March 31, 1936. H. E. BAUER ET AL 2,035,858

CREEPING TRACTION

Filed Oct. 18, 1934 3 Sheets-Sheet 1

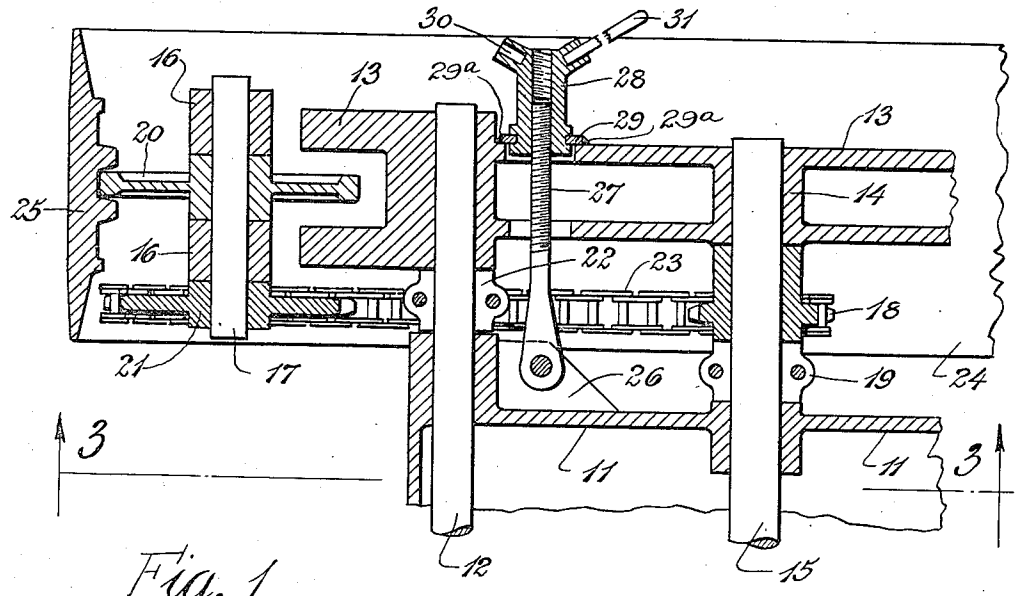


Fig. 1.

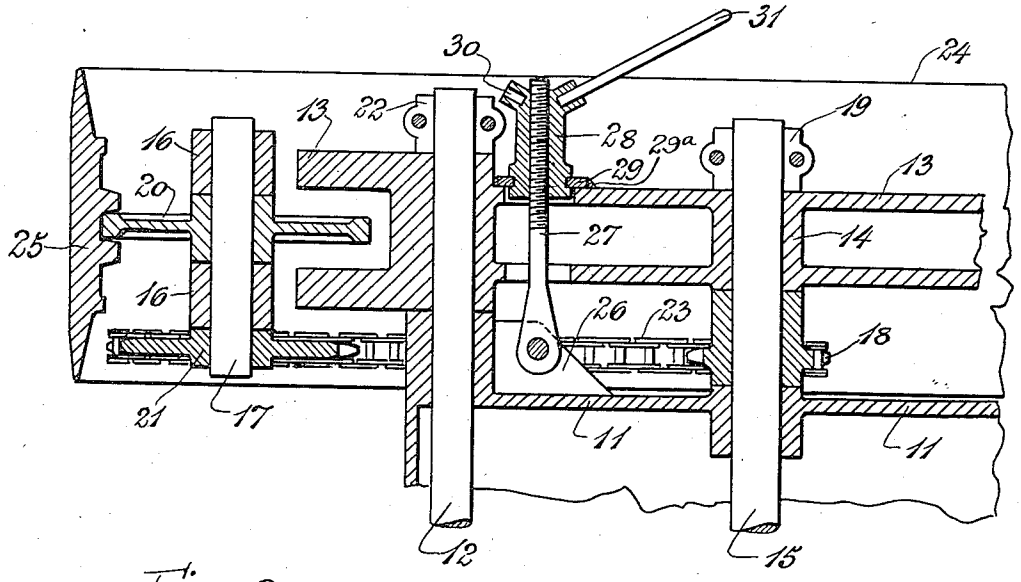


Fig. 2.

