O. BUFE.

AUTOSLEIGH ATTACHMENT.

APPLICATION FILED JUNE 3, 1920.

1,425,835.

Patented Aug. 15, 1922.

4 SHEETS—SHEET 1.

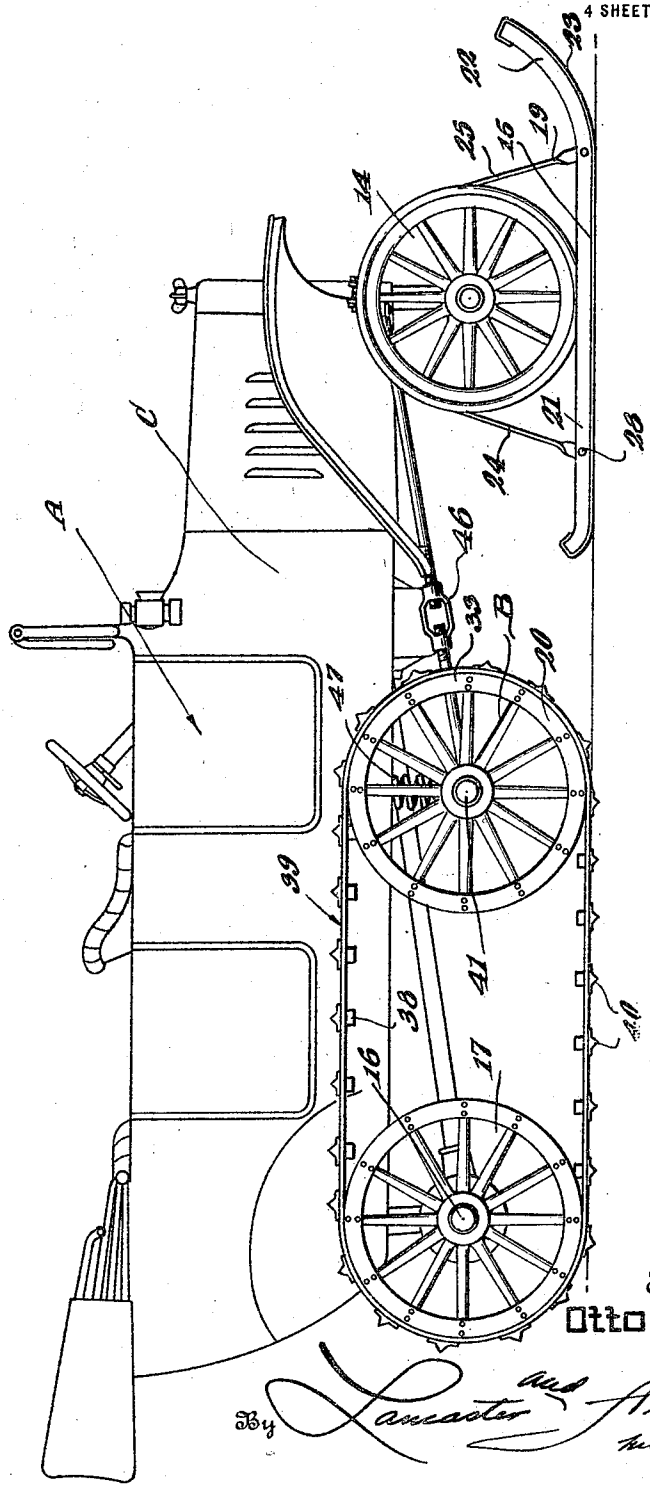


Fig. 1.

