

(No Model.)

2 Sheets—Sheet 1.

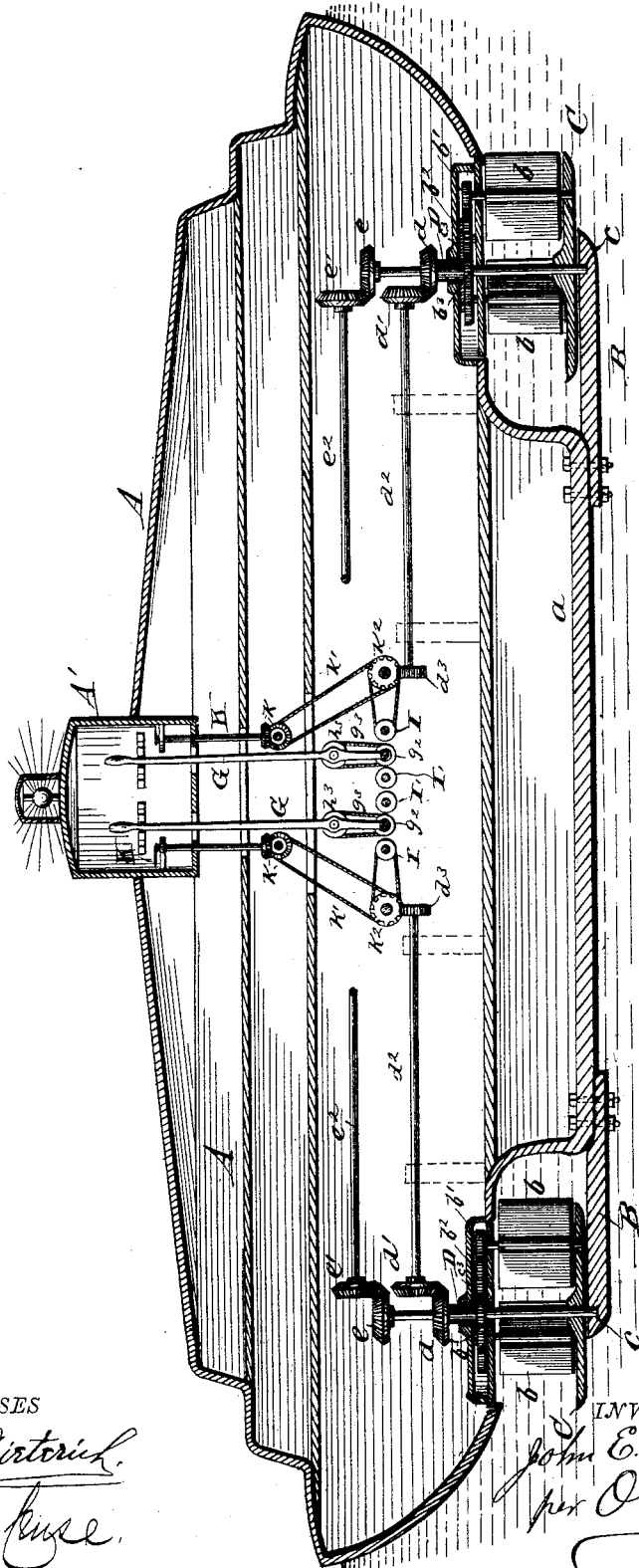
J. E. HALLETT.

STEERING AND PROPELLING MECHANISM FOR FLOATING BATTERIES, &c.

No. 419,941.

Patented Jan. 21, 1890.

Fig. 1.



WITNESSES

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Fig. 2.

