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W. RUDDOCK

2,166,479

TAG-LINE DEVICE

Filed April 23, 1938

Fig. 1.

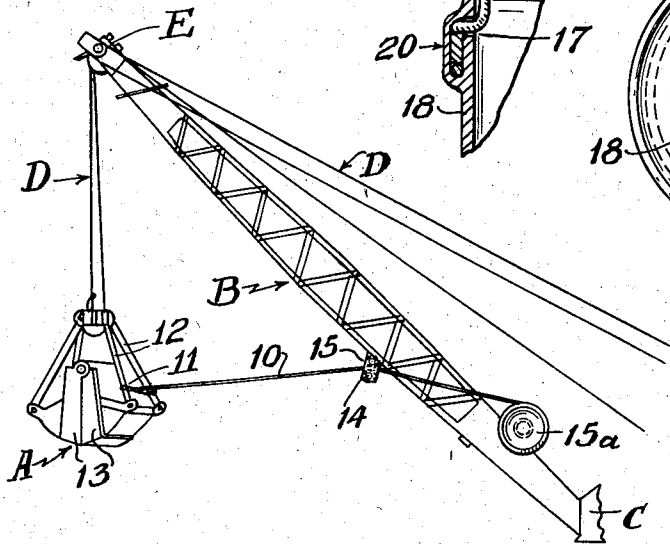


Fig. 4.

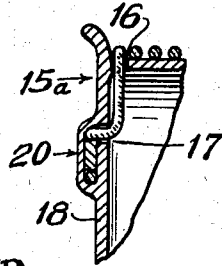


Fig. 3.

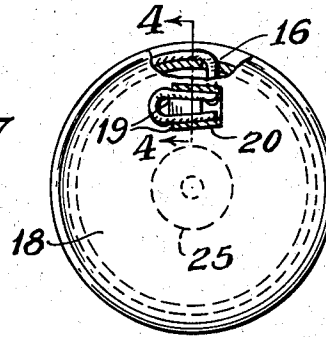


Fig. 2.

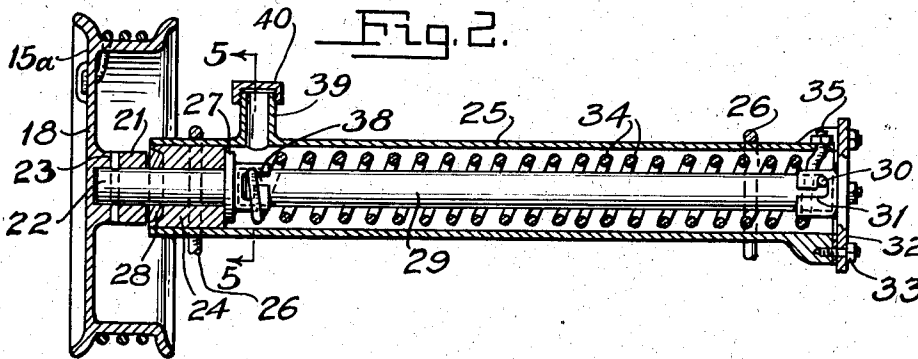
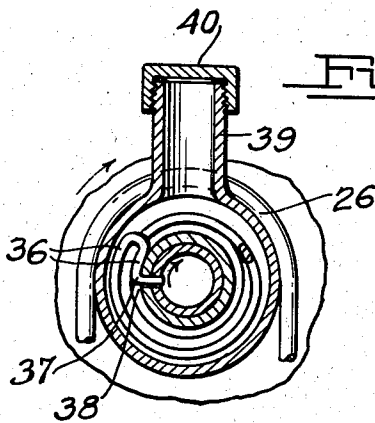


Fig. 5.



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TAG-LINE DEVICE

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3 Claims. (Cl. 212-42)

This invention relates to crane mechanisms, and more particularly to the taglines used for preventing swinging of a material handling bucket or other device suspended from the boom of the crane.

For the purpose of preventing turning of a crane bucket while in operation, it is usual to attach a tagline thereto and maintain it in tension. Heretofore, the usual arrangement has included a weight movable longitudinally of the boom along guide rails; with one end of the tagline being attached to the weight and the other end to the bucket, the intermediate portion passing over a plurality of sheaves located near the respective ends of the boom. While a proper pull on the tagline is obtainable when the boom is in a vertical position, the force of gravity acting upon the weight is practically nil when the boom approaches a horizontal position, resulting in an inadequate tension on the tagline to prevent swinging of the bucket. Moreover, the tension exerted is variable, whereas a steady tension is of greater desirability. Furthermore, the sliding of the weight longitudinally of the boom requires the use of a long cable making reverse turns around small sheaves, which requires the oiler to climb out on the boom to grease the guide rails and the operating parts, with its attendant risk of bodily harm.

It is the overcoming of the above noted disadvantage with which the present invention is concerned. Accordingly, it becomes an object of the invention to provide a device which will maintain a steady pull on the tagline of a material handling bucket or the like regardless of the position of the crane boom.

It becomes a further object of the invention to provide a self-contained and compact device which will maintain a steady pull on the tagline of a material handling bucket or the like.

Still a further object resides in the provision of a device which will maintain a steady pull on the tagline of a material handling bucket or the like, and in which said pull is readily increased or decreased.

A further object of the invention involves a tagline device for material handling buckets or the like which requires a minimum number of parts associated with it for maintaining a steady pull on the tagline of the crane.

Other objects and advantages of the invention will become apparent from a consideration of the following description and accompanying drawing, in which:

Fig. 1 is a partially perspective view of a crane

boom and suspended bucket with the tagline device attached thereto.

