

PATENT SPECIFICATION

773,972



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International Classification:—B62d.

COMPLETE SPECIFICATION

Improvements in Endless Tracked Tractors

I, JOSEPH ARMAND BOMBARDIER, a Citizen of Canada, residing at Valcourt, County of Shefford, Province of Quebec, Canada, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention has reference to a device for varying the tension in an endless track of a tractor of the kind wherein each track extends around a driving wheel and a driven idler wheel. In normal everyday use of a tractor of the above kind, it is desirable that the tensions in the tracks should be low in order to drive freely and without undue binding of moving parts; however, on occasions, it is desirable to increase the tension to avoid slipping.

The principal object of the present invention is to enable a uniform tension to be imparted to the track and for the driven idler wheels to be urged on to the surface of the ground over which the tractor is to be driven.

Further objects of the invention are to enable the track tension to be adjusted quickly and easily by the driver of the tractor and to provide a rugged and economical means for effecting such adjustment.

In accordance with the said invention, the axle of the driven wheel or of the idler wheel of a tractor of the kind referred to, is mounted upon the upper end of a rocker which is located in a plane normal to the axle and, between its ends, is pivoted upon the free end of a strut of which the opposite end is pivoted upon a first anchorage located in the vicinity of, and fixed relatively to, the other axle, the lower end of the rocker being connected to a second anchorage located in the vicinity of, and fixed relatively to, the said other axle by a resiliently tensioned flexible member and wherein means are provided for adjusting the tension in the said flexible member.

The strut may consist of a bar and the flexible member may be tensioned by a spring,

the degree to which the said spring is tensioned being adjustable.

Alternatively, the strut may consist of a cylinder in which a piston, connected to the rocker by a rigid link, is accommodated means being provided for supplying fluid to the cylinder at a variable pressure to determine the position of the piston axially of the cylinder and, therefore, angular relationship of the rocker upon the cylinder.

In order that the invention may be more readily understood and carried into practice reference will now be made to the accompanying drawings, wherein:—

Figure 1 is a side elevation of a belt-adjusting device fitted to a tractor of which the body, a driving wheel, a driven wheel and a traction belt are indicated in dotted lines;

Figure 2 is a plan of the device shown in Figure 1;

Figure 3 is a perspective view of a detail of construction;

Figure 4 is a perspective view of another detail of construction;

Figure 5 is a plan of the detail shown in Figure 4,

Figure 6 is a sectional elevation of still another detail of construction.

Figure 7 is an elevation, partly in section, of an alternative or modified belt-tensioning device; and

Figure 8 is a section along the line 8—8 of Figure 7.

The track-tensioning device shown in Figures 1—6, is supported upon the axle casing through which the driving axle 1 of the tractor extends. The device includes a pair of shackles 2 which embrace the said casing and to which a plate 3 is bolted on the underside of the casing. The plate extends downwardly of the axle and, at each side of its forward end, is provided with an ear 4 (see Figure 3); the head of a T-shaped bar 5 is pivotally connected to and between the ears 4, the stem of the said bar extending forwardly and downwardly of the plate 3 and a

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tubular rocker 7 is pivoted at 6 to the forward end of the said stem. The rocker (see Figures 4 and 5) is located in a substantially vertical plane and projects upwardly and downwardly of its pivot 6, its upper end carrying the axle 8 of the driven or idler wheel 9 whereas its lower end carries a laterally projecting pin 15'. Endless tracks 11 extend around the driving wheels 10 and the driven idler wheels 9.

A cylindrical spring housing 12 having an integral lip 13 is suspended from the plate 3 by the said lip and is held in rigid relationship to the plate by a brace 3'. A screw threaded rod 14, which extends into the housing, is resiliently supported axially of the latter by a coiled compression spring 20 of which one end coil abuts the bottom of the housing and its opposite end coil abuts a washer 18 carried on the rod and spring driven against a nut 19 screwed on to the said rod.

The rod end disposed within the housing and the spring, is coupled to one end of a chain 15 which extends through the bottom of the said housing, over a pulley 16 journalled between ears 17 projecting from and externally of the housing, and is connected by its opposite end to the laterally projecting pin 15'.

The chain is tensioned by the spring and tends to rotate the rocker in the direction which increases the distance between the axles 1 and 8, thereby tensioning the track 11 and, at the same time, tends to swing the bar 5 in the direction which urges the driven idler wheels downwardly into contact with the ground.

To limit the downwards angular movement of the bar, a chain 21 extends between and is attached to a part 22 of the tractor body and a hook 23 on the bar; the effective length of this chain can be varied by engaging a different link thereof with the hook 23.

