W. T. URIE.

BOAT.

APPLICATION FILED MAY 28, 1909.

939,878.

Patented Nov. 9, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

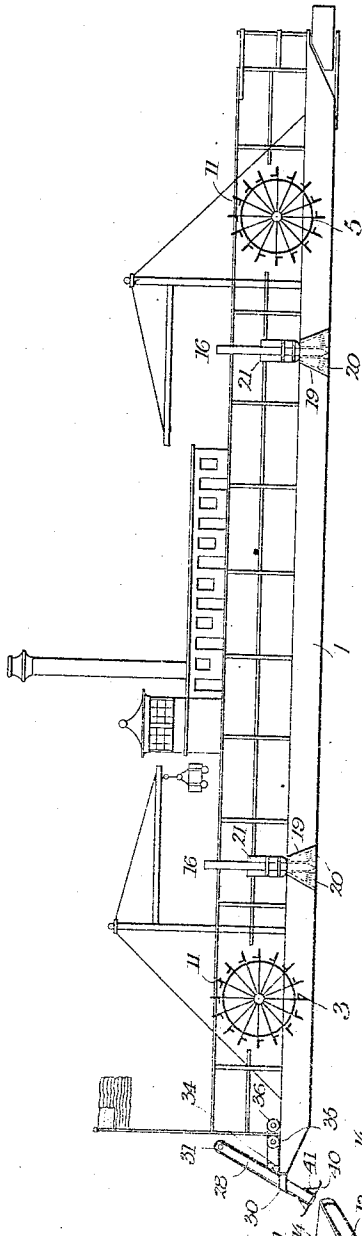


Fig. 2.

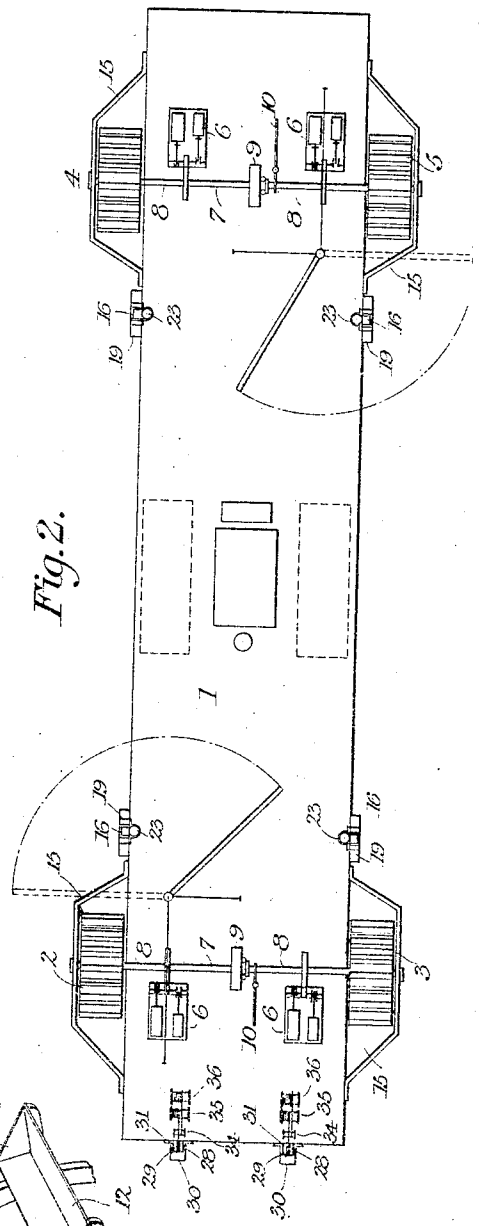
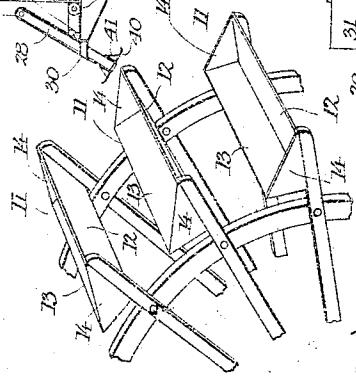


Fig. 3.