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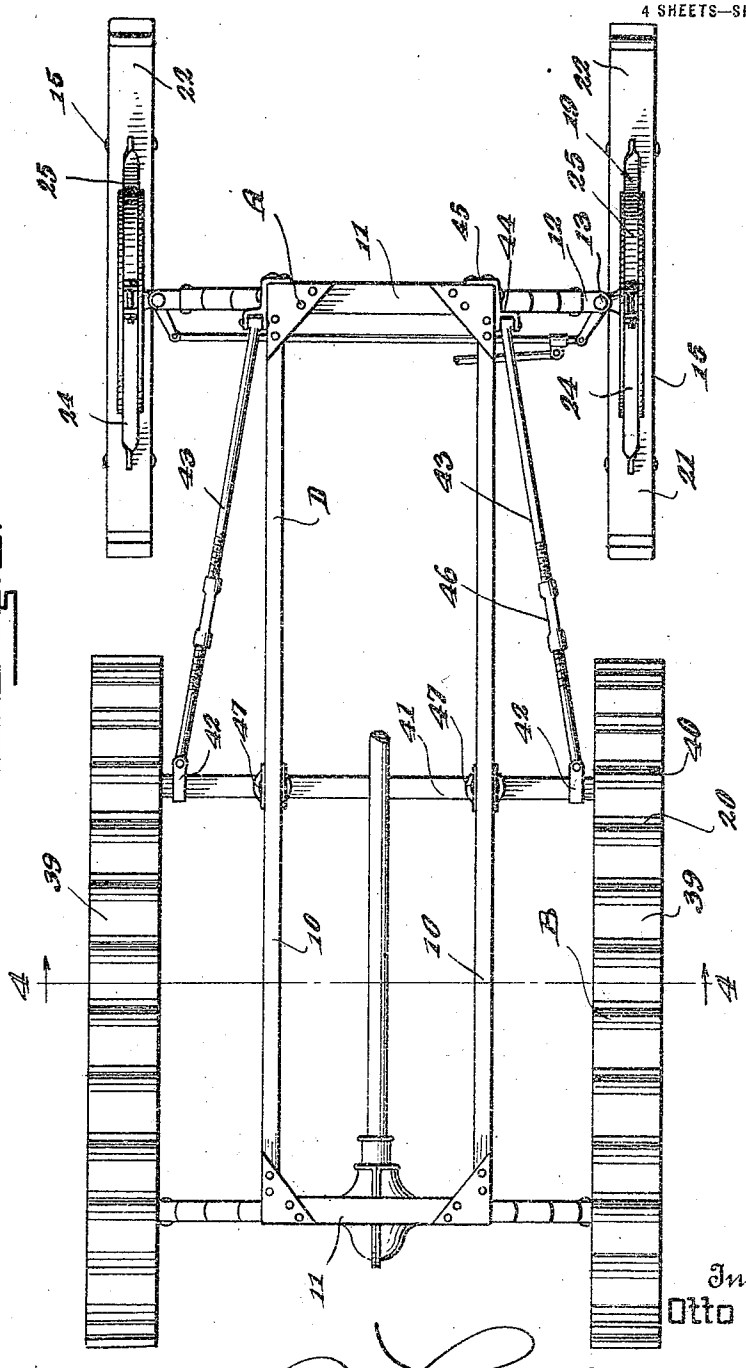
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

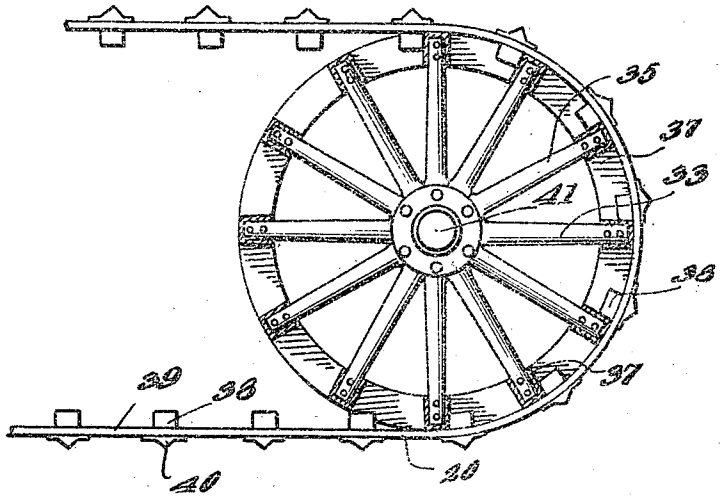
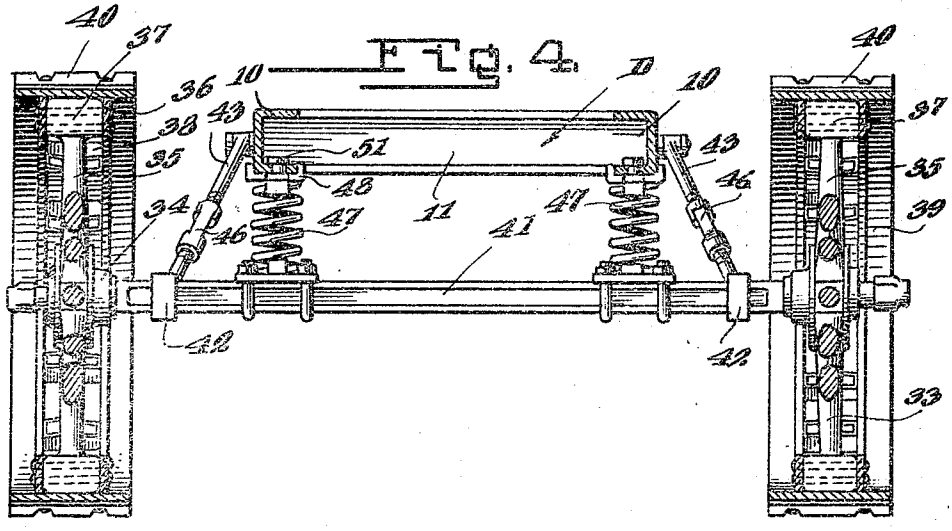


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 5.