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Filed Oct. 18, 1934 3 Sheets-Sheet 2

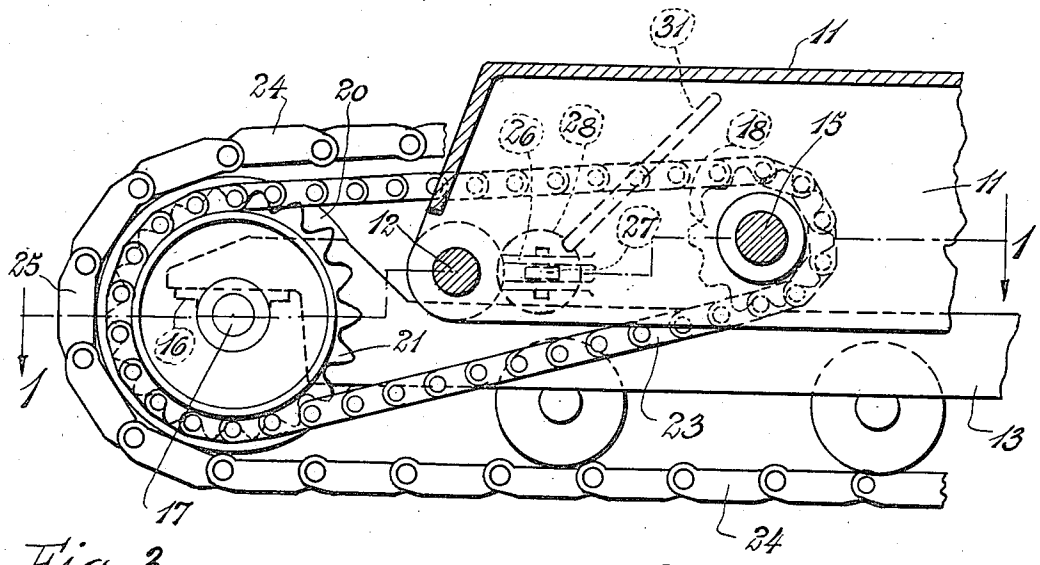


Fig. 3

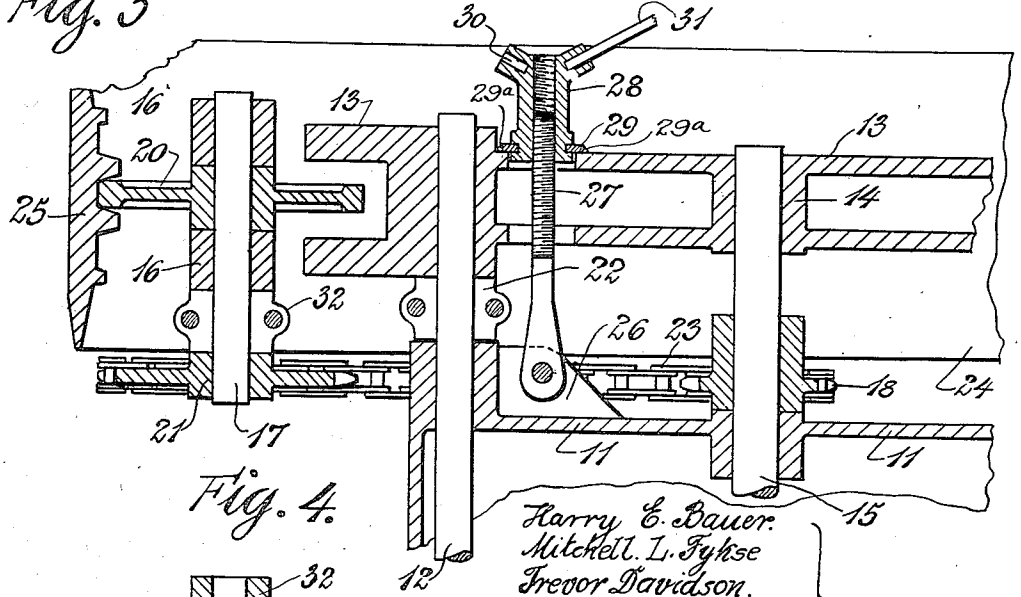


Fig. 4.

