

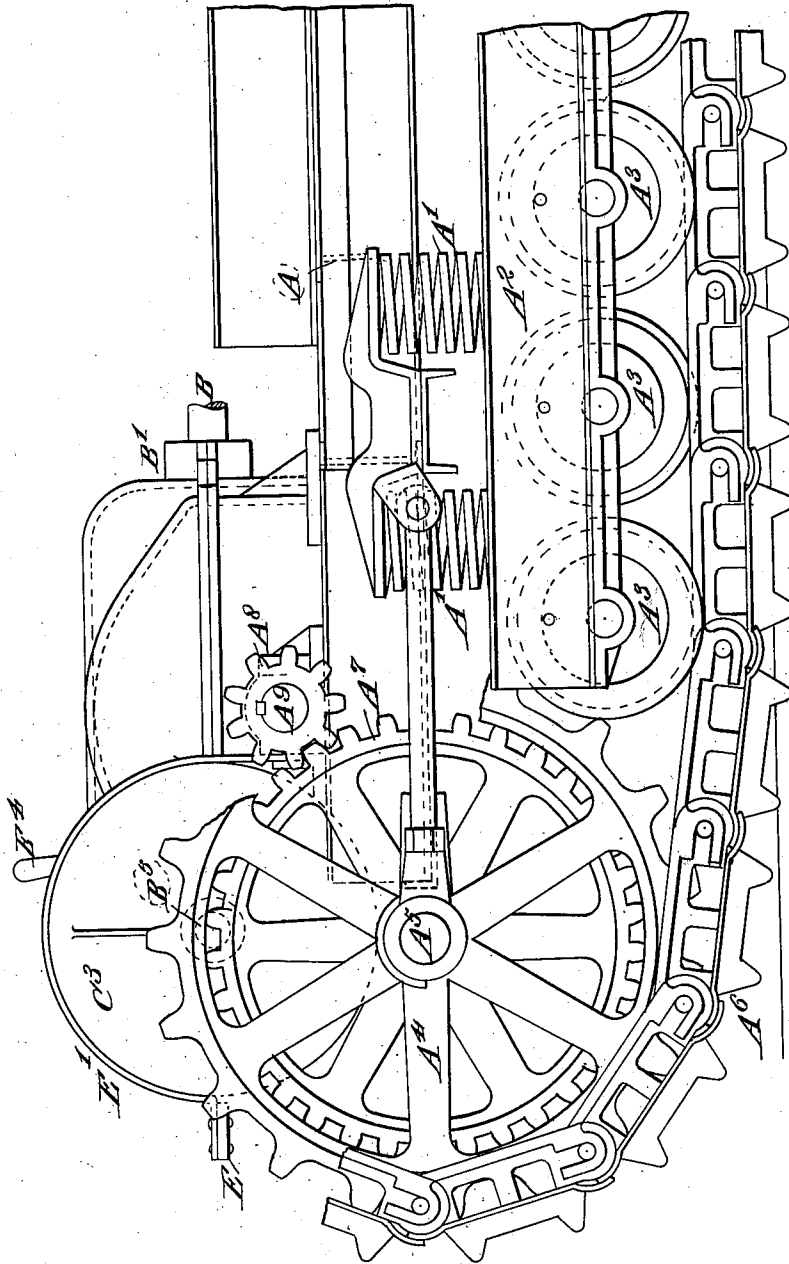
E. F. NORELIUS.
TRACTION ENGINE.
APPLICATION FILED AUG. 24, 1914.

1,184,008.

Patented May 23, 1916.

4 SHEETS—SHEET 1.

Fig. 1.



