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CONTROL CABLE ARRANGEMENT FOR SCRAPERS

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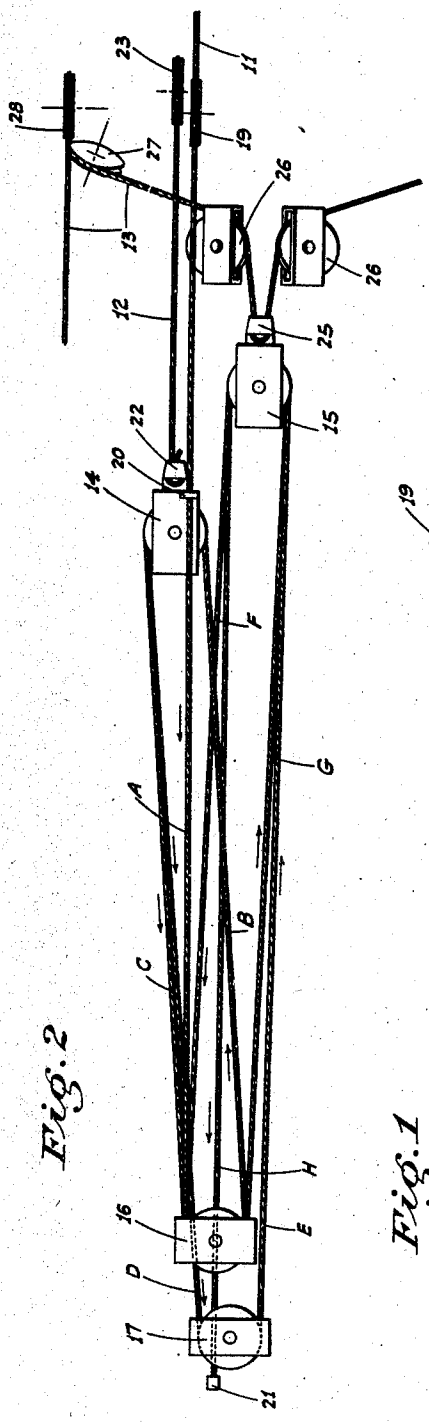


Fig. 2

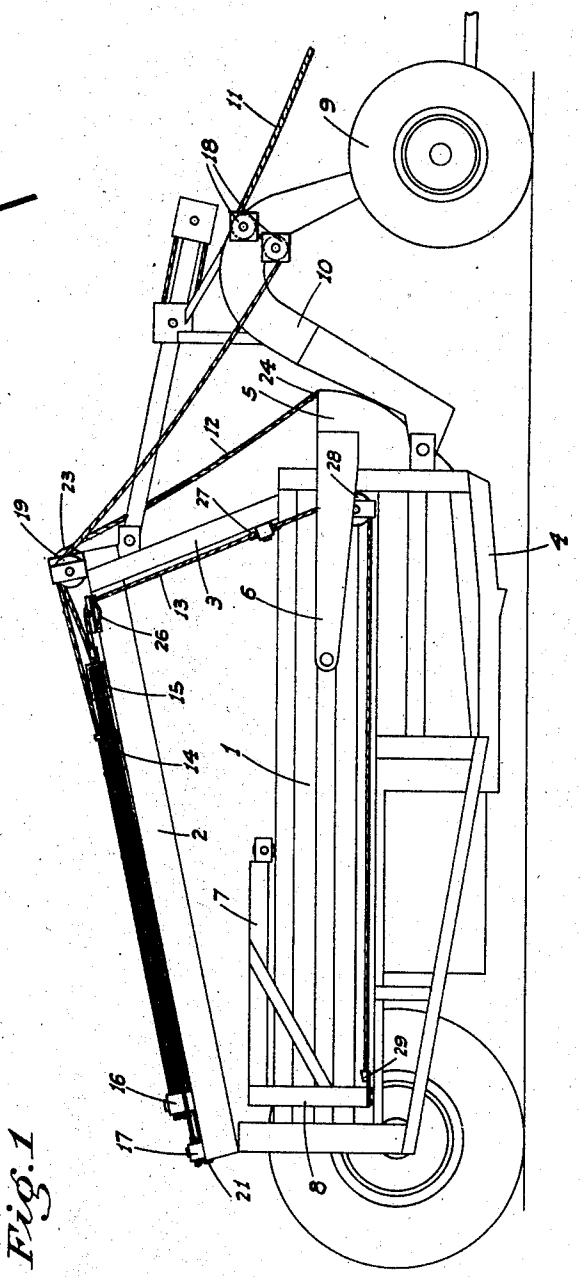


Fig. 1

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CONTROL CABLE ARRANGEMENT FOR SCRAPERS

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6 Claims. (Cl. 37—126)

This invention relates to scrapers of that type having a front vertically movable apron and a forwardly movable tailgate by means of which the dumping of the load is effected, as for instance is shown in my patents, No. 2,122,105 dated March 22, 1938 and No. 2,229,103 dated January 21, 1941. In the structures of these patents, the movement of the apron and tailgate in the desired successive order is controlled by a single cable from the power unit or cable drum on the tractor, and in connecting such cable to the apron and tailgate, sundry cable engaging sheaves are disposed where they are exposed to the abrasive wear of the dirt, and also, are apt to become clogged.

