(No Model.) 2 Sheets—Sheet 1.

A. H. BACON.

BOAT PROPELLING MECHANISM.

No. 524,629. Patented Aug. 14, 1894.

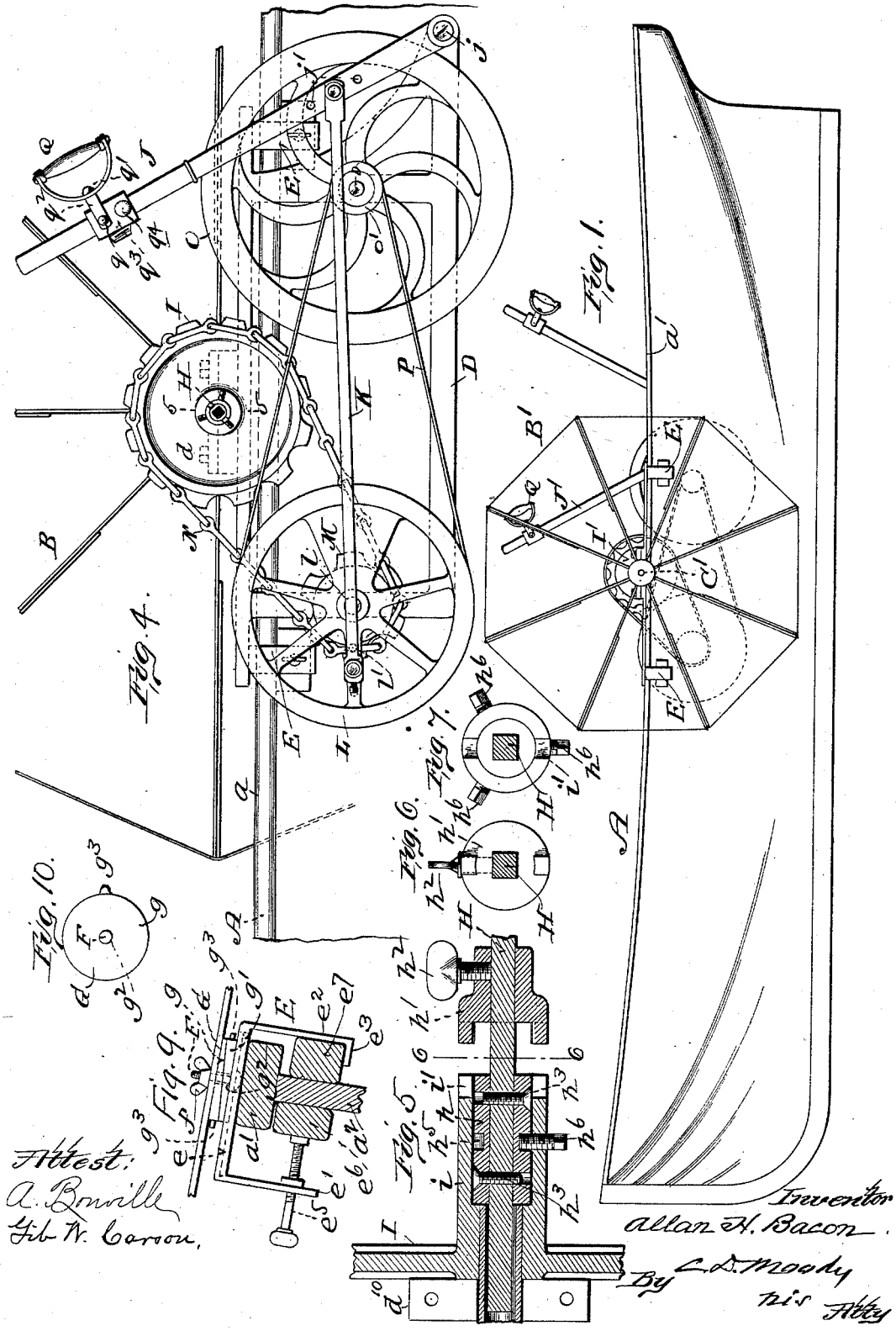

Fig. 1.

Fig. 4.

Fig. 7.

Fig. 6.

Fig. 10.

Fig. 9.

Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

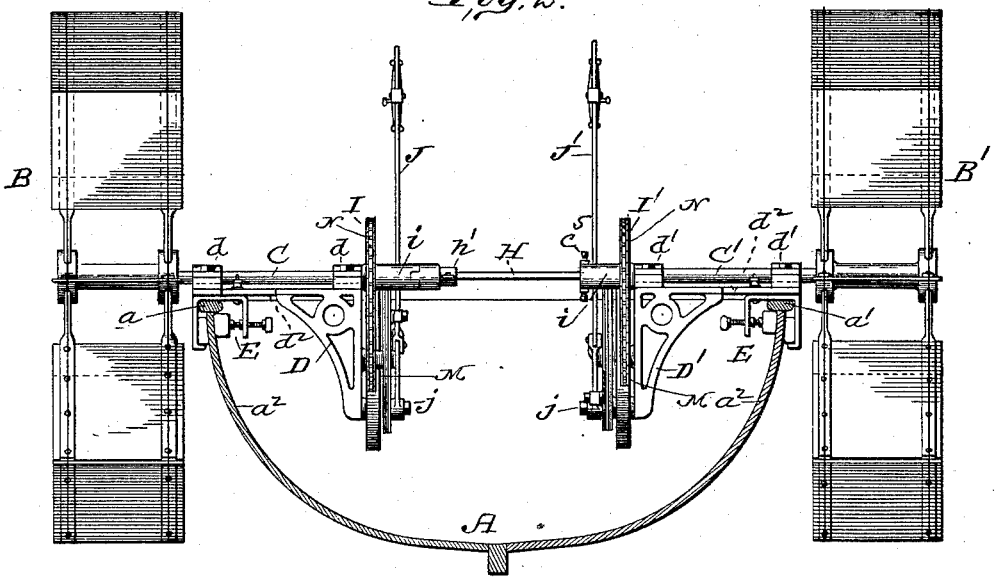


Fig. 3.

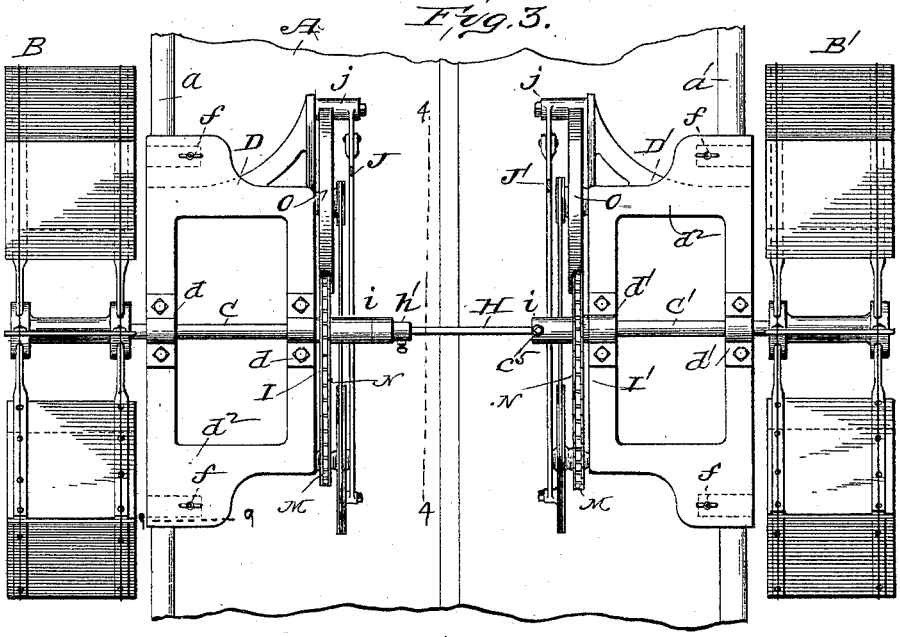
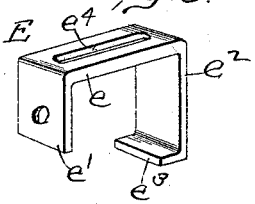


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALLAN H. BACON, OF WEBSTER GROVES, MISSOURI.

BOAT-PROPELLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 524,629, dated August 14, 1894.

Application filed September 25, 1893. Serial No. 486,429. (No model.)

