O. C. HOUGHTON.

TRACTION ENGINE.

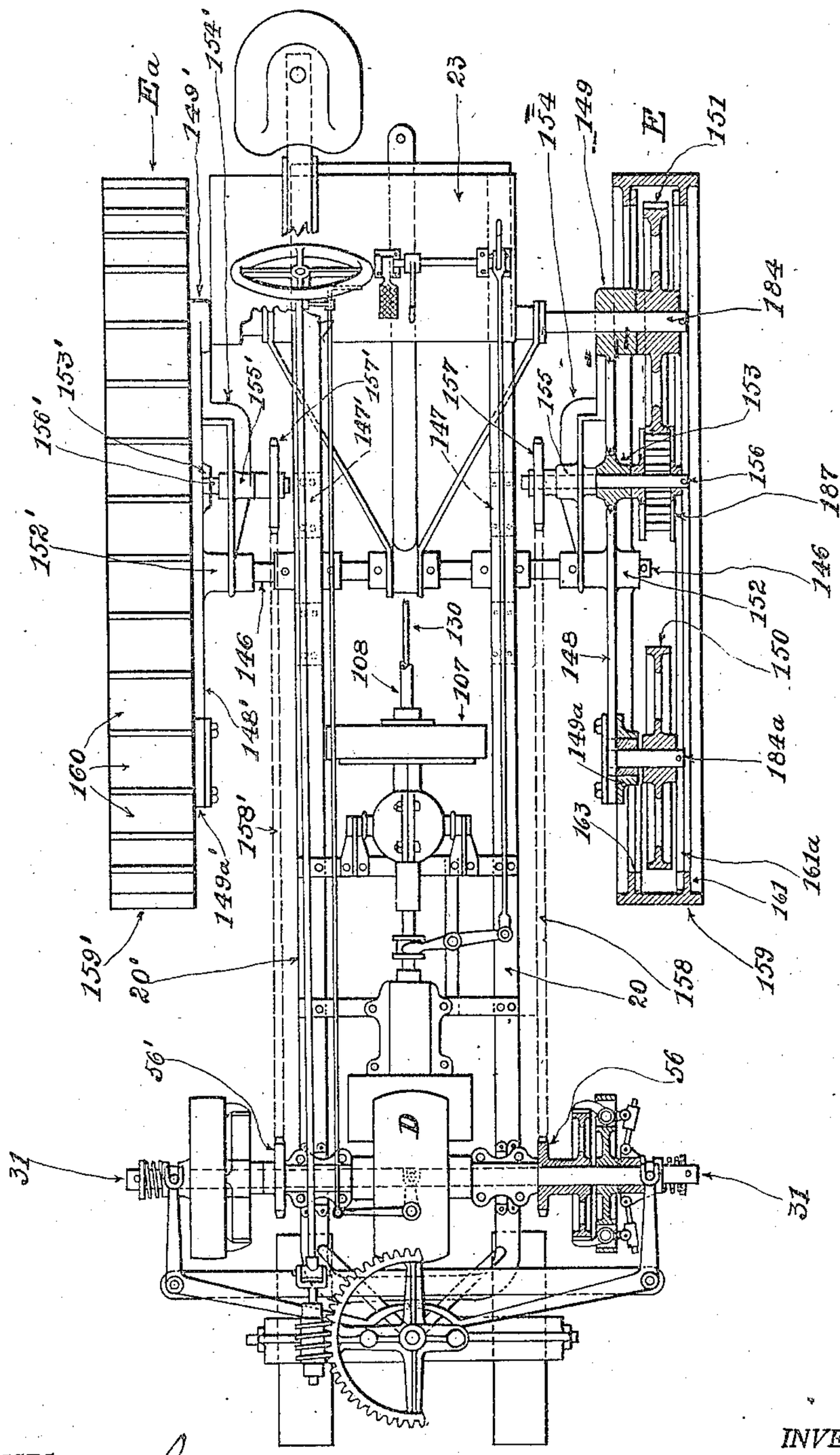
APPLICATION FILED MAY 6, 1915.

1,167,302.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 1.