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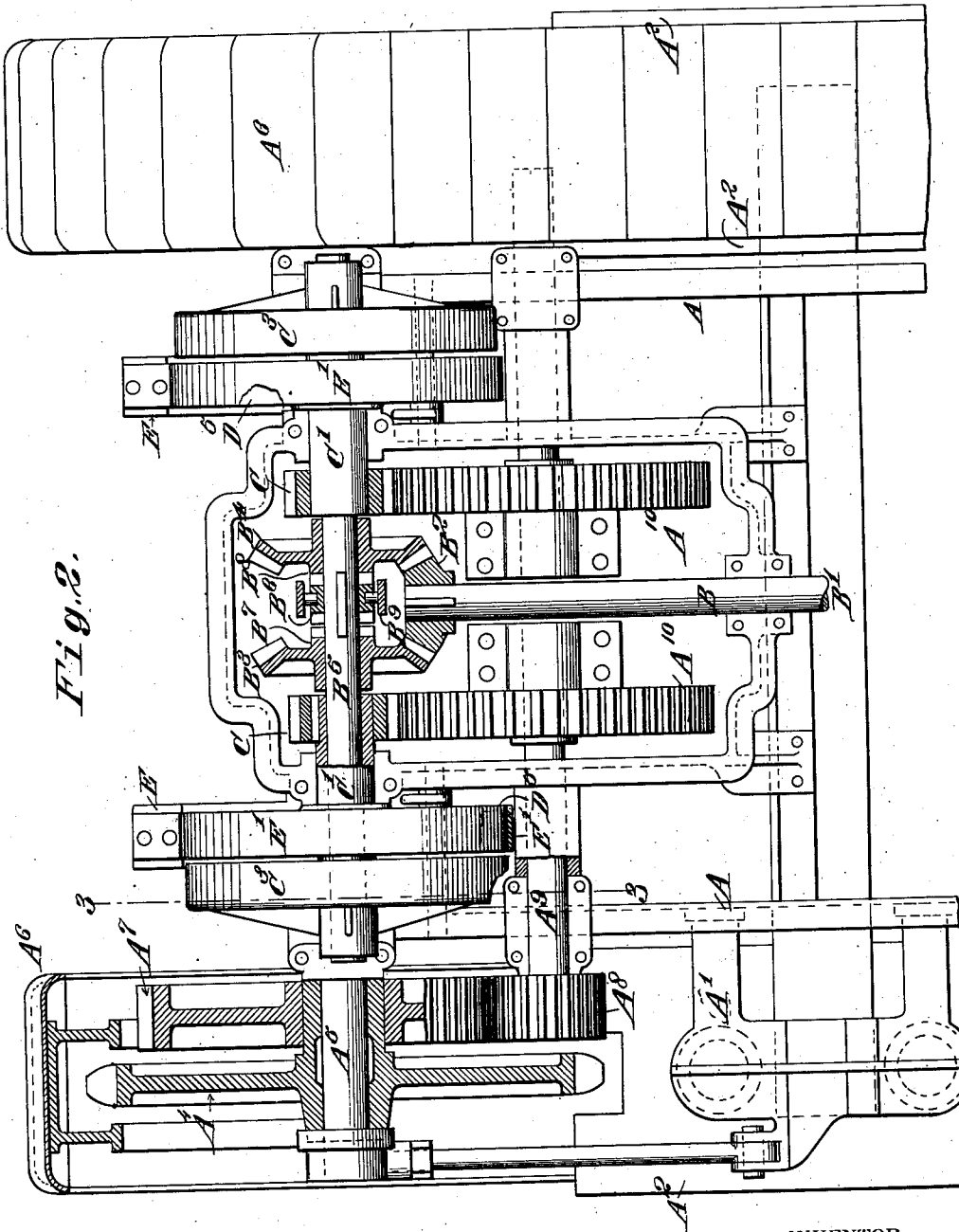
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4 SHEETS—SHEET 2.



