(No Model.)

E. I. & E. A. PFEIFER.

CHAIN STEAMER.

No. 491,492. Patented Feb. 7, 1893.

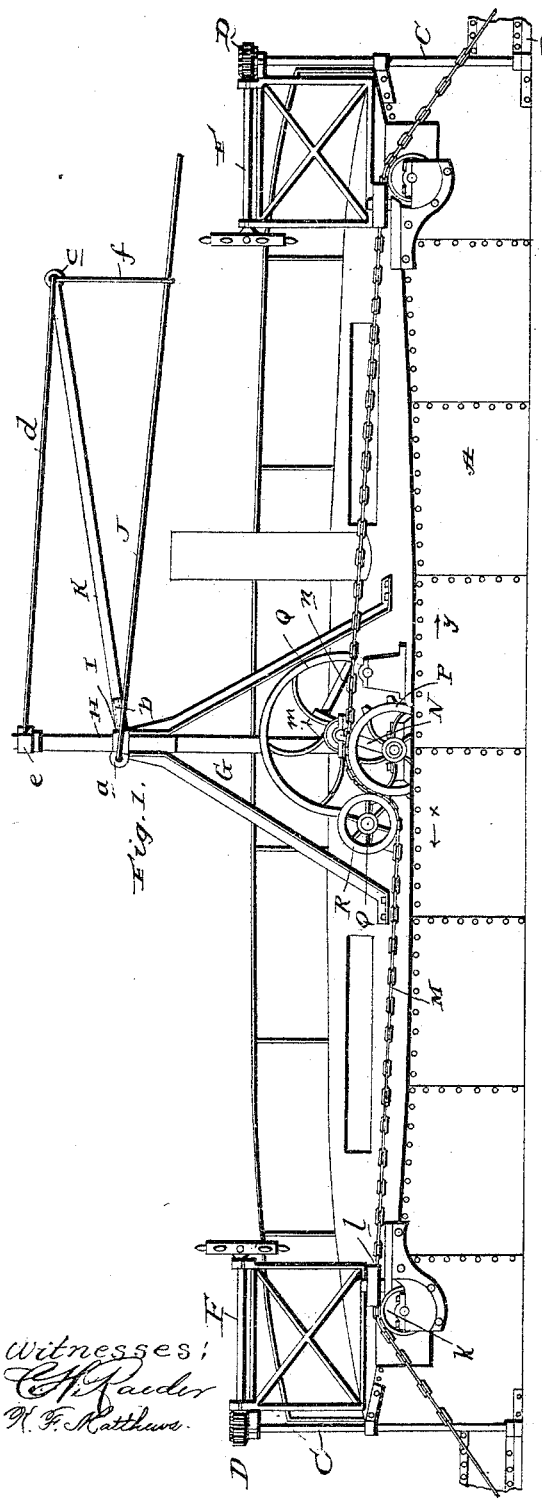

Fig. 1.

