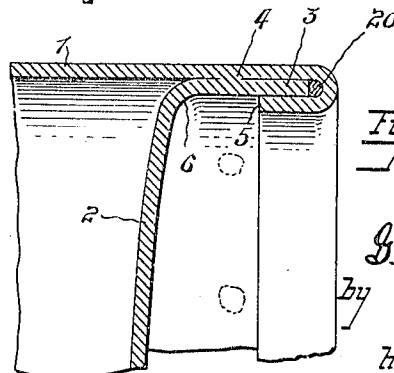
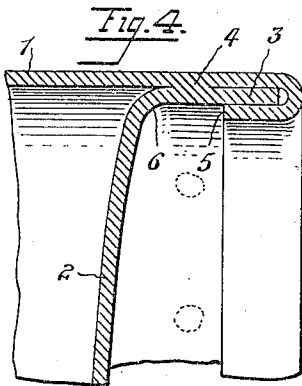
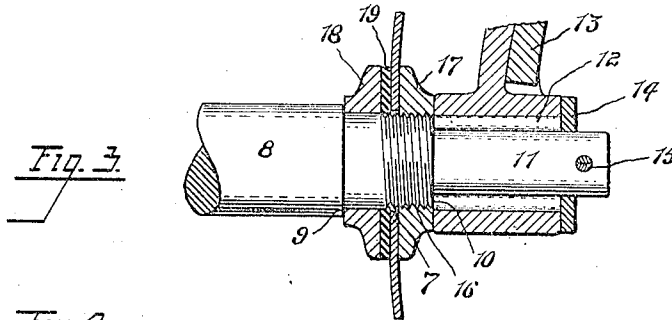
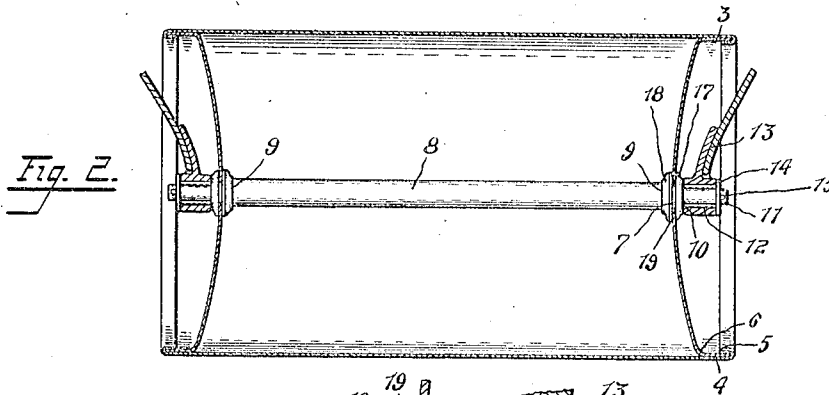
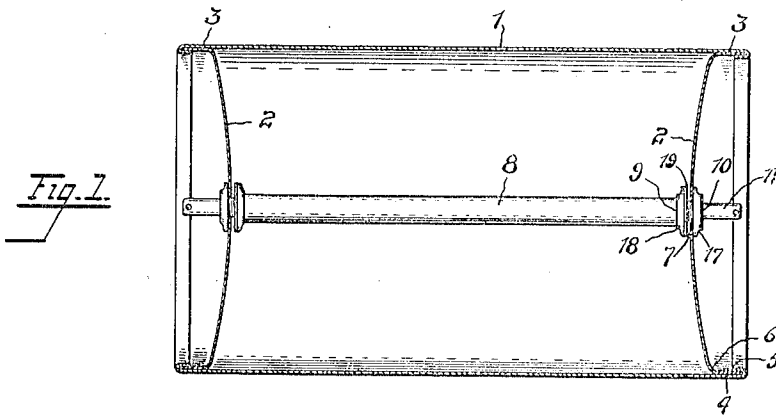


G. E. KARL.
LAND ROLLER.

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1,298,511.

Patented Mar. 25, 1919.



Inventor:
G. E. Karl
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UNITED STATES PATENT OFFICE.

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LAND-ROLLER.

1,298,511.

Specification of Letters Patent.

Patented Mar. 25, 1919.

Application filed August 20, 1915. Serial No. 46,484.

To all whom it may concern:

Be it known that I, GEORGE E. KARL, a citizen of the United States, resident of Berea, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Land-Rollers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to land rollers and particularly to that class of rollers which are known as water ballast rollers in which water or sand is used as a ballast.

The object of the invention is to provide a water ballast roller construction which will be economical of manufacture and efficient in performance of its functions.

The said invention consists of means hereinafter fully described and particularly set forth in the claims.

The annexed drawing and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be applied.

In said annexed drawing:—

Figure 1 represents an axial section, with the handle omitted, of a land roller embodying my invention, and showing the parts thereof occupying the position assumed prior to the complete assembling thereof.

Fig. 2 represents a section similar to that illustrated in Fig. 1, showing the parts in their final or assembled position and also showing fragmentary portions of the handle in section.

Fig. 3 represents upon an enlarged scale an axial section of the fragmentary portion of the device, the one end of the axial shaft being shown in elevation.

Fig. 4 represents upon an enlarged scale an axial section of a fragmentary portion of the drum, illustrating the manner of forming the water-tight joint between the cylindrical shell and end heads.

Fig. 5 represents a view similar to that of Fig. 4 showing a modified form of the joint between such shell and heads.

The illustrated embodiment of my invention comprises an outer shell 1 of sheet

metal bent into cylindrical form and having its meeting ends welded in the usual manner.

