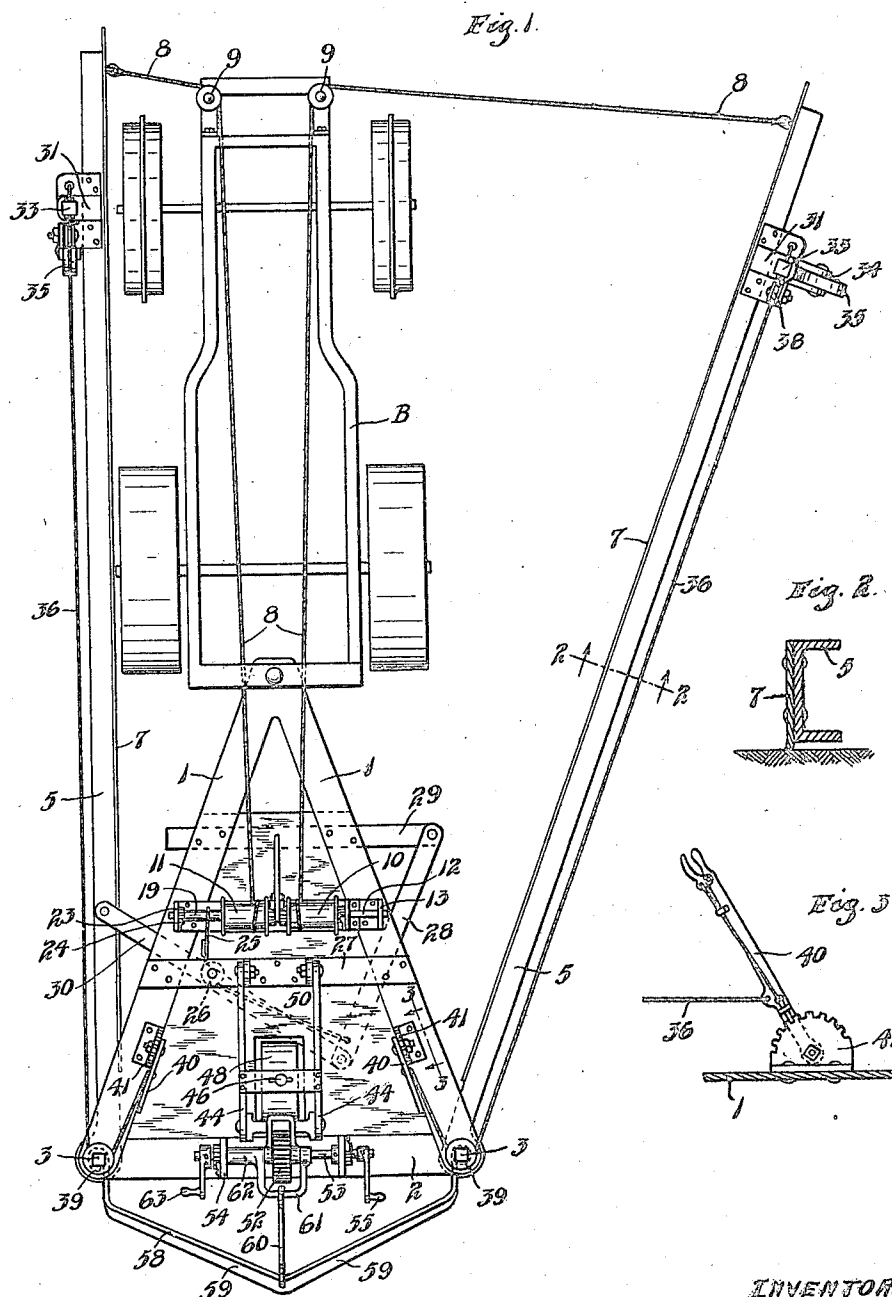


Aug. 14, 1923.

1,464,672

B. WHITEMORE
ROAD DRAG AND GRADER
Filed Sept. 27, 1922

2 Sheets-Sheet 1



INVENTOR.
BENNIE WHITEMORE.
BY HIS ATTORNEY.

James F. Williamson

Aug. 14, 1923.