Witnesses

Raymond A. Barnes.

L. E. Thomson

Inventor

W. T. Urie,

by P. T. Dodge,

Attorney.

W. T. URIE.

BOAT.

APPLICATION FILED MAY 28, 1909.

939,878.

Patented Nov. 9, 1909.

3 SHEETS—SHEET 2.

Fig. 4.

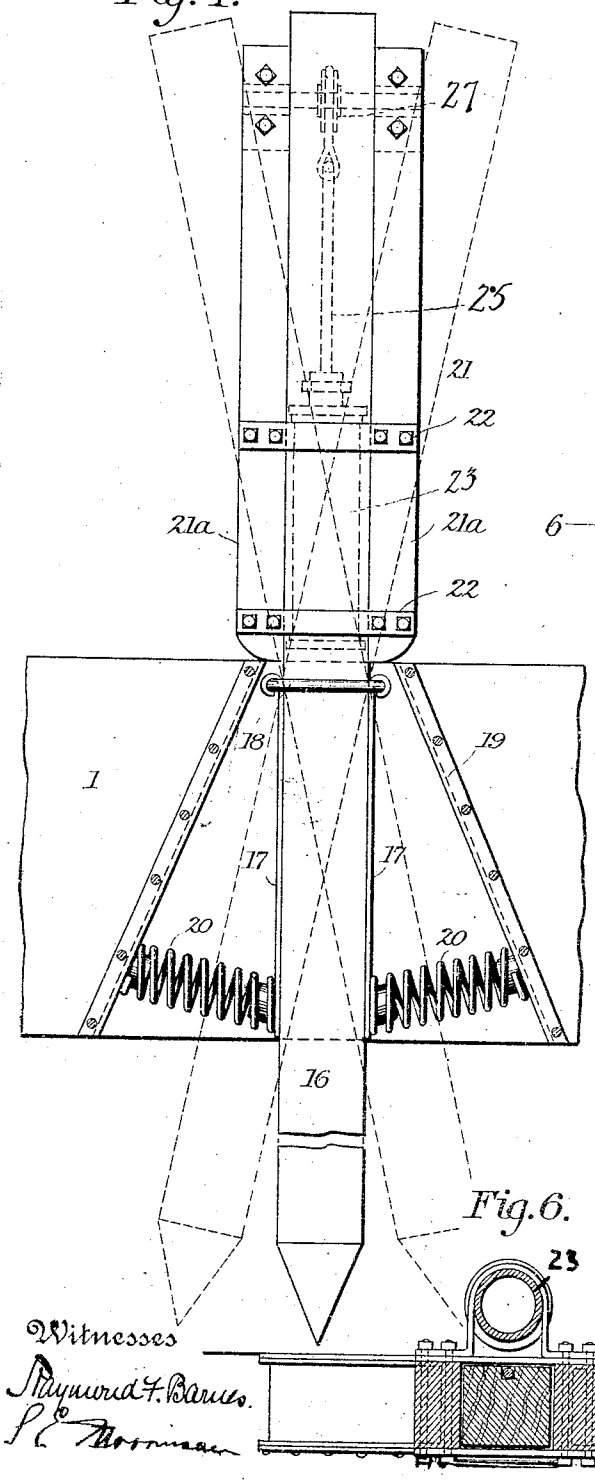


Fig. 5.

