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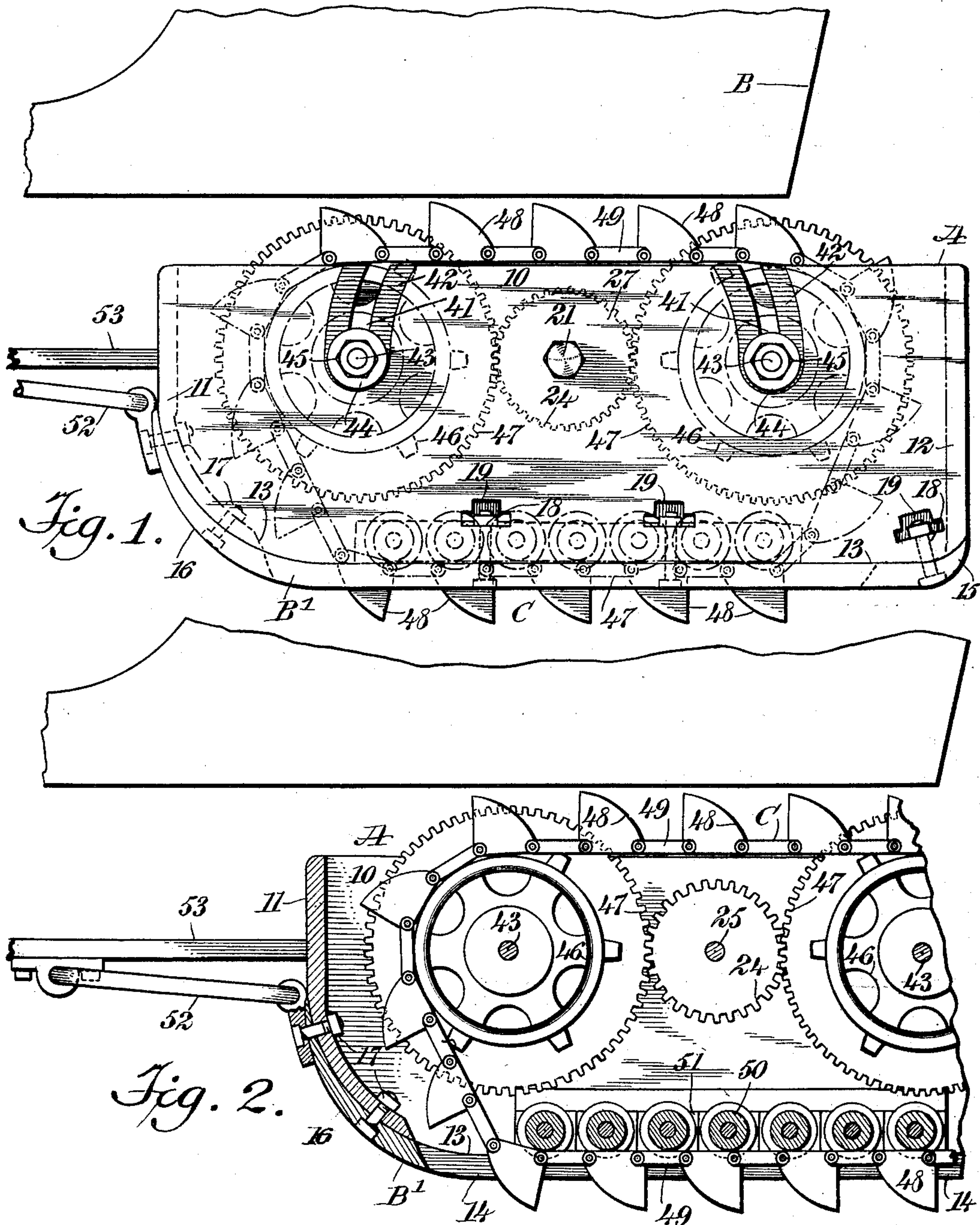
W. H. ANDERSON.

RUNNER ATTACHMENT FOR AUTOMOBILES.

