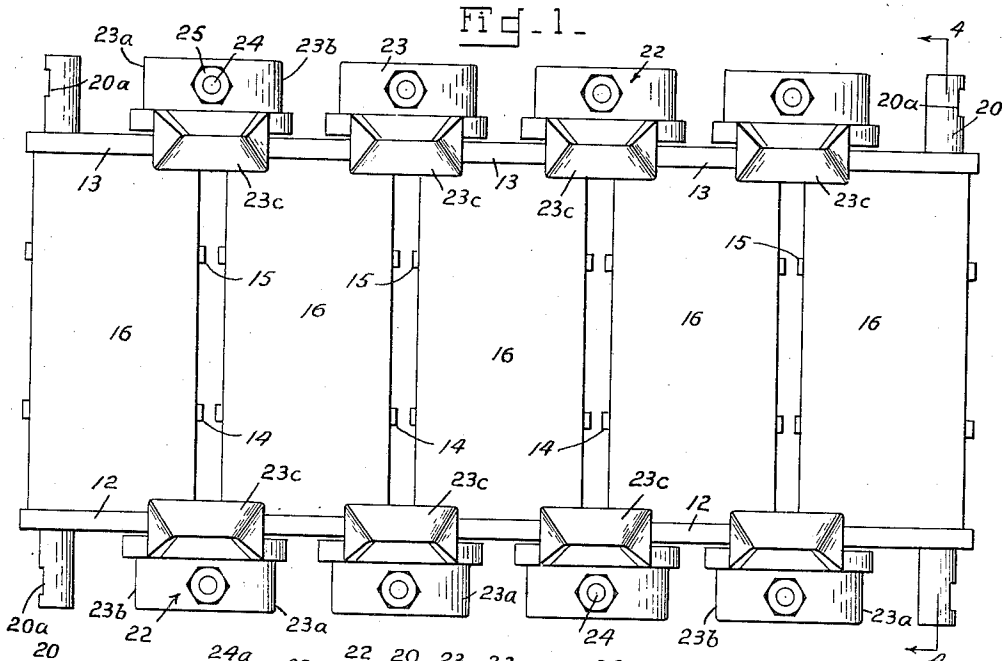
Nov. 20, 1945. H. A. KNOX 2,389,438

TRACK SHOE

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Fig. 1.



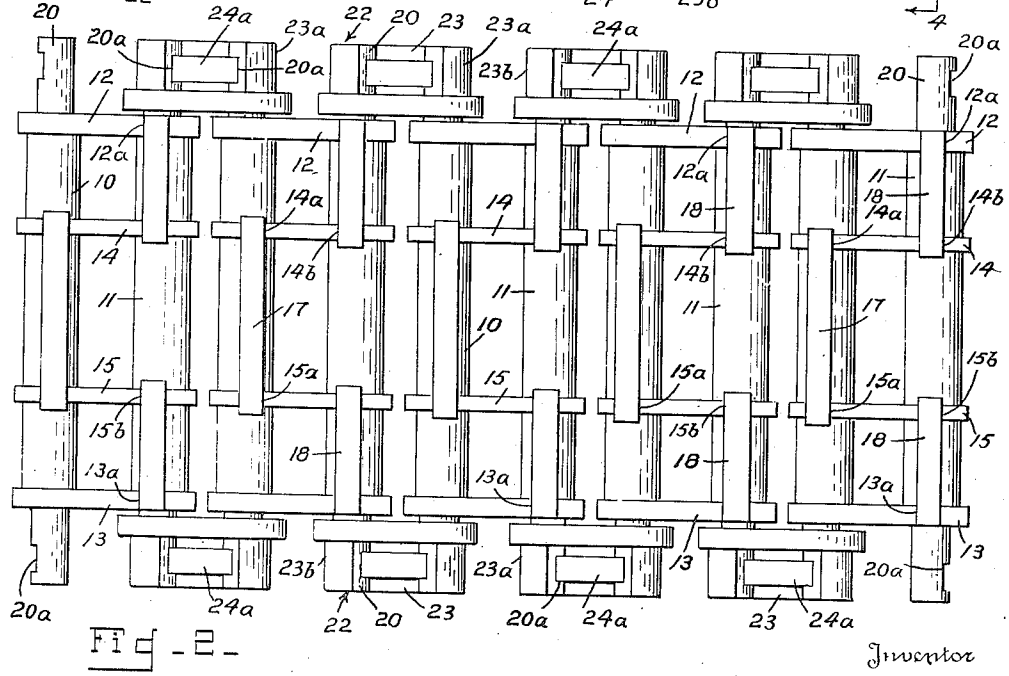


Fig. 2.