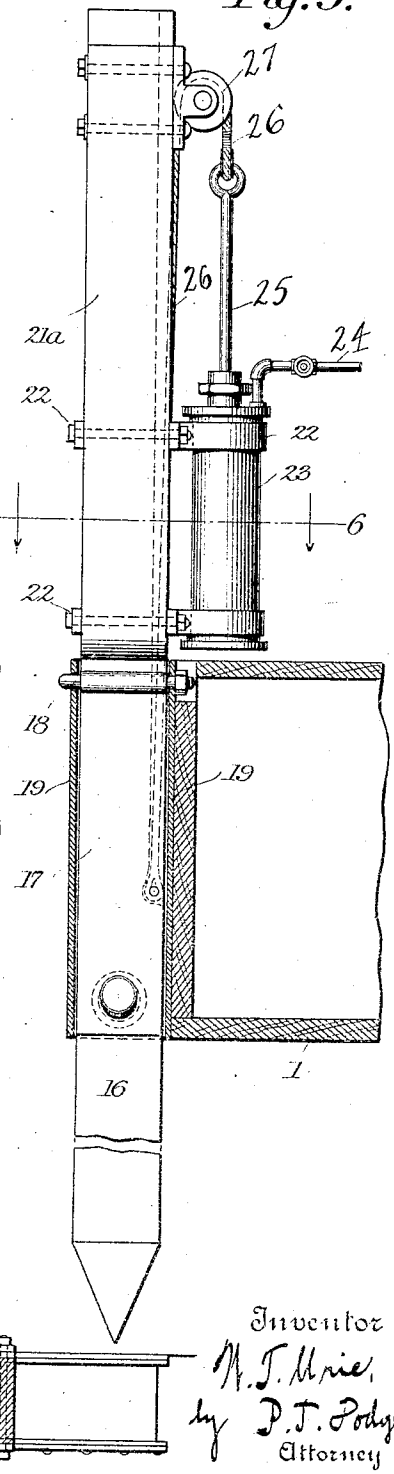


Fig. 6.

Witnesses

Raymond F. Barnes.

P. C. Morrison

Inventor

W. T. Urie,

by P. T. Dodge,

Attorney

W. T. URIE.

BOAT.

APPLICATION FILED MAY 28, 1909.

939,878.

Patented Nov. 9, 1909.

3 SHEETS—SHEET 3.

Fig. 7.

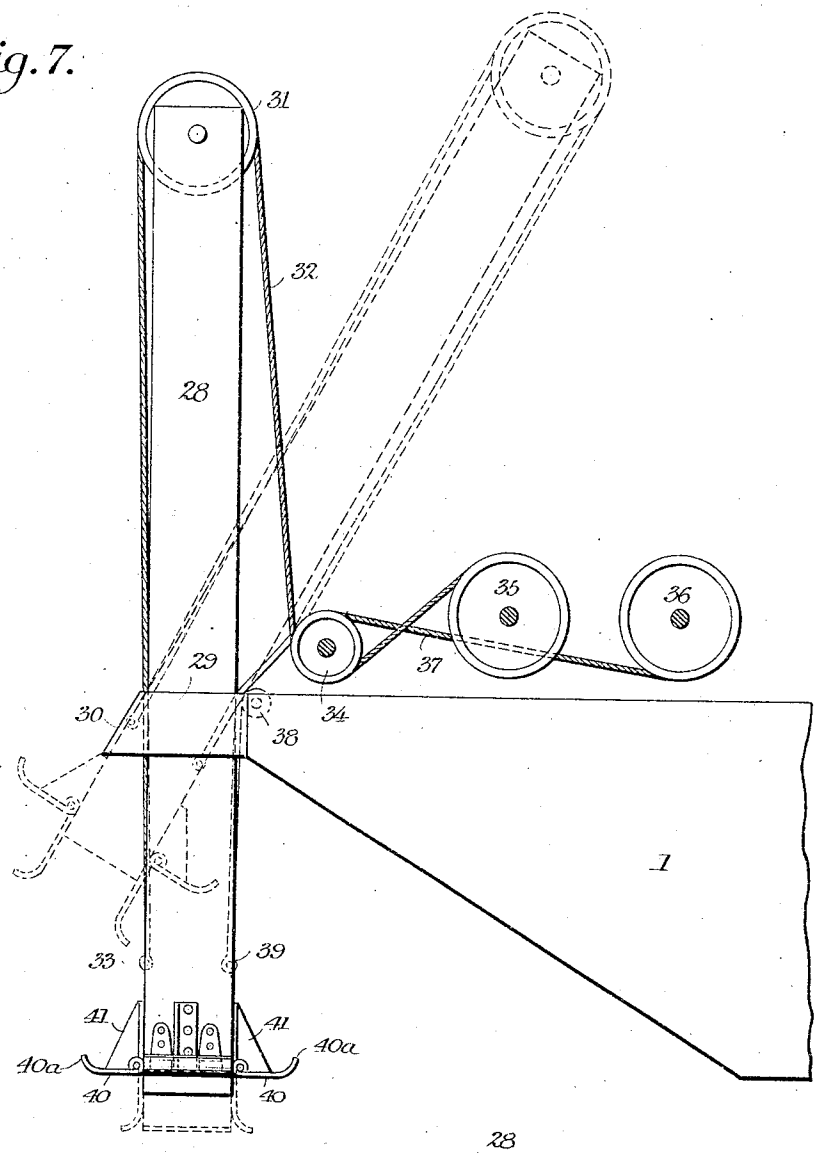
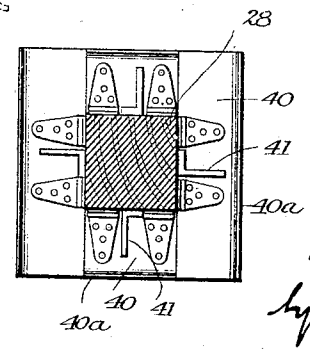