APPLICATION FILED AUG. 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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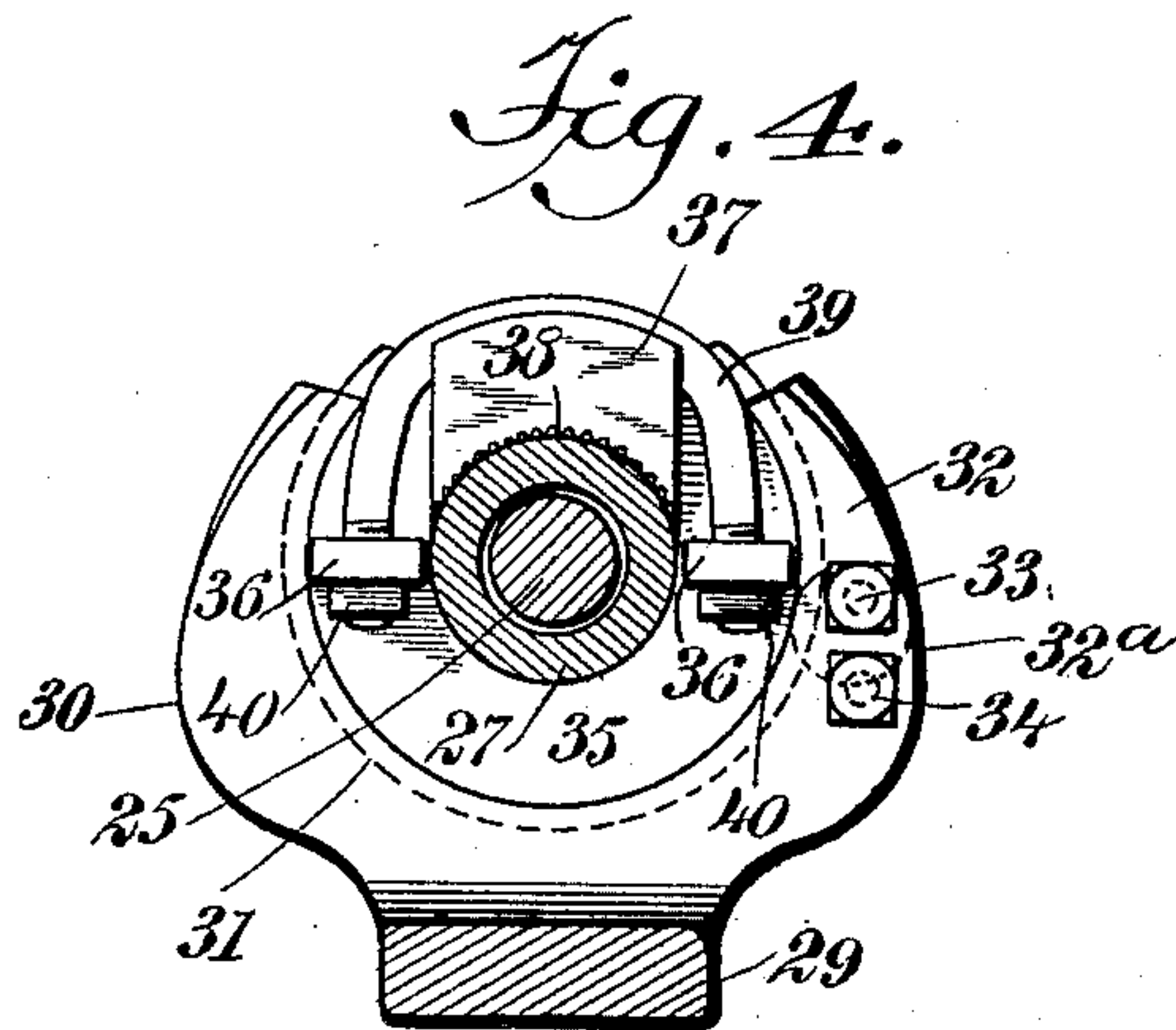