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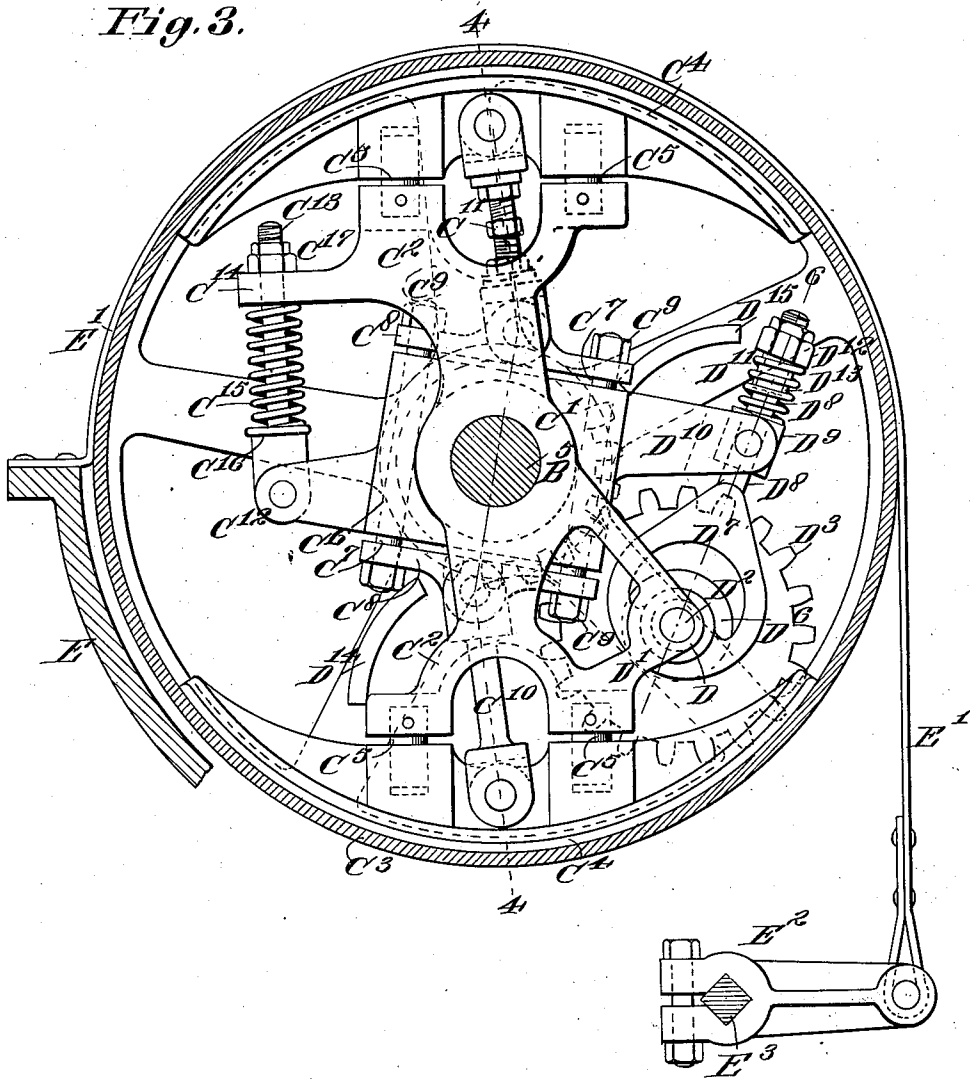
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4 SHEETS—SHEET 3.

Fig. 3.



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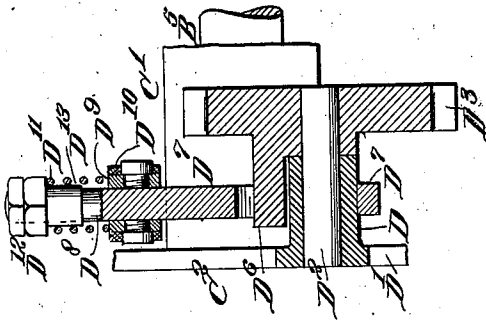


Fig. 6.

Fig. 5.