In normal use of the tractor, the tension in the track is kept low to enable the drive to be transmitted freely and without undue binding of the moving parts. However, as and when it is desired to increase the said tension, the nut 19 is rotated in the direction which tends to draw the rod 14 outwardly of the housing 12 thereby increasing the degree to which the spring 20 is compressed and swinging the rocker in the direction which increases the distance between the axles 1 and 8 so that the tracks are tightened. The lower tension is restored by turning the nut 19 in the opposite direction.

In the alternative device shown in Figures 7 and 8, the T-shaped bar is replaced by a closed cylinder 30 in which a piston 31 is accommodated and is adapted to be displaced axially thereof under the control of pressure fluid fed to the interior of the cylinder through a pipe 35 and the reaction of the

idler wheel axle 8' which axle, as in the arrangement of Figures 1—6, is journalled in a tubular rocker 7' upwardly of the cylinder. The said upper rocker end is connected to the piston 31 by a link 34 of which the opposite ends are pivotally connected to the rocker and a pin 32 extending laterally from the piston through a slot 33 formed in and lengthwise of the cylinder wall. The lower end of the rocker 7' is again provided with a laterally projecting pin to which one end of a chain 15a is attached, the chain being connected as shown in Fig. 6 and Fig. 7 to operate in a similar manner to that already described, and to serve as an alternative or additional track tensioning means.

The fluid pressure created within the cylinder and acting on the piston is adapted to be regulated by any suitable means which is readily accessible to and operable by the driver of the tractor.

What we claim is:—

1. A tractor of the kind referred to, wherein the axle of the driving wheel or of the idler wheel is mounted upon the upper end of a rocker which is located in a plane normal to the axle and, between its ends, is pivoted upon the free end of a strut of which the opposite end is pivoted upon a first anchorage located in the vicinity of, and fixed relatively to, the other axle, the lower end of the rocker being connected to a second anchorage located in the vicinity of, and fixed relatively to, the said other axle by a resiliently tensioned flexible member and wherein means are provided for adjusting the tension in the said flexible member.

2. A tractor as claimed in Claim 1 wherein one end of the flexible member is connected to the rocker and the opposite end is connected to a rod which is axially loaded by a spring in the direction which tensions the said flexible member.

3. A tractor as claimed in Claim 2 wherein the spring is accommodated within a cylindrical housing which is fixed to the second anchorage, the rod being disposed axially of the housing and the spring being compressed between the housing and a washer carried by and adjustable lengthwise of the rod.

4. A tractor as claimed in Claim 1 wherein the strut consists of a cylinder wherein a piston is accommodated, the said piston being linked to the rocker and means being provided for supplying pressure fluid to the interior of the cylinder.

5. A tractor as claimed in Claim 4 wherein the piston is linked to the axle supporting end of the rocker.

6. A tractor as claimed in Claim 4 wherein the piston is provided with a laterally projecting pin which extends through a slot formed in and lengthwise of the cylinder wall and which is connected to the link.

7. A tractor of the kind referred to pro-

vided with means for tensioning the track, which means are constructed, arranged and adapted to operate substantially as herein described with reference to Figures 1—6 or 5 Figures 7 and 8 of the accompanying drawings.

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Agent for the Applicant.

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Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which
copies may be obtained.

