2,928,561

LOADING MEANS FOR CONCRETE MIXERS AND THE LIKE

Filed July 16, 1957

3 Sheets-Sheet 1



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Fig. 5

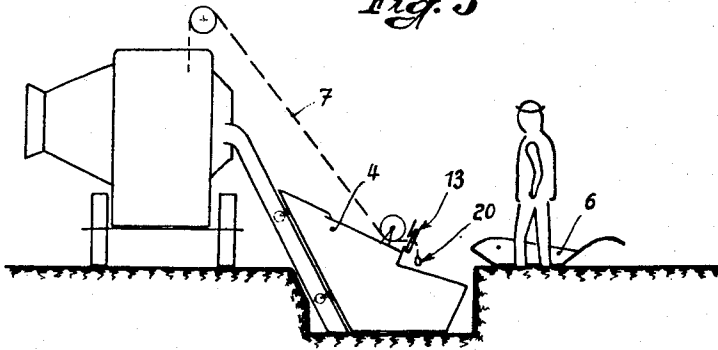


Fig. 6

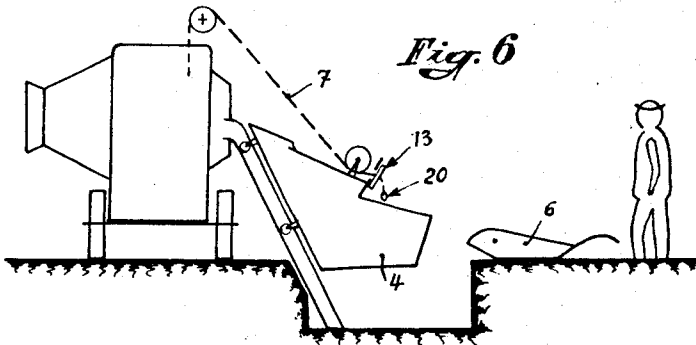


Fig. 7

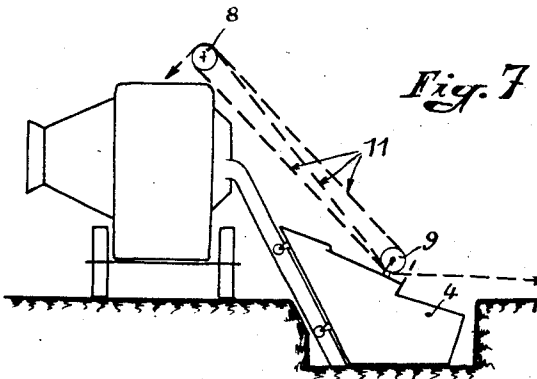
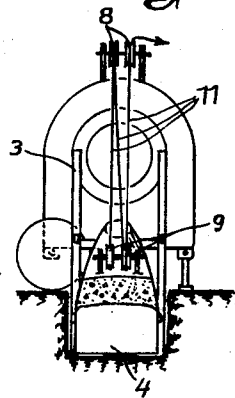


Fig. 12



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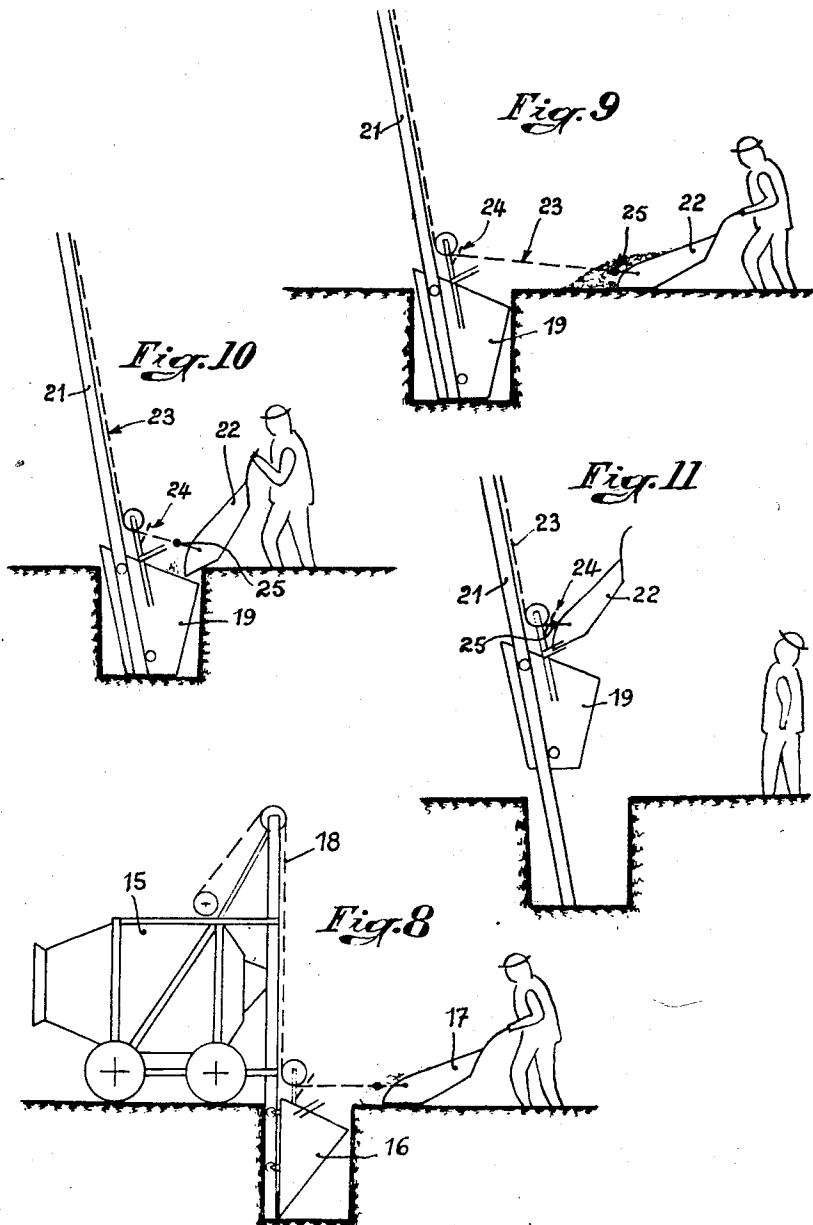
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3 Sheets-Sheet 3



