H. BIDWELL.

MEANS FOR MOVING HEAVY LOADS.

APPLICATION FILED AUG. 29, 1917.

1,287,845.

Patented Dec. 17, 1918.

3 SHEETS—SHEET 1.

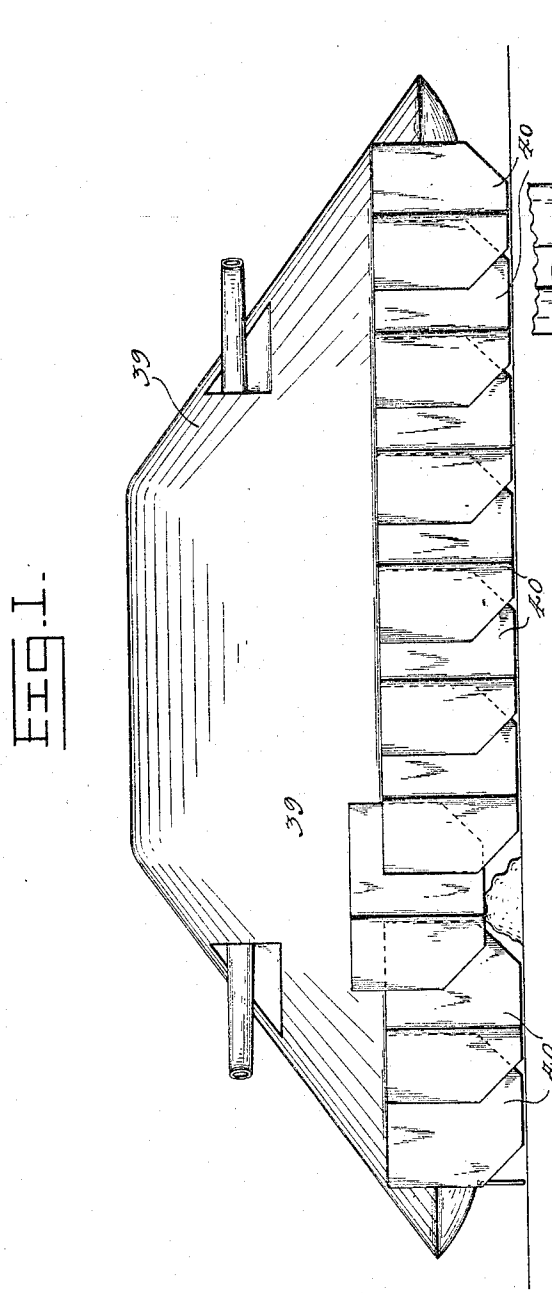


FIG. 1.

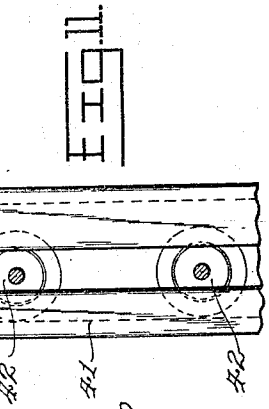


FIG. 11.

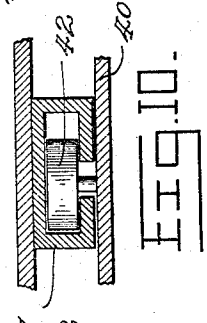


FIG. 10.

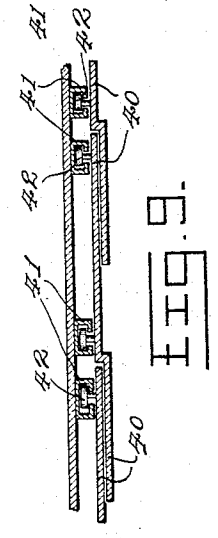


FIG. 9.

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3 SHEETS—SHEET 2.

