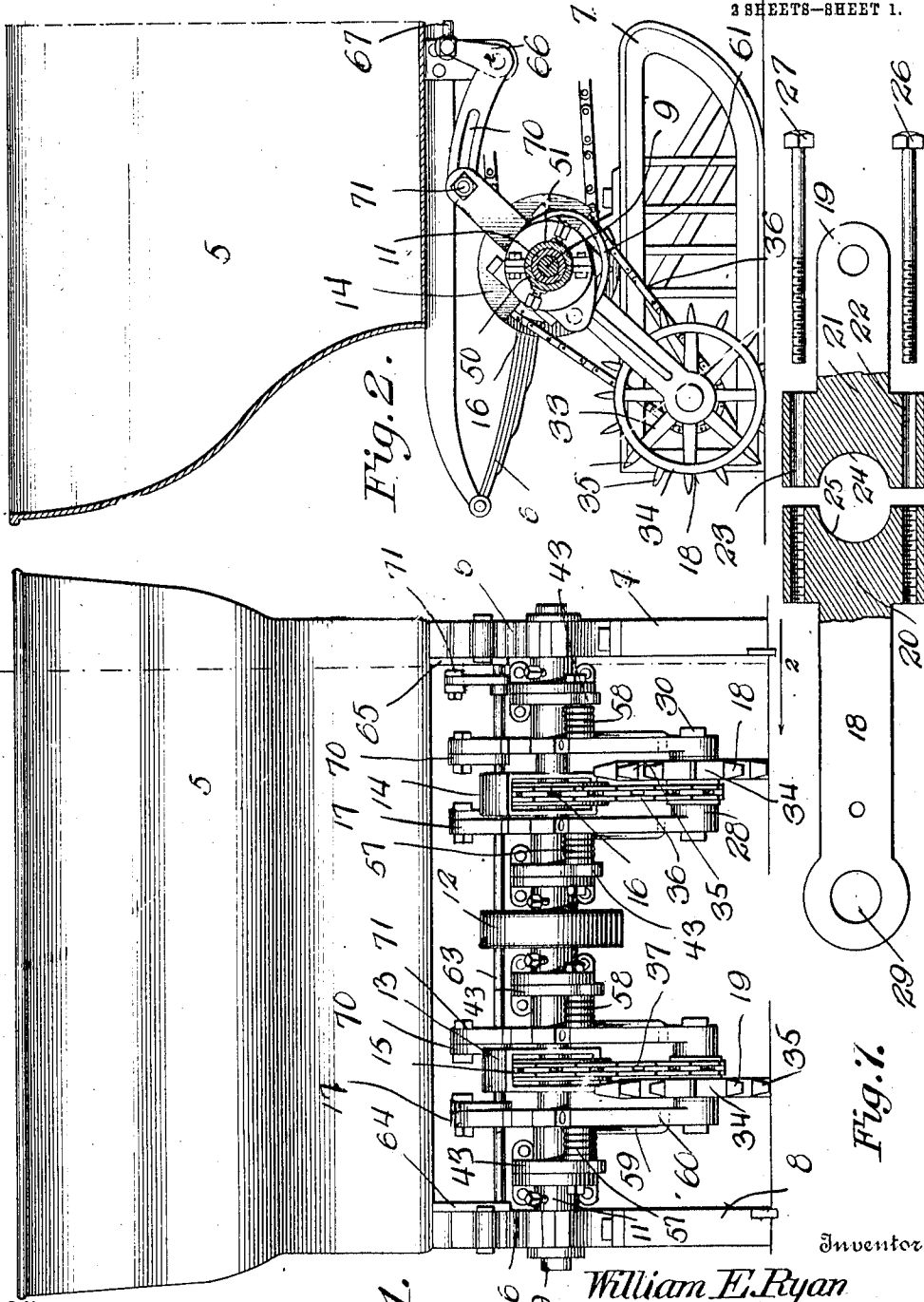


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AUTOMOBILE SLED ATTACHMENT.
APPLICATION FILED FEB. 25, 1910.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.