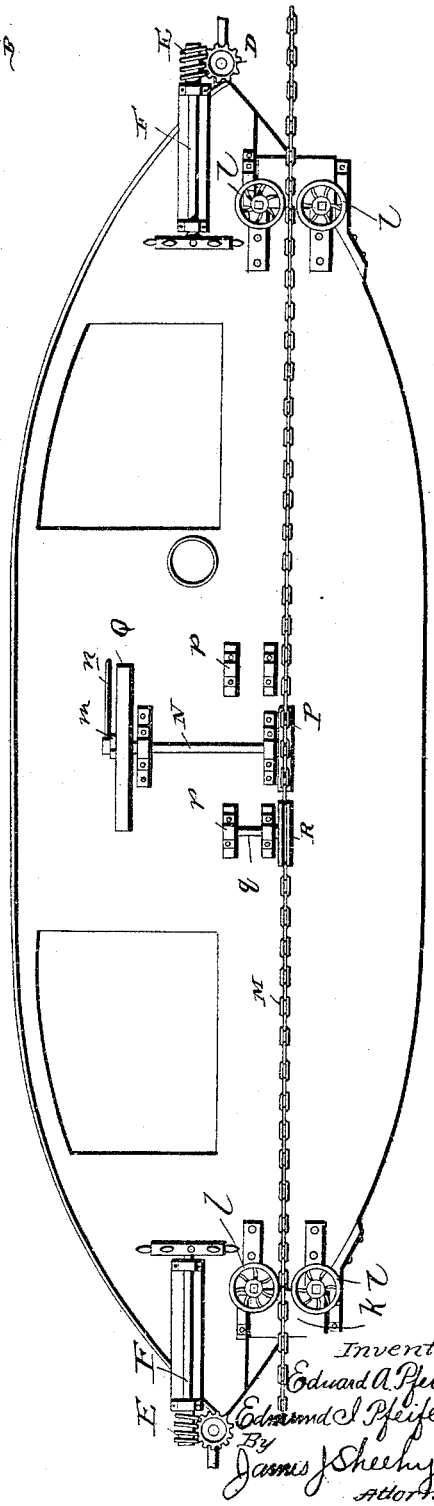

Fig. 2.

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UNITED STATES PATENT OFFICE.

EDMUND I. PFEIFER AND EDUARD A. PFEIFER, OF AUSTIN, TEXAS.

CHAIN-STEAMER.

SPECIFICATION forming part of Letters Patent No. 491,492, dated February 7, 1893.

Application filed June 4, 1892. Serial No. 435,568. (No model.)

To all whom it may concern:

Be it known that we, EDMUND I. PFEIFER and EDUARD A. PFEIFER, citizens of the United States, both residing at Austin, in the county of Travis and State of Texas, have invented a new and useful River-Steamer which we call a Chain-Steamer, and for which we never obtained a patent before, of which the following is a specification.

Our invention has relation to improvements in means for propelling vessels and it is designed more particularly for use in conjunction with tow boats, and the like traveling upon swift, shallow streams, although it may be employed to advantage for propelling ferry boats across streams having a swift current.

The general object of our invention is to provide means whereby a boat may be propelled at a high uniform rate of speed regardless of the current of the stream upon which the boat is traveling, and with the employment of but comparatively little power.

A further object of the invention is to provide a means for propelling a boat, adapted to prevent a material, lateral deflection of the boat from its course while under way.

A still further object of the invention is to provide means for propelling a boat, through the medium of which the boat, when stopped, will be held against material movement in any direction, and the necessity of employing an anchor will be obviated.

Other objects and advantages will be fully understood from the following description and claims when taken in connection with the accompanying drawings in which:

Figure 1, is a side perspective view of a vessel embodying our invention together with the purchase chain, and: Fig. 2, is a top plan view of the same with some of the parts removed to permit of a better illustration.

In the said drawings similar letters designate corresponding parts throughout both the views referring to which:

A, indicates the hull of a vessel which may be of any approved form and construction; and B, indicates the rudders; one of which is preferably employed at each end of the boat, whereby the same may be readily steered in both directions. These rudders B, are fixedly connected to rudder posts C, which are journaled in suitable bearings and are provided at their upper ends with pinions D, with which mesh worm screws E, on the shafts F. The rudders B, are manipulated through the medium of the shafts F, which are provided with suitable hand wheels as shown, and by the provision of the worm screws E, in mesh with the pinions D, it will be perceived that the rudders are always locked in their adjusted positions which is a highly important desideratum.

Supported by a tripod frame G, arranged preferably midway the length of the vessel is an upright H, upon which is loosely mounted a collar or ring I, having an eye *a*, for the attachment of the hauling cable J. This ring I, is also provided with a radial socket *b*, for the reception of a crane arm K, which is provided at its outer end with an eye *c*, to which is connected one end of a supporting cable *d*, which is connected at its opposite end to a ring *e*, upon the upright H, and serves to sustain the crane arm in the position illustrated. Connected to the eye *c*, of the crane arm K, and to the hauling cable J, is a short cable *f*, which serves in practice to support the hauling cable and enables the same to clear the steering gear before described.