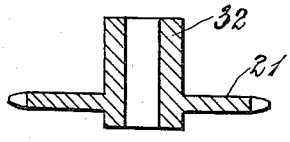


Fig. 5

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CREEPING TRACTION

Filed Oct. 18, 1934 3 Sheets-Sheet 3

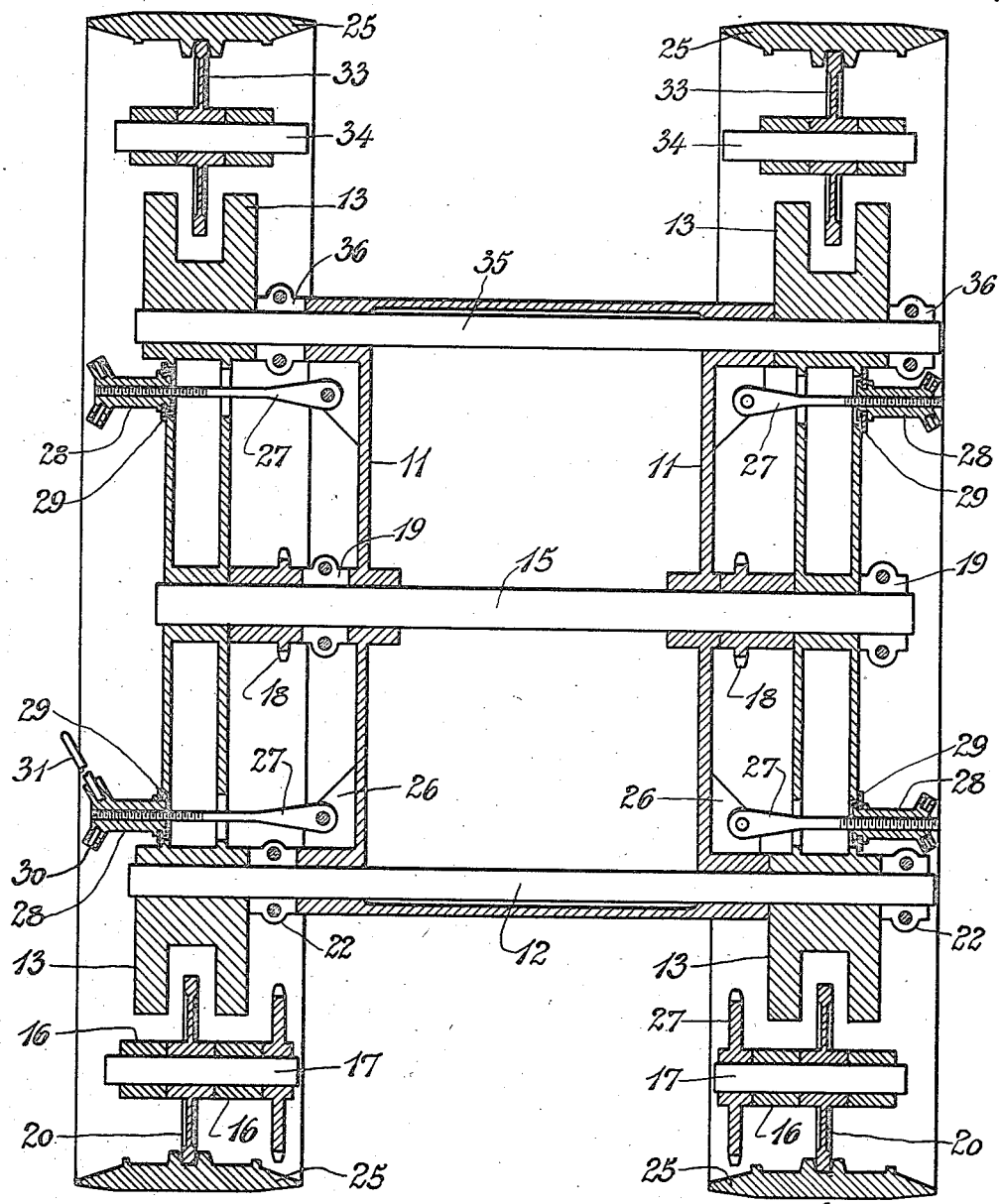


Fig. 6

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2,035,858

CREEPING TRACTION

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Application October 18, 1934, Serial No. 748,852

7 Claims. (Cl. 305—9)

Our invention relates to new and useful improvements in creeping traction.

Our principal object is to provide a creeping traction mounting for excavators, cranes and the like, which shall possess in operation a sufficiently wide base for purposes of stability, and yet which shall possess during railroad shipment a sufficiently narrow base to be within railroad clearance.

It has been proposed in the past to solve this problem by building the traction-device so that its wheels will fall just within railroad clearance, and its treads will extend beyond railroad clearance. Then, for shipping, the treads are removed, and the wheels are run onto special rails on a flat car.

The present application is an improvement over Patent Number 1,939,684, to Mitchell L. Fykse, in that, differing from the device shown and described in the said patent, our device is able to run up on a flat car, without the use of the carefully spaced special rails required by said patent; and also can do this under its own power, which is impossible for the device of said patent.

In addition to our principal object, we have worked out a number of novel and useful details, which will be readily evident as the description progresses.

Our invention consists in the novel parts, and in the combinations and arrangements thereof, which are defined in the appended claims; and of which three embodiments are exemplified in the accompanying drawings, which are hereinafter particularly described and explained.

Throughout the description, the same reference number is applied to the same member or to similar members.

Referring to the drawings, it will be seen that Figure 1 shows a horizontal section of a portion of one side of one embodiment of our creeping traction mounting, as arranged for working upon its broader base, the section being taken as shown by the line 1—1 of Figure 3. The balance of this side, being substantially similar, except that it omits the driving means, is not shown. The other side of the complete structure, being exactly similar, is not shown.