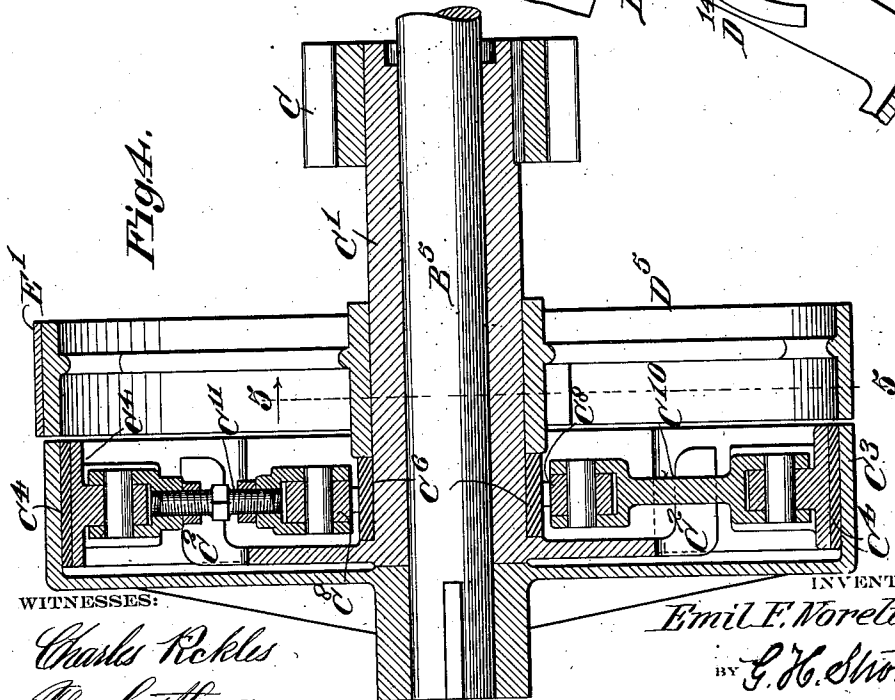
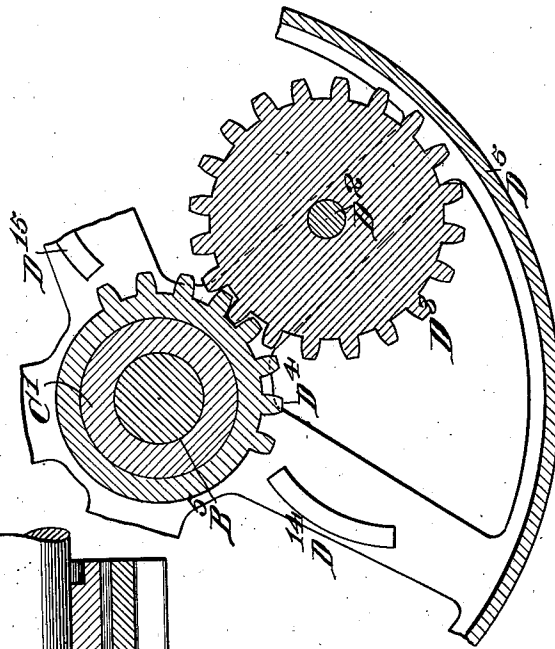


Fig. 4.

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UNITED STATES PATENT OFFICE.

EMIL F. NORELIUS, OF PEORIA, ILLINOIS, ASSIGNOR TO THE HOLT MANUFACTURING COMPANY, OF STOCKTON, CALIFORNIA, A CORPORATION OF CALIFORNIA.

TRACTION-ENGINE.

1,184,008.

Specification of Letters Patent.

Patented May 23, 1916.

Original application filed February 16, 1914, Serial No. 818,837. Divided and this application filed August 24, 1914. Serial No. 858,176.

To all whom it may concern:

Be it known that I, EMIL F. NORELIUS, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented new and useful Improvements in Traction-Engines, of which the following is a specification.

This invention relates to traction engines of the self-laying track variety; the present application being a division of my original application Ser. No. 818,837, filed February 16, 1914.

The invention consists generally in the combination with a traction engine mounted on a pair of endless, flexible, self-laying tracks or traction members, of means acting through the traction members for steering the machine.

It should be said that the construction here detailed is for use particularly in connection with engines of the character shown and described in my copending case Ser. No. 820,504, filed February 24, 1914, in which the entire weight of the vehicle is supported upon the two endless, flexible traction members; it being necessary, by reason of the doing away of the ordinary steering wheels and steering mechanism, to steer through the traction members, all in a manner shortly to be described.