M, indicates the purchase chain which normally lies upon the bed of the stream or body of water and has its ends suitably secured at the ends of the vessel's course. The purchase chain M, is of a length sufficient to enable it to pass longitudinally over the vessel; and in order to reduce the friction incidental to such passage of the chain, we have provided the friction rollers *k*, which are journaled in suitable bearings adjacent to the ends of the vessel as illustrated. The chain M, is prevented from lateral play off the rollers *k*, by the horizontally disposed friction wheels *l*, between which the cable rests as shown.

Journaled in suitable bearings, preferably upon the deck of the steamer is the drive shaft N, which carries a sprocket wheel P, at one end and a crank or fly wheel Q, at its opposite end. This fly or crank wheel Q, is provided as shown, with a crank pin *m*, to which is connected the pitman *n*, of an engine which is preferably arranged below the deck and is not illustrated because it may be of any approved construction.

Arranged in front and rear of the sprocket

wheel P, are suitable bearings *p*, in which the shaft *q*, of the keeper wheel R, is journaled. The shaft *q*, of this wheel R, which is designed to hold the chain M, in engagement with the sprocket wheel P, is placed as shown with respect to the sprocket wheel when the vessel is to travel in the direction of the arrow *x*, and is placed upon the opposite side of the said sprocket wheel when the vessel is to travel in the direction of the arrow *y*. By this construction it will be seen that when the engine is set in motion, the sprocket wheel engaging the chain M, will carry the boat along, the said chain being raised from the bed of the river at the forward end of the vessel and returned thereto from the rear end of the vessel, whereby it will be seen that the chain will not interfere with the ordinary navigation of the stream or river in which the chain is laid.

By reason of the fact that our improved vessel is not propelled by a screw, side wheels or the like, it will be seen that it will draw but little water and may therefore be used upon shallow streams that are not navigable by the ordinary steam vessels at present in use.

From the construction before disclosed it will be seen that the speed of the vessel will be but little affected by the current of the stream, inasmuch as the chain affords a positive purchase for the driving mechanism; and by reason of the said driving mechanism and the chain it will be still further perceived that but little power will be required to drive the vessel which is a very important advantage.

In the foregoing description, we have in some instances specifically described the construction and relative arrangement of the several elements making up our improved means or system for propelling vessels, but we do not desire to be confined to the same as such changes or modifications may be made as fairly fall within the scope of our invention.

Having described our invention what we claim and desire to secure by Letters Patent is:—

1. As an improvement in means for effecting the propulsion of vessels, the combination with a chain or cable laid in the course of the vessel, the vessel adapted to take up the chain or cable, the drive shaft journaled in suitable bearings upon the vessel, and a sprocket wheel mounted on said shaft and resting beneath the chain or cable and adapted to engage said chain or cable, of bearings arranged in front and rear of the sprocket wheel, the shaft *q*, adapted to be alternately journaled in the said bearings, and the keeper wheel R, mounted on said shaft and adapted to engage the chain or cable, and to hold the same in engagement with the sprocket wheel substantially as specified.

2. As an improvement in means for effecting the propulsion of vessels, the combination with a chain or cable laid in the course of the vessel; of the vessel adapted to take up the chain or cable and having the horizontal friction rollers *k*, and the friction wheels *l*, the drive shaft journaled in suitable bearings upon the vessel, a sprocket wheel mounted on said shaft and engaging the chain or cable, the bearings arranged in front and rear of the sprocket wheel, the shaft *q*, adapted to be alternately journaled in the said bearings, and the keeper wheel R, mounted on said shaft and adapted to engage the chain or cable, substantially as and for the purpose set forth.

EDMUND I. PFEIFER.
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