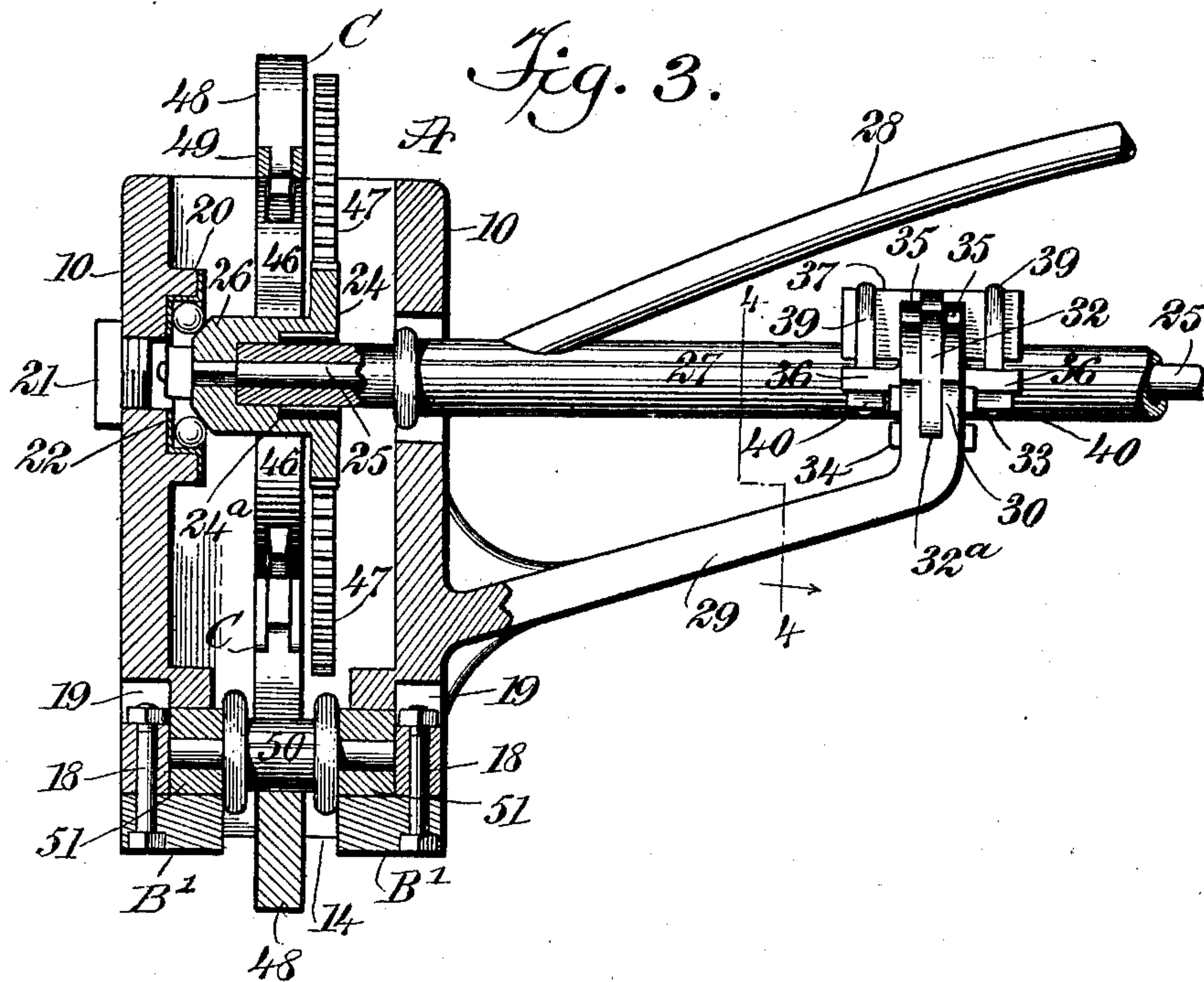
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WALTER H. ANDERSON, OF NEW YORK, N. Y.