Fig. 2 is a longitudinal section of the tagline device.

Fig. 3 is an end elevation of the pulley around which the tagline is wound.

Fig. 4 is a partial section on an enlarged scale, taken as seen on line 4-4 of Fig. 3.

Fig. 5 is a transverse section, taken as seen on line 5-5 of Fig. 2.

Although the invention is shown as applied to a crane having a clam shell bucket A, it is to be understood that it is applicable also to other types of crane mechanism, wherever it is desirable to prevent turning of the bucket. As illustrated in Fig. 1, the crane includes the usual boom B pivoted on a carriage C for vertical swinging movement, with the carriage normally being capable of swinging in a horizontal plane. The bucket A is suspended from the boom and can be raised and lowered with respect thereto by means of the usual operating cables D attached to the bucket and passing over the sheaves E at the outer end of the boom. By movement of the cables in a well known manner, the bucket can be raised or lowered and opened or closed for retaining and discharging materials.

For the purpose of preventing swinging or turning of the bucket a tagline 10 is attached to a cross-piece 11 in the form of a chain affixed to the suspender straps 12 supporting the bucket halves 13. The tagline passes between the guide pulleys 14 carried by a bracket 15 depending from one of the rails of the boom, and then over a pulley 15, with its end portion extending through a peripheral opening 16 and an opening 17 in a side face 18 thereof, where the end makes a return bend through apertures 19 in a lug 20, for affixing it to the pulley. The hub 21 of the pulley is attached to a transversely disposed shaft 22 by means of a pin 23 the shaft being enclosed in a housing 25 that is attached to the boom B thereto by U-bolts 26. While I have shown the tagline controlling mechanism as secured to the boom B, it will be understood that it may be mounted in other situations with equal facility. The inner portion of the shaft 22 carries a flange 27 abutting against an inner end of the bearing 24, an end of the pulley hub engaging a lubricant retainer 28 for preventing escape of oil or grease from the tubular housing 25, and which in cooperation with the flange 27 maintains the pulley from endwise movement with respect to the housing and boom. A

second stationary shaft 29 has one end piloted within the first shaft 22 and its other end provided with a pin 30 fitting within a bayonet slot 31 on an end plate 32 of the housing 25, which is fastened thereto by the screws 33.

A helical spring surrounds the second stationary shaft 29 and has one end attached to the housing 25 by extending therethrough and carrying thereon the nut 35 abutting the outer surface of the housing. The other end of the spring is provided with a reverse bend 36 and a terminal bend portion 37 extending into a bayonet slot 38 in the end of the shaft 22 carrying the tagline pulley 15. By reason of the construction described, the tagline can be held in tension by means of the force supplied by the helical spring 34, the tendency being for the spring to wind the tag line on the pulley 15 by the turning effort applied to the pulley shaft 22. The stationary shaft 29 will ensure alignment of the spring turns and prevents its buckling regardless of the amount of twisting effort applied thereto by the exertion of the tagline thereon.

All of the parts may be lubricated at all times by the introduction of oil or grease into the housing through the inlet pipe 39 which is normally closed by the cap 40. The lubricant retainer 28 will prevent leakage from the housing along the pulley shaft 22 while providing a proper film of lubricant between it and the bearing 24.

The arrangement described will maintain a constant tension on the tagline regardless of the vertical position of the boom since the effort exerted by the spring is independent of the force of gravity. The parts are compact, self-contained, and occupy a small space. In view of the enclosing housing, the mechanism turns entirely in oil, requiring no attention after its installation. A more economical construction results since the use of relatively long cables which must make reverse turns around small turns is obviated. In addition to the elimination of the danger to an oiler who is required to climb out on the beam to grease the sheaves, as in the old method, a longer life of the cable is ensured by omitting any necessity for its making abrupt bends around the small sheaves. An additional advantage presents itself by the simple manner in which the pull on

the tagline can be altered, by simply putting more or less turns on the pulley and thereby changing the tension of the spring.

While the invention has been described with particular reference to the embodiment disclosed on the drawing, it is to be understood that such showing is merely illustrative of the invention and is not intended to confer any restrictions thereon. The invention is best defined in the appended claims.

I claim:

1. In a crane mechanism having a material handling bucket or the like suspended from a boom; in combination, a tagline attached to said bucket, a pulley around which said tagline passes, a housing having a bearing for rotatably mounting said pulley, a coil spring having one end fixed to rotate with said pulley and its other end adapted to maintain a steady pull on said tagline regardless of vertical movement of said boom.

2. In a crane mechanism having a material handling bucket or the like suspended from a boom; in combination, a tagline attached to said bucket, a pulley around which said tagline passes and to which it is anchored, a housing, a bearing at one end of said housing, a shaft fixed to said pulley and extending through said bearing into said housing, a helical spring within the housing fixed at one end to said shaft and at its other end to said housing, whereby said spring is adapted to maintain a steady pull on said tagline regardless of vertical movement of said boom.

3. In a crane mechanism having a material handling bucket or the like suspended from a boom; in combination, a tagline attached to said bucket, a pulley around which said tagline passes and to which it is anchored, a housing, a bearing at one end of said housing, a shaft fixed to said pulley and extending through said bearing into said housing, a second shaft within the housing piloted in said shaft at one end and fixed to said housing at its other end, a helical spring surrounding said second shaft, one end of said spring being fixed to said first-mentioned shaft and the other end of the housing, whereby said spring is adapted to maintain a steady pull on said tagline regardless of vertical movement of said boom.

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