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2,928,561

LOADING MEANS FOR CONCRETE MIXERS
AND THE LIKE

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Claims priority, application France July 21, 1956

2 Claims. (Cl. 214—92)

Movable concrete mixers used on building yards are provided with a skip which is filled either through a shovel or a wheel barrow or again by means of railroad trucks fed through storing hoppers or else as is more generally the case nowadays by means of hand-operated scrapers for feeding their mixing container with the desired aggregated material.

Such scrapers have a tendency to be more widely used since they allow obtaining the desired loading throughput under control of a single man for the loading without requiring any substantial appliances such as hoppers and loading cranes as is generally the case when feeding by means of tip-wagons. The agglomerated material constituted by sand, gravel, slag and the like is as a matter of fact stored on the ground in proximity with the concrete mixers and it is removed by the shovel of the scraper which latter is drawn along by means of a cable through a special winch which feeds the material into the skip of the concrete mixer. Said scrapers require however the use of special winches for the drawing of their shovels.

In order to cut out this drawback, I have devised an improvement in concrete mixers and the like which consists in associating the shovel of a hand-operated scraper with the winch and cable actuating the skip of the concrete mixer or the like and thus the same cable ensures in succession the drawing of the scraper shovel and the raising of the skip of the concrete mixer or the like.

Obviously, said improvement is applicable more particularly to concrete mixers, but it is also applicable of course to any other raising and hoisting apparatus incorporating skips.

The raising movement of the skip should be performed only when it is full; to this end the skip and the scraper are provided with connecting abutment means engaging each other when the scraper shovel has entered a position above the skip, so as to allow a raising of said skip through a traction exerted on the scraper.

Cooperating guiding members are furthermore provided advantageously on the skip and on the shovel of the scraper, so as to constrain the latter to remain in the same position with reference to the skip when the latter is turned upside down with reference to the concrete mixer.

The skip may furthermore be provided with locking means holding it in its lowermost position during its filling so that it may not be raised in an untimely manner through a traction exerted on the cable and intended to draw only the scraper shovel.

I have illustrated by way of example in the accompanying drawings a few embodiments of the invention, which should not be construed in a limiting sense. In said drawings:

Figs. 1, 2, 3 and 4 are elevational side views showing the different stages of operation of the loading system according to my invention as applied to a concrete mixer with an obliquely moving skip.

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Figs. 5, 6 and 7 show in elevational view two modifications of last mentioned loading system.

Fig. 8 shows an application of the invention to a concrete mixer with a vertical skip.

Figs. 9, 10 and 11 show three operative stages of a loading system according to my invention in its general application to hoisting means.

Fig. 12 is a view along line *a—b* of Fig. 7.

Figs. 1, 2, 3 and 4 illustrate the loading system forming the object of my invention as applied to a concrete mixer; in said figures, 2 designates the container of the concrete mixer, 3 the slideway for the skip and 4 the actual skip which is lowered for its loading inside the pit 5. The shovel of the hand operated scraper is shown at 6.

30 designates the drum of the winch of the concrete mixer, said winch being actuated by the motor 31 and controlling the winding of the cable 7.

