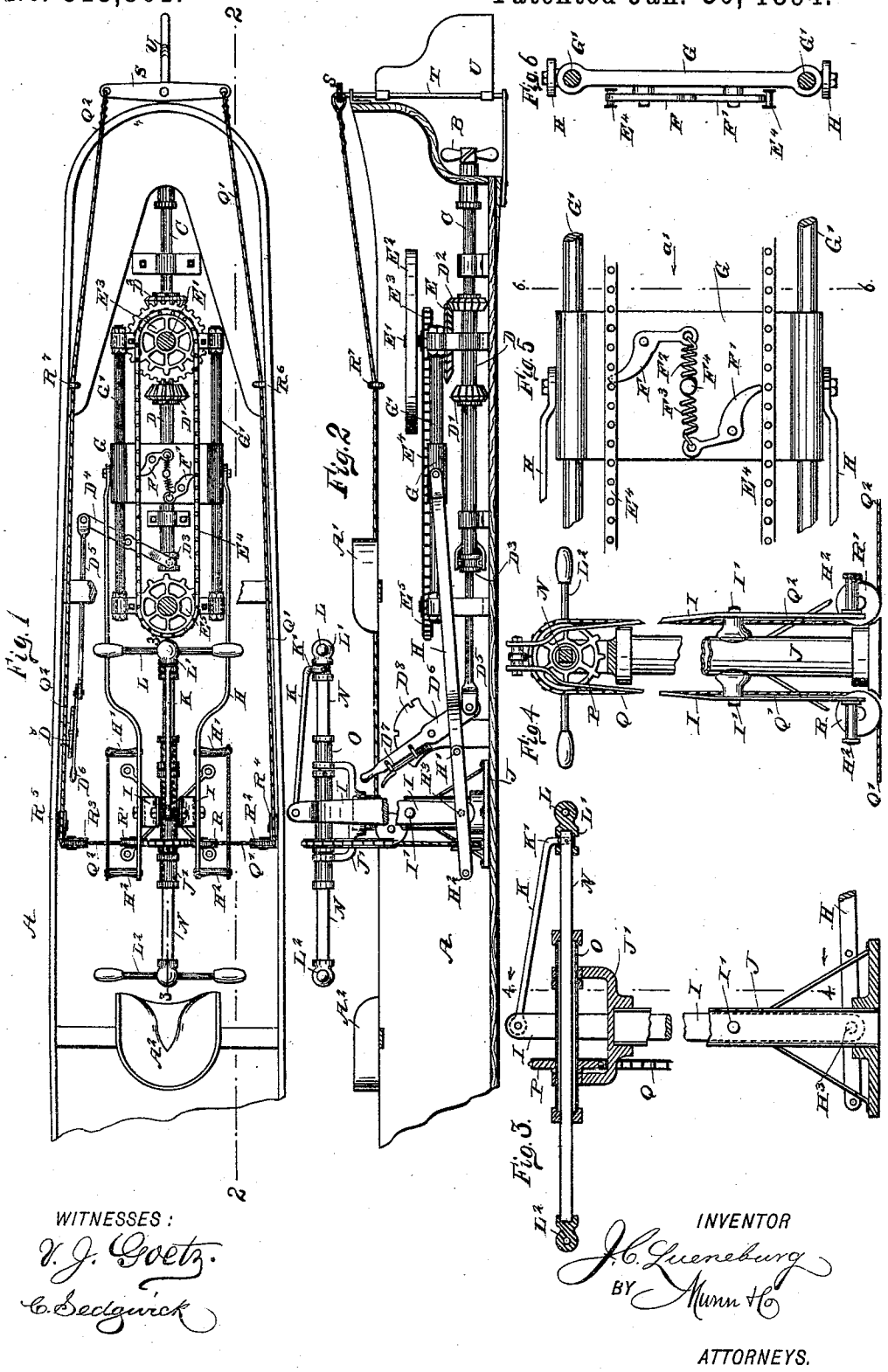
(No Model.)

J. C. LUENEBURG.

MOTOR.

No. 513,801. Patented Jan. 30, 1894.



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MOTOR.

SPECIFICATION forming part of Letters Patent No. 513,801, dated January 30, 1894.

Application filed March 22, 1893. Serial No. 467,149. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. LUENEBURG, of Lakefield, in the county of Jackson and State of Minnesota, have invented a new and Improved Motor, of which the following is a full, clear, and exact description.

