

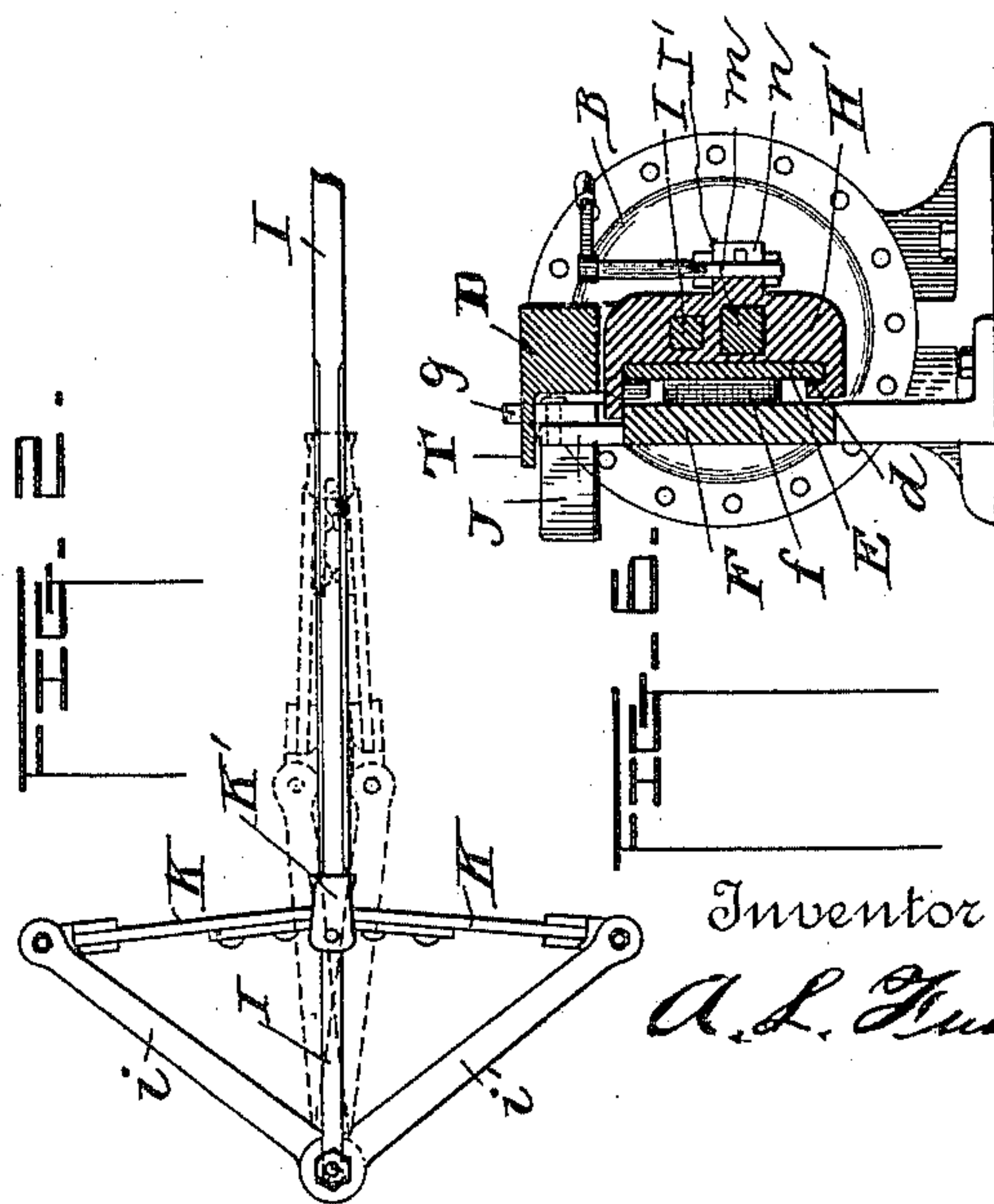
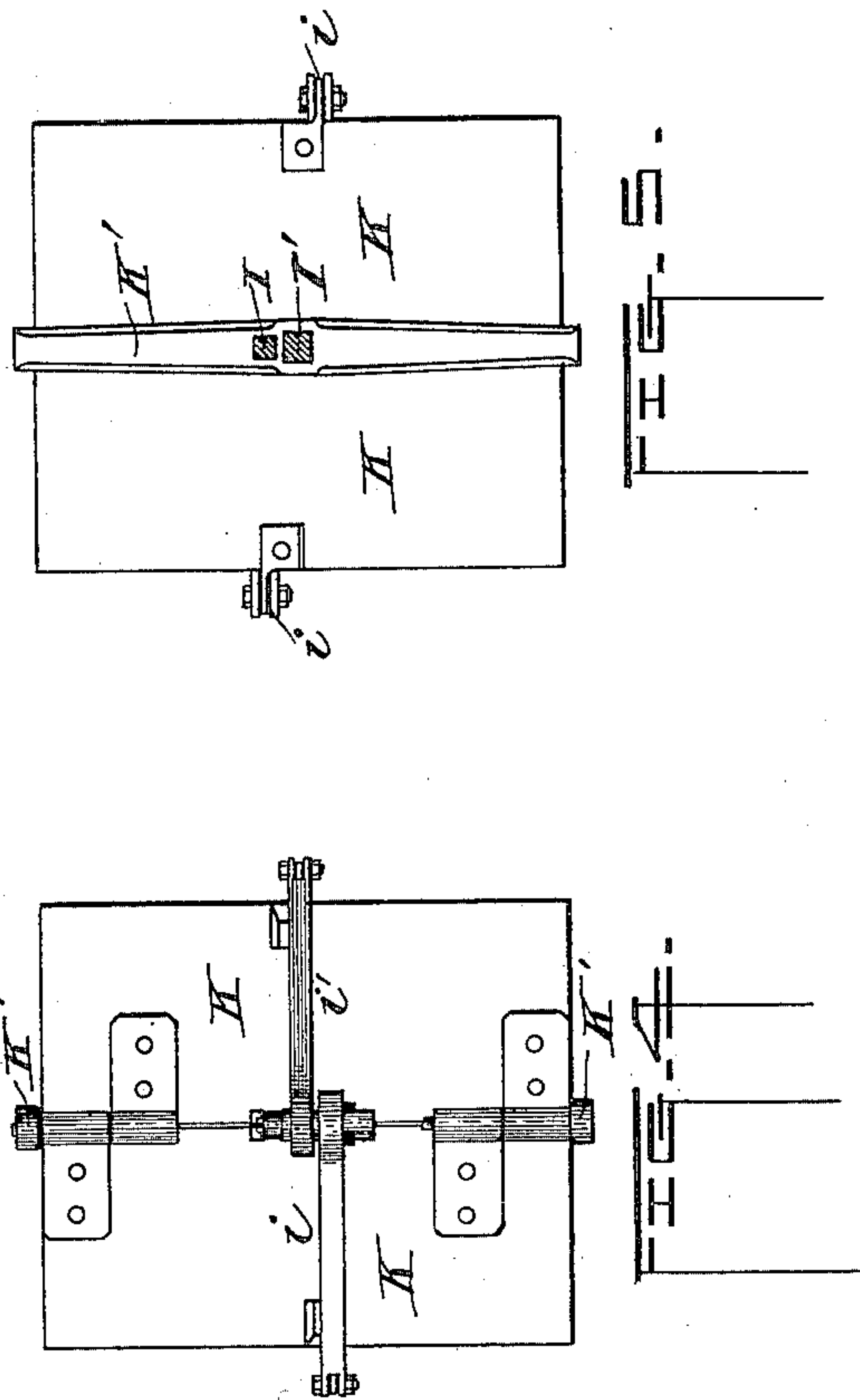