Figure 2 shows a similar horizontal section of the same portion of the same embodiment of our creeping traction mounting, as arranged for running upon its narrower base.

Figure 3 shows a side view of our creeping traction mounting, in order the better to exhibit the spacial relation of the various parts. This view is taken from the inside, looking out, along the lines 3—3 of Figure 1, and showing the main frame partly in section.

Figure 4 shows a horizontal section of a portion of one side of a second embodiment of our invention. In this embodiment the driving chain and associated sprockets remains with the main frame instead of shifting with the traction frame.

Figure 5 shows a horizontal section of a variation of a sprocket and a collar, in which the two are built integral.

Figure 6 shows a horizontal section of the complete main frame and two associated traction frames, the left hand traction mechanism being in the position of Figure 1, and the right hand traction mechanism being in the position of Figure 2.

Referring now particularly to the embodiment shown in Figures 1, 2 and 3, 11 shows the main frame, upon which the excavating machinery or other instrumentalities (not shown), are supported, which main frame is supported upon two shafts, of which only the rear supporting shaft 12, is shown, the arrangement at the forward supporting shaft being exactly the same in all respects as herein described for the rear supporting shaft 12. These shafts are rigidly secured to the main frame 11, and pass slidably through the creeping traction frames 13.

The creeping traction frames 13 provide bearings 14, in which a driving-shaft 15 is rotatably mounted, said shaft being driven, in any one of the well known ways, from the machinery (not shown) mounted on the main frame 11.

The creeping traction frames 13 also provide, rigidly carried thereby, bearings 16, for a rotatable shaft 17.

The driving-shaft 15 carries, slidably keyed thereto, rotatable therewith, and immediately adjacent the bearings 14, sprocket-wheel 18.

Referring more particularly to Figure 1, it will be noticed that, between sprocket-wheel 18 and main frame 11, there is, on driving-shaft 15, a removable split-collar 19, the purpose of which will be hereinafter explained.