The invention relates to motors such as shown and described in the Letters Patent No. 485,419, granted to me on November 1, 1892.

The object of the invention is to provide a new and improved motor designed more especially for conveniently and powerfully propelling vessels, vehicles, &c., by the muscular power of the occupants.

The invention consists of a main driving shaft and gear wheels for imparting a rotary motion to the said shaft, a traveling sprocket chain for imparting motion to the said gear wheels, and a reciprocating cross-head carrying spring-pressed pawls adapted to engage the strands of the said chain.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

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

Figure 1 is a plan view of the improvement as applied to a marine vessel. Fig. 2 is a sectional side elevation of the same on the line 2—2 of Fig. 1. Fig. 3 is an enlarged sectional side elevation of part of the improvement on the line 3—3 of Fig. 1. Fig. 4 is a transverse section of the same on the line 4—4 of Fig. 3. Fig. 5 is an enlarged plan view of the reciprocating cross-head and adjacent parts; and Fig. 6 is a transverse section of the same on the line 6—6 of Fig. 5.

As illustrated in the drawings, the improved motor is applied to a boat A provided with the usual propeller B secured on the outer end of a propeller shaft C extending longitudinally and mounted to turn in suitable bearings in the boat A. On the inner end of the shaft C is fitted a sleeve D mounted to slide on the shaft and to turn the same so that when the sleeve is rotated, a rotary motion is transmitted to the shaft C.

On the sleeve D are secured the bevel gear wheels D′ and D^2, adapted to be thrown alternately in mesh with a bevel gear wheel E secured on the lower end of a short vertically disposed shaft E′ mounted to turn in suitable bearings secured to the boat A. The sleeve D is provided on one outer end with a collar D^3 engaged by a shifting lever D^4 pivotally-connected by a link D^5 with a reversing lever D^6 arranged on one side of the boat A and under the control of the operator seated on the seat A′.

On the reversing lever D^6 is arranged the usual hand lever D^7 adapted to lock the reversing lever D^6 to the notched segment D^8 attached to the boat A and also forming the fulcrum for the reversing lever D^6. Thus, when the several parts are in the position illustrated in Figs. 1 and 2, the bevel pinion D^2 is in mesh with the bevel gear wheel E and when the operator seated on the seat A′ throws the reversing lever D^6 rearward, then the sleeve D is shifted longitudinally on the shaft C, so that the bevel pinion D^2 is thrown out of mesh with the gear wheel E, and the other bevel pinion D′ is thrown in mesh with the bevel gear wheel E. Thus, when the gear wheel E receives a continuous rotary motion in one direction, a rotary motion can be given to the main driving shaft C in either direction whenever the operator shifts the reversing lever D^6, as above described.

On the shaft E′ is secured a fly wheel E^2, and a sprocket wheel E^3 over which passes a sprocket chain E^4 extending longitudinally in the boat and passing over an idle sprocket wheel E^5 journaled in suitable bearings on the boat and disposed horizontally, as plainly shown in Figs. 1 and 2. The sprocket chain E^4 is engaged at its strands by the pawls F and F′ respectively pivoted on the top on a reciprocating cross-head G mounted to slide longitudinally on the guideways G′ secured in the boat A, as shown. The inner ends of the pawls F and F′ are connected by the springs F^2 and F^3 with a pin F^4 attached to the cross-head G, the said pawls being arranged so that on the forward motion of the cross-head G in the direction of the arrow a', the pawl F engages the right hand strand of the chain E^4 to impart a traveling motion to

the sprocket chain, the other pawl F′ at the same time gliding loosely over the links of the chain.

When the cross-head G is on the backward stroke and the inverse direction of the arrow a', then the pawl F glides loosely over the links, while the other pawl F′ engages the left hand strand of the chain E^4, thus imparting further movement in the same direction to the sprocket chain. By this arrangement a continuous traveling motion in one direction is given to the sprocket chain E^4 on reciprocating the cross-head G. The cross-head G is connected with a longitudinally-extending slide H provided on its forward end with transversely-extending foot rests H′ and H^2 adapted to be engaged by the feet of the operators seated on the seats A′ and A^2 respectively, the operator on the seat A′ facing forward, while the one on the seat A^2 faces the stern of the boat.

The slide H is pivotally-connected at H^3 with a lever I arranged vertically and pivoted at I′ to a suitable framework J erected within the boat A. The pivotal connection at H^3 is located midway between the foot rests H′ and H^2 as plainly shown in Fig. 3. The upper end of the vertically-disposed lever I is pivotally-connected with a link K formed at its end with an eye K′ engaging an annular groove in the head L′ of a transversely-extending handle bar L adapted to be taken hold of by the operator seated on the seat A′.