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Fig. 3.

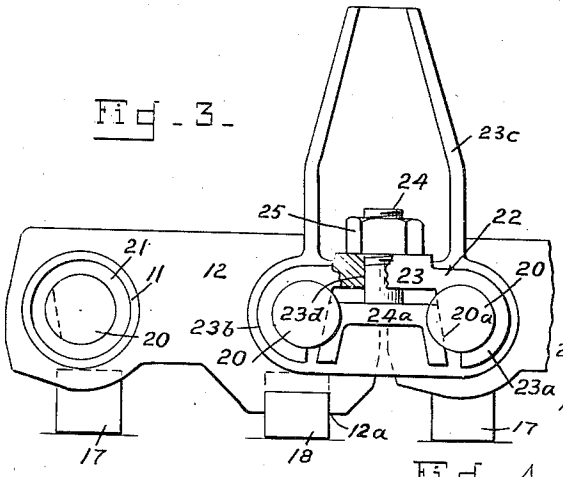


Fig. 5.

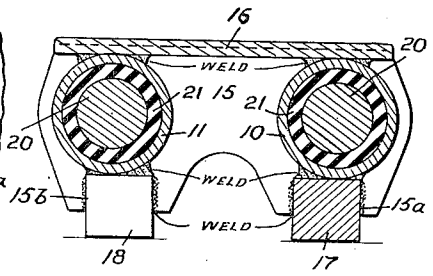


Fig. 4.

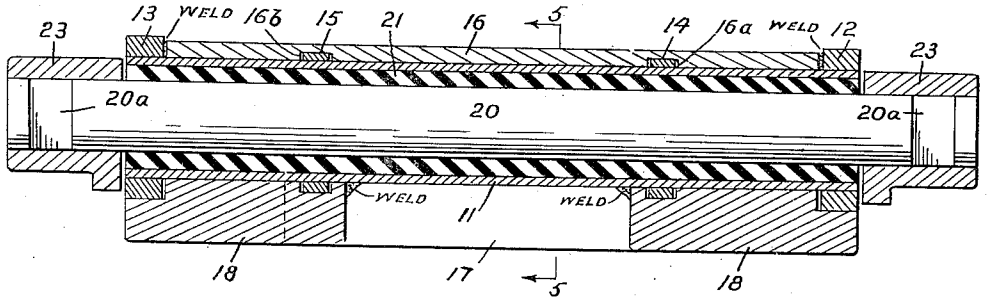


Fig. 6.

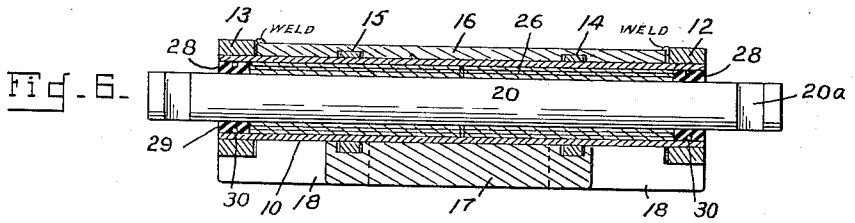
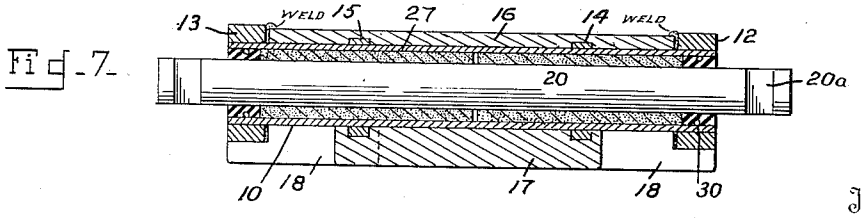


Fig. 7.



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Fig. 9.

