

(No Model.)

3 Sheets—Sheet 1.

F. ZSCHIEGNER.

PROPELLING ATTACHMENT FOR BOATS.

No. 336,684.

Patented Feb. 23, 1886.

fig: 1.

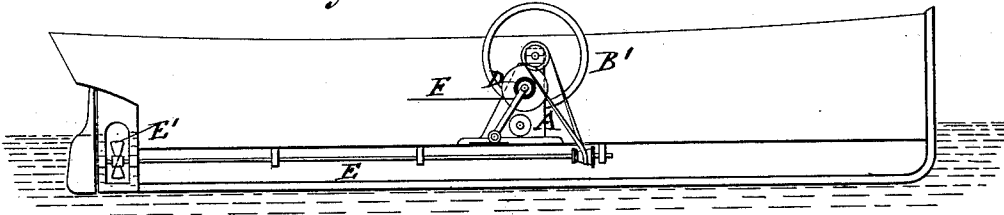
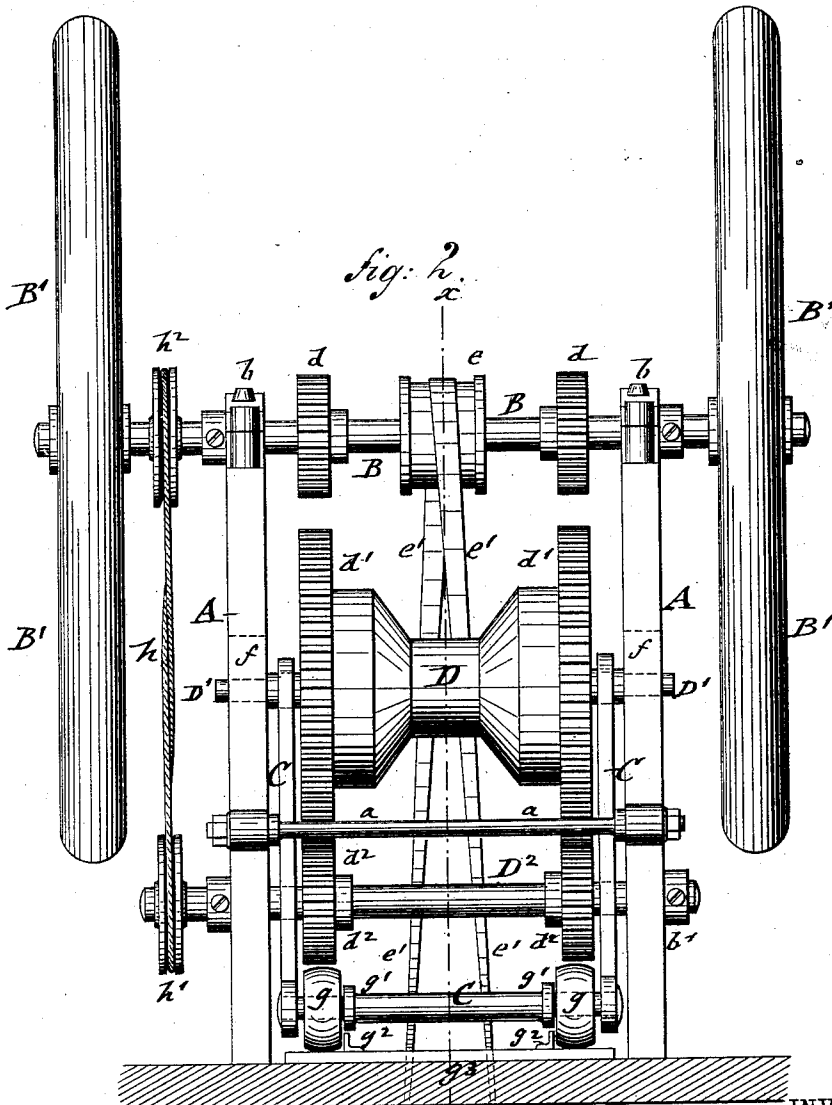


fig: 2.