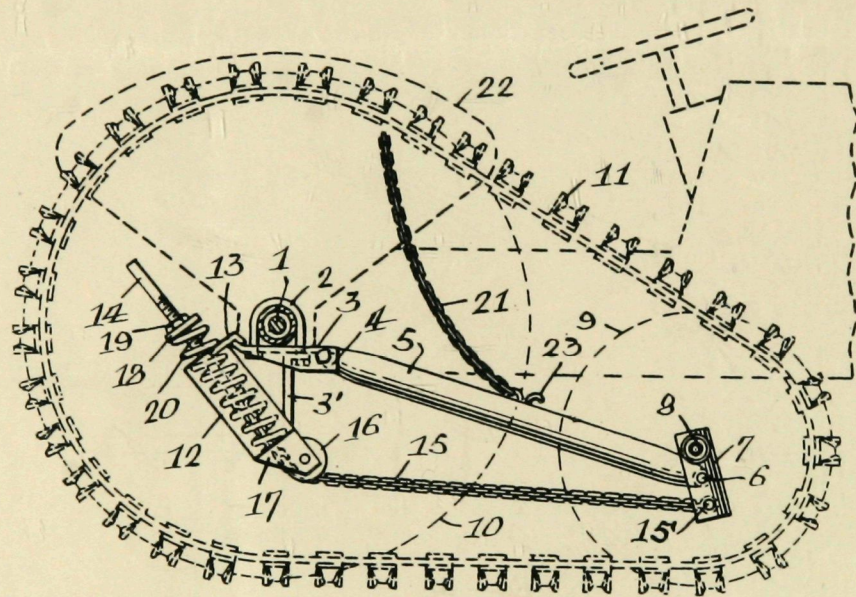


Fig. 1

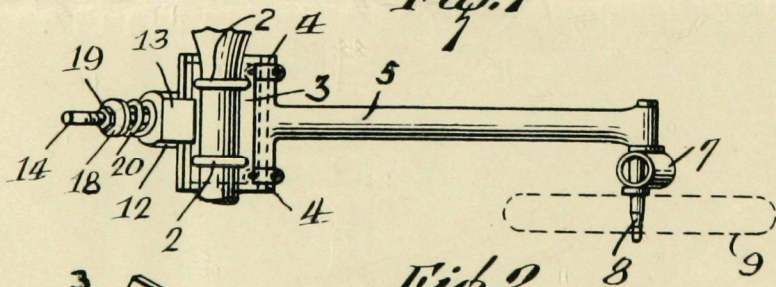


Fig. 2

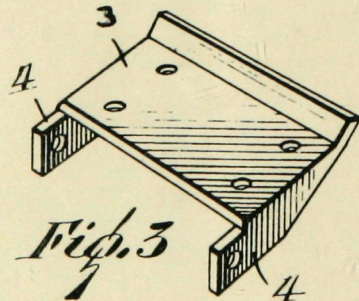


Fig. 3

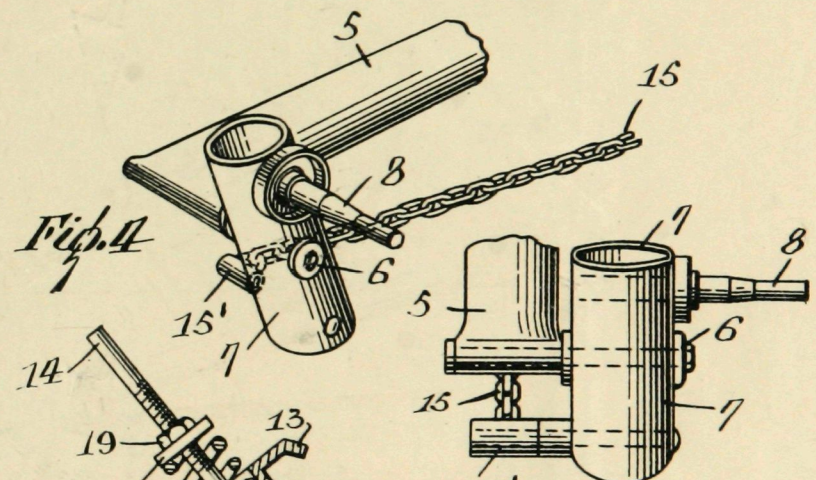


Fig. 4

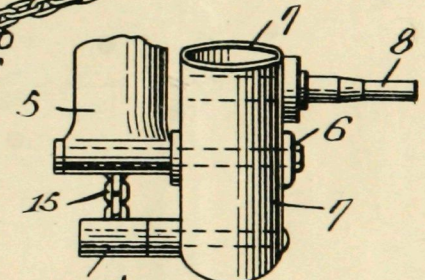


Fig. 5

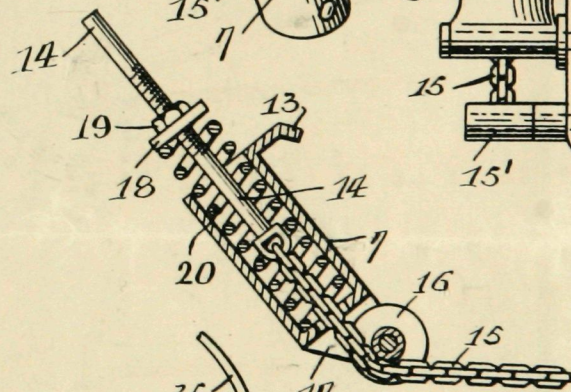


Fig. 6

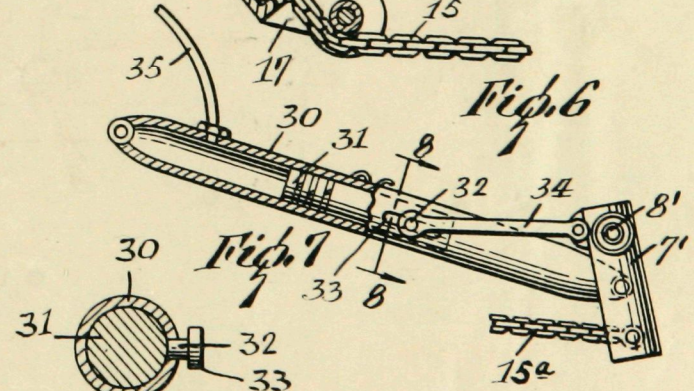


Fig. 7

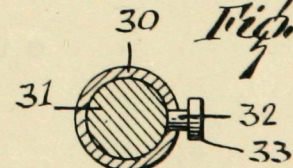


Fig. 8

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ALBERT FOURNIER

CONSEILS EN MATIÈRE DE PROPRIÉTÉ INDUSTRIELLE
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934, rue Ste-Catherine Est, Montréal 24

Monsieur J. Armand Bombardier,
a/s AUTONEIGE BOMBARDIER,
Valcourt,
Cté Shefford, P.Q.

le 7 juin 1954.