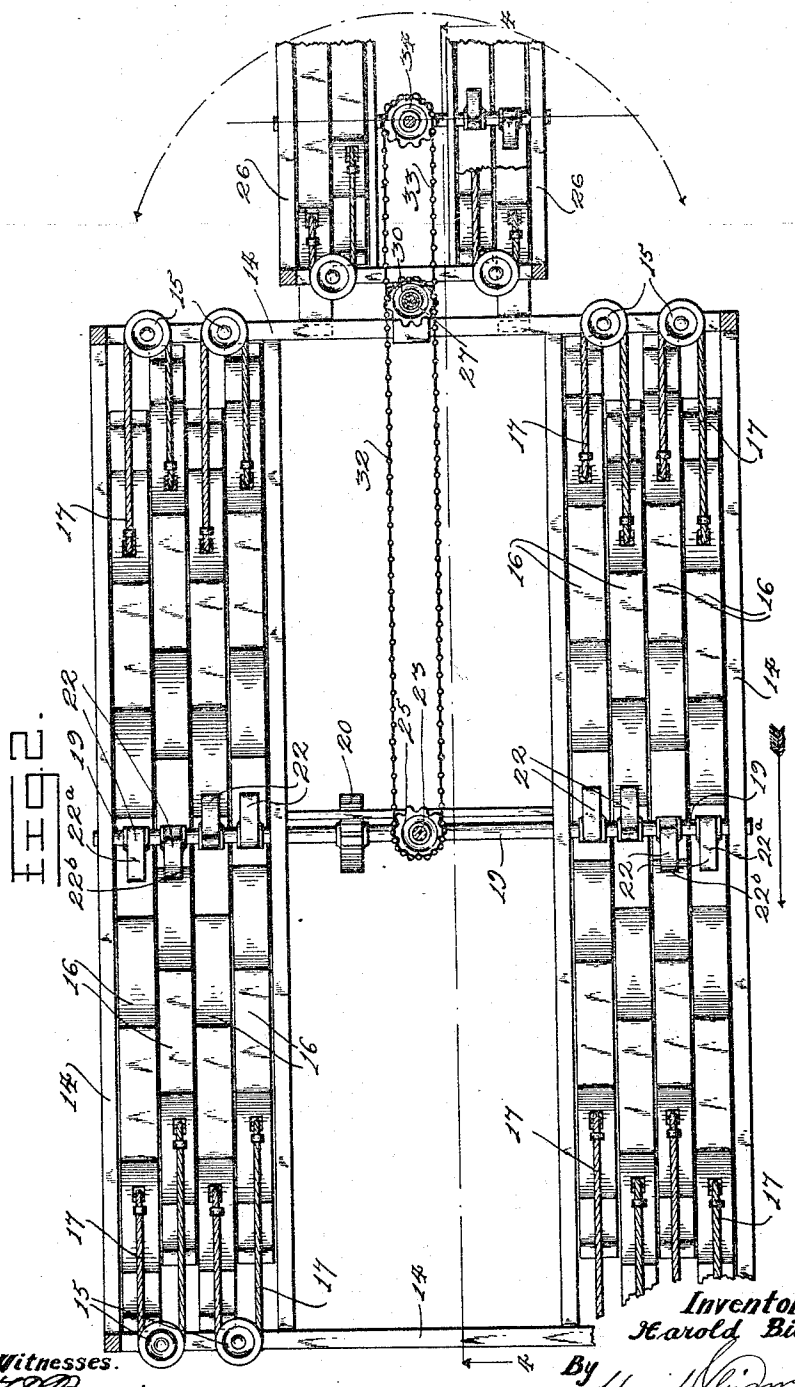


Fig. 2.

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3 SHEETS—SHEET 3.