WITNESSES:

A. Schehl.
Ernst Wolff

INVENTOR

Friedrich Zschiegner
BY *Loepel & Raegner*
ATTORNEYS.

(No Model.)

3 Sheets—Sheet 2.

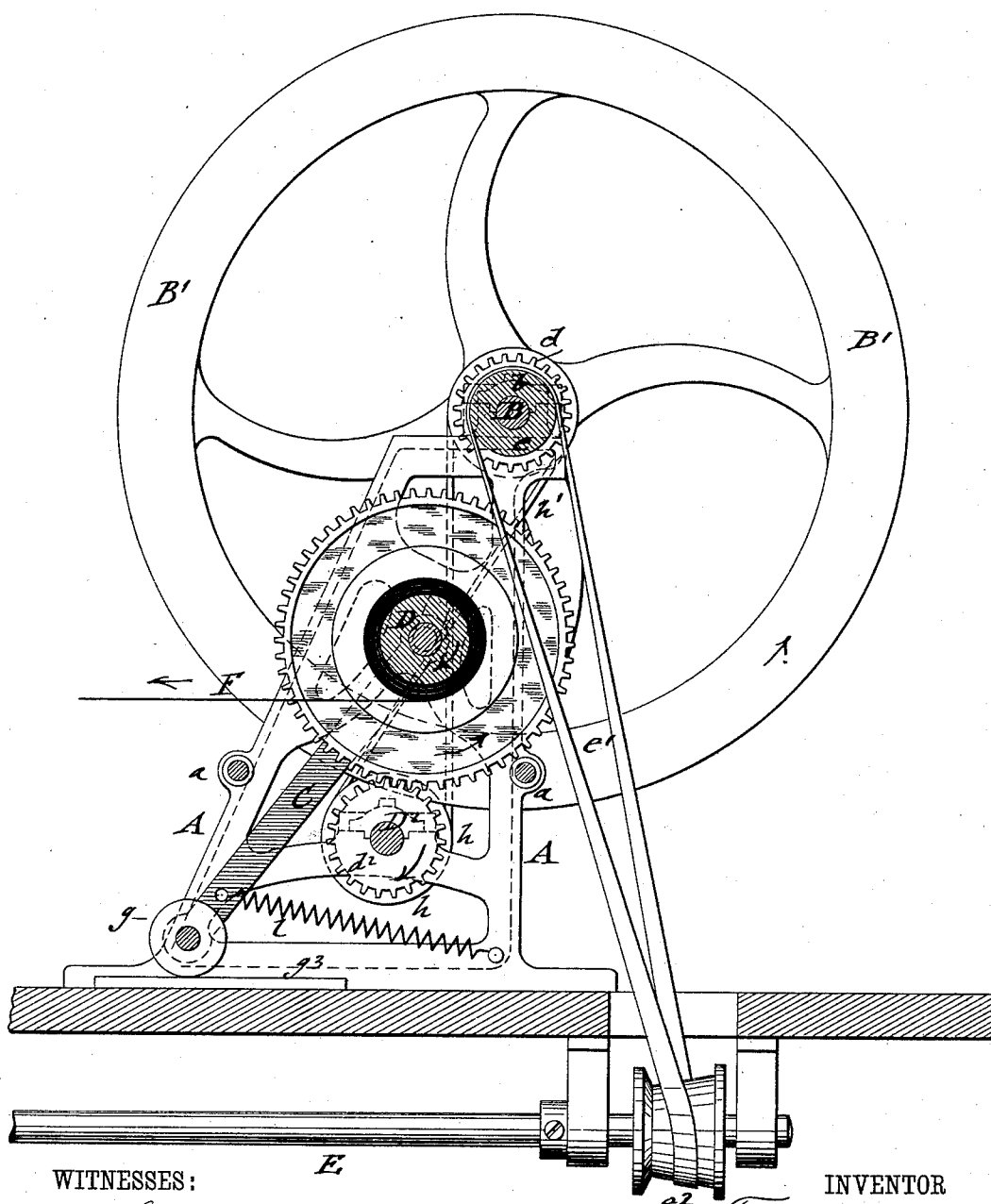
F. ZSCHIEGNER.