Fig. 8.



Witnesses

Raymond F. Barnes.

L. E. Thurman

Inventor

W. T. Urie,

by P. T. Dodge,

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM T. URIE, OF KANSAS CITY, MISSOURI.

BOAT.

939,878. Specification of Letters Patent. Patented Nov. 9, 1909.

Application filed May 28, 1909. Serial No. 498,989.

To all whom it may concern:

Be it known that I, WILLIAM T. URIE, of Kansas City, county of Jackson and State of Missouri, have invented a new and useful Improvement in Boats, of which the following is a specification.

This invention relates to boats, and particularly to devices and operating mechanisms therefor for propelling and controlling the movements thereof.

The object of the invention is to provide a boat which shall be of light draft and in which propelling means of great power may be embodied, and which may be economically operated, and particularly in streams which, though exceedingly shallow, have a swiftly moving current which renders the control of the boat and the landing thereof quite difficult. Moreover, the turning of the boat in a narrow swiftly-running stream is by the mechanisms embodied in the boat rendered possible.

With this and other objects in view, the invention consists in various novel constructions, combinations and arrangement of parts, all as will more fully appear hereafter.

In the accompanying drawings:—Figure 1 is a view in side elevation of a boat in which the several features of my improvement are embodied. Fig. 2 is a top plan view thereof showing particularly the relative position of the plurality of propelling wheels and independent engines for driving the same. Fig. 3 is a fragmentary view in perspective of one of the propelling wheels, showing particularly the form of the buckets carried thereby. Figs. 4, 5 and 6 are views, respectively, in front and side elevation and in section (on line 6—6, Fig. 5) of a spud and the mechanism for operating the same, employed in controlling certain movements of the boat. Figs. 7 and 8 are views in side elevation and in bottom plan of a boat-spar which is also employed in connection with effecting movement of the boat.

In these drawings, the numeral 1 designates the boat proper which, in this instance, is of the light draft class that is now largely used in shallow rivers and which, by reason of such shallowness, cannot be of deep draft. In consequence of this fact and the further fact that the current of such rivers is frequently swift, it is necessary to provide a plurality of elements for effecting movement and control of the boat: To this end, I provide, among other constructions, four propelling wheels 2, 3, 4 and 5, disposed at each side of the boat, fore and aft. Each wheel is preferably operated by its own engine 6, which may be of the well known compound condensing type.

Each pair of the oppositely disposed wheels is mounted on a transverse wheel-shaft 7, the same carrying gearing which is operated by one or both of the adjacent driving engines 6, as shown in Fig. 2. The shaft 7 preferably comprises two parts 8, 8.