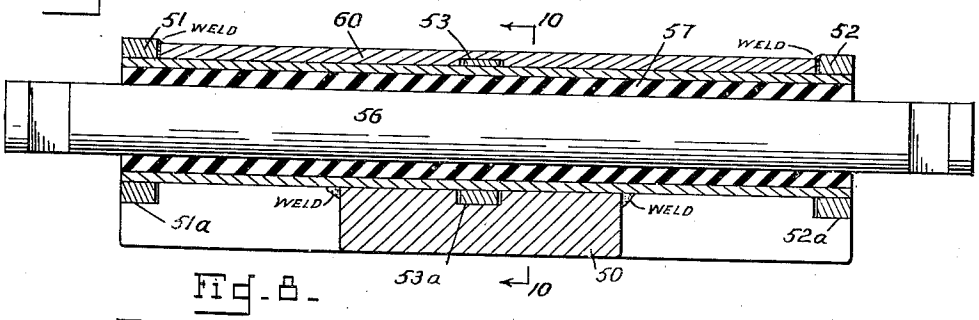


Fig. 8.

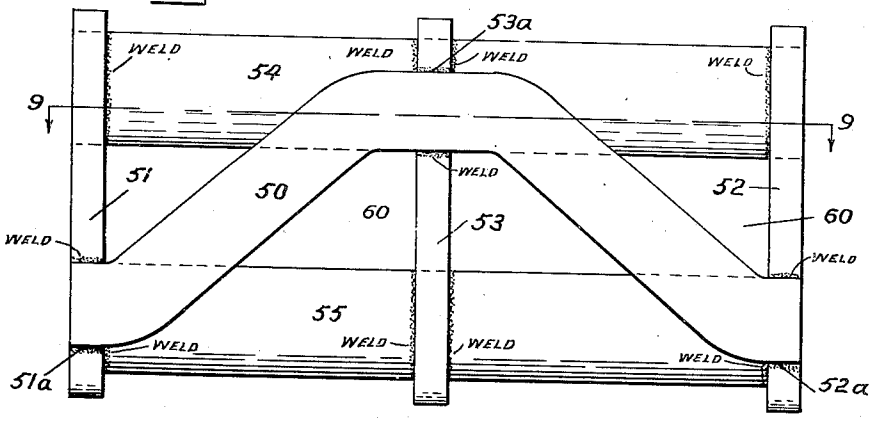


Fig. 10.

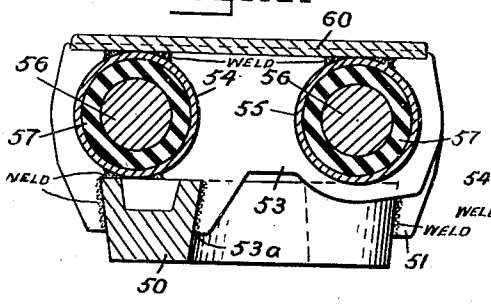
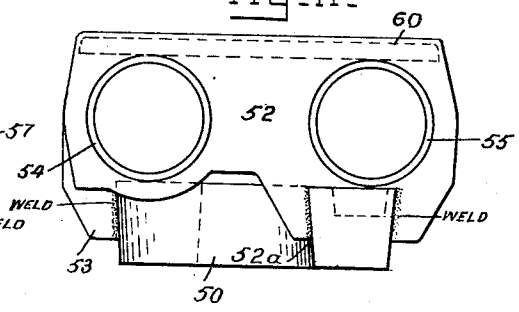


Fig. 11.



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UNITED STATES PATENT OFFICE

2,389,438

TRACK SHOE

Harry A. Knox, Washington, D. C.

Application August 31, 1942, Serial No. 456,749

7 Claims. (Cl. 305—10)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a track shoe.

An object of this invention is to provide an all welded or brazed track shoe having grousers or cleats mounted thereon.

Another object of this invention is to provide novel means for mounting cleats or grousers in staggered relationship on a track shoe.

Another object of this invention is to provide a track shoe having a chevron type cleat mounted thereon.

Another object of this invention is to provide a substitute bearing for the conventional rubber double pin track shoe.

Another object of this invention is to provide a one-piece track shoe frame which is fabricated from steel plates and tubes and in which no castings or bolts are used.

Another object of this invention is to provide a double pin track shoe having a highly compressed fabric bushing which is impregnated with lubricating compound.