Tumbler-shaft 17, which is freely rotatable in bearings 16, bears, keyed thereto or otherwise constrained to rotate therewith, both driving tumbler 20, and sprocket-wheel 21. Sprocket-wheel 21 is aligned with sprocket-wheel 18.

Still referring more particularly to Figure 1, it will be noticed that there is, on shaft 12, and intermediate the main frame 11 and the creeping traction frame 13, a split-collar 22, exactly similar in all respects to split-collar 19 on shaft 15.

A sprocket-chain 23, connects sprocket-wheel 18 and sprocket-wheel 21; and by means of this chain sprocket-wheel 18 drives sprocket-wheel 21, and therefore drives tumbler 20. Tumbler 20 drives the usual tread-belt 24, of which one link 25 is shown in section in Figures 1 and 2.

At the other end of the creeping traction frame 13, the other tumbler 33 is not driven, but idles, in the well known manner. It is carried on idler-shaft 34. The shaft 35 which carries this other end, possesses a split collar 36 similar and similarly placed to that 22 of shaft 12.

The main frame 11 carries a flange 26, to which there is secured a jack-screw 27 as shown in Figures 1 and 2. This jack-screw passes transversely through apertures in the creeping traction frame 13 as shown. Its outer threaded end carries a jack-nut 28, which is grooved to accommodate a split-washer 29. The split-washer is bolted, or otherwise secured, as by welding as indicated at 29*a*, to the creeping traction frame 13. The jack-nut 28 is provided with two diametrically opposed sockets 30, for the insertion of capstan-handles 31.

Comparing now Figures 1 and 2, it will be seen that, if from the rear supporting shaft 12, and from the exactly similarly arranged forward shaft 35, and from the driving shaft 15, there are removed (from the positions shown in Figure 1) the exactly similar split collars 19, 22 and 36, the creeping traction frame may then, by means of jack-screws 27, jack-nuts 28 and capstan-handles 31, be jacked in to an amount equal to the transverse dimensions of said split-collars. The split-collars 19, 22 and 36 are then secured to the outer ends of shafts 15, 12 and 35 respectively, as shown in Figure 2. The same amount being taken up with respect to each creeping traction frame, it is clear that, when the capstan-handles 31 are removed from the sockets 30, the over-all dimension of the apparatus has been reduced by twice the transverse dimension of the split-collars 19, 22 and 36.

Since the split-washers 29 are secured to the creeping traction frame 13, a reverse turning of the jack-nut 28 will restore the structure to its wider base, the split-collars being first removed from the position shown in Figure 2 at the outer ends of the shafts, and finally replaced in the position shown in Figure 1.

It is to be noted that neither the widening nor the narrowing of the base will in any way disturb the alignment of the driving sprocket 18 and the driven sprocket 21. The apparatus will therefore be capable of running under its own power, regardless of whether it is upon its wider base or upon its narrower base.

Figure 4, which may be considered in connection with Figure 3, shows the second embodiment of our invention. This is the same as that shown in Figures 1, 2 and 3, and just described, except that, instead of maintaining sprockets 18 and 21 in the same position relative to the creeping traction frame by moving collar 19, these two sprockets are maintained in the same position relative to the main frame by moving collar 32.

The third embodiment consists in combining sprocket 21 and collar 32 into one element, as shown in Figure 5.

Having now described and illustrated three forms of our invention, we wish it to be understood that our invention is not to be limited to the specific forms or arrangements of parts hereinbefore described, except in so far as such limitations are specified in the appended claims.

We claim:

1. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a plurality of removable collars, each associated with one such shaft; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; at least one jackscrew to move the creeping traction frame toward or away from the main frame, and to clamp the creeping traction frame selectively either against the collars or against the main frame, according as the collars are present or removed; the creeping traction frame comprising: a tread-belt and associated parts; a driving tumbler carried by the creeping traction frame; a sprocket-wheel, constrained to rotate with the driving tumbler; a second sprocket wheel, carried by and driven from the main frame, but laterally slidable with respect thereto; a sprocket-chain connecting the two sprocket-wheels; a removable collar, associated with the second sprocket wheel, and capable of spacing this sprocket wheel away from the main frame, when the creeping traction frame is spaced away from the main frame, so as to maintain the two sprocket wheels in alignment, in each of the two relative positions of the main frame and the creeping traction frame.

2. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a plurality of removable collars, each associated with one such shaft; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; at least one jackscrew to move the creeping traction frame toward or away from the main frame, and to clamp the creeping traction frame selectively either against the collars or against the main frame according as the collars are present or removed; the creeping traction frame comprising: a tread-belt and associated parts; a driving tumbler carried by the creeping traction frame; a sprocket-wheel, constrained to rotate with the driving tumbler but laterally slidable with respect thereto; a second sprocket wheel, carried by and driven from the main frame; a sprocket-chain connecting the two sprocket-wheels; a removable collar, associated with the first sprocket wheel, and capable of spacing this sprocket wheel away from the creeping traction frame, when the creeping traction frame is spaced away from the main frame, so as to maintain the two sprocket wheels in alignment, in each of the two relative positions of the main frame and the creeping traction frame.

3. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a plurality of removable collars, each associated with one such shaft; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; at least one jackscrew to move the creeping traction frame toward or away from the main frame, and to clamp the creeping traction frame selectively either against the collars or against the main frame, according as the collars are present or removed; the creeping traction frame comprising: a tread-belt and associated parts; a driving tumbler carried by the creeping traction frame; a sprocket-wheel, constrained to rotate with the driving tumbler; a second

sprocket wheel, carried by and driven from the main frame; one of said sprocket wheels being laterally slidable with respect to the frame which carries it; a sprocket-chain connecting the two sprocket-wheels; a removable collar, associated with one of the two sprocket wheels, and capable of spacing this sprocket wheel away from the frame which carries it, when the creeping traction frame is spaced away from the main frame, so as to maintain the two sprocket wheels in alignment, in each of the two relative positions of the main frame and the creeping traction frame.

4. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; a plurality of means, capable of spacing the creeping traction frame a predetermined distance from the main frame; at least one means to move the creeping traction frame toward or away from the main frame, and to clamp the creeping traction frames in position with respect to the main frame; the creeping traction frame comprising: a tread-belt and associated parts; a driving tumbler carried by the creeping traction frame; driving means for the driving tumbler; means carried by and driven from the main frame; a driving connection between the last two mentioned means; and means for maintaining this driving connection in operative alignment, regardless of the relative positions of the main frame and the creeping traction frame.

5. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a plurality of removable collars, each associated with one such shaft; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; and at least one jackscrew to move the creeping traction frame toward or away from the main frame, and to clamp the creeping traction frame selectively either against the collars or against the main frame, according as the collars are present or removed.

6. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; at least one means to move the creeping traction frame toward or away from the main frame, and to secure the creeping traction frame in position with respect to the main frame; and, with respect to each creeping traction frame: a tread-belt and associated parts; a driving tumbler carried by the creeping traction frame; driving means for the driving tumbler; means carried by and driven from the main frame; a driving connection between the last two mentioned means; and means for maintaining this driving connection in operative alignment, regardless of the relative positions of the main frame and the creeping traction frame.

7. In creeping traction mechanism, the combination of: a main frame; a plurality of shafts, carried by the main frame, and projecting sidewardly therefrom; a creeping traction frame, adjustable towards and away from the main frame on certain of the shafts; at least one means to move the creeping traction frame toward or away from the main frame, each such means comprising a male screw element and a female screw element, one of these elements being appropriately secured to its creeping traction frame and the other to the main frame; and to secure the creeping traction frame in position with respect to the main frame; and, with respect to each creeping traction frame: a tread-belt and associated parts; a driving tumbler carried by the creeping traction frame; driving means for the driving tumbler; means carried by and driven from the main frame; a driving connection between the last two mentioned means; and means for maintaining this driving connection in operative alignment, regardless of the relative positions of the main frame and the creeping traction frame.

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