Having reference to the accompanying drawings—Figure 1 is a detail side elevation of one end of a tractor with parts broken away. Fig. 2 is a detail plan view in section with parts broken away. Fig. 3 is a section along line 3—3 of Fig. 2 on an enlarged scale with parts omitted. Fig. 4 is a section along line 4—4 of Fig. 3. Fig. 5 is a section along line 5—5 of Fig. 4. Fig. 6 is a section along line 6—6 of Fig. 3.

A is the main frame supported by means of the springs A¹ on the roller truck A² with rollers A³ adapted to travel on the endless, self-laying track A⁴.

A⁴ is a driving sprocket mounted on an axle A⁵ on the frame A.

A⁶ is an endless, flexible, self-laying track adapted to travel over the driving sprocket A⁴ and furnish a track along which the rollers A³ may travel.

A⁷ is a bull gear on the sprocket A⁴ in mesh with a bull pinion A⁸ on a shaft A⁹ rotatably mounted on the frame A. This

shaft carries at its inward end a reduction gear A¹⁰.

It will be noted that the parts above described are in duplicate, one on either side of the machine. They are, however, identical in every respect, and a description of one will suffice for both.

B is a drive shaft driven by any suitable source of power, such as an engine, not shown here. This drive shaft is arranged in the bearings B¹ and along the line parallel with the central axis of the frame. It carries on its end a miter pinion B² constantly in mesh with the miter gears B³ B⁴, which gears are rotatably mounted but held against longitudinal movement along a shaft B⁵.

B⁶ is a sliding clutch member splined to the shaft B⁵ in opposition to clutch jaws B⁷ B⁸ on the gears B³ B⁴ respectively and adapted to be actuated by a yoke B⁹ controlled in any suitable manner to reverse the direction of movement of the shaft B⁵ with respect to the shaft B to move the machine forward or reverse. The shaft B⁵ has at either end a combined clutch and brake assembly. These assemblies are in each case identical, and a description of one will suffice for both.

C is a driving pinion in mesh with the gear A¹⁰ mounted on the sleeve C¹, which sleeve is rotatable on the shaft B⁵ and carries a clutch spider C².

C³ is a clutch drum keyed to the shaft C⁵.

C⁴ C⁴ are brake shoes adapted to frictionally engage the inner bearing surface of the drum C³ and slidable along the guide pins C⁶ on the spider C².

C⁶ is a rocker block rockably or rotatably mounted about the sleeve C¹ inside the drum C³. This rocker block has slidably mounted on either side of the shaft B⁵ the pins C⁷ shouldered to engage the yoke C⁸ which are held in position against the shoulders by the nuts C⁹.

C¹⁰ is a pivotal link interposed between one of the yokes C⁸ and the clutch shoes C⁴.

C¹¹ is an adjustable pivotal link interposed between the other yoke C⁸ and shoe C⁴. The yokes C⁸ are thus free to move slightly with respect to the block C⁶.

C¹² is a controlling arm projecting outwardly from one side of the rocker block C⁶.

having pivotally mounted thereon a pin C¹³, which pin is in slidable engagement with an arm C¹⁴ on the spider C². The spring C¹⁵, surrounding the pin pressing against the shoulder C¹⁶ at one end and the arm C¹⁴ at the other, tends to separate the arms C¹² C¹⁴ and thus yieldingly wedge the blocks C⁴ apart and clamp them against the surface of the brake drum C³. This movement is limited by the nuts C¹⁷.

D is a hub carried on the arm D¹ of the spider C². This hub carries a shaft D² on which is rotatably mounted a pinion D³. This pinion is in mesh with the fragmentary gear D⁴ on a brake wheel D⁵, which wheel is rotatably mounted on the sleeve C¹.

D⁶ is a cam carried by the pinion D³.

D⁷ is a cam yoke in the path of the cam D⁶. D⁸ is a control rod projecting from said cam yoke and in slidable engagement with the block D⁹ pivoted on the arm D¹⁰ on the rocker C⁶.