Another object of this invention is to provide a double pin track shoe having self-lubricating metal bushing bearings.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

Fig. 1 is a plan view of a portion of my track as seen from the inside of the endless composite track.

Fig. 2 is a plan view of a portion of my track in Fig. 1 as seen from the outside of the endless composite track.

Fig. 3 is a view in end elevation of a portion of my track shown in Fig. 1.

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1 without the wheel guides.

Fig. 5 is a sectional view taken substantially on a line corresponding to line 5—5 of Fig. 4.

Fig. 6 is a section through a modified track and corresponds to a section similar to the one shown in Fig. 4.

Fig. 7 is a section through a modified track and corresponds to a section similar to the one shown in Fig. 4.

Fig. 8 is a plan view of a track shoe having a chevron type cleat thereon and is taken from the ground side.

Fig. 9 is a sectional view taken substantially on line 9—9 of Fig. 8.

Fig. 10 is a section taken substantially on line 10—10 of Fig. 9.

Fig. 11 is an end view of the track shoe shown in Fig. 8.

Referring to Figs. 1–5, my track shoe comprises two spaced hollow tubes 10, 11 which are held in spaced relationship by means of end plates 12, 13 and intermediate plates 14, 15. The tubes 10, 11 are rigidly fastened to the end plates and intermediate plates by means similar to brazing or welding. Upper wheel bearing plate 16 extends between end plates 12, 13 and may be welded or brazed to the tubes 10, 11 along their lines of contact (Fig. 5). Wheel bearing plate 16 has recesses 16*a*, 16*b* (Fig. 4) for the reception of portions of intermediate plates 14, 15 and may be fastened to the end plates 12, 13 by means similar to welding or brazing.

Intermediate plates 14, 15 are preferably disposed an equal distance from the center of the track shoe and have cut-out portions 14*a*, 15*a* respectively adapted to snugly receive centrally mounted cleat or grouser 17 which is fastened to the intermediate plates 14, 15 and which extends therebetween by means similar to welding or brazing. A pair of grousers 18, 18 spans the distance between correspondingly disposed intermediate plates 14 or 15 and one of the pair of adjacent end plates 12, 13 and these cleats are held in cut-out portions 14*b*, 15*b*, 12*a*, 13*a* in the intermediate plates 14, 15 and end plates 12, 13 respectively as by means of welding or brazing (Figs. 2 and 5).

As is well understood in the art, a link pin 20 is then inserted through each of the tubes 10, 11 with elastic material 21 such as rubber spacing the link pin 20 from the tube 10, 11 which surrounds or encases the link pin.

Adjoining link pin ends of adjoining shoes are locked against independent rotational movement by clamp 22 which is well known in the art and fully described in my previous patents. The clamp 22 comprises an upper plate 23 having pin encircling portions 23*a*, 23*b* and a wheel guide 23*c* mounted thereon. A bolt 24 having a wedge head 24*a* having faces thereon adapted to contact link pin faces 20*a* passes through aperture 23*d* in upper plate 23 so as to receive fastening nut 25.

The track is propelled by a sprocket wheel (not shown) which is adapted to engage upper plate pin encircling portions 23*a*, 23*b*.

In Fig. 4 it is noted that I have disclosed the conventional rubber sleeve 21 spacing the link pin

from the corresponding encircling tube 11 but as shown in Figs. 6 and 7, the rubber bushing or sleeve may be replaced by a highly compressed fabric bushing 26 which is impregnated with a lubricating compound as seen in Fig. 6; or a self-lubricating metal bushing 27 may be used in place of the rubber or sleeve as seen in Fig. 7.

In the construction shown in Fig. 6 a closure member 28 may be mounted on opposite ends of the link pin so as to confine lubricating compound which may be introduced in the space between surrounding metal tube 10 and the link pin 20. The particular closure member 28 disclosed is described and claimed in my copending application and comprises a ring 29 of elastic material which resiliently and frictionally engages the link pin 20 so as to prevent leakage therebetween. Elastic ring 29 is circumferentially grooved so as to receive at least one metallic ring 30 which projects beyond the outer circumference of the elastic ring 29 so as to provide a metal contact between the closure member 28 and the tube 10 whereby lubricating compound is prevented from leaking therebetween. The elastic or resilient ring 29 may be of rubber, synthetic rubber or other similar elastic material so long as it resiliently engages the link pin.