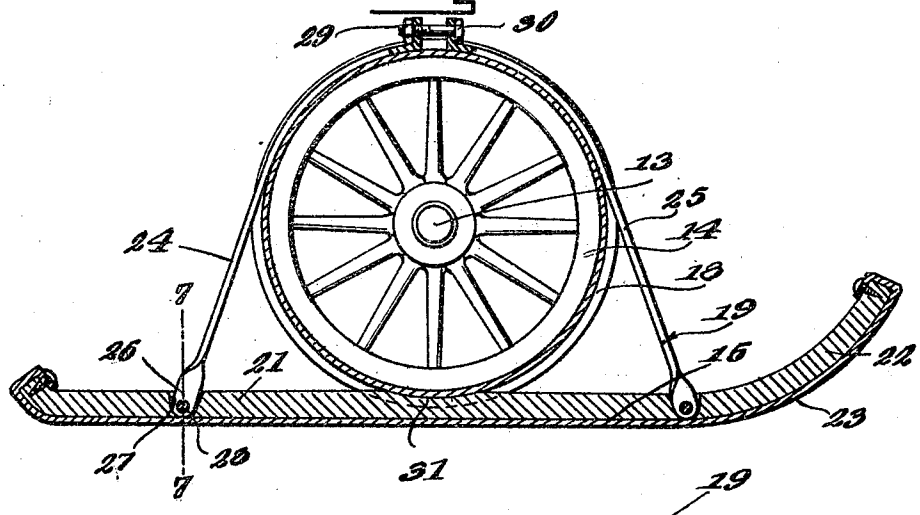


Fig. 7.

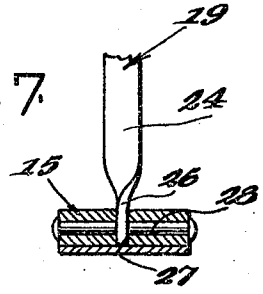


Fig. 6.

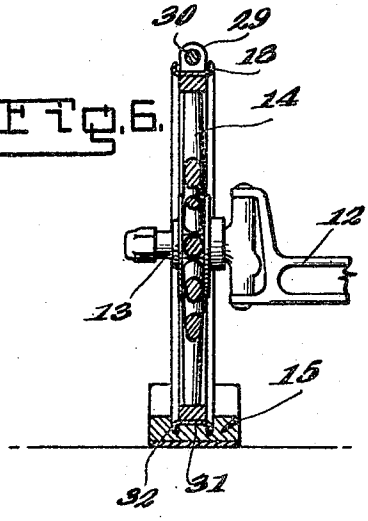
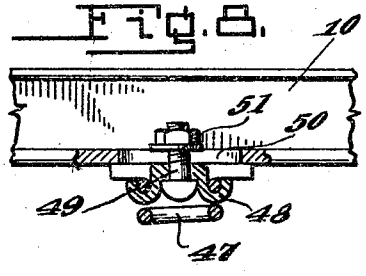


Fig. 8.



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UNITED STATES PATENT OFFICE.

OTTO BUFE, OF GRAND MARAIS, MICHIGAN.

AUTOSLEIGH ATTACHMENT.

1,425,835. Specification of Letters Patent. Patented Aug. 15, 1922.

Application filed June 3, 1920. Serial No. 386,302.

To all whom it may concern:

Be it known that I, OTTO BUFE, a citizen of the United States, residing at Grand Marais, in the county of Alger and State of Michigan, have invented certain new and useful Improvements in Autosleigh Attachments, of which the following is a specification.

This invention relates to motor driven sleighs and the primary object of the invention is to provide a sleigh attachment which can be readily attached to or detached from motor vehicles of the ordinary styles and types, and which is so constructed as to permit the effective use thereof in all kinds of weather and regardless of drifts, the depth or condition of the snow.

Another object of the invention is the provision of a novel type of traction band and wheel, the arrangement of which is such in relation to each other, that a positive drive is assured and that a firm relatively large grip will be obtained upon the snow.

A further object of the invention is to provide a novel type of runner for the front wheel of the vehicle with which the attachment is associated and an improved means for securing the runner to the wheels against accidental displacement.