PROPELLING ATTACHMENT FOR BOATS.

No. 336,684.

Patented Feb. 23, 1886.

fig. 3.



WITNESSES:

A. Schehl.
Ernst Wolff.

INVENTOR

Friedrich Zschiegner
BY *Georg Meißner*
ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

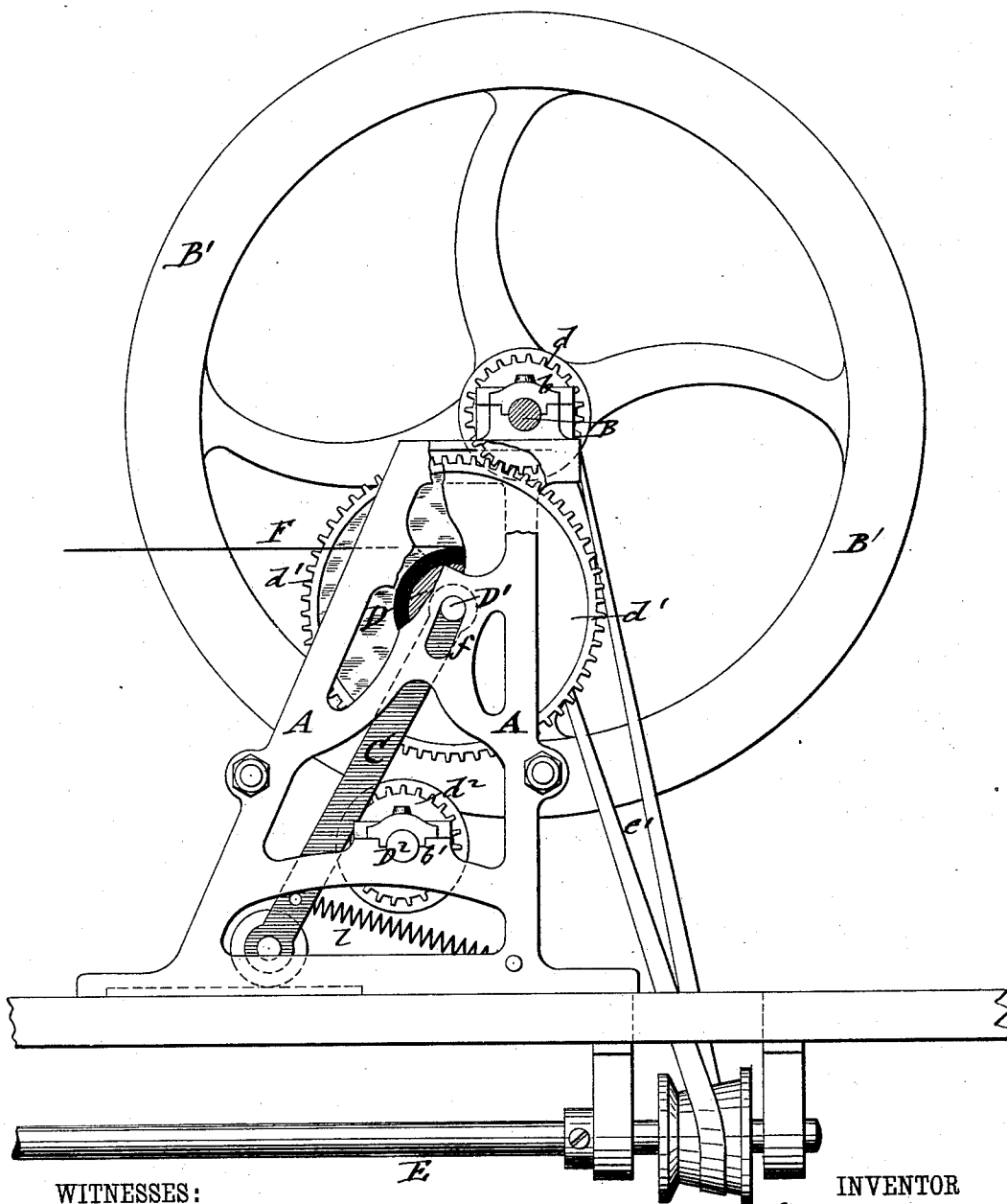
F. ZSCHIEGNER.

