

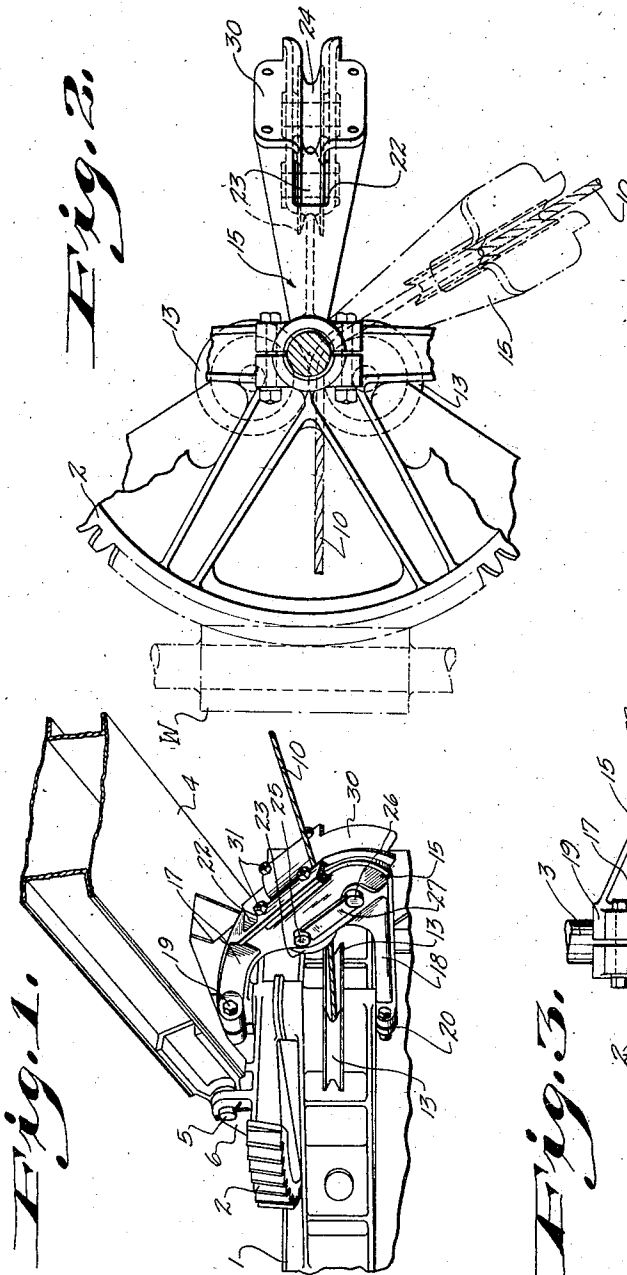
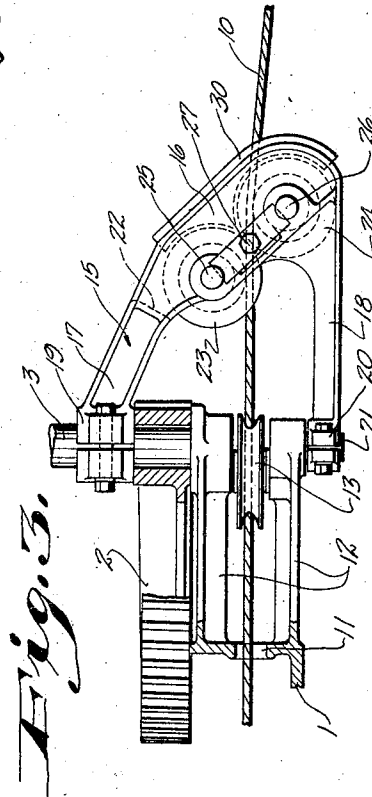
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DRAG LINE FAIR LEAD

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INVENTOR.

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DRAG-LINE FAIR-LEAD

Application filed January 21, 1928. Serial No. 248,287.

This invention relates to a fair lead especially designed for use with the drag lines of back fillers, although also adapted for advantageous use with other excavating machines except those of the full revolving type.