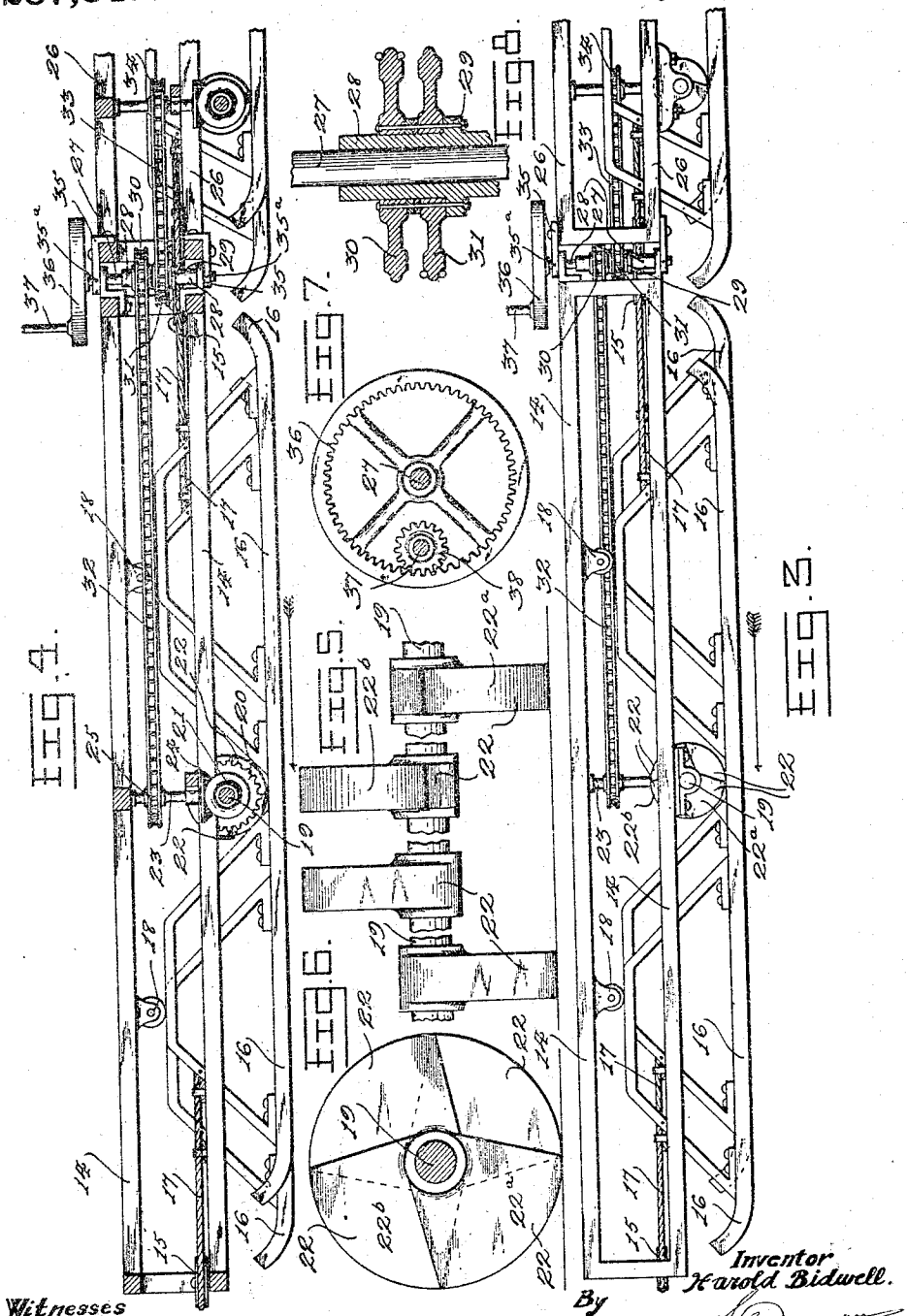


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

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MEANS FOR MOVING HEAVY LOADS.

1,287,845. Specification of Letters Patent. Patented Dec. 17, 1918.

Application filed August 29, 1917. Serial No. 188,812.

To all whom it may concern:

Be it known that I, HAROLD BIDWELL, a citizen of the Dominion of Canada, residing at Ottawa, in the county of Carleton and Province of Ontario, Canada, have invented certain new and useful Improvements in Means for Moving Heavy Loads, of which the following is a specification.

This invention relates to tanks or the moving principle may be used in connection with heavy hauling of any kind.

The invention consists of a frame-work having a cross axle on which are mounted segments of a wheel which operate on runners.

The object of the invention is to provide an arrangement whereby a load can be moved along rough or soft ground without getting stalled.

A further object is to provide a means of relieving the track in soft or rough ground and placing it to roll on runners.

A further object is in a novel means of guiding the same.

A further object is in a means for protecting the operating parts against shell fire.

With these and other objects in view, the invention consists in the construction, combination and arrangement of parts as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

Figure 1 is a side view of the complete tank. Fig. 2 is a top plan view of the runners and frame. Fig. 3 is a side elevation of the same. Fig. 4 is a sectional view on the line 4—4 of Fig. 2. Fig. 5 is a front view of the segments. Fig. 6 is a side view of the segments. Fig. 7 is a view showing the guide means. Fig. 8 is a view showing the transmission gears. Fig. 9 is a sectional view of the protection plates. Fig. 10 is an enlarged sectional view of the guiding means for the protection plates. Fig. 11 is a section view of the guide means for the protection plates.

Referring to the drawings like numerals designate like parts in the various drawings.

14 is a frame-work on which are mounted suitable pulleys 15. 16 are a set of runners which may be any suitable length and suitably placed. These runners are joined together in pairs by suitable cables 17 which extend around pulleys 15 so as to give a see-saw motion to each pair of runners. In Fig. 2 I have shown the runners in one particular way of forming them into pairs, but I do not wish to limit myself to this particular way as they may be coupled together in any other desired manner so that one of each pair will be forward when the other is in a rearward position. The pairs may be coupled by having one on each side and I do not wish to limit myself to four runners on each side as shown in the drawings as more or less runners may be found to be of greater advantage for different constructions in which the principle of my invention may be involved.

The frame-work 14 may be supported to some extent by the roller bearings 18 which are adapted to roll on the suitable braces of the runners 16.