Witnesses
Phil E. Barnes
H. Allen

Fig. 1.

William E. Ryan

Victor J. Evans

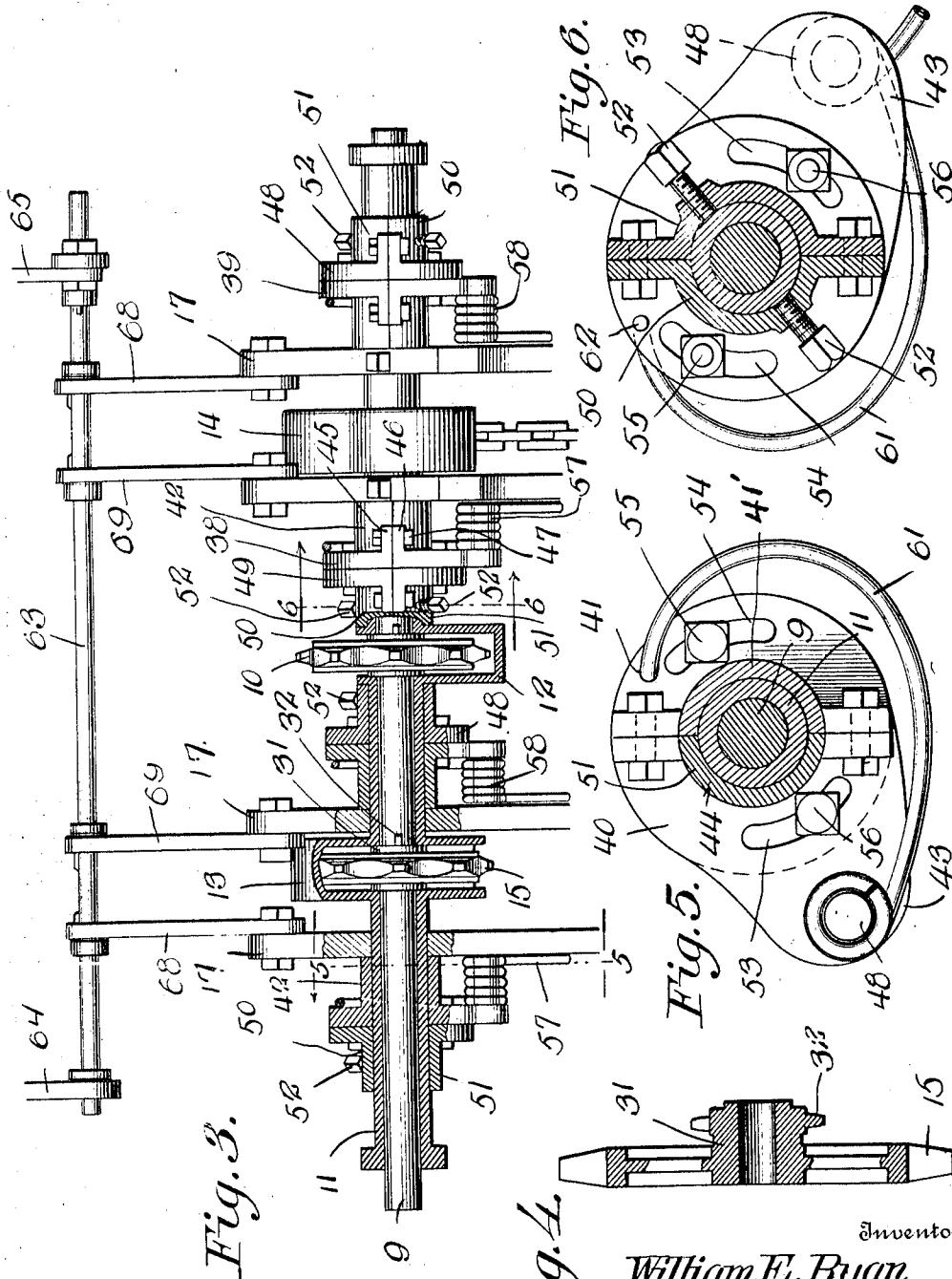
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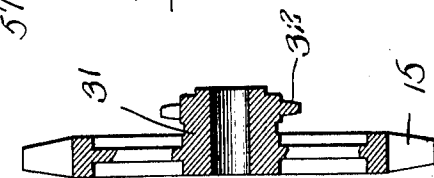
2 SHEETS—SHEET 2.