RUNNER ATTACHMENT FOR AUTOMOBILES.

SPECIFICATION forming part of Letters Patent No. 756,556, dated April 5, 1904.

Application filed August 13, 1903. Serial No. 169,346. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. ANDERSON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Runner Attachment for Automobiles, of which the following is a full, clear, and exact description.

The purpose of my invention is to provide a form of runner adapted to be fitted to the rear axle as a substitute for wheels and to provide the runners with propelling mechanism and driving devices for said mechanism, together with means for operating the driving devices from the rear or driving axle of the automobile, the propelling mechanism including an endless chain of lugs or spurs adapted to extend through slots in the shoes of the runners and enter the snow or pierce the ice to such an extent as to have sufficient grip when the propelling-chain is operated to force the machine forward, the improved runners being used in connection with any desired style of forward runners.

A further purpose of the invention is to provide runners of the character described which will be strong, light, and readily applied and removed and to provide supporting devices for such runners that will enable them to adjust themselves to the irregularities of the surfaces traveled over and also to provide simple and conveniently-operated means for adjusting the carriers for the propelling-chain of lugs or spurs to take up the slack of the chains or to raise or lower the lower stretches of the chains, as may be desired.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of one of the improved runners and a portion of the body of a vehicle. Fig. 2 is a longitudinal vertical section through a portion of the runner shown in Fig. 1. Fig. 3 is a central transverse sec-

tion through the runner and a side elevation of a portion of the driving-axle and its bearing and a hanger for adjustably connecting the runner with the axle-bar; and Fig. 4 is a section taken practically on the line 4 4 of Fig. 3.

A represents one of the runners, two of which are employed at the rear of the vehicle, a portion of the body B whereof is shown in Figs. 1 and 2. Each runner is of the same construction, and consists of a body, cast, forged, or otherwise produced, comprising parallel side members 10, a front member 11, curved rearwardly at the bottom, and a rear member 12, more or less curved downward and forward at its bottom.

The top of the body frame or casing of a runner is open from front to rear, and in the bottom of the said body frame or casing a longitudinal opening 13 is made, extending from a point near the front to a point near the back, as is indicated by dotted lines in Fig. 1. At the bottom portion of a runner a shoe B' is located, preferably made of steel, and the said shoe is provided with a longitudinal opening 14, registering with the bottom opening 13 in the body frame or casing of the runner, and the forward end 16 of the shoe is upwardly curved and fits close to the forward end of the runner at its exterior, extending to a point practically between the center and upper edge of the body frame or casing, as is shown in Figs. 1 and 2, while the rear or heel end 15 of the shoe is upwardly and rearwardly curved and is fitted to the corresponding lower portion of the said body frame or casing, as is illustrated in Fig. 1.

The forward portion of the shoe is secured to the said body frame or casing of the runner by means of bolts 17 or their equivalents, as is illustrated by dotted lines in Fig. 1, and other bolts 18 are located intermediate of the ends of the shoe and at the heel portion of the shoe, extending upward into the side portions of the body frame or casing, the said side portions of the body frame or casing having openings 19 therein to receive the upper ends of the bolts 18, which upper ends are provided with suitable nuts, as is shown in Figs. 1 and 3,

thus rendering it very convenient to remove a shoe when it has become unduly worn and replace it by another.

The outer side member 10 of the casing or body frame of each runner is provided centrally between its ends with an interiorly-located tubular boss 20, as is shown in Fig. 3, and the chamber of the boss is closed at the outside by a suitable plug 21, so that access to the chamber or bore of the boss may be conveniently secured, and at the inner face of the boss 20 a ball-race 22 is located, which ball-race is adapted to receive a conical section 26, formed on the hub of a pinion 24, which pinion 24, as is shown in Fig. 3, is secured upon an outer end of the rear or driving axle 25 of the vehicle. The said rear axle 25 is adapted to turn in a tubular bearing 27, attached to the body of the vehicle or its running-gear by suitable braces 28. The outer ends of the tubular bearings 27 extend into the hub portions of the pinions 24, one of which pinions, it will be understood, is employed in connection with each runner. The said hub portions of the pinions 24 have bearing-rollers 24^a therein to engage with the said tubular bearing, as is indicated in Fig. 3.

Each runner is held in position by means of a bracket-arm 29, and these bracket-arms are attached to the central portion of the outer faces of the inner side members of the runners. Each bracket-arm 29 terminates in an upwardly-extending jaw 30 of segmental formation, as is shown in Fig. 4, and each jaw 30 is provided in its inner edge with a groove 31, as is indicated in Fig. 4. One upper member of the jaw 30 is provided with a hinged section 32, having a downwardly-extending integral lug 32^a at its bottom portion and below the pivot 33 for the said hinged section, as is indicated in Figs. 3 and 4. The said upper hinged section or member 32 of the jaw 30 is held in closed position (shown by dotted lines in Fig. 4) by means of a bolt 34, passed through the stationary portion of the jaw 30, entering a recess in the lug 32^a of the said drop or pivoted member or section 32 of the jaw.