As is well known, back fillers comprise a frame mounted on suitable running gear, such as motor driven self-laying tracks. On the frame, a boom is mounted for vertical and also for horizontal swinging movement, power means being provided on the frame for controlling the horizontal and vertical adjustments and positions of the boom. The boom carries a drag line scraper by means of a hoist line extending out over the boom and down to the scraper and a drag line or hauling line extending from the scraper inwardly under the boom, both lines being controlled by suitable motor driven drums mounted on the frame of the back filler and to which they are connected. As the boom swings horizontally, and as the machine is shifted relative to the scraper, the lead of the drag line from the machine to the scraper changes, and the provision of a simple and practicable means which will vary its lead with the swing of the boom without wearing or fouling the cable has been a serious problem in the art.

One of the principal objects of applicant's invention is to provide a fair lead for the drag line of a back filler which automatically follows the drag line in its horizontal movements and which properly guides and deflects the cable while insuring minimum cable wear.

Another object of the invention resides in the provision of a fair lead of this character which is of simple and durable construction, reliable and effective in operation, and adapted for convenient organization with the back filler.

In carrying out the present invention a pair of horizontal pulleys or guide sheaves are mounted for rotation about fixed vertical axes just below the boom foot and near the axis of swing of the boom. A swinging frame is mounted for free hori-

zontal movement about an axis co-incident with the axis of swing of the swinging boom and this swinging frame carries a pair of vertical guide sheaves mounted for free rotation about horizontal axes. The drag line is passed through the horizontal sheaves and also in between the vertical sheaves of the swinging frame. Beyond the vertical sheaves the drag line extends outwardly through flaring guides on the swinging frame to the scraper to which it is connected. Inwardly beyond the horizontal sheaves the drag line extends onto its drum. With this organization, when the boom swings horizontally, or when the machine shifts relative to the scraper or in other words when the lead of the drag line changes, the swinging frame is carried under the influence of the drag line through the same angular interval of swing. At the point where the drag line leaves the machine it is deflected about one or the other of the horizontal pulleys. Any variation in the vertical position of the boom is taken care of by the vertical sheaves.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part of this specification, and in which:

Figure 1 is a fragmentary perspective view showing a portion of a back filler embodying the present invention;

Figure 2 is a fragmentary plan view showing the horizontal swing gear sector on which the boom is mounted and the associated fair lead embodying applicant's invention; and

Figure 3 is a view partly in side elevation and partly in section further illustrating the parts shown in Figure 2.

Referring to the drawings, the numeral 1 designates a fragment of the frame of a back filler. The general construction of the back filler is well known and is shown to advantage in Figure 1 of the co-pending application Serial Number 248,288 of Frank E.

Brown, filed January 21, 1928, for hoist line fair lead for back fillers. On this frame a worm gear sector 2 is mounted for rotation about a vertical shaft 3 supported in suitable bearings on the frame. A boom 4 has trunnions 5 at its foot or lower end pivoted in lugs 6 integral with the gear sector 2 whereby the boom 4 is supported for swinging movement in a vertical plane, the trunnions 5 rotating in the lugs 6 to permit of such swinging movement. And when the gear 2 is rotated the boom 4 is swung horizontally. A power driven worm W is provided which meshes with the sector 2 for swinging the sector and the boom horizontally. The usual drag line is designated at 10 and passes out through an opening 11 provided in the frame. At the point where the boom is mounted the frame has wings or extensions 12 and in between these wings or extensions a pair of horizontal pulleys 13 are mounted for rotation about parallel vertical axes releasably secured to the frame extensions 12. As clearly shown in Figures 2 and 3 these pulleys or guide sheaves 13 are located just below and adjacent the axis of swing of the boom. The drag line 10 passes in between these guide sheaves 13 and engages the grooved peripheries thereof.

A swinging frame designated generally at 15 is provided and has a body portion 16 and arms 17 and 18. Adjustable two-part bearings 19 and 20 are provided at the ends of the arms 17 and 18, the bearings 19 loosely embracing the shaft 3 and resting on the hub of the gear sector while the bearing 20 loosely embraces a stud 21 extending downwardly from the lower wing or extension 12 of the frame and coaxial with the shaft 3. The body portion 16 of the swinging frame is formed with a slot 22 extending entirely therethrough, and in this slot 22 a pair of vertical pulleys 23 and 24 are mounted. These pulleys 23 and 24 are mounted on pins 25 and 26 releasably held against displacement by suitable fastening means 27. As shown in Figure 3, the pulleys 23 and 24, while rotatable about vertically spaced axes, overlap each other in a vertical plane but are disposed one behind the other, that is, the pulley 23 is disposed slightly rearwardly of the pulley 24, so that these pulleys 23 and 24 properly clear each other. The drag line 10 extends through the slot 22 and passes under the pulley 23 and over the pulley 24. The pulleys 23 and 24 have grooved peripheries to prevent accidental disengagement of the drag line therefrom. The walls of the slot 22 are provided with flaring drag line engaging pieces or guides 30 secured in position by suitable fastening means 31.