The head L′ of the handle bar is secured on the rear end of a longitudinally-extending square bar N fitted to slide longitudinally in a sleeve O mounted to turn in a bearing J′ secured to the upper end of the framework J. The forward end of the bar N is provided with a transversely-extending handle bar L^2 adapted to be taken hold of by the operator seated on the forward seat A^2. On the sleeve O is secured a sprocket wheel P over which passes a sprocket chain Q extending downwardly, and connected at its ends with the ropes or chains Q′ and Q^2, passing under suitable pulleys R and R′, to pulleys R^2 and R^3 respectively, located on the sides of the boat A, as plainly shown in Fig. 1. The ropes or chains Q and Q′, thus pass over pulleys R^4 and R^5 respectively, and then extend rearwardly along the sides of the boat to be guided in eyes R^6, R^7, respectively, and finally connect at their rear ends with the steering tiller S held on the upper end of the stock T of the rudder U and mounted to turn in suitable bearings at the stern of the boat.

The operation is as follows: The operators seated on the seats A′, A^2, work with their feet, the foot rests H′ and H^2 so as to impart a longitudinal sliding motion to the slide H. At the same time, the operators, with their hands, pull and push on the handle bars L and L^2 so as to impart a sliding motion to the bar N, and to the link K, thus imparting by the latter, a swinging motion to the lever I, also connected with the slide H, thus adding force to the forward and backward sliding motion of the slide H. The movement of the latter imparts a reciprocating motion to the cross-head G, which by the spring pressed pawls F and F′, imparts a traveling motion to the sprocket chain E^4 as previously described, so that a continuous rotary motion in one direction is given to the shaft E′, which, by its gear wheel E in mesh with either of the gear wheels D′ or D^2 imparts a rotary motion to the sleeve D, which transmits its motion directly to the shaft C to revolve the propeller B in the water, and thus propel the boat A in the usual manner. In order to steer the boat in the desired direction the operator seated on the seat A′ and facing forward turns the handle bar L, so as to revolve the sleeve O thereby imparting a traveling motion to the sprocket chain Q and ropes or chains Q′ and Q^2, so that the steering tiller S attached to the stock T is turned, and the rudder U is moved either to the right or left, according to the direction in which the operator turns the handle bar L. By shifting the rudder to either side the boat A will turn in the same direction in the usual manner. If desired, the operator seated on the seat A^2 may steer the boat by turning the handle bar L^2 to revolve the sleeve O as described. This may be desirable in case the boat A is run backward by revolving the propeller B in an opposite direction, on shifting the reversing lever D^6 as above described. It will be seen that by this arrangement an operator can easily exercise his muscular power without much exertion, to rotate the propeller shaft C so as to propel the boat forward or backward.

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

1. In a motor, the combination with a main driving shaft and gear wheels for imparting a rotary motion to the said shaft, of a traveling sprocket chain for imparting motion to the said gear wheels, and a reciprocating cross-head carrying spring-pressed pawls adapted to engage the strands of the said chain to impart a traveling motion to the chain in one direction on reciprocating the said cross-head, substantially as shown and described.

2. In a motor, the combination with a main driving shaft and gear wheels for imparting a rotary motion to the said shaft, of a traveling sprocket chain for imparting motion to the said gear wheels, a reciprocating cross-head carrying spring-pressed pawls adapted to engage the strands of the said chain to impart a traveling motion to the chain in one direction on reciprocating the said cross-head, and a reversing mechanism connected with the said gear wheels to shift the same to rotate the main driving shaft in either direction, substantially as shown and described.

3. In a motor, the combination with a traveling sprocket chain connected with the mechanism to be driven, of a reciprocating cross-

head carrying independent spring-pressed pawls adapted to engage the said sprocket chain, a slide provided with foot rests, and connected with the said cross head, a lever pivotally-connected with the said slide, and a mechanism, substantially as described, and connected with the said lever for imparting a swinging motion to the same, substantially as set forth.

4. In a motor, the combination, with a slide provided with foot rests and connected with the machinery to be driven, of a lever pivotally connected with the slide, a link pivotally connected with the said lever, and a bar mounted to slide longitudinally and provided with handle bars one of which is connected with the said link, substantially as shown and described.

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Witnesses:
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