It is therefore the principal object of the present invention to provide a control cable arrangement for the purpose which retains all the advantages of the former but which eliminates the placing of the sheaves in the dirt zone, and disposes all but a very few in compact relation to each other so that they may be readily housed over as a unit for further protection if desired.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side outline of a scraper having an apron and a tailgate, showing my improved control cable arrangement applied thereto.

Figure 2 is a fragmentary top plan view of the cable arrangement in somewhat diagrammatic form and detached.

Referring now more particularly to the characters of reference on the drawing, the frame of the scraper as shown comprises main side frames 1, a central hollow beam 2 sloping upwardly from the rear end over and above the frames 1 and connected at its forward end to the top of a lateral A or a wishbone frame 3 which upstands from the frames 1 at their forward end. The beam 2 not only serves to brace the framing but also contains the pull-back spring of the tailgate, as shown for instance in my Patent No. 2,214,138 dated September 10, 1940.

The main bowl 4 of the scraper is mounted in fixed connection with the frames 1, and an apron 5, mounted on swing arms 6, cooperates with the front of the bowl. The load is discharged from the bowl by the forward movement of a tailgate which is mounted on a carriage 7 movable lengthwise of the scraper and which includes depending side arms 8 on the outside of the frames 1, as shown in said Patent No. 2,229,103.

The scraper frame at its forward end is supported from a front wheel truck 9 or similar supporting member, by means of a yoke and gooseneck unit 10 hingedly connected to the scraper for relative tilting movement in a vertical plane; such movement being controlled by substantially the same mechanism as shown in my Patent No. 2,122,105, and which mechanism forms no part of the present invention. The above described parts are standard in one form or another in my scrapers of this general type, and I do not disturb or alter the same in any way in applying my improved cable control arrangement thereto. Such arrangement includes a main pull cable 11 extending rearwardly from the drum on the tractor, an apron lift cable 12 and a tailgate cable 13; laterally spaced floating sheave blocks 14 and 15 having two and three sheaves respectively disposed on top of the beam 2 normally near its forward end, and a four-sheave block 16 fixed on the beam 2 near its rear end and a direction changing pulley 17 also mounted on said beam rearwardly of the block 16.

The cable 11 extends from the tractor through a direction changing pulley unit 18 on the gooseneck, about a pulley 19 on the beam 2 at its forward end, and through an eye 20 on the block 14. After passing through the eye the cable extends as at A to and about the top sheave of block 16, then forward as at B to the top sheave of the block 14, then back as at C about the second sheave of the block 16 and then again forward about the other sheave of said block 14. The cable then extends from said block 14 back to and about the pulley 17 as at D and then forwardly as at E to the bottom sheave of block 15. The cable then extends from block 15 back to and about the third sheave on block 16 as at F, forward as at G to and about the second sheave of the block 15, back to and about the bottom sheave of the block 16, again forward to and about the bottom sheave of the block 15 and then back as at H to an anchor adjacent pulley 17 as at 21.

The cable 12 is anchored on the block 14 as at 22 and extends thence forwardly over a pulley 23 on the forward end of the beam 2 and down to an anchor on the apron as at 24. The cable 13 is anchored centrally of its ends on the block 15

as at 25, thus forming separate identical runs on both sides of the anchor. Each run extends forwardly and about a direction changing pulley 26 on the beam 2 adjacent its forward end, then down about a direction changing pulley 27 on the adjacent side of frame 3, and another pulley 28 on the adjacent frame 1 on a level with the lower end of the corresponding tailgate arm 7, and back from said pulley to a connection with said arm as at 29.

With this arrangement it will be seen that the greater majority of the necessary sheaves and lengths of cable are disposed in a compact relationship on top of the beam 2 which is above the dirt loading area. Also this arrangement enables the sheaves and cable to be readily housed over as a further protection.

In operation it will be seen that a pull on the cable 11 is transmitted from the anchored block 18 to both floating blocks 14 and 15. Since the resistance to upward movement of the apron (when the scraper is loader) is less than the resistance to forward movement of the tailgate, the sheave block 14 moves rearwardly first, thus pulling on the cable 12 and lifting the apron. After the apron is fully lifted and the block 14 can no longer move rearwardly, the block 15 moves rearwardly. This pulls rearwardly on the two runs of the cable 13 and by reason of the direction changing pulleys 27 and 28, the rear portions of said cable runs are pulled forwardly, advancing the tailgate. When the cable 11 is slacked the spring motor of Patent No. 2,214,138 retracts the tailgate, while the apron drops to a normal position of its own weight.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. In a scraper having a frame which includes a central longitudinal beam above the dirt carrying area of the scraper, a vertically movable front apron for the bowl of the scraper and a forwardly movable tailgate to cooperate with and push dirt from the bowl; a control cable arrangement for raising the apron and then moving the tailgate forward comprising a main pull cable extending rearwardly from ahead of the scraper, a multiple sheave block fixed on the beam, a pair of separate floating sheave blocks disposed on said beam ahead of the fixed block, the cable extending first to the fixed block, then running between said block and one of the floating blocks and subsequently between said fixed block and the other floating block and then to an anchor adjacent the fixed block, a cable secured to one of the floating blocks and extending thence to the apron to lift the same with rearward movement of said one floating block, another cable secured to the other floating block and extending thence to a connection with the tailgate, and direction changing pulleys over which said last named cable passes to cause the tailgate to be advanced with rearward movement of said other floating block.