Witnesses

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 R. Allen

Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM E. RYAN, OF MASON, NEVADA.

AUTOMOBILE SLED ATTACHMENT.

970,354.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed February 25, 1910. Serial No. 545,935.

To all whom it may concern:

Be it known that I, WILLIAM E. RYAN, a citizen of the United States, residing at Mason, in the county of Lyon and State of Nevada, have invented new and useful Improvements in Automobile Sled Attachments, of which the following is a specification.

This invention relates to improvements in attachments for motor vehicles and has particular reference to a device adapted to be attached to a motor sleigh and operating to propel the same through snow and over icy roads.

Another object is the provision of an attachment including a propeller and a means connecting the propeller with the vehicle and operating to yieldingly hold the propeller in engagement with the ground regardless of the condition of the surface of the ground over which the vehicle passes, that is to say that the device will operate equally as well when the vehicle is passing over rough and uneven ground as when passing over comparatively smooth ground.

With these and other objects in view, which will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claims; it being understood that various changes in the form, proportion, size, and minor details of the device may be made, within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, forming a part of the specification:—Figure 1 is a rear end elevation of an automobile sled and showing my improved device applied thereto. Fig. 2 is a sectional end elevation on the line 2—2 of Fig. 1 and looking in the direction of the arrows. Fig. 3 is a detail plan view of the driving portion of the attachment with the driven portion eliminated and showing a portion of the driving mechanism in section. Fig. 4 is a vertical sectional view of one of the propellers. Fig. 5 is a sectional end view taken on the line 5—5 of Fig. 3 and looking in the direction of the arrows. Fig. 6 is a similar view taken on the line 6—6 of Fig. 3 and looking in the direction of the arrows. Fig. 7 is a

side elevation of the hanger sections partly in section and also showing the means for uniting the said hanger sections.

Similar numerals of reference are employed to designate corresponding parts throughout.

That portion of the body of the vehicle which is shown is designated by the numeral 5 and has suitably secured thereto and preferably connected directly with the springs 6, a pair of sleds designated in general by the numerals 7 and 8. It might here be stated that I have shown the equipment of sleds arranged at the rear end of the automobile, it being understood that the wheels of the latter have been removed and the sleds substituted in lieu thereof and it will be understood further that the front wheels have been removed and a similar arrangement of sleds are suitably secured to the front portion of the body similar to the rear sleds 7.

Journalled in any preferred manner at the rear end of the vehicle is what will subsequently be termed a drive shaft 9. This member extends transverse the longitudinal line of the vehicle and is medially provided with a sprocket wheel 10, the same having connection with the drive shaft of the motor (not shown) by means of a sprocket chain (not shown.) While I have shown and specified a sprocket chain connection between the motor and drive shaft 9 it must be understood however, that I am not to be limited to this specific employment of parts, since it will be understood from what will appear later, how the drive shaft may be actuated by gearing or in any of the various ways in which connection is usually established between the motor and shaft 9, without departing from the spirit or sacrificing any of the advantages of the invention.

Enveloping the drive shaft 9 is a tubular casing designated in general by the numeral 11. This casing 11 is loosely fitted over the shaft 9 and is fixedly secured in any preferred manner to the body of the automobile or the springs or in fact any positive connection may be employed between any portion of the vehicle taken as a whole and the casing 11 in order to secure the latter. The casing is medially provided with a semicircular hood 12 which overlies one-half of the driving sprocket 10 with its open face presented forwardly. By reference now to the drawings it will be seen that arranged on

either side of the hood 12 are a similar pair of hoods 13 and 14 the open sides of which are presented rearwardly. These hoods 13 and 14 house a pair of driving sprockets 15 and 16 keyed to the drive shaft 9. It might here be stated that the hoods and sprockets are spaced for a considerable distance from the central hood and sprocket, as clearly shown in Figs. 1 and 3.