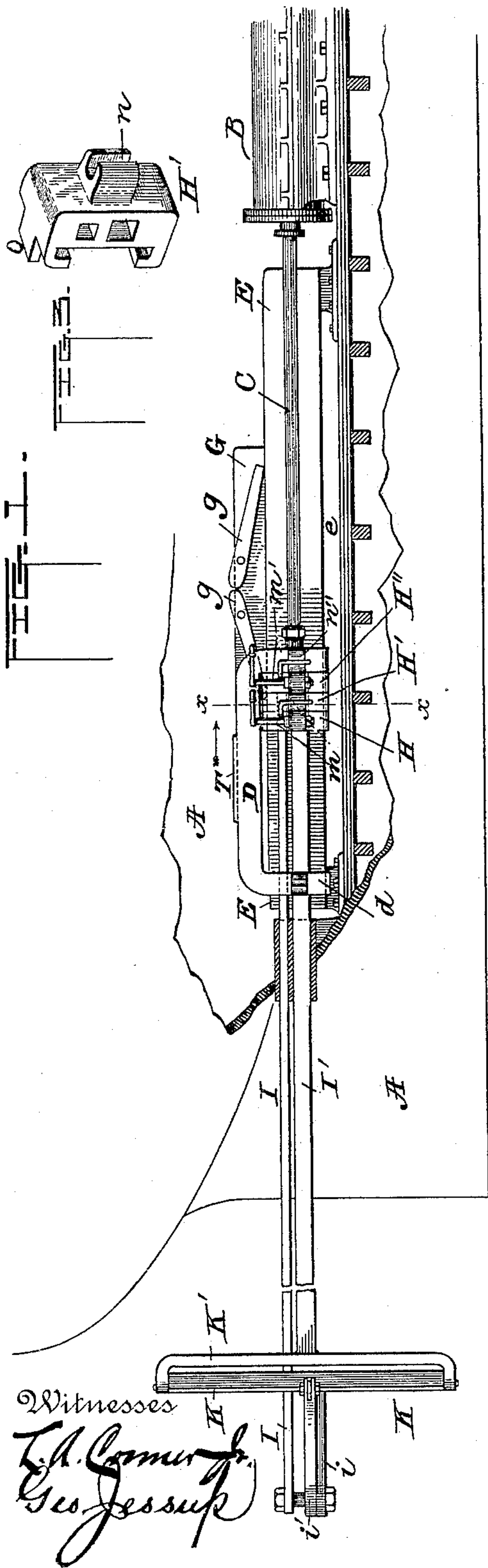
(No Model.)