PROPELLING ATTACHMENT FOR BOATS.

No. 336,684.

Patented Feb. 23, 1886.

fig. 4.



WITNESSES:

A. Schöhl.
Ernst Wolff.

INVENTOR

Friedrich Zschiegner

BY

Göpel & Haegener

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRIEDRICH ZSCHIEGNER, OF HOBOKEN, NEW JERSEY, ASSIGNOR OF ONE-THIRD TO GUSTAV AMBERG, OF NEW YORK, N. Y.

PROPELLING ATTACHMENT FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 336,684, dated February 23, 1886.

Application filed February 28, 1885. Serial No. 137,334. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH ZSCHIEGNER, of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Propelling Attachments for Boats, of which the following is a specification.

This invention has reference to an improved propelling attachment to boats, whereby the propelling-screw is operated by means of a comparatively simple mechanism that is worked by a motion resembling somewhat the motion of the body in rowing; and the invention consists of a supporting-frame attached to the bottom of the boat, a driving-roller provided with gear-wheels that are adapted to mesh alternately with pinions on a fly-wheel shaft or on a lower auxiliary shaft, a reciprocating slide-frame applied to the shaft of the roller and provided with rollers at the lower part, an actuating-band attached to the roller and adapted to be wound up in one or the opposite direction thereon, and mechanism by which motion is transmitted from the fly-wheel shaft to the auxiliary shaft and to the propeller-shaft, as will more fully appear hereinafter, and finally be pointed out in the claims.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of a boat with my improved propelling attachment. Fig. 2 is an end elevation of my improved propelling attachment, drawn on a larger scale. Fig. 3 is a vertical longitudinal section on line *x x*, Fig. 2; and Fig. 4 is a side elevation of the propelling attachment with parts broken away and the actuating-band in position for reversing the motion of the propelling-screw.

Similar letters of reference indicate corresponding parts.

A A in the drawings represent two upright standards, of cast-iron or other suitable material, which are rigidly secured to the bottom of the boat and connected by transverse brace-rods *a a*. At the upper part of the standards A A are arranged bearings *b b*, for supporting a transverse shaft, B, to each end of which a fly-wheel, B', is rigidly applied. The fly-wheel shaft B is provided between the upright standards A A with two pinions, *d d*, and intermediately between the pinions with a pulley, *e*. Below the fly-wheel shaft B is

supported in bearings at the upper ends of an inclined frame, C, of U shape, the shaft D' of a grooved roller, D, which shaft is guided by inclined slots *ff* of the supporting-standards A when the frame C is raised or lowered by the action of the feet. To both ends of the roller D are attached gear-wheels *d' d'*, which mesh alternately with the pinions *d d* of the fly-wheel shaft B, and also with the pinions *d''* of an auxiliary shaft, D'', that is supported in bearings *b'* of the standards A A below the roller-shaft D'. The lower part of the inclined frame C is provided with rollers *g g*, that are retained by collars *g'* and guided along rails *g''* of a bottom plate, *g''*. Spiral springs *l* connect the standards A with the slide-frame C, and serve to balance to some extent the weight of the frame and of the roller D, so as to facilitate the upward motion of the same. A belt, *e'*, extends from the pulley *e* of the fly-wheel shaft B, to a pulley, *e''*, on the propeller-shaft E, which latter turns in bearings at the under side of the bottom of the boat, and extends through a stuffing-box at the stern to the outside, the propelling-screw being applied to the rear end of the shaft E. A cross-belt, *h*, extends farther from a pulley, *h'*, on the auxiliary shaft D'' to a pulley, *h''*, on the fly-wheel shaft, as shown in Figs. 2 and 3.