By referring to Figs. 1 and 3 it will be seen that loosely fitted on the casing 11 and on either side of the hoods 13 and 14 are a double pair of hangers designated in general by the numeral 17. By virtue of the disposition of these hangers it will be evident that a space will exist between the lower end of each pair. The lower ends of each pair of hangers are connected by a shaft and journaled on the shafts are a pair of propellers 18 and 19. Since the parts comprising each pair of hangers are identical and the connections between each pair of hangers and the casing 9 are identical a description of one pair of hangers and its connections will suffice for both. By reference now to Fig. 7 it will be seen that each hanger comprises a pair of straps designated by the numerals 18 and 19. These straps at their inner ends are widened as shown at 20 and 21, whereby shoulders 22 are provided. The shoulders 22 are provided with openings 23 extending parallel with the lengths of the straps, the openings on the straps 18 being interiorly screw-threaded. The inner ends of the straps are medially provided with semicircular depressions 24 and 25 which cooperate to present a circular opening when the inner ends bear one upon the other, the diameter of said openings being slightly greater than the diameter of the casing 11. The straps are united by means of a pair of clamp bolts 26 and 27 passed through the openings in the strap 19 and threaded into the openings of the strap 18. The hangers incline downwardly in a plane oblique to the casing 11 and at their lower ends are interiorly provided with bushings 28 and are further provided with alining transverse openings 29 extending through the bushings. The openings 29 receive the opposite ends of a shaft 30 and journaled on this shaft is the propeller. By reference to Figs. 2 and 4 it will be seen that the propeller comprises an elongated hub portion 31 one end of which is provided with sprocket teeth 32 and from the opposite end portion of which extend spokes 33 the outer end portions of which support a rim 34. Fixed to the periphery of the rim and arranged in spaced relation are a plurality of spurs or teeth 35. By reference to Fig. 1 it will be seen that the sprocket teeth 32 adjacent to one end of the hub are in direct alinement with the sprocket wheels 15 and 16 on the drive shaft and con-

nection between the said sprockets is established by means of the sprocket chains 36 and 37. Thus it will be seen when rotary movement is imparted to the shaft 9 rotary movement will be transmitted to the propellers through chains 36 and 37 and when these propellers are in engagement with the surface of the ground and rotate in one direction the vehicle will move forwardly.

In order to provide for the positioning of the hangers on the casing and at the same time to insure the propellers against leaving the surface of the ground when the vehicle is passing over uneven ground the following construction is employed. By reference to Figs. 1 to 3 inclusive, and also Figs. 5 and 6 it will be seen that loosely fitted on the casing 11 and adjacent to the outer faces of the hangers are a pair of disks designated by the numerals 38 and 39. Reference to Fig. 5 discloses the fact that these disks each include a pair of sections designated by the numerals 40 and 41. The section 41 is semi-circular in contour and is medially provided on its straight side with a semi-circular depression and extending in advance of that surface of the section adjacent to the hanger is a semi-cylindrical tubular section 41' which bears on the adjacent face of the hanger. The other section 42 comprises a substantially semicircular portion having a radial lug 43 and also provided on its straight side with a semicircular depression and semicylindrical tubular portion 44 the end of which bears on the adjacent face of the hanger and cooperates with the tubular section 42 to provide a spacer and prevent endwise movement of the hanger in one direction. The sections 40 and 41 are provided on their surface adjacent to the hanger with lateral lugs 45 and 46, the said lugs being perforated to receive clamping bolts 47 by means of which the sections are firmly united. The radial lug 43 on the section 42 extends parallel with the hanger or substantially so and adjacent to its outer end is provided with a laterally extending pin 48 which extends to a point adjacent the surface of the hanger and the function of which will appear later.