FIG. 1



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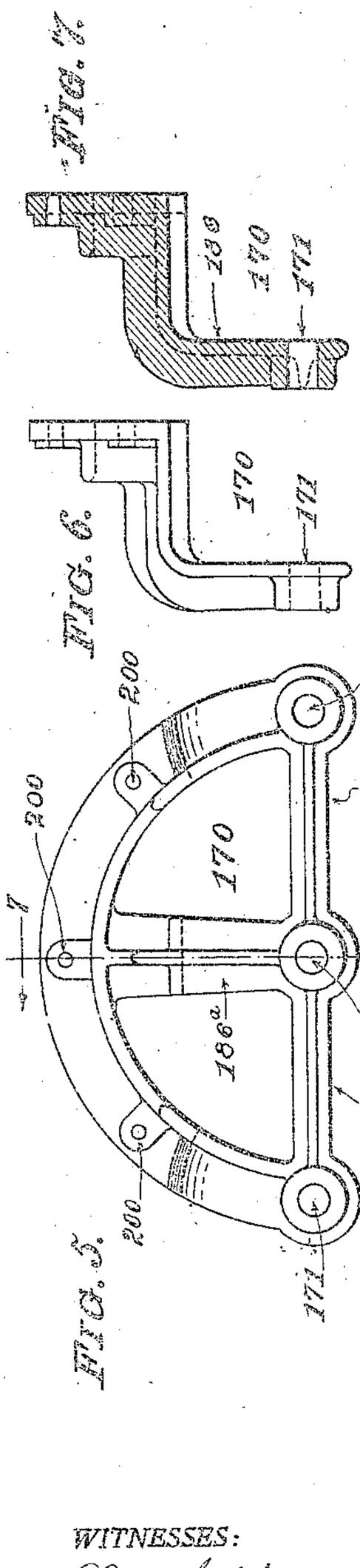