It will be understood that, by reason of the shaft being in two parts, each may be independently operated when it is necessary to rotate the propelling wheels in opposite directions, as in turning the boat.

The shafts may be connected for operation in unison by the clutch mechanism 9, which may be of any appropriate form, and the coöperating members of which may be controlled by a lever 10, disposed adjacent to the clutch mechanism. When the wheels of one or both pairs are operated in opposite directions, the turning of the boat may be accomplished within a space not greater than the length of the entire boat, and this whatever may be the direction or force of the current.

Each of the propelling wheels is provided with a peculiarly shaped bucket 11, comprising a body portion 12, a right-angled portion 13, and sides 14, 14. These buckets are disposed when in the water at an angle of about 90°. By the peculiar form and position of these buckets I secure a greater amount of power than usual, which increased power is essential in navigating boats in the shallow swiftly-running streams where my boat is to be used. This result follows from the fact that the buckets when in action obtain a better hold upon the water. In the ordinary form of plain paddle wheels, I have found that the water floats over the top of the paddles; but in my peculiar form of angle-buckets, a firmer hold on the water is obtained. Moreover, in view of the fact that these buckets operate with greater force in the water, they have a tendency to raise the boat up in the water, so that the boat will have less draft than otherwise.

As a further means to be used in connection with the operation of the boat, I provide the same at a point, preferably contiguous to each wheel box 15, with oscillatory spuds 16, the same comprising a vertically

extending member (preferably square in cross section) and pointed at its lower end so that it may easily penetrate into the sand or mud in the river-bed when being used as an anchor, as when it is desired to turn the boat, the spud holding it in position and serving as a pivot therefor while the wheels are being operated to turn the boat.

The spud, at its lower portion, operates for its vertical movement between two vertical plates 17, which, at their upper ends, are pivoted to a hinged member 18. These plates are housed within a casing 19, suitably secured to the sides of the boat. Mounted within the casing, at the lower portion thereof, are strong coiled springs 20, one end thereof bearing against the inclined sides of the casing, and the other end bearing against the lower portion of the vertical plate 17. By this means, the spud is normally held in a vertical position. When, however, the spud is lowered into the bed of the river while the boat is moving, the cushion-springs 20 will relieve the strain which would otherwise be imposed upon the spud and the parts which support the same, because the spud will rock and cause the vertical plates 17 to compress one or the other of the cushion-springs.

Above the casing 19 is a guide frame 21 consisting of sides 21ª, which, at their lower ends, are rounded for clearance. This frame is encircled by clips 22. As will be seen by referring to Fig. 4, the upper portion of the spud slides between the sides of the guide frame, and that the frame is so arranged that it will move with the spud when the same is rocked, as shown in dotted lines in this figure. As the lower ends of the sides of the frame would, during such rocking movement, strike against the upper portion of the casing 19, they are rounded as already mentioned. As these spuds are of more or less weight, it is desirable to provide mechanism by which they may be operated with facility; and, to this end, I provide a power cylinder 23, which, by the clips 22, is secured to the upright frame 21, comprising the sides aforementioned. Within the cylinder is a piston, the power to operate which may be supplied from any suitable source through a hose connection 24, Fig. 5. Projecting upwardly from the piston is a connecting rod 25, to the upper end of which is secured a rope or cable 26, which passes over a pulley 27, and at its other end is attached to the spud toward its lower pointed end. The power for operating this spud actuating mechanism may be any desirable fluid under pressure, such as air, steam or the like. By this means, the spud may be lowered and raised with great facility. When the spud is in its raised or normal position, it may be held by any suitable device, such as a dog or the like (not shown).

It will be understood that when the boat is to be anchored, the spud is lowered to penetrate into the sand or mud of the river-bed. The momentum of the boat would ordinarily produce a strain upon the spud and its supporting parts, but by reason of the cushion-devices already mentioned, this strain is entirely relieved on both the spud and supporting parts. By reason of the fact that the power cylinder 23 is supported on the frame 21, which frame is movable with the spud, all of these parts, the spud, the frame and the power device, will rock when the spud is forced into the inclined position illustrated in dotted lines of Fig. 4.