A further object of the invention is to provide an improved means for associating the traction wheels and bands with the vehicle body so as to permit the band to move in relation thereto, thereby preventing shocks being transmitted to the vehicle body incident to travel of the vehicle on a road.

A still further object of the invention is to provide an improved motor sleigh of the above character which is durable and efficient in use, one that is simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings forming a part of this specification, in which drawings:

Figure 1 is a side elevation of a motor vehicle showing the improved motor sleigh attachment connected thereto.

Figure 2 is a plan view of the chassis of a motor vehicle showing the improved attachment connected thereto.

Figure 3 is an enlarged fragmentary side elevation of the traction chain and one of the drive wheels, parts of the drive wheel being shown in section.

Figure 4 is a transverse section taken on the line 4—4 of Figure 2.

Figure 5 is a longitudinal section through one of the front sleigh runners showing the same attached to a front wheel of the vehicle.

Figure 6 is a vertical section through the same.

Figure 7 is an enlarged fragmentary vertical section taken on the line 7—7 of Figure 5, showing the means for connecting one of the clamping straps with the runner, and

Figure 8 is an enlarged fragmentary vertical section through a portion of the chassis showing the means for connecting the front dead axle of the traction device thereto.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates a motor vehicle and B the improved sleigh attachment therefor.

The motor vehicle A may be of any preferred style or type and as shown includes the body C and chassis D. The chassis D is also of the ordinary construction and as shown includes the longitudinally extending side bars 10 and end bars 11. The forward end of the chassis frame has connected thereto in the ordinary manner the front axle 12 which carries the stub axles 13 which are turned in the ordinary manner. The stub axles have rotatably mounted thereon the front wheels 14 which have mounted thereon the front sleigh runners 15. The rear end of the chassis carries in the ordinary manner the rear drive axle 16 which has secured thereto for rotation therewith the rear drive wheels 17, which are of a special construction and will be hereinafter more specifically described.

The front wheels 14 have secured thereto in the ordinary manner clincher rims 18 which are adapted to cooperate with the clamps 19 for the front runners to hold the clamps against relative lateral movement on the front wheels. The improved runners 15 include longitudinally extending bodies 21, which are curved upwardly at their forward ends as at 22, and have secured to their lower surfaces the usual wear members 23

to permit the easy passage of the runners over the surface of the snow. The clamps 19 for holding the front runners in position, each include a pair of clamping straps 24 and 25 which have their outer ends curved arcuately to conform to the configuration of the wheels. The lower ends of the clamping straps 24 and 25 are provided with right angular extending feet 26 which are secured in suitable recesses 27 formed in the runner body 21 by means of pivot pins 28. Thus it can be seen that the clamping plates may be swung in opposite directions on the pivot pins and thus facilitate the positioning or the removal of the runners from the vehicle wheels. The extreme upper ends of the clamping straps 24 and 25 are provided with right angularly extending lugs 29 which receive the adjustable fastening bolts 30. These bolts are adapted to draw the clamping straps into tight engagement with the rim of the vehicle wheel to prevent displacement of the wheel from the runner. The clamping straps engage between the flanges of the clincher rim and thus prevent lateral movement of the wheel and runner in relation to each other. The upper bodies 21 are provided with arcuate depressions 31 which are adapted to receive the rims of the wheels. The opposite sides of these depressions 31 are provided with slots 32 in which the flanges of the clincher rim 18 are adapted to seat. The provision of these slots for the flanges of the clincher rim absolutely prevents relative lateral movement of the runner and the wheels.

The rear traction device 20 includes the forward wheels 33, and the rear pair of traction wheels 17, each of which are constructed the same. Each of the wheels includes a hub 34 of the ordinary construction, a plurality of outwardly extending spokes 35, and annular side metallic rings 36, which are secured to the outer ends of the spokes. The rings 36 terminate flush with the outer ends of the spokes, and these spokes are covered with suitable metallic end caps 37 which form wear members for engaging the drive lugs 38 formed on the traction band 39.

The traction bands 39 are of a special construction and have been designed after considerable experiment to find a traction device which would effectively operate in all conditions of snow. The traction bands 39 are formed relatively wide and are made of an endless flexible metallic band and are trained around the forward and rear pair of traction wheels 33 and 17. The drive lugs 38 are secured on the inner surface of the bands 39 and are spaced at equi-distant points which correspond to the distance between the spokes 35. The outer surfaces of the bands 39 are provided with transversely extending cleats 40 which are adapted to engage and bite into the snow so that a firm grip may be obtained thereon.