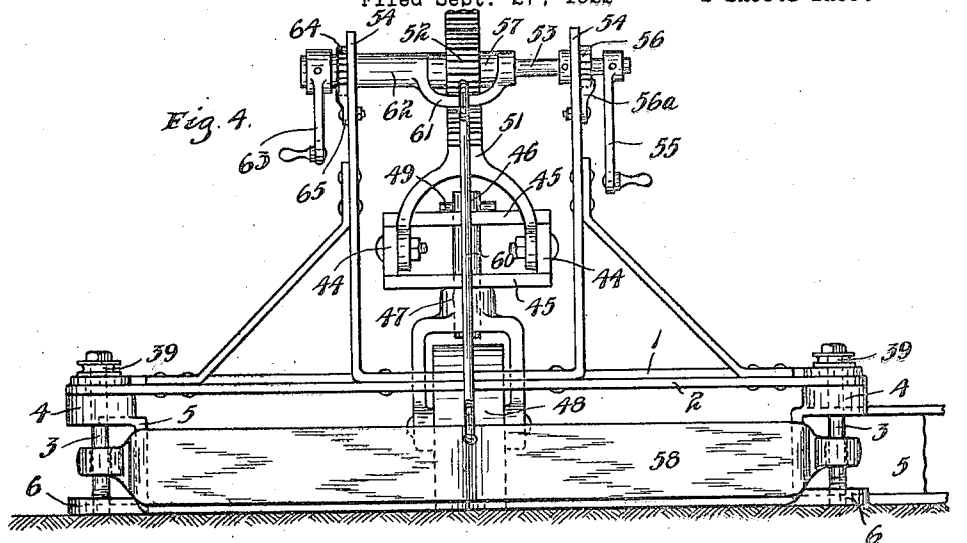
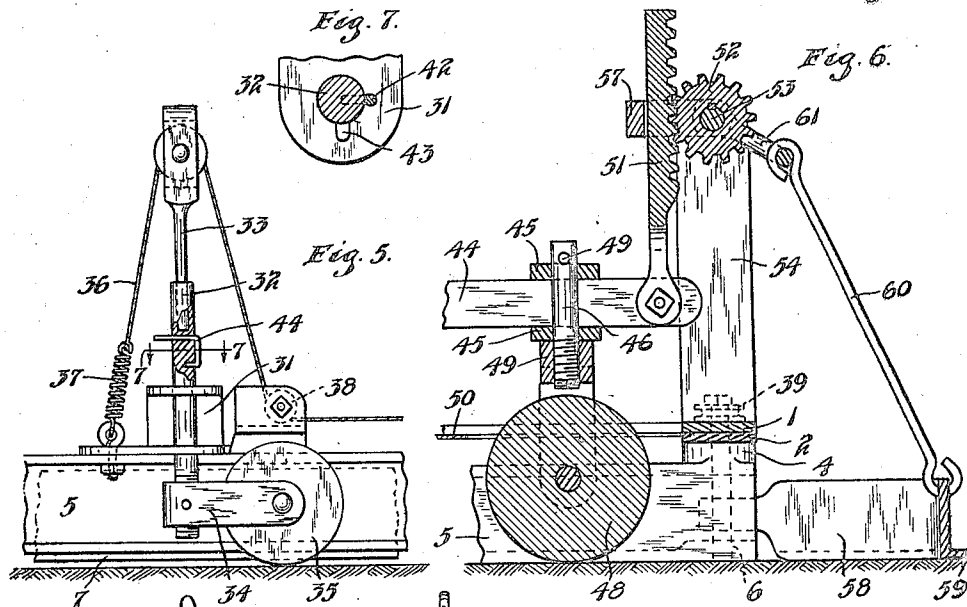
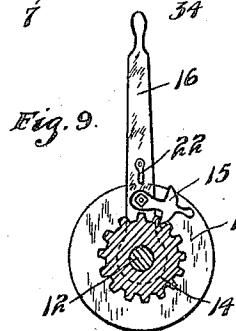
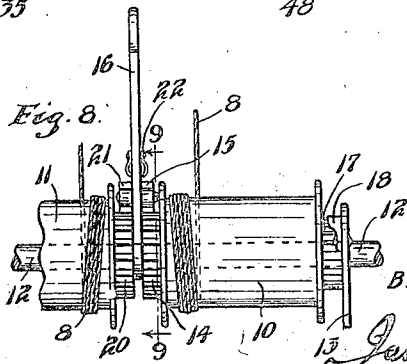
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B. WHITTEMORE

ROAD DRAG AND GRADER

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2 Sheets-Sheet 2



INVENTOR.
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UNITED STATES PATENT OFFICE.