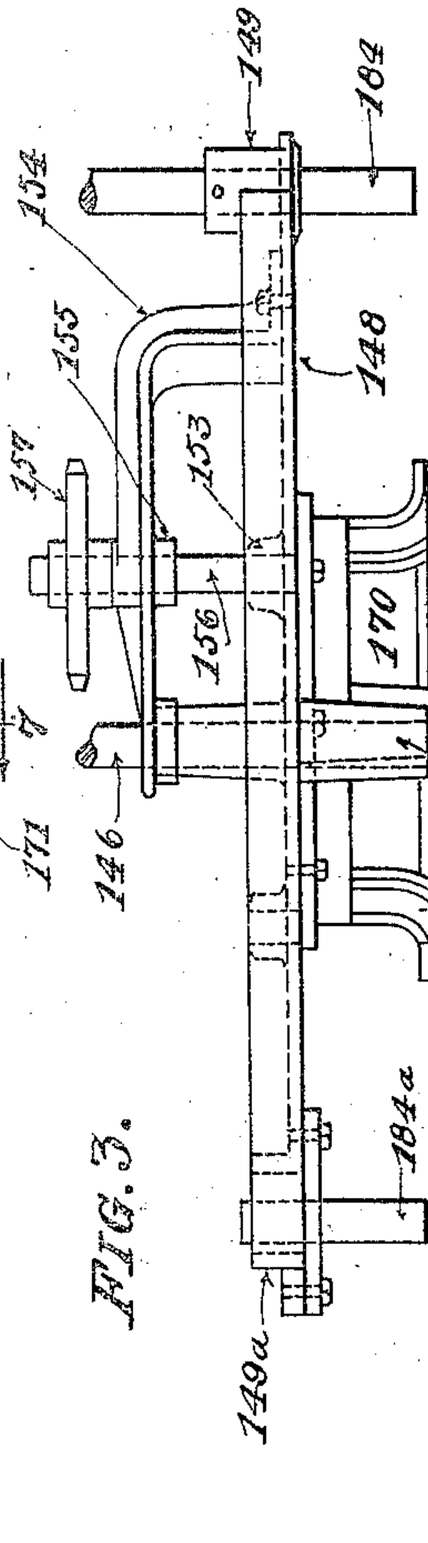

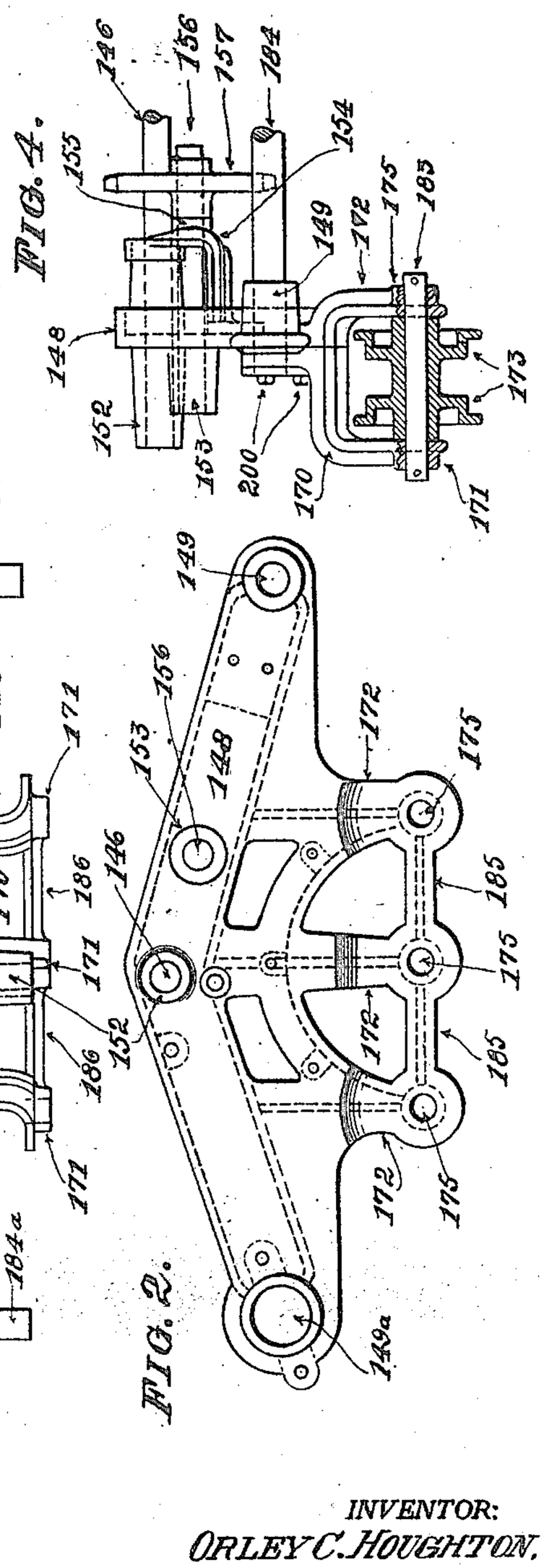

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3 SHEETS—SHEET 3.

FIG. 10.