2. In a scraper having a frame which includes a central longitudinal beam above the dirt carrying area of the scraper, a vertically movable front apron for the bowl of the scraper and a forwardly movable tailgate to cooperate with and push dirt from the bowl; a control cable arrangement for raising the apron and then moving the tailgate forward comprising a main pull cable extending rearwardly from ahead of the scraper, a multiple sheave block fixed on the beam, a pair of separate floating sheave blocks disposed on said beam ahead of the fixed block, the cable extending first to the fixed block, then running between said block and one of the floating blocks and subsequently between said fixed block and the other floating block and then to an anchor adjacent the fixed block, a cable secured to one of the floating blocks and extending thence to the apron to lift the same with rearward movement of said one floating block, the tailgate including a carriage having side arms depending outside the bowl, another cable secured centrally of its ends to the other floating block to provide a pair of identical runs, both of which are connected at their initially free end to the side arms and direction changing pulleys over which each run of the last named cable passes disposed to cause the carriage to be pulled forwardly with rearward movement of said other floating block.

3. In a scraper having a frame which includes a central longitudinal beam above the dirt carrying area of the scraper, a vertically movable front apron for the bowl of the scraper and a forwardly movable tailgate to cooperate with and push dirt from the bowl; a control cable arrangement for raising the apron and then moving the tailgate forward comprising a sheave block fixed on the beam adjacent its rear end, a pair of separate floating sheave blocks disposed on the beam ahead of the fixed block, a cable connected to one floating block and to the apron, a direction changing pulley over which said cable passes to cause the apron to be lifted with rearward movement of said one floating block, another cable connected to the other floating block and to the tailgate, direction changing pulleys over which said other cable passes to cause the tailgate to be advanced with rearward movement of said other floating block and a main pull cable engaging and threaded between the fixed and floating blocks in predetermined order and so as to cause the floating blocks to be moved rearwardly separately from each other.

4. In a scraper having a frame, a vertically movable front apron for the bowl of the scraper and a forwardly movable tailgate to cooperate with and push dirt from the bowl; a control cable arrangement for raising the apron and then moving the tailgate forward comprising a fixed sheave block, a pair of separate floating sheave blocks spaced from said fixed block lengthwise of the scraper, connection means between one floating block and the apron to lift the latter upon movement of said one floating block lengthwise of the scraper in one direction, connection means between the other floating block and the tailgate to advance the latter upon movement of said other floating block lengthwise of the scraper in one direction, a main pull cable threaded betwen the fixed and floating blocks in predetermined order to move said floating blocks separately in said one direction when said main cable is pulled and a member rigid with the scraper frame above the dirt carrying area

on which the fixed and floating blocks are supported.

5. In a scraper which includes a central longitudinal beam above the bowl of the scraper, a vertically movable front apron for the bowl and a forwardly movable tailgate in the bowl; a control cable arrangement for raising the apron and then moving the tailgate forward comprising a main pull cable, a multiple sheave block fixed on the beam, a pair of separate floating sheave blocks disposed on the beam in spaced relation to the fixed block, the cable extending first to the fixed block, then running between said fixed block and one of the floating blocks and subsequently between said fixed block and the other floating block and then to an anchor adjacent the fixed block, a cable secured to one of the floating blocks and extending thence to the apron to lift the same with movement of said one floating block toward the fixed block, another cable secured to the other floating block and extending thence to a connection with the tailgate and direction changing pulleys over which said last named cable passes to cause the tailgate to be advanced with movement of said other floating block toward the fixed block.

6. In a scraper having a frame which includes a beam above the dirt carrying area of the scraper, a vertically movable front apron and an element movable in one direction to effect discharge of the dirt from the scraper; a control cable arrangement for raising the apron and then moving the element in said direction comprising a main pull cable, a multiple sheave block fixed on the beam, a pair of separate floating sheave blocks disposed on the beam in spaced relation to the fixed block, the cable extending first to the fixed block, then running between said fixed block and one of the floating blocks and subsequently between said fixed block and the other floating block and then to an anchor, another cable secured to one of the floating blocks and extending thence to the apron to lift the same with movement of said one floating block toward the fixed block and a third cable secured to the other floating block and extending thence to a connection with the dirt discharge element and arranged to cause the element to be moved in said one direction with movement of said other floating block toward the fixed block.

ROBERT G. LE TOURNEAU.