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A. C. ERICKSON, OF ALBERT LEA, MINNESOTA.

ROAD DRAG AND GRADER.

Application filed September 27, 1922. Serial No. 590,952.

To all whom it may concern:

Be it known that I, BENNIE WHITTEMORE, a citizen of the United States, residing at Albert Lea, in the county of Freeborn and State of Minnesota, have invented certain new and useful Improvements in Road Drags and Graders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a road drag or grader. Such road drags are used to improve the road and do not materially change the general forms of the roadbed, but merely distribute the loose earth into depressions in the road and pack the same therein without tearing up the hard packed crust or surface of the road or the underlying foundation thereof. Many roads have their central portion well packed and surfaced but have sod or weeds grown up at the sides thereof where there is more or less loose dirt. It is the function of the road drag to cut and remove the sod and weeds and to distribute the loose dirt efficiently over the road where the same will be packed down by the traffic.

It is an object of this invention to provide a road drag or scraper comprising a frame having laterally swinging blade-carrying members pivoted to the rear sides thereof, which members extend forwardly and along the side of the frame. It is a further object of the invention to provide a road drag or scraper having such a blade carrying member, together with means for moving said member both inward toward the frame and outward away from the same.

It is another object of the invention to provide such a drag or scraper having truck means adjacent the forward ends of the blade-carrying members and also having a truck means adjacent the rear end of the frame, together with mechanism by which said blades and frame may be raised and supported on said trucks.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to the

same parts throughout the different views and in which,

Fig. 1 is a top plan view of the device; 55

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1, as indicated by the arrows, the same being shown on an enlarged scale;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1, as indicated by the arrows, the same also being shown on an enlarged scale; 60

Fig. 4 is a view in rear elevation of the device; 65

Fig. 5 is a partial view in side elevation thereof;

Fig. 6 is a central vertical section through the rear end of the device;

Fig. 7 is a horizontal section taken on the line 7—7 of Fig. 5, as indicated by the arrows; 70

Fig. 8 is a view in front elevation of a part of the mechanism; and

Fig. 9 is a vertical section taken on the line 9—9 of Fig. 8, as indicated by the arrows. 75

Referring to the drawings, the device comprises a substantially horizontal frame member having the rearwardly diverging side members 1 and the rear cross member 2. The front of said frame is of appreciable width and is adapted to be connected to the drawbar or rear of a tractor designated generally as B. Bolts 3 extend downward through the overlapped ends of members 1 and 2 at the rear corners of the frame and pass through bosses 4 formed on members 5 and are threaded at their lower ends and screwed into bosses 6 also formed on said members 5. The members 5 are formed of standard channels with the flanges thereof turned outwardly and these members extend forwardly along and beyond the sides of the frame member and have secured thereto the blade members 7 extending substantially throughout the entire length thereof. The blade members 7 normally are in contact with the ground and are provided with comparatively sharp edges at their lower sides. The members 5 and 7 have secured adjacent their front ends cable members 8, which cables pass over sheaves 9 mounted adjacent the front of the tractor frame B and then

pass rearwardly and are secured to drums 10 and 11 mounted on a shaft 12 carried in a bracket 13 secured to the frame members 1. The drum 10 rotates freely on the shaft 12 and has a gear 14 secured at one end thereof adapted to be engaged and rotated in either direction by a double pawl 15 pivotally secured on a lever 16 also mounted on the shaft 12. The drum 10 also carries at its other end a ratchet wheel 17 engaged by a spring-pressed pawl 18 for preventing movement thereof in one direction. The drum 11 has a portion of large diameter adjacent the lever 16 and a portion 19 of smaller diameter rigid therewith and extending from one end thereof. The drum 11 is also freely mounted on the shaft 12 and has a ratchet gear 20 at one end thereof also adapted to be engaged by a double pawl 21 so as to be moved in either direction by swinging movements of the lever 16 to which said pawl is pivotally connected. The pawls 15 and 21 can be held in position entirely out of engagement with the ratchet wheels 14 and 20 by the spring members 22 mounted on lever 16. The drum 11 also has a ratchet wheel 23 at its small end arranged to be engaged by a freely swinging dog 24 mounted on the bracket 13. The small drum 19 has a cable 25 secured thereto passing over a sheave 26 mounted on the underside of a cross member 27 of the frame and having its end secured to a link 28 disposed beneath the frame members 1. Said link 28 is pivotally connected at its forward end to the projecting end of a member 29 secured to the underside of the frame members 1 and is pivotally connected at its rear end to the end of another link 30, which latter link projects forward and has its forward end pivotally secured to one of the members 5.