2 Sheets—Sheet 1.

A. L. FUSS.
PROPELLER FOR BOATS OR VESSELS.

No. 599,293.

Patented Feb. 15, 1898.



Witnesses
T. A. Comer
Geo. Jessup

Inventor
A. L. Fuss

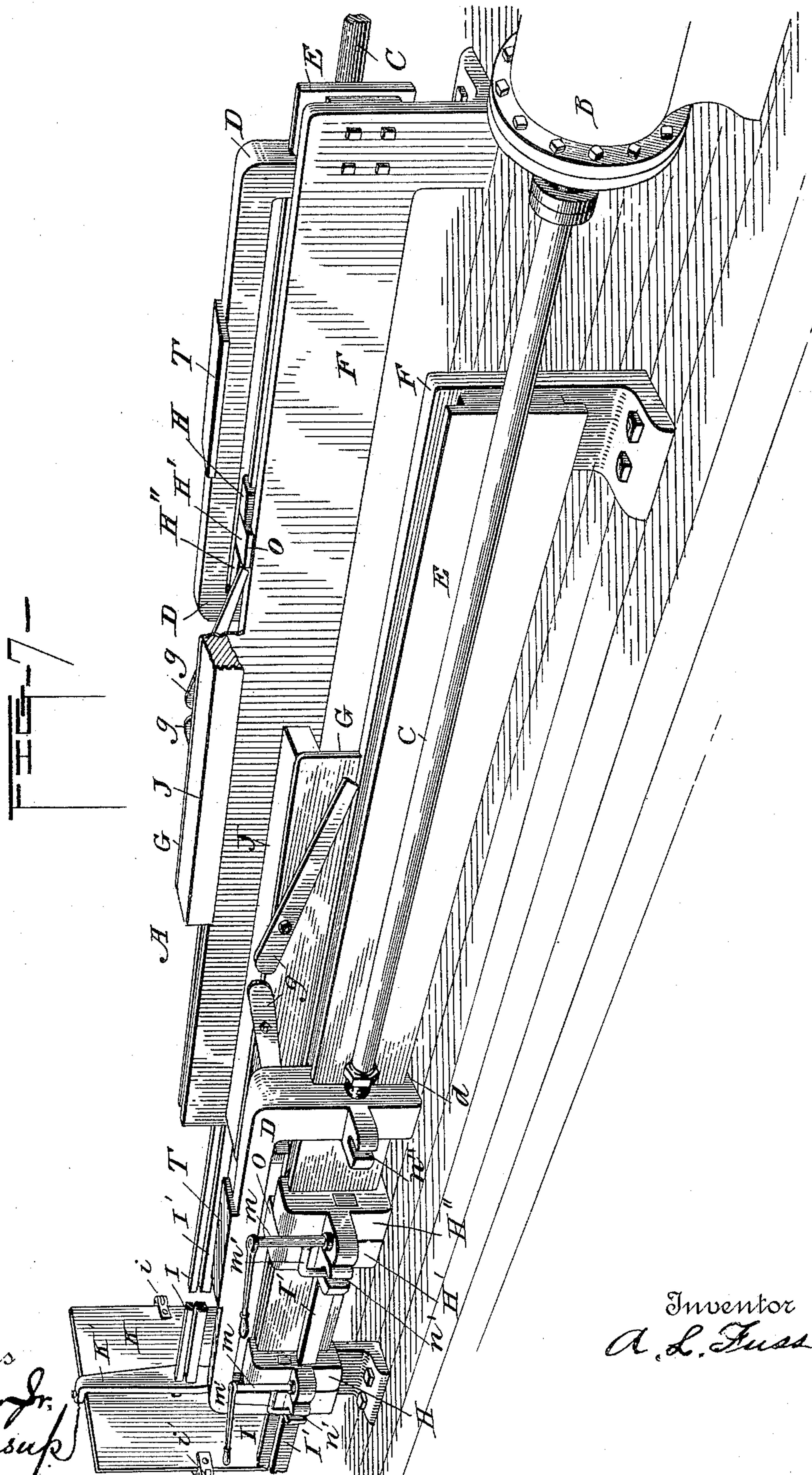
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2 Sheets—Sheet 2.