Inset into each end of such shell is a head 2 consisting of a main circular portion and a peripheral flange 3. These heads are inset a distance such that the end portions of the shell 1 originally extended beyond the outer extremities of the flanges whereby such shell end portions may be bent around and against the inner surfaces of the flanges, as shown in Figs. 1, 2, 4 and 5. Such bending operation is performed by the use of well-known bending apparatus and the overlapping parts are pinched tightly together to form a water-tight joint. After these two joints are formed as above described, or prior to the formation thereof, as may be found most expedient, each shell flange is integrally united at points constituting a zone intersected by a plane perpendicular to the shell's axis and located at points 4 intermediate of the extreme inner ends 5 of the bent portion of the shell and the inner extremity 6 of the corresponding flange. This integral union is preferably performed by spot welding and by means of suitable apparatus for this purpose well-known to those skilled in the art. I have found, however, in practice that it is preferable to join the flanges to the shell by the spot welding operation, before the bending operation takes place, inasmuch as the union thus obtained of the parts prior to such bending operation, prevents their displacement during the latter. Inasmuch as the thickness of the shell is such as to require considerable force in the bending operation, it will be seen that the tendency to effect such displacement would be considerable and that unless the two parts were held together by some suitable means, they would not be in their proper position at the conclusion of the operation. This is quite important inasmuch as the heads should be always a definite distance apart for uniformity in manufacture, as will be apparent. The spot welding thus constitutes the primary union, and the zone of spot welds together with the inside zone of flange end welding, serves to give increased stiffness to the roller.

In this manner a water-tight joint is

formed between the shell and flanges and at the same time they are joined together independently of such joint by means of the welding spots so that the water-tight joint is relieved from strains to which it would otherwise be subjected during the operation of the roller. Should, however, the joints so formed, through accident become leaky, such leak may be readily repaired by placing that portion of the joint affected upon an anvil and peening the parts until the required closure is effected.

In addition to the above-described advantages, a very economically produced and water-tight union is thus effected between these parts.

In Fig. 5 I have shown a slightly modified construction, such modification consisting in the introduction between the extreme end of each flange and the adjacent bent portions of the shell, a packing material 20 which preferably consists of lead wool. This material is inserted, of course, before the bending operation is effected and contributes to rendering the joint water-tight, as will be readily understood.

The central portion of each head is formed with a circular opening 7 through which openings extend the extremities of an axial shaft 8. These extremities are reduced to form two shoulders 9 and 10, Fig. 3, the shoulder 9 being located interiorly of the drum and the shoulder 10 exteriorly thereof. The fact that the inbent ends of the roller do not extend up the flanges, facilitates the institution of flexing strains, the edge of the inbent end serving as a line about which the flexing may occur. The extreme end-portion 11 is cylindrical and forms a journal upon which the roller bearings 12 of the handle 13 revolve. These bearings are held in place by means of a suitable washer 14 itself secured in place by means of a cotter pin 15. The inner ends of the rollers are adjacent to the shoulder 10.

That portion of the end part of each shaft intermediate of the shoulders 9 and 10 is provided with a thread 16 which is engaged upon the outside of the head by a nut 17. Adjacent to the shoulder 9 is a separating washer 18 and between this washer and the head is located a packing ring 19. The washer 18 is preferably made to have a driving fit.

The distance between the two shoulders of the shaft is made less than the distance between the central portions of the heads 2 when the latter are in a normal position prior to the assembling of the parts, as shown in Fig. 1, that is when the latter are in a state of internal rest.

The parts are completely assembled by screwing up the nuts 17 against the outside so as to cause the washers 18 to engage the shoulders 9, also to compress the packing

ring 19 so as to effect a water-tight joint and also flex the heads inwardly, as shown in Fig. 2, and thus set up a condition of tension therein.

As a result of imparting to these heads the described tension, it will be seen that they are rendered very rigid and are, during the operation of the roller, prevented from flexing in the direction of the roller's axis.

Where this condition of tension is not set up in the heads, such flexing takes place during the operation of the roller and produces not only an undesirable noise, but also imparts an impression of looseness and weakness to the structure. This flexing is especially apparent in the case of water ballast rollers and where the interior is not completely filled with water and where, therefore, the latter is permitted to move laterally against these heads. This flexing movement furthermore tends to weaken the metal of the joints effected between it and the shell.

In the above described manner therefore, I obtain a very simple and rigid construction without unduly increasing the thickness of the heads.

While I have shown heads which are in a dishd or bent form before assembling the parts, it will be understood that they may be originally perfectly flat, assuming a dishd form after assembly.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a land roller, the combination with a metal sheet bent and butt-welded to form a cylindrical shell of uniform exterior contour, of two end heads, each formed with a peripheral flange and each respectively in contact throughout its extent, with the inner surface of an end of the shell, the ends of the shell being extended beyond the ends of the flanges and bent around said flange ends, said shell being welded to said flanges at a zone of spots between the inner turned over ends of the shell and the inner or beginning parts of the flanges, and means whereby the heads may be put under tension to tend to draw or flex the ends of the shell toward the center, the pull of the tensioned heads coming mainly upon the welded spots.

2. In combination, a land roller having a cylindrical metallic shell, flanged heads adapted to fit one in each end of the shell, said heads being welded at spots to the shell well within the ends of the shell, the extending ends of the shell being bent over the flanges inwardly so as to seal the joints, and means whereby the heads may be strained so as to exert a tensional pull inwardly upon the ends of the cylinder and upon the said points of union whereby the sealed joints are largely relieved from the effect of the strained heads.

3. In a land roller, in combination with a cylindrical metallic shell; flanged heads for the ends of said shell, head-holding connections between said flanges and shell, there being besides, beyond said connections water tight joints between the shell and the heads, effective longitudinally of the roller and

means, to put strain upon said heads, the effect of the strain thus coming upon said connections, whereby the said water tight joints are relieved of strain. 10

Signed by me, this 14th day of August, 1915.

GEORGE E. KARL.