To all whom it may concern:

Be it known that I, ALLAN H. BACON, of Webster Groves, St. Louis county, Missouri, have made a new and useful Improvement in Boat-Propelling Mechanisms, of which the following is a full, clear, and exact description.

The invention under consideration relates mainly to mechanisms of a paddle-wheel type that are employed as substitutes for oars in propelling row-boats, and it consists more especially in the improved means for adapting such mechanisms to boats of different sizes, and also to different positions in the boat; in the improved means for attaching such a mechanism to the boat; in the device for enabling the person propelling the boat to easily and effectively manipulate the levers used in operating the paddle wheels; in the improved means whereby the operator is enabled to exert more or less leverage as may be desired; in the means for carrying the wheel shafts over the dead centers; in the improved means whereby the wheels can be jointly or independently operated, and whereby either or both wheels can be propelled in either direction by means of a single lever; and in other features of the construction, all substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of a boat having the improved mechanism; Fig. 2 a vertical cross section of the boat, showing the propelling mechanism in elevation, the view being from the bow of the boat; Fig. 3 a plan of the propelling-mechanism, including the portion of the boat to which it is more immediately attached; Fig. 4 a view, in side elevation, from the interior of the boat, of one of the wheel-propelling mechanisms; the view may be considered a vertical section on the line 4—4 of Fig. 3; Fig. 5 a longitudinal section, on the line 5—5 of Fig. 4, of a portion of the paddle wheel shaft-mechanism; Fig. 6 a section on the line 6—6 of Fig. 5, looking toward the right hand of that figure, and Fig. 7 a similar section looking toward the left hand; Fig. 8 a view in perspective of one of the clamps that are attached to the gunwales of the boat, the clamp-screw not being shown; Fig. 9 a section, on the line 9—9 of Fig. 3, showing a clamp attached to the boat and including a portion of the plumber block, and Fig. 10 a plan of the adjustable washer employed in leveling the paddle wheel shaft plumber blocks.

The views are not all upon the same scale.

The same letters of reference denote the same parts.

A represents any boat to which the improvement is adaptable.

B, B′ represent the paddle wheels of the propelling-mechanism. They are of any suitable style and size. They are respectively fastened to the shafts C, C′. These shafts are journaled in bearings d, d', upon the plumber blocks, D, D′, substantially as shown. The plummer blocks are attachable to the gunwales a, a', of the boat, and they serve not only to respectively support the shafts C, C′, but also as frames for the mechanism employed in rotating the shafts. The plumber blocks are not attached directly to the boat, but to clamps E, E, which in turn are attached to the boat. Two of these clamps in practice are attached to each gunwale. The clamp is shaped substantially as shown, having a top, e, that rests upon the gunwale, an arm, e', that extends downward from the top to come upon the inner side of the gunwale and the boat-side a^2, and another downwardly-projecting arm e^2, that comes upon the outer side of the gunwale, and boat-side, and that may have an inwardly turned flange e^3. The top is slotted at e^4, the arm e' is adapted to receive a suitable clamp-screw e^5, and, in practice, blocks e^6, e^7, are employed in securing the clamp to the boat; said blocks are arranged at opposite sides of the side of the boat immediately beneath the gunwale, and when the clamp screw is tightened, and the clamp thereby secured to the boat, the parts are assembled substantially as shown.

I desire not to be restricted to a special form of clamp, or mode of attachment. The plumber block is attached to the clamp by means of a fastening such as the bolt, F, which in the case of each clamp, passes from beneath upward through the slot in the clamp and through the top d^2 of the plumber block, and by means of a nut f upon the bolt the block is tightened in position upon the clamp.

As boats have their gunwales variously shaped and inclined, and as it is desirable for