In Fig. 7 the metal bushing 27 is of the self-lubricating type and may be formed from metals which are well known in the art. The material of metal bushing may be of the type known in the art as Oilite or Superoilite which consists essentially of powdered copper or bronze mixed with some ferrous material and a lubricating compound added and then compressed; or the lubricating material may be added after compression.

Self-lubricating bushing 27 made of lead alloys may also be useful for the purpose at hand, i. e., to provide a bearing which requires no periodic lubrication from extraneous sources.

The expedient of welding or brazing end plates 12, 13 to tubes 10, 11 so as to provide a track shoe frame is well known in the art as seen in my copending application, Serial No. 395,231, filed May 26, 1941, and in the Kubaugh Patent 2,234,927. One of the important features of my invention is to provide at least one intermediate plate similar to plates 14, 15 in Figs. 1–4 between pairs of spaced end plates 12, 13 whereby the track shoe frame is strengthened and means are provided for mounting grousers or cleats. As seen in the drawings, Figs. 1–4 there is provided a pair of end cleats 18, 18 and one center cleat or grouser 17 per track shoe in staggered relationship to one another, and it is apparent that other physical arrangements of the cleats or grousers might be suggested from the teaching that end plates and intermediate plates may be advantageously used to strengthen the track shoe frame and to provide mounting means for cleats or grousers.

It is noted in Figs. 1–4 that the device of the invention has staggered cleats or grousers on each individual track shoe, i. e., a center cleat or grouser 17, and a pair of end cleats or grousers 18, 18. Accordingly, when assembling the composite track, similar center cleat or grouser 17 may be mounted in adjoining relationship to a correspondingly similar cleat or grouser 17 on an adjoining shoe; or adjoining cleats or grousers on adjoining shoes may be of different character, i. e., an end cleat or grouser 18, 18 on one shoe may be in adjoining relation to a center cleat or grouser 17 on an adjoining shoe.

In the track shoe of Figs. 8–11 having a chevron type cleat or grouser 50 mounted thereon by welding or brazing two end plates 51, 52 and one intermediate plate 53 rigidly hold tubes 54, 55 in spaced relationship. Inserts 51*a*, 52*a*, 53*a* are cut in corresponding plate members for the insertion of cleat 50 in position prior to the welding or brazing process wherein the cleat 50 is fastened to the tubes 54, 55 and/or plates 51, 52, 53. Link pins 56 extend through the track shoe and are yieldingly separated therefrom by elastic material 57 such as rubber or by means shown in Figs. 6 and 7. Top wheel bearing plate 60 is fastened to the track shoe frame by means similar to welding as in the previously described constructions.

I claim:

1. In a track shoe, a pair of spaced continuous tubes, separated individual end plates joining the tubes, intermediate plates separated from the end plates and joining the tubes, and grousers mounted on the end plates and intermediate plates.

2. In a track shoe, a pair of spaced tubes, end plates joining the tubes, intermediate plates joining the tubes, and staggered grousers mounted on the end plates and intermediate plates.

3. In a track shoe, a pair of continuous tubular members, a pair of separated individual plates having hollow portions adapted to receive the pair of tubular members, means for fastening the plates to the tubular members, and a grouser mounted on the plates and extending from plate to plate.

4. In a track shoe, a pair of tubular members, end plates joining the tubular members, at least one intermediate plate joining the tubular members, and staggered grousers mounted on and between the intermediate plates and end plates.

5. In a track shoe, a pair of tubular members, end plates joining the tubular members, a wheel engaging plate mounted on the tubular members and extending substantially the full length thereof, at least one intermediate plate joining the tubular members, and staggered grousers supported by the intermediate plate and end plates.

6. In a track shoe, end plates having openings therethrough, at least one intermediate plate having openings therethrough, tubular members threaded through the intermediate plate and end plate openings, means for fastening the intermediate plate and end plates to the tubular members, and staggered grousers mounted on the intermediate plate and end plates.

7. A track shoe having a pair of spaced hollow portions, end plates connecting said hollow portions, an intermediate plate secured to said hollow portions, intermediate their ends, a grouser having its outer portion secured to the end plates adjacent one hollow portion, and its central portion secured to the intermediate plate adjacent the adjoining hollow portion.

HARRY A. KNOX.