Each of the members 5 has secured thereto, somewhat adjacent its forward end, a bracket 31 forming the bearing for an upright standard 32 journaled therein, which standard has a sheave carrying rod 33 journaled in its upper end. The lower end of the standard 32 is threaded and screwed into a forked bracket 34 in which is journaled a ground-engaging wheel 35. A cable member 36 has its end connected to a spring 37 which is, in turn, connected to an eye-bolt secured in the brackets 31 and member 5 in front of the standard 32. This cable member passes over the sheave in the member 33 and over another sheave 38 mounted in an upstanding flange of the brackets 31. Said cable then passes to the rear of the member 5 where it passes over a sheave 39 journaled on the bolt 3 above the frame members 1 and is secured to a lever 40 (see Figs. 1 and 3). The lever 40 is provided with the usual grip-operated pawl adapted to engage with a quadrant member 41 forming part of a

bracket secured to the frame member 1 and to which the lever 40 is pivoted, so that the lever can be held in various adjusted positions. The standard 32 has a pin member 42 passing therethrough and extending along one side thereof, which, at certain times, is adapted to aline with and seat in a groove 43 formed in the top of bearing 31. It will be noted that there are two sets of the parts just described, one for each of the members 5.

A pair of rearwardly extending arms 44 are pivoted at their front ends in upstanding lugs secured to the cross member 27 and these bars have top and bottom members 45 extending therebetween and bolted thereto, which members form the bearings for a standard 46 of a swiveled bracket 47, in which is journaled a ground-engaging truck wheel 48. The standard 46 is held in place by a pin 49 passing therethrough resting on the top member 45. It will be noted that the wheel 48 is disposed in a slot formed in the rear part of a platform member 50 covering the space between the frame members 1 and 2. The bars 44 extend to the rear of the standard 46 and have extending therebetween and pivotally connected thereto adjacent their outer ends, the horizontal arms of a vertically extending rack member 51. This rack is engaged by a pinion 52 rigidly secured to a shaft 53 mounted in the arms 54 of an upright bearing secured to the rear member 2. The shaft 53 has a crank handle 55 secured at one end thereof for turning the same and also carries a ratchet member 56 engaged by a spring pawl 56^a. The rack 51 is held in engagement with the gear 52 by a strap member 57, the ends of which engage the shaft 53.

The machine also comprises a rear drag member 58 having rearwardly projecting and converging sides 59, the ends of which extend forwardly and have lugs thereon operated to loosely engage the pivot bolts 3. The strap 58 can be raised at its rear end about said lugs and bolts, and, for this purpose, a link or rod 60 is connected to the rear central portion thereof and extends upwardly where it is connected to a yoke portion 61 of a sleeve member 62 journaled on the shaft 53, which yoke portion passes around the pinion 52. The sleeve 62 extends through one of the bracket arms 54 and has a crank handle 63 secured thereto for turning the same and said sleeve is also equipped with a ratchet 64 and spring-pressed pawl 65 for holding the same in various positions.