The jaw 30 is adapted to hold a plate 35, which has a peripheral rib formed thereon, adapted to turn loosely in the groove 31 in the inner edge of the jaw 30. The said plate 35 has apertured lugs 36 extending from its ends, as is shown by Figs. 3 and 4, and is provided with a substantially central opening of sufficient size to receive the bearing 27 of the driving-axle 25, and the said plate 35 is further provided at its upper central portion with a vertical opening communicating with the central opening just mentioned, the vertical openings in the plate 35 being adapted to receive a clamping-block 37, having serrations 38 at its bottom edge for engagement with the upper surface of the tubular bearing 27 for the driving-axle 25, the under or lower serrated

face of the said clamping-block being made to conform to the upper surface of the said tubular bearing 27. This clamping-block 37 is held firmly in engagement with the tubular bearing 27 for the driving-axle 25 by means of yokes 39, the ends of which are threaded and passed through apertures in the aforesaid lugs 36 on the plate 35. The said yokes are held in clamping position by means of suitable nuts 40 at their lower threaded ends bearing against the under faces of the lugs 36, as is shown in both Figs. 3 and 4. Under this construction of support for the said runners it is obvious that the runners while suitably supported by the driving-axle and bearings therefor are capable of vertical movement at their forward and end portions, so as to permit the said runners to pass over an undulating surface without undue interference.

Slots 41 are produced in the upper edges of the side members of the frame or casing of the runners, the said slots being one at each side of the center of a runner, and the slots are oppositely and downwardly curved, as is illustrated in Fig. 1.

At the margin of each slot 41 on the outer faces of the runner bodies or casings offset and exteriorly toothed or serrated surfaces or bosses 42 are formed, as is shown in Fig. 1, and through transversely-opposing slots 41 in each runner a spindle 43 is passed, provided at each outer end with a washer 44, toothed or serrated to engage the serrations of the bosses 42, above referred to. These washers are held firmly in engagement with the bosses 42 by suitable nuts 45 on the outer ends of the spindles 43.

A sprocket-wheel 46 is held to turn loosely on each spindle 43 within the frame or casing of the runner carrying the spindle, and each sprocket-wheel 46 has preferably attached thereto a gear-wheel 47, the sprocket-wheels being of equal size and the gear-wheels 47 larger, but of the same size one with the other. The gear-wheels in each runner mesh with the teeth of the pinion 24, carried by the end of the driving-axle 25 entering the runner, so that as the axle 25 is revolved the gears 47 are set in motion, and consequently the sprocket-wheels 46.

The sprocket-wheels in each runner carry an endless chain C, and each chain C consists of a series of lugs or spurs 48, connected by links 49. The said spurs or lugs 48 are preferably so formed that one edge is segmental and the other edge is straight, and the said edges are so disposed that the lugs or spurs on the lower stretch of the chain C have their straight edges facing rearward and their segmental edges facing forward.

The lugs or spurs 48 on the lower stretches of the endless chains C, which are propelling-chains, extend a desired distance downward from the bottom openings in the casings for

the runners and the longitudinal openings 14 in the shoes attached to the runners, and the lower stretches of the propelling-chains C are held parallel with the bottom of the shoes by engagement with friction-rollers 50, provided, preferably, with end flanges, as is shown in Figs. 2 and 3, the trunnions of the said rollers being mounted in boxes 51, suitably located in the inner faces of the casings of the runners, as is shown in Fig. 3, and held in place by the shoes B' of the runners when the shoes are applied.

It will be observed that by adjusting the spindles 43 upward or downward the propelling-chains may be tightened or loosened, as required. In order to prevent the runners from having undue lateral movement, couplings 52 are pivotally attached to their forward ends and are likewise pivotally attached, preferably, to the reach 53 of the vehicle, although the said couplings may be attached to any other convenient portion of the running-gear or when desirable to the bottom of the body B of the vehicle.

The runners A at the rear of the vehicle may be used in connection with any suitable form of forward runners, and as the propelling-chains C are set in motion the lower spurs or lugs 48 will enter the snow or penetrate the ice over which the vehicle is being propelled. As the chains at their lower stretches move in direction of the rear of the vehicle the said chains in their rotation around the sprocket-wheels 46 serve to propel the vehicle forward with more or less speed, according to the speed at which the driving-axle 25 is rotated.

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

1. In vehicles, a driving-axle, a chambered runner into which an end of the driving-axle extends, the said runner being open at its bottom and provided with a shoe having a corresponding opening, a bracket-arm attached to the inner face of the runner, a support for the axle with which the bracket-arm has rotary connection, an endless propelling-chain located in the chamber of the runner, lugs extending from the chain and adapted at the lower stretch of the chain to extend below the bottom of the shoe, rotary supports for the said chain, and a gear connection between the said chain-supports and the end of the axle within the chamber of the runner, as described.