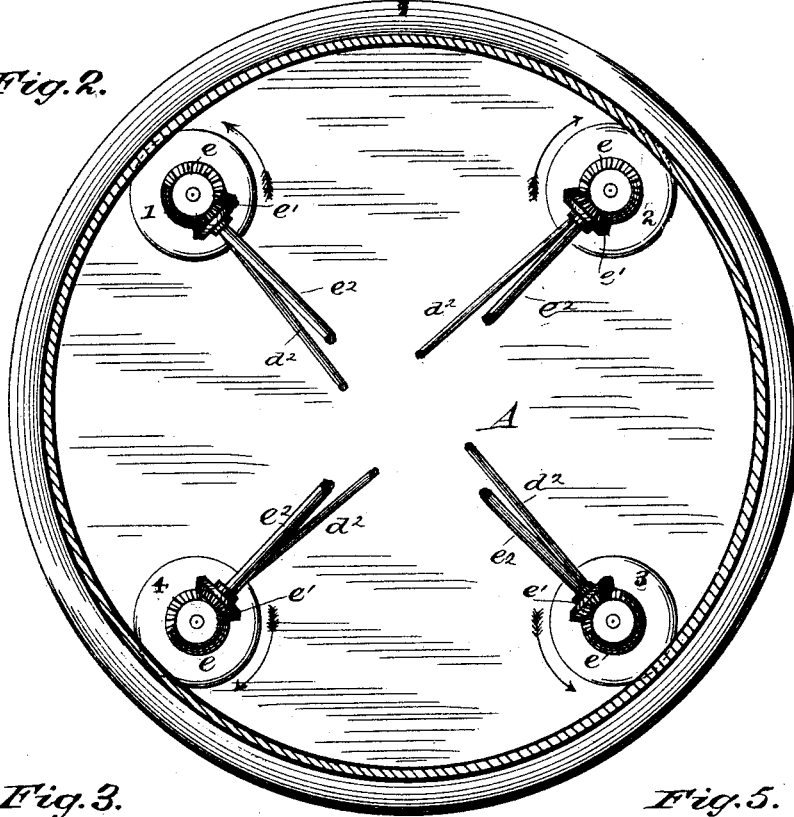


Fig. 3.

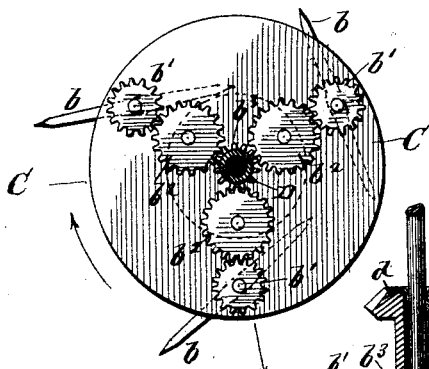


Fig. 4.

WITNESSES

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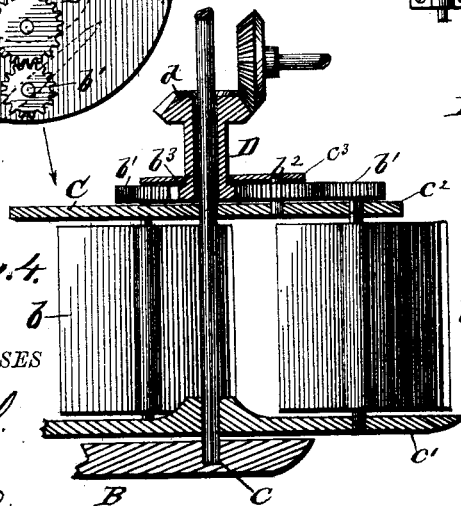


Fig. 5.

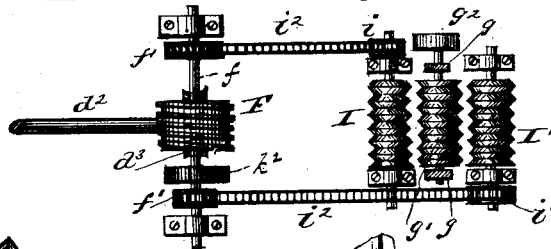
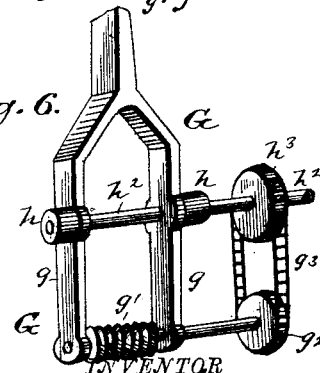


Fig. 6.



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# UNITED STATES PATENT OFFICE.

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STEERING AND PROPELLING MECHANISM FOR FLOATING BATTERIES, &c.

**SPECIFICATION** forming part of Letters Patent No. 419,941, dated January 21, 1890.

Application filed June 30, 1887. Renewed April 26, 1888. Again renewed November 27, 1888. Again renewed June 27, 1889.  
Serial No. 315,722. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. HALLETT, of Valley Springs, in the county of Minnehaha and Territory of Dakota, have invented certain new and useful Improvements in Steering and Propelling Mechanism for Floating Batteries or Forts; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The object of my invention is to provide a floating battery or fort that will be self-propelling and self-navigable, so that it can be moved to any point that may be desirable without the aid of any other vessel. Another object of my invention is to so construct and arrange the propelling and steering mechanism that the floating battery or fort may revolve on its own axis and at the same time be propelled in any direction desired.