To the grooved actuating-roller D is rigidly attached the end of a stout band, F, made of canvas, leather, or other suitable material, the outer end of which may be provided with a suitable handle or handles. The band F is of such a width that it will readily wind around the central grooved part of the roller D. The person operating the propelling attachment sits back of the same, looking forward in the direction of the bow, with his feet resting on the lower part of the slide-frame C and his hand grasping the band F. By pressing the slide-frame C forward so that its rollers move along the guideways of the bottom, its upper ends lift the shaft of the roller D in the slots *ff* of the standards, and move thereby the roller D in upward direction, so as to enable its gear-wheels *d' d'* to mesh with the pinions *d d* of the fly-wheel shaft. At the moment when this is accomplished a backward pull is exerted on the band F, whereby rotary motion is imparted to the roller D and the fly-wheel

shaft B, which motion is transmitted by the pulley *e*, belt *e'*, and pulley *e''*, to the propeller-shaft E and the propeller E', so that the boat is moved in forward direction. When
 5 the band F is nearly unwound from the roller D, the pressure of the feet on the slide-frame C is relaxed, so that the latter is returned into its former position by its own weight and the weight of the roller D and thrown in mesh
 10 with the pinions *d''* of the lower shaft, D², to which continuous rotary motion is imparted by the cross-belt *h* and the pulleys *h'* *h''* from the fly-wheel shaft in opposite direction to the rotary motion imparted by the band to the
 15 roller D, as indicated by the arrows in Fig. 3. As soon as, therefore, the gear-wheels *d'* mesh with the pinions *d''* of the shaft D², the motion of the roller D is reversed and the band F wound up thereon ready for the next pull.
 20 The inclined slide-frame C is then again pushed forward by the feet, so that the gear-wheels *d'* mesh with the pinions *d''* on the fly-wheel shaft B, at which moment the band is again pulled back and unwound from the roller D, so that
 25 the rotary motion is imparted to the same and to the fly-wheel shaft. The pressure of the feet on the slide-frame is then relaxed, the roller lowered, the actuating-band wound up again by the motion of the lower shaft and
 30 the intermeshing of the gear-wheels *d'* *d'* and pinions *d''* *d''*. The fly-wheels receive a sufficient momentum by the intermittent action of the band F to keep the fly-wheel shaft and the propeller shaft in continuous rotary motion
 35 during the time required for the rewinding of the actuating-band.

When it is desired to reverse the motion of the boat, the band F is pulled back to its full extent and allowed to wind up in opposite
 40 direction on the roller D, as shown in Fig. 4. In this position of the band the motion of the fly-wheel shaft and the propeller-shaft is reversed, and consequently the boat moved in backward direction. When a forward motion
 45 is again to be imparted to the boat, the band is again drawn back to its full extent and allowed to wind up in its former position on the roller D, as shown in Fig. 3.

The operating mechanism is preferably inclosed by a suitable protecting - casing (not shown in the drawings) that incloses the gearing and prevents injury by contact with the gear-wheels.

The advantages of my improved propelling attachment for boats are, first, that the same
 55 can be operated by movements of the body which resemble those in rowing—that is to say, a motion of the feet alternating with the action of the arms; secondly, that this motion takes place regularly without overstraining
 60 the body, and is communicated uniformly to the propeller-shaft; thirdly, that the person actuating the propelling mechanism sits with his back toward the stern of the boat and looks
 65 forward, so as to be able to steer the boat at the same time, and, lastly, that the apparatus

is comparatively simple and imparts a highly-increased speed to pleasure-boats of all kinds.