Said cable passes in succession over a transmission pulley 8 carried by the concrete mixer and under a transmission pulley 9 carried by the skip 4 and its end is secured at 10 to the scraper shovel 6. Between the pulley 9 and the scraper 6, the cable 7 passes through a perforation formed in a plate 12 rigid with the skip 4 and it carries in proximity with said scraper 6 a stop 13. The skip 4 carries furthermore a guideway 14.

The skip 4 being set in the pit 5, its filling is obtained through an emptying of the shovel 6 of the scraper into said skip. To this end, said shovel is drawn in by the cable 7 wound over the winch drum 30, so that it is filled and pushes forwardly as illustrated in Fig. 1 a mass of aggregated material. When the shovel has been brought into a position above the skip 4, it is turned over into the skip as illustrated in Fig. 2, or again it pours into said skip the material urged forwardly by said shovel.

When after a number of operations, i.e. after a number of stages emptying or pouring out the material out of the shovel 6, the skip 4 is full, the cable 7 is drawn forwardly until the stop 13 engages the plate 12 while the front of the shovel engages the guideway 14 as illustrated in Fig. 3.

The traction exerted on the cable 7 continuing, said cable acts then on the skip itself by reason of the contact between the stop 13 and the plate 12, which constrains thus the skip 4 to rise along the slideways 3 until it rocks and empties into the container 2 of the concrete mixer as illustrated in Fig. 4. The guide 14 for the skip 4 prevents the shovel 6 from being turned upside down during the rocking of the skip.

In order to prevent the motor 31 and the winch 30 of the concrete mixer from raising the shovel 6 together with the skip 4 and its load, it is also possible to secure said shovel removably to the end of the cable 7. A hook 20 secured to said cable to the rear of the stop 13 allows as a matter of fact and as illustrated in Figs. 5 and 6 disconnecting the blade when the skip 4 is full, so that said shovel may remain on the ground during the raising of the skip.

Furthermore, in order to provide for the raising of the skip 4 through driving means having a power higher than that which is sufficient for the mere drawing along of the scraper shovel it is possible as illustrated in Fig. 7 to insert a tackle 11 between the pulleys 8 and 9. The speed of rising of the skip 4 is thus different from the speed of movement of the shovel 6 and the power available for raising the skip is equal to that which serves for the drawing of said shovel multiplied by the number of strands in the tackle.

Fig. 8 shows the loading system according to my invention as applied to a concrete mixer 15 in which the runway of the skip 16 is vertical. The shovel is shown

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at 17 and the cable fed in by the winch of the concrete mixer is shown at 18.

As mentioned hereinabove, my improved loading system is of course not limited to concrete mixers. It is, as a matter of fact, applicable to any hoisting means provided with a skip. This is shown in Figs. 9, 10 and 11 wherein 19 designates a skip adapted to be shifted over a substantially vertical runway 21. The shovel 22 is connected with the cable 23 which was provided initially for a mere rising of the skip 19. As in the precedingly described case, when the skip 19 is full, the stop 25 carried by the cable 22 is drawn in until it bears against the plate 24 rigid with the skip, so that the subsequent drawing in of the cable 23 may produce a rising of said skip 19.

Obviously, my invention is by no means limited to the sole embodiment and application of the loading system described hereinabove by way of example and it covers in contradistinction all the modifications thereof falling within the scope of the invention as defined in the accompanying claims.

What I claim is:

1. A power-driven concrete elevating and mixing device for transferring aggregate material from the ground to a mixer located above the ground, comprising in combination, a winch; driving means operatively connected to said winch for driving the same; a single winch cable partly wound around said winch; a guideway upwardly extending from the ground to said mixer and being connected thereto; a skip guidingly mounted on said guideway; a first pulley rotatably mounted on said mixer; a second pulley rotatably mounted on said skip; said first and second pulleys constituting a guide for said cable; a manually controlled scraper shovel connected to the end of the cable remote from said winch; a cable arresting abutment fixed on the skip between said second

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pulley and said cable end; a cooperative travelling abutment fixed on said cable between said skip carried abutment and said cable end to limit travel of the cable relative to the skip; the construction and arrangement being such that said single cable is effective first to draw the scraper shovel toward said skip for loading said skip and thereafter, by a continued movement of the cable, to draw the cable carried abutment into engagement with the skip carried abutment and through the abutments to raise the skip; and at least one additional stationary pulley around which said cable is passed after passing said skip carried pulley, to provide a composite pulley system which affords said winch no mechanical advantage with respect to said scraper shovel so long as said skip remains stationary, but which does provide for a multiplication of winch power in lifting said skip as said skip is raised by said cable.

2. A material loading and elevating system as set forth in claim 1, further comprising means for locking said skip in its lowermost position while the skip is being loaded.

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