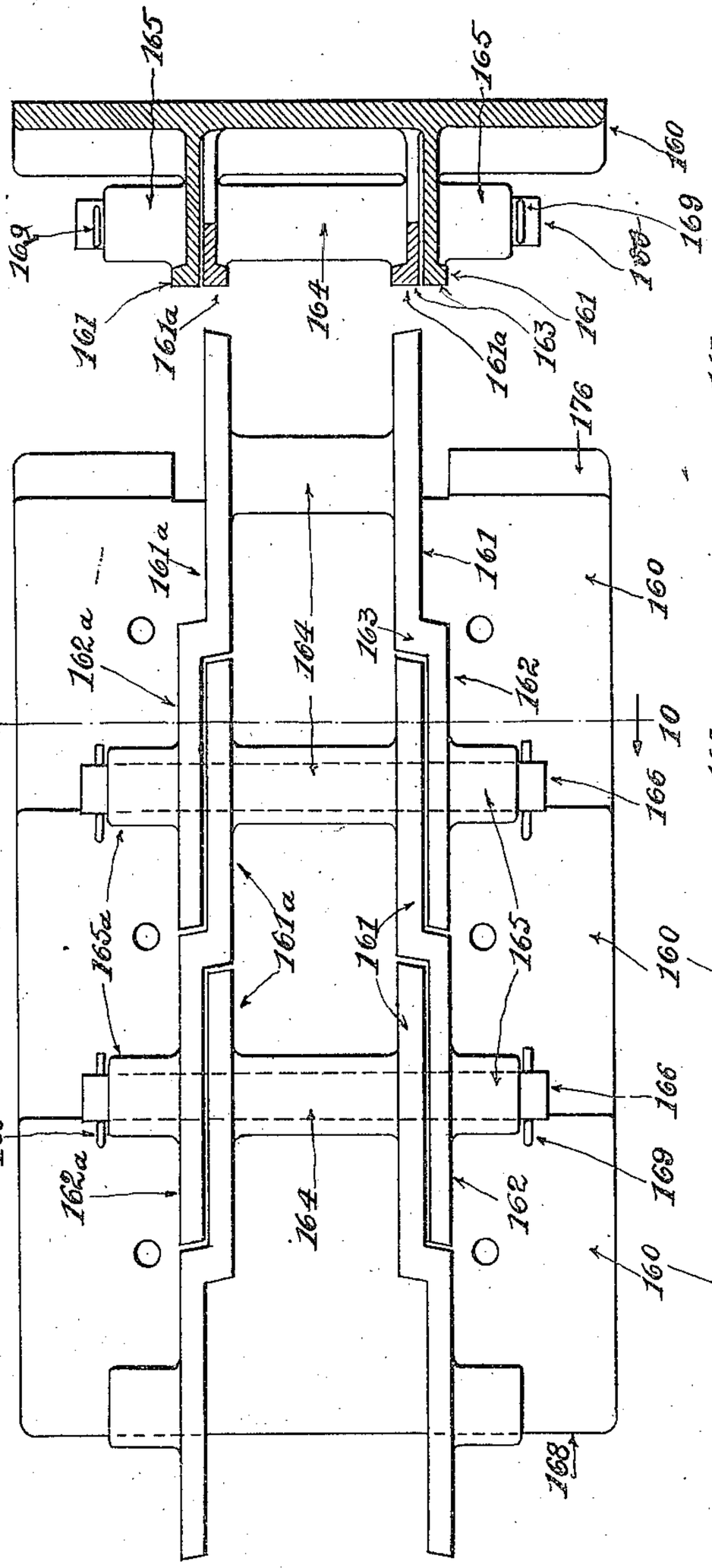

FIG. 9.

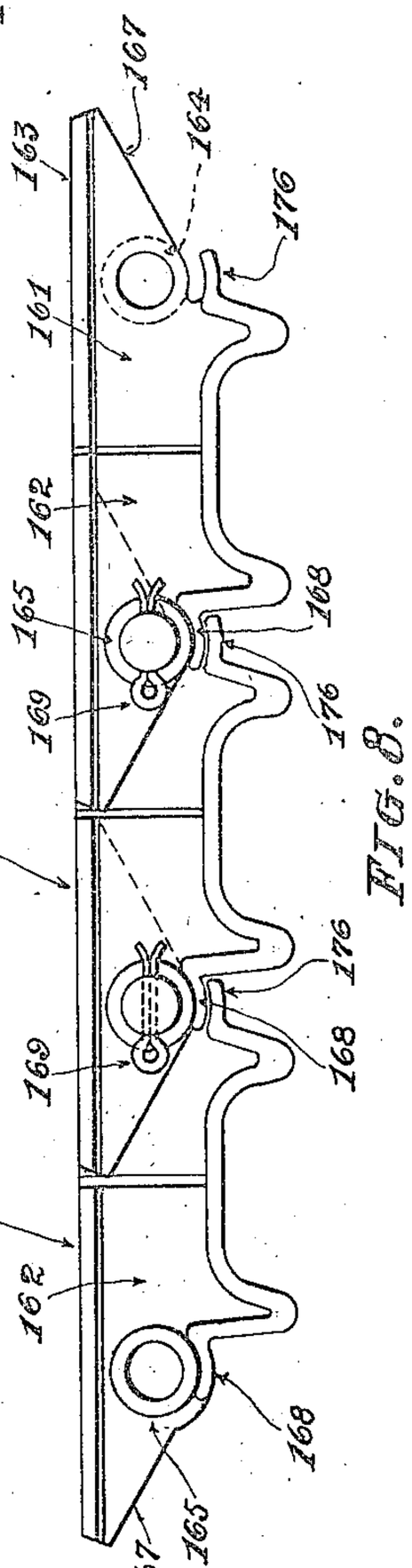

FIG. 8.

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UNITED STATES PATENT OFFICE.

ORLEY C. HOUGHTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO BULLOCK TRACTOR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TRACTION-ENGINE.

1,167,302. Specification of Letters Patent. Patented Jan. 4, 1916.

Original application filed September 26, 1914, Serial No. 863,724. Divided and this application filed May 6, 1915. Serial No. 26,342.

To all whom it may concern:

Be it known that I, ORLEY C. HOUGHTON, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Traction-Engines, being a division of an application for Letters Patent of the United States filed by me on the 26th day of September, 1914, Serial No. 863,724; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which my said invention appertains to make and use the same.