As a further means for effecting movement and control of the boat, I may provide on the bow of the boat one or more spars 28 (in this instance, two being shown), the same being normally slidable in rectangular openings 29 formed in a projection 30, secured to the bow of the boat. In the upper end of the spars 28 is a pulley 31, over which passes a rope or cable 32, which, at one end, is attached to the lower portion of the spar 28, as at 33, and at its other end passes over a pulley 34 and around a drum 35, which may be operated in any preferred manner. Contiguous to the drum 35 is a second drum 36 for operating a rope or cable 37, which also passes over the pulley 34 and a pulley 38 and is attached to the spar at 39. It will be understood that one of the lines or ropes is for the purpose of lowering the spar while the other one is for raising the same into normal position, which, preferably, would be at an angle to the plane of the deck of the boat, so that the spar will be as far out of the water as possible while the boat is moving through the water.

The lower end of the spar is provided on each of its four sides with wings 40, which are hingedly connected to the spar and whose upward movement is limited by the angle-members 41, mounted on the sides of the spar. The projecting edges 40ª of the wings are curved upwardly, as shown in Fig. 7. When the spar is lowered and the wings are pushed against the sand or mud, they will engage the mud and be opened, their upward movement being limited by the angle-members 41; but when the spar is withdrawn from the mud or sand, into which the wings have penetrated, the latter will be forced downward into the position indicated in dotted lines in Fig. 7, so that the withdrawal of the spar from the mud and its movement through the water are thus greatly facilitated. The curved edges 40ª of the wings 40 will aid in operating the wings when they are moved downwardly through the water and into the mud. By the mechanism provided for positioning the spar, its easy and quick operation is rendered possible, whereby much time is saved. In this respect, I achieve results which are not

possible in the form of spar-operating means now employed, and comprising block and tackle rigged to the spars, and the operation of which is difficult, requires a great deal of time, and at a moment when it is particularly necessary to project the spar into the river bed with all possible facility to push the boat off of a sand-bar. In my arrangement, the spar is dropped into the sand, the drum is operated, which forces the spar down into the river bottom, and by reason of the wings, a larger engaging surface is provided. The return of the spar to its normal position is accomplished with equal facility.

By the arrangement here provided of four independently operated wheels instead of the usual stern or side paddle wheels, the propulsion of the boat is greatly increased, the turning of the same within a limited space is rendered possible, and by reason of having the wheels well forward in the boat, the latter can easily be navigated, even where the current is swift. In the event that the boat runs upon a sand-bar, the spar may then be brought into use and operated with the facility already mentioned. When it is desired to make a landing, or to turn the boat mid-stream, the spud may be dropped into the river bottom while the boat is still in motion, and by reason of the cushioning devices herein described, the danger of breaking the spud or straining it and its supporting parts is overcome. The peculiar form of buckets mounted on the wheels enables the same to operate in the water with a greater firmness and steadiness than is possible with other constructions.

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

1. In a light draft boat, the combination of four propelling wheels disposed in pairs fore and aft, a spar coöperating with the wheels to effect movement of the boat off and away from a sandbar, power means for operating the spar to lift the boat, anchoring spuds disposed contiguous to the propelling wheels, and means for raising and lowering the spuds.

2. In a light draft boat, means for propelling the same, comprising four wheels disposed at each side fore and aft, independent engines for driving said wheels in either direction, a spar provided with movable wings at one end and mounted on one end of the boat and adapted to engage the river bottom and while the propelling wheels are rotating to move the boat, mechanism for positioning the spar and actuating the same, oscillating spuds disposed contiguous to the propelling wheels, and cushioning devices disposed in relation to the spuds and adapted to cushion the same when oscillated.

In testimony whereof I hereunto set my hand this 24th day of May, 1909, in the presence of two attesting witnesses.

WILLIAM T. URIE.

Witnesses:
B. A. GREEN,
J. E. WILSON.