Frais de préparation et de dépôt
d'un amendement destiné à réfuter
les objections de l'examineur de
Grande-Bretagne contre votre demande
en ce pays numéro 29185/52 pour
" TENSIONING DEVICE FOR TRACTORS ".....\$30.00

chèque 14 juin 1954
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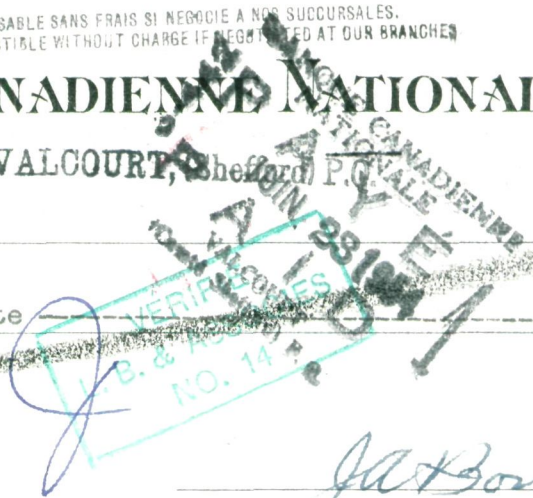
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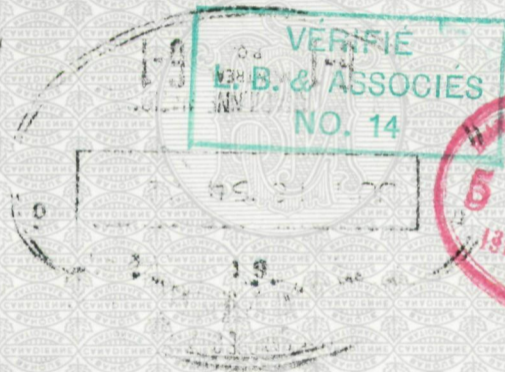
Ré: facture 7 juin 1954
Dem. No 29185/52

J. Bombardier

Cher Jean

Pour dépôt seulement
au crédit de

BUREAU TECHNIQUE FOURNIFF



PATENTS ACT, 1949
The Patent Office,
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LONDON, W.C.2.

CERTIFICATE OF PAYMENT OF RENEWAL FEES

This is to certify that Letters Patent, as numbered below, were renewed for a further period of ^{two} ~~one~~ years as from the due date, the payment of the requisite fees having been made.

Letters Patent No. 773972

Due Date 19 November 1956

Fee Paid £11-0-0

J. a. Bombadier,
c/o Messrs. Arthur Sadler & Son

*a payment from
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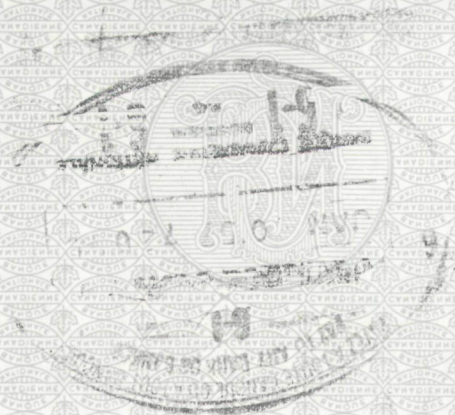
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PROCCUREURS DE BREVETS D'INVENTIONS LICENCIÉS



934, rue Ste-Catherine Est, Montréal 24

Monsieur J. Armand Bombardier,
a/s AUTONEIGE BOMBARDIER,
Valcourt,
Cté Shefford, P.Q.

le 4 janvier 1957.

Revision de la demande de brevet en
Grande-Bretagne numéro 29185/52
effectuée par mon confrère de Grande-
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Amendement préparé pour la poursuite
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934, rue Sainte-Catherine Est

Montréal 24, le 14 novembre 1957.

Monsieur J. Armand Bombardier,
a/s AUTONEIGE BOMBARDIER,
Valcourt,
Cté Shefford, P.Q.

Monsieur,

Je reçois à l'instant votre lettre datée du 11 courant accompagnée d'un chèque au montant de \$55.00 pour le renouvellement de votre brevet britannique numéro 773,973, et vous en remercie.

Je transmets immédiatement le montant réclamé par mon correspondant et dans l'attente de pouvoir vous envoyer le reçu officiel de ce paiement, je vous prie d'agréer, monsieur, mes salutations les plus empressées,

AF/DS