This invention has general reference to that class of traction engines which carry endless track bands on which the machine is constructed to move; and it is especially directed to improvements in the general construction of this class of tractors whereby advantages of considerable importance are derived therefrom, said improvements including the novel and peculiar combination of parts, and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already referred to, which disclose the preferred embodiment of this application, Figure 1 is a plan of the tractor, partly in section, portion of the complete motor being omitted to disclose underlying parts, and minor details not involved in this application being omitted. Fig. 2 is a side elevation of a cast member forming the main part of the truck-frame. Fig. 3 is a plan of the truck-frame in its assembled condition. Fig. 4 is an end elevation of the same, one of the bearing wheels being shown in section. Fig. 5 is a front elevation of the front-bracket of the truck-frame. Fig. 6 is an end elevation of the same. Fig. 7 is a sectional elevation on line 7—7 of Fig. 5. Fig. 8 is a side elevation of a portion of the endless track band employed in this machine. Fig. 9 is a plan of the same; and Fig. 10 is a sectional view of the same on line 10—10 of Fig. 9.

Like parts are designated by the same characters and symbols of reference in all the figures.

Inasmuch as the entire and complete traction engine, a portion of which is only involved in this present application, is fully and clearly described in the parent application hereinbefore cited, I shall only briefly describe the main features of this tractor and, then specifically disclose the matters included in this divisional application.

The frame or chassis of this tractor comprises an I-beam bent at its forward end so as to resemble the letter U, and suitably connected at the terminals of its two parallel members by any desired means, preferably a channel bar or the like, and also by a platform 23. Adjacent to this platform 23 there is located upon the chassis a motor, preferably of the internal combustion type, of which motor, however, only a portion of its crank shaft 108, and its fly wheel 107 are shown.

Near the forward end of the chassis there is located the transmission D, by which motion is communicated from the motor to a pair of trucks E, E^a, located one on each side of the machine at or near the rear end thereof. These trucks E, E^a, are alike in construction so that a detailed description of one truck applies with equal force to the other; like reference characters being employed to designate the various duplicate parts except that a prime (′) is added to distinguish one from the other set of parts.

Near the rear end of the chassis there is located a transverse, non-rotatable, axle 146, supported in brackets 147, depending from the members 20, 20′, of the chassis, and extending outwardly at both sides of the chassis for some distance. Pivoted at the outward extremity of axle 146 there is a substantially triangular truck-frame 148, shown in detail in Figs. 2 to 7 inclusive, at the terminals of which are provided bearings 149, 149^a, wherein are mounted shafts 184, 184^a, on the former shaft there being mounted an idler wheel 150, and on the latter shaft being mounted a driving sprocket wheel 151. In the triangular frame 148, adjacent to the central hub 152 thereof, there is a bearing 153; and at the inner

faces of the truck frames there is a bracket 154, having a bearing 155, in axial alinement with the bearing 153, to receive shaft 156, on the outer extremity of which there is secured a lantern pinion 187, that engages the sprocket wheel 151 to rotate the same.

At the inner end of shaft 156 there is secured a sprocket wheel 157, which sprocket wheel connects with the sprocket wheel 56, mounted on the transverse shaft 31, that forms part of the transmission mechanism D, by a drive chain 158, shown in dotted lines in Fig. 1.

Trained over sprocket wheel 151 and idler wheel 150 there is an endless track band 159, comprising a series of articulated shoes 160, as illustrated in detail in Figs. 8, 9, and 10. Each of these shoes is a corrugated plate of proper width and ample thickness to resist bending under unusual strain. At both sides of the center line of these shoes rise walls 161, 161ª, which, for some distance, are in parallel relation, and then offset, as shown at 162, 162ª, thereby forming, as it were, links for an endless chain, the narrower portions between these walls entering the space between the wider portions thereof, the upper edges of these walls forming a continuous track 163, whereupon carrying rollers, hereinafter to be referred to, are constructed to move.

The walls 161, 161ª, are connected to each other by a tubular boss 164; and the walls 162, 162ª, have laterally extending tubular bosses 165, 165ª, which latter bosses aline with the bosses 164 when the shoes are assembled, a pin or pintle 166, being passed through these bosses, whereby the several shoes are hingedly connected one to the other. Portions of the walls 161, 162 extend in front and in the rear of the pintles for some distance in order to avoid locating the joints of the plates directly over the center of said pintles, which I consider of importance because this construction affords long overlaps of the links and prevent sidewise movement or swaying of the track-band. The ends 167, of the side walls of each plate are tapered, as illustrated in Fig. 8, to reduce weight without impairing efficiency of the design.