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 70

1. In a propelling attachment for boats, the combination, substantially as set forth, of a reciprocating sliding frame, a shaft having bearings therein, a grooved roller fixed to said shaft, provided with an actuating-band, a gear-wheel attached to said shaft, meshing inter-
 75 mittently with pinions on an auxiliary and fly-wheel shaft, a pulley on said auxiliary shaft connected by a cross-belt with a pulley on the fly-wheel shaft, a drum on said fly-wheel shaft, and a belt connecting said drum with and imparting rotary motion to a propeller shaft and blade.

2. In a propelling attachment for boats, the combination, substantially as set forth, of a
 85 reciprocating sliding frame, rollers attached to the lower part thereof, a shaft having bearings in said frame, a grooved roller fixed to said shaft, provided with an actuating-band, a gear-wheel attached to said shaft, meshing
 90 intermittently with pinions on an auxiliary and fly-wheel shaft, a pulley on said auxiliary shaft connected by a cross-belt with a pulley on the fly-wheel shaft, and a drum on said fly-wheel shaft having a belt connecting said drum
 95 and imparting rotary motion to a propeller shaft and blade.

3. In a propelling attachment for boats, the combination, substantially as set forth, of a reciprocating sliding frame, a shaft having
 100 bearings therein, a grooved roller fixed to said shaft, an actuating-band attached thereto, a gear-wheel attached to said shaft, meshing intermittently with pinions on an auxiliary shaft, and a fly-wheel shaft provided with fly-wheels,
 105 a pinion meshing intermittently with the gear-wheel of the driving-shaft, a pulley receiving a cross-belt, and a drum on said fly-wheel shaft having a belt connecting said drum and imparting rotary motion to a propeller shaft
 110 and blade.

4. In a propelling attachment for boats, the combination, substantially as set forth, of the standards A, a fly-wheel shaft provided with a pinion, drum, and pulley, an auxiliary shaft
 115 provided with a pinion and a pulley, a belt connecting the auxiliary and fly-wheel shafting, a reciprocating sliding frame provided with a gear-wheel meshing intermittently with the pinions of the fly-wheels, and auxiliary
 120 shaft, mechanism for imparting rotary motion from the fly-wheel shaft to the propeller shaft and blade, and a spiral spring connecting the reciprocating sliding frame to the standards A.

5. In a propelling attachment for boats, the
 125 combination, substantially as set forth, of the standards A, the stationary auxiliary shaft with bearings in the lower part thereof, said auxiliary shaft being provided with a pinion and pulley, a stationary fly-wheel shaft with
 130 bearings in the upper part of said standards, provided with a pinion, drum, and pulley, the

latter connected to said auxiliary shaft by a cross-belt, a driving-belt connecting said drum with a propeller shaft and blade, a reciprocating sliding frame, a driving-shaft having bearings in said frame and moving in an inclined plane in guiding slots of the standards A, said sliding shaft being provided with a gear-wheel meshing intermittently with the pinions of the auxiliary and fly-wheel shaft, an actuating-roller, and band attached thereto.

6. In a propelling attachment for boats, the combination, substantially as set forth, of a base-plate, g^3 , guide-rails g^2 , attached thereto, supporting-standards A, a fixed shaft, B, with bearings in said standards provided with the fly-wheel B', the drum e , the pinion d , and pulley h^2 , an auxiliary shaft, D², provided with the collar b' , pinion d^2 , and pulley h' , a cross-belt, h , connecting the pulleys h' and h^2 ,

the transverse brace a , a reciprocating sliding frame, C, provided with the connecting-rod g' , rollers working on the guide-rail g^2 , a driving-shaft, D', having bearings in the sliding frame C, said shaft D' moving in inclined guide-slots f in the standards A, a grooved roller, D, an actuating-band, F, attached thereto, a gear-wheel, d' , on the shaft D' meshing intermittently with the pinions d and d^2 , a driving-belt, e' , and a propeller-shaft, E, provided with a pulley, e^2 , the driving-belt e' , connecting the pulleys e and e^2 , and the blade E'.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FRIEDRICH ZSCHIEGNER.

Witnesses:

RICHARD KOENIG,
PAUL GOEPEL.