A. L. FUSS.
PROPELLER FOR BOATS OR VESSELS.

No. 599,293.

Patented Feb. 15, 1898.



Witnesses
L. A. Connor Jr.
Geo. Jessup

Inventor
A. L. Fuss

UNITED STATES PATENT OFFICE.

ALFRED LEE FUSS, OF WASHINGTON, DISTRICT OF COLUMBIA.

PROPELLER FOR BOATS OR VESSELS.

SPECIFICATION forming part of Letters Patent No. 599,293, dated February 15, 1898.

Application filed May 9, 1892. Serial No. 432,365. (No model.)

To all whom it may concern:

Be it known that I, ALFRED LEE FUSS, residing in Washington, (Anacostia,) in the District of Columbia, have invented a new and useful Propeller for Propelling Boats or Vessels, of which the following is a specification.

My invention relates to improvements in propellers which move substantially in line with the length of the vessel on which they are placed to propel it forward or backward; and the object of my invention is a device so constructed and arranged that it opens out when thrust in the direction opposite the desired direction of the vessel on which it is placed and folds up on its return stroke, thus giving a direct outward stroke with full power of the engine, and by folding up offers but little resistance as it returns through the water.

My invention consists in the construction and combination of devices fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a horizontal view of one side of a boat with one set of propelling-shafts with the propeller-wings spread and at the end of the outstroke. Fig. 2 shows a plan view of the propeller with the blades partly open. Fig. 3 shows a detached sliding lug with a trip or tappet. Fig. 4 is a front view of the propeller-blades extended when ready for their effective stroke. Fig. 5 is a rear view of the propeller with shafts in section. Fig. 6 is a cross-section on line X X, Fig. 1. Fig. 7 is a perspective view looking toward the rear.

Like letters designate like parts in all the figures.

A designates the body of a boat or vessel with an engine B, which may be of any ordinary or preferred type and construction.

C is the piston-rod connected in any preferred manner to a sliding yoke D. This yoke is mounted on a beam E, so as to slide thereon, by four hook-lugs *d*, said lugs hooking over the edges of bar E at top and bottom, as shown in Figs. 6 and 7, the bar being supported at its ends, so as to afford a space *e* for the lower lugs of the yoke to move back and forth in. Bar E is rigidly attached to another bar F, of equal width, and with spacing-blocks *f f* between them, so as to give

room for the claspings-lugs *d* between them. Bar F is rigidly attached by brackets and framework to the boat. On the top of bar F is a projection G, the purpose of which is to support two pivoted, and maybe spring-pressed, stops *g g*, the functions of which stops will presently be explained in connection with slides H H' H'' and rods I I'. 55 60