The forward pair of wheels 33 is rotatably mounted on the terminals of a dead axle 41 and this axle carries suitable clevises 42 which have pivotally connected thereto the forwardly and inwardly extending spreader arms 43. The forward ends of the spreader arms 43 are pivotally connected as at 44 to angle clamps 45 which are secured to the forward corners of the chassis as clearly shown in Figure 2 of the drawings. The spreader arms 43 have interposed therein suitable turnbuckles 46 by means of which the length of the spreader rods can be regulated so as to tension the bands 39. To effectively maintain the forward end of the traction bands in engagement with the road and to ward off shock incident to the travel over the road, relatively heavy coil springs 47 are interposed between the side channel bars 10 of the chassis D and the dead axle 41. The upper terminals of the relatively strong coil springs 47 are carried by suitable cups 48 and slidably held in place by bolts 49. The bolts 49 are slidably mounted in relatively short longitudinally extending slots 50 in the side channel bars 10 and this permits of the upper ends of the relatively strong springs 47 moving in relation to the side channel beams. A wear washer 51 engages the upper surface of the channel beam so as to permit the ready sliding of the upper end of the springs thereon. While coil springs have been shown it is to be understood that elliptical springs or any other preferred type of spring means may be substituted therefor.

When it is desired to associate the improved motor attachment B with the motor vehicle, the tires of the front wheels thereof are removed and the straps 24 and 25 of the clamp structure 19 are turned back on the pivot pins 28 and the front wheels are then placed on the runner bodies 21. The straps 24 and 25 are then swung over the rims of the front wheels by means of the adjusting bolts 30. The ordinary rear wheels of the vehicle are then removed and the traction device 20 is substituted therefor. The rear wheels 17 are placed on the rear drive axle instead of the ordinary wheels and the dead axle 21 is attached to the chassis in front of the rear drive axle, as heretobefore explained. The vehicle is then ready for use and owing to the relatively broad bearing surface of the sleigh runners 15 and the traction bands 35 its use in relatively deep or soft snow is permitted. The provision of the traction band also permits a relatively firm grip to be obtained on the snow so that the vehicle will be effectively propelled over the snow.

From the foregoing description it can be seen that an improved sleigh attachment is provided for motor vehicles, which can be readily and quickly attached to or detached from the same and will permit of the use of the vehicle in all conditions of snow.

Changes in details may be made without departing from the spirit or scope of this invention; but,

I claim:

1. In a motor sleigh, the combination with a chassis including front and rear axles, and drive wheels carried by the rear axle, of a sleigh attachment including a dead axle arranged intermediate the rear axles, spreader arms carried by the forward ends of the chassis and connected to said dead axle, shock absorbing springs arranged intermediate the dead axle and the chassis, and slidably carried by the chassis, idler wheels carried by the terminals of the dead axle, traction bands trained around the rear drive wheels, and the idler wheels, and means for regulating the active length of the spreader bars, for moving said dead axles and springs whereby the tension of the traction bands can be regulated.

2. In a motor vehicle, the combination, with a chassis including front and rear axles, drive wheels carried by the rear axle, of a sleigh attachment including a dead axle arranged intermediate the front and rear axles, means slidably and resiliently connecting the dead axle with the chassis, spreader arms pivotally carried by the forward end of the chassis and secured to said dead axle adjacent the terminals thereof, means for adjusting the length of the spreader arms for regulating the position of the dead axle in relation to the rear axle, idler wheels rotatably carried by the terminals of the dead axle, and flexible traction bands trained around the rear drive wheels and the idler wheels.

3. In a motor vehicle, the combination, with a chassis, including front and rear axles, drive wheels carried by the rear axle, of a sleigh attachment therefor including a dead axle, a pair of spreader arms carried by the dead axle, means pivotally securing the forward ends of the spreader arms to the forward ends of the chassis, shock absorbing springs carried by the dead axle, means slidably connecting the upper ends of the shock absorbing springs to the chassis, wheels carried by the terminals of the dead axles, traction bands trained around the drive wheels, and the idler wheels carried by the dead axle, and turn buckles interposed in the spreader arms.

4. In a motor vehicle, the combination with a chassis including longitudinally extending side beams, front and rear axles, drive wheels carried by the rear axle, of a sleigh attachment therefor including a dead axle disposed intermediate the front and rear axles, rest plates secured to the dead axle, tensioned coil springs fitted upon the rest plates, cups carried by the upper ends of the springs and receiving the longitudinally extending side beams, and bolts carried by said cups and slidably carried by the side beams, wheels carried by the terminals of the dead axle, and traction bands trained around the drive wheels and the wheels carried by the dead axle.

OTTO BUFE.