a mechanism such as is under consideration to be attachable to the boat at various points in its length, provision is made for supporting the plumber-block horizontally irrespective of the inclination of the gunwale, and also for adapting the plumber block to the taper of the boat. That is, it frequently happens that the top of the gunwale, in place of being horizontal at the point of the attachment of the plumber block as in Fig. 2, is more or less inclined as indicated in Fig. 9, and in such case it is essential to employ means to support the plumber block in a level position. As the most desirable means to this end I employ an adjustable washer G, which is inserted between the clamp and plumber-block top as in Figs. 9 and 10. This washer consists of a pair of circular wedge shaped disks g, g', perforated centrally at g^2 to enable the disks to be rotated upon each other around a common pivot, such for instance at the bolt F. When the disks are arranged as in Fig. 9, that is, with the thin part of one disk opposite the thick part of the other disk, the combined disks are of uniform thickness and the plumber block top is held parallel with the top of the clamp, and in the case of a horizontal gunwale the washer is really not needed. But by turning the disks, g, g', around upon each other so that the thinnest part of one of them does not coincide with the thickest part of the other, the washer as a whole becomes more or less wedge-like in shape, and the plumber block in consequence is held more or less out of parallel with the clamp. (That is, the plumber block-top can be held level upon an inclined gunwale.) As the top and bottom faces of the washer are more or less inclined to each other according to the extent to which the disks are turned upon each other, the washer is adaptable to the various inclinations of the clamps in use. To facilitate the turning of the disks g, g', each of them may have a projection g^3, or any equivalent means, by which the disk can be readily grasped, or taken hold of, and turned around. In this manner each plumber block can be attached horizontally to the boat. And to suit the shape of the boat, which usually tapers from its middle toward each end thereof, and at the same time enable the paddle wheels to be held parallel and opposite each other, provision is made for adjusting the plumber block upon the clamp in a horizontal direction, and so that the block-top at one outer corner thereof may project outward from the boat more than at its other outer corner. For this purpose the slot in the top of the clamp is brought into use: as the plumber block is shifted toward the end of the boat the outer edge of its top becomes more and more out of parallel with the gunwale, and in such case the bolt which connects the clamp and the plumber block is shifted in the slotted clamp-top, as indicated in Fig. 9, to suit the position of the plumber block above it. It is undesirable to connect the plumber blocks with the boat saving at the gunwales thereof. In such case however the inner portion of each plumber block tends to sag. I substantially prevent this by connecting the shafts C, C′, by means of some rigid connection which shall operate, so far as this feature of the construction is concerned, to brace the paddle wheel shaft from one side of the boat to the other. The preferable mode of accomplishing this is to connect the shafts C, C′, by means of a bar H which at its ends is connected with the shafts. Said shafts, at least at the inner portion thereof, are tubular, and the bar H, at its ends respectively, is inserted in said shafts, and in any suitable manner to prevent the shafts and the plumber blocks respectively thereto attached from sagging. The shaft H is angular, and preferably square, in cross section.

The shafts, C, C′, are provided with sprocket wheels I and I′, respectively. The wheels are fast upon their shafts, and one, I, of them, and preferably both of them, have an extended hub i. If it were designed to permanently connect the paddle wheel shafts C, C′ the bar H might be permanently connected with the ratchet wheels or the shafts C, C′. One, I′, of said wheels is preferably so connected. But to enable the paddle wheels to be independently rotated the connection of the bar with one of the wheels, say the wheel I, is a detachable one. This is illustrated in Figs. 5, 6, and 7. The bar H is provided with or constructed to form a cylindrical bearing h. A clutch part, h', is also mounted on the bar. The hub i of the wheel I is fitted to receive the bearing h, of the shaft, and the wheel hub and bearing are thus adapted to turn upon each other; the hub i has a clutch part, i', adapted to coact with the clutch-part h', and by slipping said last named part upon the bar H into engagement with the clutch-part i' the shafts C, C′, and their wheels are united to turn together. Therefore when it is desired to connect the wheels so that they shall rotate together the clutch part h' is slipped upon the square rod H into engagement with the hub i, and is tightened upon the rod by means of the set screw h^2. And to enable either wheel to be used independently of the other the clutch part h' is loosened and withdrawn from the clutch-part i' as shown in Fig. 5. The bearing h can be attached to, or formed upon, the bar H in any suitable manner, and in the present instance it is shown as a sleeve and is fastened to the bar by means of the screws h^3. To interlock the bar H endwise with the shaft C and wheel I the sleeve h is grooved at h^5, and screws h^6 pass through the hub i and engage in said groove as shown in Fig. 5. This permits of the shafts C, C′, being rotated independently of each other, but at the same time connects the shafts longitudinally.