Positioned on the outer surfaces of the disks 38 and 39 are a similar pair of disks 48 and 49. These disks are keyed to the casing 11 and each is shown to consist of a pair of semi-cylindrical sections the inner surfaces of which bear on the disks 38 and 39 and the outer surfaces of which have semitubular sections 50 and 51 the said tubular sections 50 and 51 having radial openings into which are threaded set screws 52 by means of which the disks are keyed to the casing. The sections 40 and 41 are provided adjacent to their peripheries with arcuate-shaped openings 53 and 54 and extending through annular openings formed in the sections of

the disks 48 and 49 are bolts 55 and 56, which extend into the openings 53 and 54. With this construction it will be manifest by unloosening the set screws 52 and turning the disks 48 and 49 in one direction will, when the bolts 55 and 56 engage with the ends of the openings 53 and 54 turn the disks 38 and 39.

What will subsequently be termed tension springs are designated in general by the numeral 57. These members include intermediate helical portions 58 which are arranged on the pins 48. The outer ends of the helical portions extend downwardly and parallel with the hangers, as shown at 59 and terminate in inturned extensions 60 which are anchored in the lower end portions of the hangers. The inner terminals of the helical portions 58 terminate in extension 61 which curve over the casing 11 and terminate in inturned extensions 62 which are anchored in the sections 41 of the disks 39. With this construction it will be manifest that by turning the disks 48 and 49 in one direction and the disks 38 and 39 in the manner before described that the tension of the springs 57 will be increased, whereby the propellers will be yieldingly held in closer engagement with the ground over which the vehicle is passing so that when the vehicle moves over uneven ground, that is when the surface of the ground underlying one of the propellers is lower than that underlying the opposite propeller, by virtue of the springs 57 the propeller passing over the lower level will be forced into contact with the surface of the said lower level.

In order to provide a construction whereby the propellers may be lifted bodily from engagement with the ground when the vehicle is in motion and when it is not desired to stop the motor the following construction is employed: A shaft 63 has its opposite ends journaled in a pair of brackets 64 and 65 which depend from the rear end portion of the vehicle and in advance and above the plane of the drive shaft. This shaft is provided with an upwardly extending crank 66 the free end of which is pivoted to the rear end of a rod 67, the forward end of the rod being connected in any suitable manner to a lever (not shown) which is arranged within easy reach of the driver. Keyed to the shaft 63 and extending rearwardly therefrom are a double pair of arms 68 and 69. The free end portions of these arms are

provided with elongated slots 70 which receive lateral studs 71 carried by the upper end portions of the hangers, as clearly shown in Figs. 1 to 3 inclusive. With this construction it will be manifest when the rod 67 is moved rearwardly that the arms 68 and 69 will descend and by virtue of their connection with the hangers the upper ends of the latter will likewise descend, whereby the propellers will be lifted from engagement with the ground.

From the foregoing it can be seen that I have provided a device which is comparatively simple in structure and inexpensive in manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

I claim:—

1. In a motor sled the combination with a drive shaft provided with a tubular casing, of a hanger loosely arranged on the casing, a propeller wheel carried by the hanger, a connection between the propeller wheel and drive shaft, and a tensioning device connected with the casing and hanger and serving to yieldingly hold the propeller in engagement with the ground.

2. In a motor sled the combination with a drive shaft provided with a tubular casing, of a hanger loosely arranged on said drive shaft, a propeller wheel carried by the hanger, a connection between the propeller wheel and drive shaft, and a presser spring connecting the casing with the hanger, and means for varying the tension of said spring.

3. In a motor sled the combination with a drive shaft provided with a tubular casing having semi-cylindrical hoods overlying portions of said shaft and drive wheels keyed to the drive shaft and arranged in said hoods; of a plurality of hangers loosely arranged on the casing, propeller wheels carried by the hangers, connections between the propeller wheels, and drive wheels, tension springs connecting the casing with the hangers, and means connected with the springs and adjustably secured to the casing and serving to vary the tension of said springs.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. RYAN.

Witnesses:

P. SHOVLIN,
B. R. ROTT.