The transverse margins of each plate are curved to a radius having its center in the center of the pin or pintle, one margin, 168, being in proximity to the pintle, while the other margin, 176, at the opposite end of the plate underlies the curved margin 168, whereby open joints in the adjacent plate-margins are avoided, and thereby the entrance of grit, dirt, and other foreign matter to the plate-joints is prevented.

Since lubrication of the moving parts of the endless track-band is of but little, if any, avail owing to the peculiar condition of use of this machine, I form the plates 160 with their track-sections, integrally in the process of casting and employ for the material a particular grade of manganese steel which combines hardness with strength to the greatest extent. I also prefer to make the pintles of the same material, and since a very close fit is not at all required, or a desideratum, these parts can be produced entirely in the process of casting without any other machining than what can be readily accomplished by grinding. Parts produced in this manner wear extremely well without lubrication of any kind. And since the cutting of threads at the ends of the pintles for the application of nuts to keep the pintles in position, is not feasible, I cast holes near the ends of the pintles through which cotter-pins 169, are passed and thereby the pintles retained in place, a method, which is, at once, very cheap but quite efficient and which renders the removal of a pintle, when necessary, a matter of but a few moments of time.

Referring to Figs. 1, 3, and 4, and the details shown in Figs. 5, 6, and 7, there is located in front of the truck-frame 148 an arcuate frame 170, having a series of bearings 171, in axial alinement with similar bearings 175, on the ends of the downwardly extending members 172 of the truck-frame 148. These bearings receive shafts 183, Fig. 4, on which are mounted bearing rollers 173, which travel on the margins 163 of the link-members, and thus sustain the superposed weight of the machine. In order to strengthen the main truck-frame and the arcuate frame member, these parts are amply provided with ribs, as shown; and the bearings 175 on said main truck-frame are connected by bars 185, while the outer bearings on the arcuate frame-member are connected by bars 186, to the middle bearing; and the latter bearing is connected to the arc of said member by a central bar 186ª, the whole being integrally formed in the process of casting. This arcuate member 170 is secured to the main truck-frame member by a sufficiency of bolts 200, as shown in Fig. 4.

As shown, especially in Fig. 4, the main member of the truck-frame has the lower portions of its pending members rearwardly offset, while the coacting portions of the arcuate member 170 are forwardly offset, the spaces between these offset portions being occupied by the bearing wheels 173, the treads whereof are spaced to correspond to the gage of the tracks of the endless track-bands.

While I have hereinbefore described the preferred embodiment of my said invention, I desire it to be understood that the details thereof may be subjected to considerable variations without departing from the scope

of my invention, as defined in the subjoined claims.

Having thus fully described this invention, I claim as new, and desire to secure to myself by Letters Patent of the United States—

1. In a motor vehicle, the combination of a chassis, a motor on said chassis, and one or more traction trucks, each truck having an endless traction belt operatively connected to said motor each of said endless traction bands comprising a series of hingedly connected shoes, each of said shoes consisting of a metallic plate said plate being downwardly and then upwardly bent near their transverse edges, the transverse terminal margins of said plate being curved, the concavo-convex portion at one margin being constructed to overlap the concave margin of the adjacent plate when the plates have been assembled, said plates being pivotally connected one to the other.

2. In a motor vehicle, the combination of a chassis, a motor on said chassis, and one or more traction trucks having endless traction bands operatively connected to said motor, each traction band comprising a multiplicity of shoes, each shoe consisting of a metallic plate, said plate being downwardly and then upwardly bent adjacent to its transverse margins, the terminals of said upwardly bent portions being outwardly bent and curved, the curvature at one margin being constructed to overlap the curved portion at the opposing margin, two upstanding walls rising from said plate, said walls being offset at their middle to permit the offset portions of said walls to admit the narrower portion thereof between them, there being a tubular boss connecting the narrower portion of said walls, the whole being integrally formed in the process of casting.

In testimony that I claim the foregoing as my invention I have hereunto set my hand, in the presence of two subscribing witnesses.

ORLEY C. HOUGHTON.

Witnesses:
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J. M. WEDLUND.