With this organization, when the boom swings horizontally under the influence of the worm driven sector 2, the drag line

swings with the boom, and the frame 15 follows the boom in its swinging movement under the influence of the drag line. Likewise, when the machine and boom shift relative to the scraper, the lead of the drag line changes. Any change in the lead of the drag line causes a corresponding change in the angular position of the swinging frame. When the frame 15 swings as for instance to the dotted line position shown in Figure 2, the point of lateral deflection of the drag line 10 is about the pulley 13 located on the same side of the boom axis as the swinging frame. Now, if, in this position, the drag line should be elevated or lowered, it will still be properly guided and controlled without sharp bending or wear and without any danger of its leaving its horizontal sheaves inasmuch as guide sheaves 23 and 24 always control the vertical deflection of the drag line.

As the sheaves 23 and 24 are automatically maintained aligned with the drag line, the drag line does not tend to pull out of engagement therefrom.

The invention claimed is:

1. A drag line fair lead for use with a back filler or the like having the usual drag line, and a boom swingable about a vertical axis and comprising means adjacent the axis of swing of the boom for guiding the drag line and for permitting its horizontal deflection in either direction, a swinging frame mounted for swinging movement about an axis co-incident with the axis of swing of the boom, and guide means for the drag line carried by said swinging frame.

2. A drag line fair lead for use with a back filler or the like having the usual drag line, and a boom swingable about a vertical axis and comprising means adjacent the axis of swing of the boom for guiding the drag line and for permitting its horizontal deflection in either direction, a swinging frame mounted for swinging movement about an axis co-incident with the axis of swing of the boom, and a pair of vertical pulleys carried by said swinging frame and engaging the drag line to control its vertical deflection.

3. A drag line fair lead for use with an excavating machine having the usual drag line and a boom swingable about a vertical axis and comprising guiding means for the drag line adjacent the axis of swing of the boom, and movable means mounted on the boom axis and carrying guides engageable with the drag line and automatically following the swinging movement of the drag line.

4. A drag line fair lead for use with an excavating machine having the usual drag line and a boom swingable about a vertical axis and including a swingable frame mounted for swinging movement about the same axis as the boom, and a pair of pulleys

mounted on the frame and engaged with the drag line.

5 5. A drag line fair lead for use with an excavating machine having the usual drag line and a boom swingable about a vertical axis and including a pair of pulleys engaged with the drag line and mounted for movement about the axis of swing of the boom and independent of movement of the boom to follow automatically the horizontal swinging movements of the drag line.

10 6. A drag line fair lead for use with an excavating machine having the usual drag line and a boom swingable about a vertical axis and including a pair of pulleys rotatable in a vertical plane about horizontal axes and mounted for movement about the axis of swing of the boom and independent of movement of the boom to follow automatically the horizontal swinging movement of the drag line.

15 7. A drag line fair lead for use with a back filler having the usual drag line and a boom swingable about a vertical axis and including a number of pulleys engaged with the drag line, and means for mounting the pulleys for free swinging movement about the axis of swing of the boom whereby the pulleys automatically follow the drag line in its horizontal swinging movements.

20 8. A drag line fair lead for use with a back filler having the usual drag line and a boom swingable about a vertical axis and including guiding means adjacent the axis of swing of the boom and cooperable with the drag line for controlling its horizontal deflection, a swingable frame including a slotted body portion and upper and lower arms provided with means for rotatably supporting the frame for swinging movement about the axis of swing of the boom, and vertical pulleys rotatably mounted in the slotted frame and engageable with the drag line.

25 9. A drag line fair lead for use with a back filler having the usual drag line and a boom swingable about a vertical axis, and including a swingable frame having arms provided with adjustable two-part bearings, the bearing of one arm being mounted for rotation about the axis of swing of the boom, and a stud on the frame fitted in the bearing of the other arm, and guide means for the drag line mounted on the frame.

30 In witness whereof, I hereto affix my signature.

ROBERT L. BROWN.