2. In vehicles, a driving-axle, a chambered runner into which an end of the driving-axle extends, the said runner being open at its bottom and provided with a shoe having a corresponding opening, a bracket-arm attached to the inner face of the runner, a support for the axle with which the bracket-arm has rotary connection, an endless propelling-chain located in the chamber of the runner, lugs extending

from the chain and adapted at the lower stretch of the chain to extend below the bottom of the shoe, rotary supports for the said chain, a gear connection between the said chain-supports and end of the axle within the chamber of the runner, bearing-rollers located in the chamber of the runner, engaging with the upper face of the lower stretch of the said chain, and a ball-bearing for the end of the said axle located within the said runner, as described.

3. In a runner for automobiles, a casing having an opening in its bottom, a shoe at the bottom of the casing, detachably connected therewith and having an opening therein corresponding to that in the bottom of the casing, sprocket-wheels mounted to revolve within the casing, an endless chain passed over the said sprocket-wheels, lugs extending from the chain, the lugs on the lower stretch of the chain being adapted to extend below the under face of the shoe, a driving device for the said sprocket-wheels, bearing-rollers arranged for engagement with the upper face of the lower stretch of the said chain, and a bracket-arm extending from the said casing, having its inner end formed in a jaw, a plate mounted to turn in the jaw, and a clamping-block carried by the plate, for the purpose set forth.

4. In a runner for automobiles, a casing having an opening in its bottom, a sprocket-wheel mounted at each end of the casing, an endless chain passing around the sprocket-wheels and provided with spurs, bearing-rollers in the lower part of the casing, and a shoe having an opening corresponding to the opening in the bottom of the casing and secured to the casing, said shoe serving to hold the bearing-rollers in the casing, as described.

5. In a runner for automobiles, the combination with the driving-axle of the automobile, of a casing having an opening in its bottom and mounted to rock on the axle, sprocket-wheels mounted in the casing, an endless chain passing around the sprocket-wheels and provided with spurs projecting out through the bottom of the casing, a gear-wheel carried by each sprocket-wheel, and a gear mounted on the axle within the casing and meshing with the gear-wheels of the sprocket-wheels, as described.

6. In a runner for automobiles, the combination with the driving-axle of the automobile, of a casing having an opening in its bottom and into which the end of the axle projects, a pinion on the axle within the casing and engaging a bearing on the outer wall of the casing, a sprocket-wheel near each end of the casing, an endless chain passing around the sprocket-wheels with its spurs projecting through the bottom of the casing, and a gear-wheel on each sprocket-wheel, said gear-wheels meshing with the pinion of the axle, as described.

7. In a runner for automobiles, the combination with the driving-axle of an automobile, of a casing having an opening in its bottom and into which the end of the axle loosely projects, a bracket-arm projecting from the casing and having its end loosely connected with the axle, a pinion on the axle within the casing and engaging a bearing on the outer wall of the casing, a sprocket-wheel mounted in the casing near each end thereof, an endless chain passing around the sprocket-wheels and provided with spurs projecting out through the bottom of the casing, and a gear-wheel on each sprocket-wheel and meshing with the pinion of the axle, as described.

8. In a runner for automobiles, the combination with the driving-axle of the automobile, of a casing having an opening in its bottom and loosely mounted on the axle with the end of the axle projecting into the same, a wheel mounted on the axle within the casing and having its hub engaging a roller bearing in the outer wall of the casing, an endless propelling-chain mounted in the casing and provided with spurs projecting through the bottom

opening of the casing, and means for operating the endless chain from the wheel on the axle, as described.

9. In a runner for automobiles, the combination with the axle of the automobile, a casing having an opening in its bottom and into which the end of the axle loosely projects, an endless chain in the casing and provided with spurs projecting out through the bottom opening of the casing and means for operating the chain from the axle, of a bracket-arm projecting from the casing and having a jaw at its end, one member of the jaw having a hinged section, a plate mounted to turn in the jaw and through which a bearing for the axle passes, a clamping-block fitting the plate, and engaging the bearing of the axle, and means for securing the block in position, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER H. ANDERSON.

Witnesses:

J. FRED. ACKER,

JNO. M. RITTER.