19 is an axle running centrally across the frame-work 14 and suitably journaled therein. Carried on this axle 19 is a drive gear 20 and a bevel-gear 21. Over each runner I provide a segment wheel 22. Where there are four runners on each side the segment is exactly one-quarter of the circumference of a wheel having the same radius. The segment wheels are securely positioned on the axle 19 so as to form a complete wheel if looked at as shown in Fig. 6. The segments on each side of the center are adapted to work at the same time so that the load will always have an equal balance. That is, segments 22^a strike the outside runners at the same time and so on with the other runners in turn. In a forward motion the segment 22^a is about to come on the outside runners and 22^b is the next to carry the load. When segment 22^a strikes the runner it rolls on it and carries the load forward while this runner stays stationary. The second outside runner is pulled forward by the cable 17 to a forward position. The two inside runners are not moved in relation to each other but are carried forward by being connected to the frame-work 14. After segment 22^b passes over its respective runner the two inside segments are rolled over their respective runners in a similar manner to the outer segments. In this way the weight of the load rolls forward on one runner at a time and thus has a flat surface to go forward on instead of meeting with all rough obstacles which might be found in the rough roads. 23 is a perpendicular shaft which is suitably journaled in the frame-work 14 and posi-

tioned over the axle 19. At its lower end I provide a suitable bevel-gear 24 which is adapted to mesh with the bevel-gear 21. 25 is a gear fast on the perpendicular shaft 23. 26 is a secondary frame which is hingedly connected to the main frame 14. This secondary frame is provided with similar runners and segment operating wheels so as to give a forward motion to it. This secondary frame may be large and of similar construction, with the various other parts, to the main frame 14, but I have shown it in a smaller size which is practically only used as a guiding means although it carries considerable of the load.

27 is a perpendicular shaft on which is carried a sleeve 28. The shaft 27 works freely in the sleeve 28. 29 is a retainer securely mounted on the sleeve 28 and above which is mounted a pair of gears 30 and 31. A suitable connection such as a chain or a similar drive 32 is between gears 25 and 30, while a similar driving means 33 operates between gear 31 and gear 34, the latter being to operate the driving gear for the segments carried by the secondary frame. The cleats 35 which are securely attached to the front end of the secondary frame 26 are rigidly fastened to the perpendicular shaft 27 and are held thus by pins 35^a. 36 is a large gear wheel having its gears on its inner circumference. 37 is a steering shaft having a small gear wheel 38 rigidly secured at its lower end and adapted to mesh into the gear wheel 36. The steering shaft 37 has any suitable kind of handle or wheel at its upper end for turning and when this is turned it turns the gear 36 which also carries the shaft 27. This shaft 27 turns or steers the secondary frame 26.

Where this construction is used in the tanks for war purposes I provide an outer shell 39 which may be of any particular design suitable for covering the requirements carried by the frame, such as cannons, machine guns, men and other equipment. As the runners and segment operating means are the important parts of the construction I provide special sliding protector plates 40 which are mounted in suitable guides 41 and are provided with suitable roller bearings 42. When the tank is carried forward and these protector plates strike a stone or high ridge they are forced upward but drop down as soon as the tank goes past the obstacle.

From the foregoing it is thought that the construction of my invention will be clearly understood, and therefore a more extended explanation has been omitted.

What I claim as new, is,—

1. A means for moving heavy loads consisting of a frame-work, pairs of runners reciprocally mounted under said frame-work, braces for said runners and roller bearings for the framework engageable with said braces, and a means for operating the same.

2. A means for moving heavy loads consisting of a frame-work, reciprocally mounted runners positioned under said frame-work and operating in pairs, braces for said runners and roller bearings for the framework engageable with said braces, a means for operating said runners and a means for guiding the same.

3. A means for moving heavy loads consisting of a frame-work, reciprocally mounted runners coupled together in pairs so as to operate in a see-saw movement, a shaft centrally positioned across said frame-work, segments mounted on said shaft and over said runners, said segments adapted to roll on their respective runners consecutively, braces for said runners and roller bearings for the framework engageable with said braces, and a means for operating said shaft.

4. Mechanism for moving heavy loads consisting of a frame-work, reciprocally mounted runners operating in pairs under said frame and supporting the same, a shaft centrally positioned across said frame, said shaft carrying segments which are adapted to roll on their respective runners in turn and move the load carried by said frame in a forward or rearward direction, a means for guiding the same, a secondary frame hingedly connected with the main frame-work and provided with similar runners and segments, and operating means common to both frames.

5. A means for moving heavy loads consisting of a frame-work, reciprocally mounted runners operating in pairs under said frame and supporting the same, a shaft centrally positioned across said frame, said shaft carrying segments which are adapted to roll on their respective runners in turn and move the load carried by said frame in a forward or rearward direction, a secondary frame hingedly connected to said frame, said secondary frame being provided with reciprocally mounted runners and operating means for the same, a vertical shaft disposed between the main and secondary frames and driving means common to the segments of both frames and means for turning said secondary frame so as to guide said main frame.

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

HAROLD BIDWELL.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."