In operation, the scraper will be drawn forward by the tractor B and the loose dirt, sod, etc., will be loosened and scraped along by the blades 7. This material will pass along said blades and be uniformly and efficiently distributed on the road, filling up any depressions which have been formed

in the surface thereof. As the machine is drawn forward, the members 5 will be swung outwardly about the pivot bolts 3 by the friction on the road. When it is desired to draw the members 5 and 7 inwardly, the lever 16 will be operated and the proper pawl 15 or 21 engaged with one of the gears 14 or 20 of the drums 10 and 11. If the member 5 shown at the right of Fig. 1 is to be drawn up the lever will be operated to turn the ratchet 14 and drum 10 and the cable 8 will thus be wound thereon to pull the said member 5 inwardly. If the member 5 at the left of the machine is to be drawn in, the drum 11 will be centrally operated by the lever 16. It is often desired to move the member 5 at the left of the machine inwardly to allow an approaching vehicle to pass the scraper and it is desirable to quickly swing this member outwardly to its operative position. For this purpose, the links 28 and 30 are provided and it will be noted that by turning the drum 11 in one direction the cable 25 will tend to straighten the links 28 and 30 which form a toggle structure and thus force the arms 5 and blades 7 to their outward position. As the large and small portions of the drum 11 are secured together, it will be noted that the cable 8 will be unwound from one portion as the cable 25 is wound up on the other. These drums, therefore, together with the lever 16, form means for swinging the member 5 and blades 7 both outwardly and inwardly. When the members 5 and 7 are to be swung it is desirable to support the same upon the wheels 35. At this time, the levers 4 are swung to pull on the cables 36 and the front ends of the members 5 are thus lifted, the wheels 35 and the standards 32 supporting the weight thereof. When the ends of the members 5 are thus lifted the spring 37 will be placed under considerable tension and when the wheels 35 swing around to position with their planes substantially normal to the longitudinal axes of the members 5, as will happen when the members are swung inwardly, the pin 42 will snap into the groove 43 and said wheels will thus temporarily be held in said position. With the wheels in this position, the members 5 and blades 7 are quickly and easily swung inwardly and the wheel will also retain this position while said members swing outwardly. When the members have reached their desired outward position the member 40 will be again swung to permit the same to come in contact with the ground.

The operator standing on the platform 50 can turn the crank arm 55 and through the pinion 52 and rack 51 can raise the rear end of the frame and members 5 and 7, the same being carried by the wheel 48. By turning the crank 63 the rear strap 59 can be swung upwardly out of contact with the ground

through the movement of the yoke 61. The frame 1 will be kept balanced horizontally to a considerable degree by the width thereof at its front end where it is connected to the tractor B, as any sidewise tilting of the frame will be resisted by the connection to the tractor.

From the above description it is seen that applicant has provided a simple and efficient road drag or scraper, the parts of which can be readily manipulated. The scraper, at one side of the device, can be quickly swung inwardly and outwardly to permit an approaching vehicle to pass. The device can be quickly raised upon the trucks and quickly lowered to position. The machine is made of few parts and these may be made of very strong and rugged character to withstand the usage intended and to furnish the proper weight for such a device.

It will, of course, be understood that various changes may be made in the form, details and arrangement of the parts without departing from the scope of applicant's invention, which, generally stated, consists in the matter shown and described and set forth in the appended claims.

What is claimed is:

1. A road drag and scraper device having in combination, a frame, a drag and blade carrying member pivoted at the rear thereof, a standard mounted for vertical movement in said member adjacent the front thereof and carrying a ground-engaging wheel at its lower end, a sheave carried by said standard, a cable secured to said member at the front of said standard passing over said sheave, and means on said frame for pulling on said cable to raise said drag member and support the same on said wheel.

2. A road drag and scraper device having in combination, a frame, a drag and blade carrying member pivoted at the rear end thereof, a wheel adjacent the front end of said member having a standard vertically movable in said member, a sheave carried at the top of said standard, an extensible resilient means secured to said member in front of said standard, a cable secured to said means and passing over said sheave, means on the frame for taking up said cable, and means on said standard engaging a means on said drag and blade carrying member when the plane of said wheel is substantially normal to the longitudinal axis of said member.

3. A road drag having in combination, a frame, blade carrying members extending forwardly from the rear corners thereof, pivot pins connecting said members to said frame, a rear scraper loosely secured to said pivots and comprising rearwardly extending converging sides, a platform at the rear of said frame, means operable from said platform for raising the rear ends of said

blade carrying members, and means operable from said platform for raising said rear scraper.