A further object of my invention is to place the control of the movements of the battery or fort entirely in the hands of one person, so that the fort or battery can be propelled in any direction or be held stationary, as may be desired, without the necessity of signaling the engineer to start or stop the engine, it being the intention to have the motive power constantly in operation when it is desired to maneuver the fort or battery. I accomplish these objects by the combination and arrangement of mechanism hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section of a floating battery or fort embodying my invention. Fig. 2 is a plan view of the interior of the fort, showing the location of the propelling and steering apparatus. Figs. 3, 4, 5, and 6 are detached details of my invention.

Similar letters of reference indicate like parts in the respective figures.

A represents a floating fort or battery, circular in form and constructed in any well-known manner, the sides of which extend up-

ward and outwardly from the bottom *a* to 50 form a considerable overhang. At points equidistant from each other on the bottom of the fort are secured, by bolts or other suitable means, four plates *B B*, to form a lower bearing for the shaft *c* of the vertical feathering 55 paddle-wheels *C C*. The wheels are each provided with three paddles *b*, the shafts of which are stepped in the lower plate *c'* of the wheel and extend through the upper plate *c''*, their upper ends being provided with cog- 60 wheels *b'*, which gear with the idlers *b''*, and they in turn all gear with the cog-wheel *b'''*, which is mounted on the sleeve *D*, this gearing being for the purpose of controlling the position of the feathering-paddles for steer- 65 ing, &c. The shafts of the idlers *b''* have a bearing at their lower ends in the upper plate *c'* of the wheel, their upper ends having a bearing in the plate *c''*, through which the sleeve *D* also passes. The wheels *C* are prefer- 70 ably so arranged that the lower side of the top plate *c''* will be on a line or flush with the outer surface of the fort or battery, so as to present a smooth surface to the water. The shaft *c* extends upward through the 75 sleeve *D*, and is provided at its upper end with a beveled gear *e*, which engages with a beveled gear *e'*, mounted on a shaft *e''*, which is supported by a suitable bearing and which is revolved by means of any suitable connec- 80 tion to the motive power.

I will now describe the steering apparatus, and as the same arrangement is used for each wheel the description of one will answer for all. The upper end of the sleeve *D* is pro- 85 vided with a beveled gear *d*, which engages with a beveled gear *d'*, mounted on one end of the shaft *d''*, which is supported in suitable bearings. The other end of the shaft *d''* is provided with a gear-wheel *d'''*, which 90 engages with a worm *F*, mounted on a shaft *f*, which is supported in suitable bearings. This worm *F* is preferable to a gear-wheel, as it prevents the sleeve *D* from being revolved by friction of the shaft *c*. On the shaft *f* are 95 also mounted two sprocket-wheels *f'*, one on each side of the worm *F*.

*G* is a bifurcated lever having the two arms

*g g*, in the lower end of which a friction-roller *g'* is mounted. One end of the shaft of the roller extends beyond the arm *g* and is provided with a sprocket-wheel *g<sup>2</sup>*. Near the upper ends the two arms are enlarged to receive a sleeve *h*, which rests in suitable bearings *h'* and serves to support the weight of the lever and form a pivot for it. The sleeves *h* also form a bearing for one end of the shaft *h<sup>2</sup>*, its other end being supported in suitable bearings and being adapted to receive rotary motion by means of any suitable power. Near the outer side of the arm *g* and in a line with the sprocket-wheel *g<sup>2</sup>* a sprocket-wheel *h<sup>3</sup>* is mounted on the shaft *h<sup>2</sup>*. An endless chain *g<sup>3</sup>*, passing over the wheels *h<sup>3</sup>* and *g<sup>2</sup>*, imparts motion from the shaft *h<sup>2</sup>* to the friction-roller *g'*.

*I I'* are friction-rollers mounted in suitable bearings, each being provided at opposite ends with sprocket-wheels *i i'*, which are connected by endless chains *i<sup>2</sup>* to the sprocket-wheels *f'* on the shaft of the worm *F*. By this arrangement the worm may be revolved in either direction as required.

The lever *G* extends up through suitable slots in the decks of the fort or battery into the lookout or steering room *A'*.

*K* is an indicator, which is connected by means of the beveled gears *k*, chain *k'*, and sprocket-wheel *k<sup>2</sup>* to the shaft *f* of the worm *F*. This indicator being for the purpose of indicating the position of the feathering-paddles, will change its position in a degree corresponding to that of the paddles, thus enabling the steersman to know exactly in what direction the wheel is working.