J is a piece of wood merely to give greater strength and rigidity to bar G and may be dispensed with. The rear upright part of slide D is provided with holes or notches through which thrust or propelling rods I I' freely pass. Now it will be observed that rod I at its forward end is rigidly connected to slide H, and its rear end is pivoted to the adjacent ends of folding links *i i'*, which at their opposite or outer ends are pivoted to the outer edges of propeller-wings K K, said wings being hinged together at their inner or adjacent edges, between or through the edges of which rod I passes. Rod I' at its forward end is rigidly connected to slide H'' and at its rear end is attached to a spanner K' or, if preferred, to the hinge of wings K K, by which connection it will be observed that when the wings are distended, as shown in Fig. 1, if rod I be held and rod I' moved toward the front the wings will be folded, as indicated in dotted lines, Fig. 2. This enables it to pass through the water with little resistance. On the contrary, if rod I be held after the folding or forward stroke has been made and rod I' be moved toward the rear the reverse or distending of both wings K K and links *i i'* will be the first effect, and by which wings K K will be put in condition for the effective or propelling stroke. To accomplish the above results automatically is the purpose of the stops *g g* and slide H'. Slide H' is mounted on rods I and I', between slides H H'' and moves freely on both rods. 65 70 75 80 85 90

In slides H and H'' are swiveled angle-levers *m m*, each of which has an angular arm *m'*. The front lever *m* may have its arm *m'* to engage with groove *n''* in yoke D or in groove *n'* in slide H', while rear lever *m* may have its arm *m'* engage with groove *n'* in slide H' or with groove *n'* in the rear end of yoke D, as shown in Fig. 7. Now it will be observed that the lower ends of stops *g g* lie in the path of lug *o* on the loose slide H' and 95 100

that when the forward stroke is commenced from the position shown in Fig. 1 said lug will come in contact with the lower end of the rear stop *g*, and since slide *H'* and its lug *o* are coupled to slide *H* they are all stopped but rod *I'*, which moves freely through slide *H*. Slide *H* moves forward with yoke *D*, which has a strip-flange *T* in the path of the upwardly-projecting end of the rear stop *g* which is thus turned on its pivot raising its rear end and permitting lug *o* on slide *H'* to pass, striking the forward end of stop *g* on its under side, raising it and passing on to the end of its forward stroke, leaving lug *o* in front of the lower end of forward stop *g*. The time that lug *o* is stopped or locked behind the lower end of the rear stop *g* is just sufficient for rod *I'* to fold wings *K K* and link *i i'* to the position shown in dotted lines in Fig. 2 or to the position for the non-effective stroke. When the reverse movement is made, the opposite effect is produced—that is to say, the lug *o* comes in contact with the lower end of the front stop *g*, as is indicated in Fig. 7, by which rod *I'* is stopped, and rod *I* moving rearward immediately expands wings *K K* by means of links *i i'* as indicated in full lines in Fig. 2. Thus it will be seen that the wings are opened at the beginning of the rearward stroke of the piston and folded at the beginning of forward stroke, thereby utilizing the full power of the engine on a direct line with the propeller-wings spread to their greatest capacity.

When it is desired for any purpose to move the boat backward instead of forward, it is accomplished by turning the coupling-levers on their pivots, so that arm *m'* of the front lever *m* engages slot *n'* and the arm *m'* of rear lever *m* to engage slot *n* in slide *H'*.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a reciprocating propeller for boats or vessels the combination of bar *E*, sliding yoke *D* having a vertical leg at each end thereof mounted thereon, slides *H H'* and *H''* mounted between the vertical legs of yoke *D* so as to be connected therewith, rods *I* and *I'* rigidly connected at their forward ends to slides and hinged wings *K K* attached to the rear ends of said rods and means for reciprocating the yoke, substantially as and for the purpose specified.

2. In a reciprocating propeller for boats or vessels, the combination of bar *E*, yoke *D* having a vertical leg at each end thereof mounted on bar *E*, slides *H H'* and *H''* mounted between the vertical legs, rods *I* and *I'*, the former rigidly connected at its forward end to slide *H*, and the latter rigidly connected at its forward end to slide *H''*, hinged wings *K K* attached to the rear end of said rods, pivoted links *i i*, stops *g g* and means for operating the yoke as and for the purposes set forth.

3. In a reciprocating propeller for boats and other vessels, the combination of bar *E*, yoke *D* having a vertical leg at each end thereof, mounted on bar *E*, slides *H H' H''* mounted between the vertical legs of yoke *D* and adapted to be connected therewith at will, rods *I* and *I'*, connecting slides *H* and *H'* with propelling-rods, and means for reciprocating yoke *D*, and levers *m m* substantially as and for the purpose set forth.

ALFRED LEE FUSS.

Witnesses:

CHAS. BINGLEY,
LOUIS GOODWILLIG.