4. A road drag and scraping device having in combination, a frame, drag and blade carrying bars pivoted to each side of the same at the rear thereof extending forwardly and beyond said frame, means for swinging said bars inwardly, truck wheels adjacent the front ends of said bars, standards supporting said wheels, and means for raising said bars to be supported by said truck wheels including hand-operating devices on said frame, and cables extending to said standards.

5. A road drag and scraper device having in combination, a scraper and blade carrying member pivoted adjacent its rear corners and extending forwardly along the sides thereof, a truck wheel mounted substantially transversely centrally of and at the rear of said frame, a standard rising from said wheel, a rack carrying member secured to said standard, and a crank-operated pinion secured to said frame and engaging said rack for raising said frame.

6. A road drag and scraper device having in combination, a frame, scraper carrying members pivoted adjacent its rear corners and extending forwardly at each side thereof, a truck wheel mounted substantially centrally of said frame adjacent its rear end, a lever pivoted at one end to said frame and connected to said wheel, a rack secured to the other end of said lever, a crank-operated gear mounted in a bracket at the rear of said frame and engaging said rack for lifting said frame.

7. The structure set forth in claim 6, a shaft on which said gear and crank are mounted, a rear scraper connected to said frame, a crank-operated sleeve mounted on said shaft, and means connected to said sleeve and rear scraper for raising the latter.

8. A road drag and scraper device having in combination, a frame, a blade carrying member pivoted at the rear end thereof and extending forwardly along the side thereof, links secured to said member and frame and pivoted together to form a toggle mechanism, and means on said frame secured to said links including a drum and a cable adapted to be wound thereon for moving the same toward a straightened position to move said member outwardly.

9. A road drag and scraper device having in combination, a frame, blade carrying members pivoted to the rear corners thereof and extending forwardly at each side of the same, a cable secured to one of said members adjacent its front end, a drum on said frame over which said cable passes for winding said cable and moving said member inwardly, a cable connected adjacent the front end of the other of said

members, a cable and link connected adjacent the rear end of said last mentioned member, co-axial drums over which said last mentioned cables pass for moving said member inwardly and outwardly, and a single lever for operating all of said drums.

10. A road drag and scraping device having in combination, a frame, drag and blade carrying bars pivoted at the rear corners thereof and extending forwardly at each side of the same, means for moving one of said members toward said frame, means for moving the other of said members toward said frame, means for moving said last mentioned member away from said frame, and a single means for operating all of said means.

11. A road drag and scraper device having in combination, a frame, an operating platform at the rear of said frame, a drag and blade carrying member pivoted to the side of said frame at the rear end thereof and extending forwardly along and beyond said frame, a cable connected to the front end of said member for swinging the same inwardly, means connected intermediate of said members for swinging the same outwardly, a cable for operating said last mentioned means and co-axially mounted drums of different diameters on which said cables are wound for moving said members inwardly and outwardly.

12. A road drag and scraper device having in combination, a frame, a member adapted to operate upon the road pivoted at the rear of said frame and extending longitudinally at the side thereof, a ground-engaging wheel carried by said member adjacent its outer end, and means controlled from the rear of said frame adapted to lift said member so that the same is supported on said wheel.

13. A device for operating on roads having in combination, a frame, a scraper at the rear thereof having rearwardly converging sides pivotally connected at their forward ends to said frame, a revoluble yoke carried by said frame and connected centrally to said scraper, and means for turning said yoke to lift said scraper.

14. The structure set forth in claim 13, a ground-engaging roller adjacent the end of said frame disposed centrally thereof, a rack carried by said roller, a pinion secured to a shaft journaled in said yoke and said frame engaging said rack, and means for turning said shaft to raise said pinion and the rear end of said frame.

15. A road drag having in combination, a frame, a drag and blade carrying member pivoted to the side of said frame at the rear end thereof and extending forwardly along and beyond said frame, pulleys secured to the front of said frame, cables running over said pulleys and connected, respectively, ad-

jacent the ends of said members, an operator's platform at the rear of said frame, a toggle connected to one of said members and frame, a cable connected to said toggle
5 to straighten the same and move said last mentioned member outwardly, and co-axially mounted drums for winding up said first mentioned cables to draw said member inwardly and to wind up said last mentioned cable to move one of said members 10 outwardly.

In testimony whereof I affix my signature.

BENNIE WHITEMORE.