D¹¹ is a yielding spring interposed between the block D⁹ and the adjustable nut D¹².

D¹³ is a shoulder on the pin D⁸ to limit the movement of the pin with respect to the block D⁹.

D¹⁴ D¹⁵ are stops on the clutch wheel D⁵ to limit the rotary progress of the pinion D³ with respect to the wheel.

E is a brake and guard bracket on the frame A partially surrounding the brake wheel D⁵.

E¹ is a brake band engaging the wheel D⁵ and anchored at one end on the bracket E.

E² is a brake lever to which is pivotally mounted the free end of the brake band E¹.

E³ is a brake shaft on which the lever is mounted and E⁴ is a hand lever whereby the brake band may be tightened.

It will be evident that, while I have shown in my drawings an operative device, still changes might be made in size, shape and arrangement of parts without departing materially from the spirit of my invention. I wish, therefore, that my drawings be regarded as in a sense diagrammatic.

The use and operation of the invention are as follows: In operating the tractor, the engine will, of course, be started in the usual manner and the clutch thrown in to move the machine either forward or backward, depending on which of the two miter gears B³ B⁴ is in mesh with the pinion B². Since the springs C¹⁵ hold the two clutches in the operating position, the machine will move forward in a straight line, since both traction members A⁶ will be moved forward with equal force and velocity. When it is desired, however, to turn the machine to one side or the other, the forward movement of one of the traction members A⁶ is decreased by manipulation of the brake band. The brake band is tightened up so as to arrest at

first the movement of the brake wheel. As this takes place the clutch spider continues to rotate, now, however, more rapidly than the brake wheel, and this results in a rotation of the pinion on the spider, owing to the change in relative velocities. The result of this is to move the cam on the pinion around to draw in on the cam yoke and gradually rock the rocker block against the tension of the larger spring and draw the two clutch shoes out of contact with the clutch drum. This continues until the pinion comes in contact with one or the other of the stops on the brake wheel. Then no further relative movement can be had and the braking effect of the brake band on the brake wheel is transmitted through the gearing to the traction member itself. Thus a single movement of the brake lever operates to disconnect the clutch first so as to no longer drive its traction member and subsequently to exert a braking effect so as to decrease its forward movement to turn the machine.

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

1. A traction engine comprising in combination, a pair of traction members, driving means therefor, a pair of clutches interposed one between the driving member and each of the traction members, means for manually interrupting the operation of either one of said clutches, and means automatically responsive to the manual operation to yieldingly resist the movement of the tractor member subsequent to said interruption.

2. In a traction engine, the combination of a driving member, traction members driven therefrom, clutches interposed between the driving member and the traction members, and means for operating said clutches automatically responsive and operative subsequently to the operation of the clutches for resisting the movement of the tractor members.

3. In a traction engine, the combination of an endless, flexible, self-laying traction member, a drive shaft, driving gears interposed between said shaft and the traction member, a clutch interposed between the driving gears and the drive shaft, and means responsive to the operation of the clutch and operative subsequent thereto for resisting the movement of the traction member.

4. In a traction engine, the combination of the main frame, a self-laying traction member forming a ground support for the frame, driving connections for said traction member, a clutch interposed in said driving connections and manually operative to disconnect the power from the traction member, and means automatically responsive to the manual operation of the clutch for ap-

plying a braking force to said traction member.

5 In a traction engine, the combination of the main frame, a self-laying traction member forming a ground support for the frame, driving connections for said traction member, a clutch interposed in said driving connections and manually operative to disconnect the power from the traction member, and means automatically responsive to the operation of the clutch for transmitting through the clutch a braking force to the traction member.

15 6. In a traction engine, the combination of the main frame, a traction member on each side of the main frame, driving mecha-

nism having a power connection with said traction member, and means for steering the vehicle through the traction members, including a clutch interposed in the power connection for each traction member, and means for operating a clutch to disconnect its respective traction member from the driving mechanism and subsequently transmit a braking force to the traction member.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EMIL F. NORELIUS.

Witnesses:

JOHN H. HERRING,
W. W. HEALEY.