The operation of the propelling and steering apparatus is as follows: The wheels derive their motion from the motive power independently of each other, and are so arranged that the wheels diagonally opposite to each other revolve in the same direction; but each adjacent wheel revolves in an opposite direction, as indicated by the arrows in Fig. 2. Now, if the feathering-paddles are arranged on the wheels 1 and 2 so as to feather on the inner side of the wheel, and on wheels 3 and 4 to feather on the outer side, and all the wheels are in operation, the fort will be propelled in the direction of the arrow *Z*, (see Fig. 2,) and by changing the position of the feathering-paddles on either of the wheels it can easily be seen that any desired direction can be given to the fort.

Referring now to the steering mechanism, it is my intention to have the shaft *h<sup>2</sup>*, which imparts motion to the friction-rollers *g'*, constantly revolving whenever the fort is being maneuvered, so that the friction-roller *g'* can be constantly running either as an idler or to impart motion to the friction-rolls *I I'*. It will therefore readily be seen that the steersman by operating the lever *G* is enabled to throw the friction-roller *g'* in contact with either of the friction-rollers *I I'* and revolve the worm *F* in either direction, thus being

enabled to change the position of the feathering-paddles at will. Therefore, as long as the wheels are revolving the steersman can control the movement of the fort. By throwing the friction-rollers into engagement to constantly revolve the paddles of the respective wheels at the same time that the wheels are revolving no propulsive force will be exerted on the fort and the steersman will be enabled to practically stop the fort without having the engineer stop the engine or the revolution of the wheels. This result will be accomplished no matter in which direction the paddles are turned; but it is preferable to turn them in a direction opposite to that in which the wheels are running.

In order to revolve the fort on its axis the wheels are set to work in one direction, and in order to revolve it and at the same time propel it in a certain direction diagonally-opposite wheels are set to work in the same direction in order to revolve it, and the other wheels are used to propel it in the necessary direction, the position of the paddles of the propelling-wheels being changed as becomes necessary on account of the change in their position relative to the direction in which the fort is to be propelled.

Having described my invention, I claim—

1. The combination, with the paddles *b*, shaft *d<sup>2</sup>*, and their intermediate gearing, of the lever *G*, the friction-roll *g'*, which revolves in bearings in said lever, the friction-rolls *I I'*, with which the roll *g'* can engage, the shaft *f*, connected by suitable gearing to the rolls *I I'*, the worm *F*, mounted on said shaft *f*, and the gear-wheel *d<sup>3</sup>*, mounted on the shaft *d<sup>2</sup>* and engaging with the worm *F*, substantially as specified.

2. The combination, with the lever *G* and the friction-roll *g'*, revolving in bearings in said lever, of the friction-rolls *I I'*, with which the roll *g'* can engage, the shaft *f*, connected by suitable gearing to the rolls *I I'*, the sprocket-wheel *k<sup>2</sup>*, mounted on said shaft, the indicator *K*, and intermediate gearing between the wheel *k<sup>2</sup>* and the indicator *K*, substantially as and for the purpose specified.

3. The combination, with the lever *G* and the friction-roll *g'*, revolving in bearings in said lever, of the friction-rolls *I I'*, with which the roll *g'* can engage, the shaft *f*, connected by suitable gearing to the rolls *I I'*, the worm *F*, mounted on said shaft, the shaft *d<sup>2</sup>*, having the gear-wheel *d<sup>3</sup>*, which engages with the worm *F*, the paddle *b*, connected to the shaft *d<sup>2</sup>* by means of the intermediate gearing, the sprocket-wheel *k<sup>2</sup>*, mounted on the shaft *f*, the indicator *K*, and the intermediate gearing between said indicator and the wheel *g<sup>2</sup>*, substantially as specified.

4. In a floating battery or fort, a pivoted lever having a friction-roller revolving in bearings at its lower end, combined with a pair of friction-rollers mounted in stationary bearings, and a feathering paddle-wheel, the paddles of said wheels being connected by

5 suitable gearing to said pair of friction-rollers and receiving motion therefrom, the friction - roller in said lever being adapted to engage with either of the rollers in the stationary bearings, whereby the paddles of the wheels may be revolved in either direction and independently of the wheels, substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of 10 two witnesses.

JOHN E. HALLETT.

Witnesses:

EDWIN CRUSE,  
PHILIP MAURO.