The means for effecting the rotation of the paddle-wheel shafts is as follows: J represents a lever pivoted at j to the plumber

block D. A pitman, K, connects said lever with a crank L fastened to a shaft *l*, that is journaled in the plumber-block. Said last named shaft is also provided with a sprocket wheel M, from which a chain, N, leads to the sprocket wheel I. The vibration of the lever J upon its pivot therefore effects the rotation of the wheel I and the shaft to which it is attached. The pitman, as indicated by the series of holes *j'*, can be connected with the lever J at a point nearer to or farther from the pivot *j*, and when more leverage is required the connection is made nearer to the pivot *j*, and when less the connection is made farther from the pivot. The pitman also has an adjustable connection with the crank, and for an analogous purpose; when more leverage is required the pitman is connected with said crank at a point farther from the shaft *l*, and when less leverage is required the connection is made at a point, *l'*, nearer to shaft *l*. To better insure the keeping of the pitman off the dead center a fly wheel, O, is used. Said fly wheel is journaled upon a bearing, *o*, upon the plumber-block, and it is provided with a pulley, *o'*, from which a belt, P, leads to the crank L which, for this last named purpose, is in the form of a pulley, substantially as shown. Thus connected the fly wheel is rotated whenever the lever J is operated, and it acts in the usual manner of a fly-wheel for the purpose in question.

To facilitate the operation of the lever J that part is provided with a handle Q, which the person propelling the boat grasps. The handle is pivoted at *q* to enable it to be turned vertically, and the handle is also journaled at *q'* to the handle-arm q^2 to enable the handle to be turned in a direction more or less at right angles to the plane in which it can be swung when turned upon its pivot *q*. The handle in this manner has a universal connection with the lever, and the operator, whether standing or sitting in the boat, can more readily and effectively operate the lever than if he had to grasp the lever directly, or than if the handle were rigidly connected with the lever. A third adjustment of the handle is provided for: The handle instead of being attached directly to the lever is attached to a sleeve, q^3, which can be slipped upward and downward upon the lever, and can be fastened at the desired point thereon by means of the set screw q^4. In this manner the leverage can be lengthened or shortened according as the sleeve is moved from or toward the pivot *j*. The mechanism for operating the other wheel-shaft, C', is of a similar nature; that is, J' represents a lever pivoted to the other plumber block, D', and similarly geared to the sprocket wheel I', and capable of being similarly adjusted and operated. When the two shafts, C C', are connected to rotate together the two paddle-wheels can be driven by means of both of the levers, J and J', or by either thereof, and in such last mentioned case one hand of the operator may be free to be used for other purposes. And when the shafts C, C', are capable of independent rotation either one, or both together, can be rotated by operating either one or both of the levers. In all cases it is desirable for the propelling-mechanism to be braced, by means of the bar H, across the boat as described. The present mechanism, as is apparent, is readily detachable from the boat.

To enable the present mechanism to be adjusted to boats of different widths the cross-bar H is adapted to be inserted a longer or a shorter distance into one or both of the wheel-shafts. In the present instance such endwise adjustment can be made in the shaft C', and by means of the set screw c^5, the bar can be fixed in the shaft. The washer G being adapted for use in many other constructions I desire not to be restricted in its use to the present boat-propelling mechanism.

I claim—

1. In a boat propelling mechanism, the combination with the clamp consisting of the top having a slot therein, the downwardly projecting arms, one of which is provided with an inwardly projecting flange, and the clamp screw, of the plumber block, the bolt passing up through the slot in said clamp and connected with the plumber block, and the paddle shaft, provided with paddles, journaled on said plumber block, substantially as described.

2. In a boat propelling mechanism, the combination with the clamp consisting of the top having a slot therein, the downwardly depending arms, one of which is formed with an inwardly projecting flange, and the clamp screw, of the bolt passing through said slot, the plumber block connected therewith, the rotatable wedge shaped washers interposed between said clamp and plumber block, and the paddle shaft and paddles, substantially as and for the purpose specified.

3. The combination of the plumber-block, the lever J pivoted in said block, the crank-shaft operated by said lever, the sprocket wheel on said shaft, the wheel-shaft, the sprocket wheel on said shaft, pitman, connecting said lever and the crank and the belt connecting said sprocket wheels, substantially as described.

4. The combination of the plumber-block, the pivoted lever J, the crank-shaft, the sprocket wheel on said shaft, the pitman, connecting said lever to the crank the wheel-shaft, the sprocket wheel on said shaft, and the belt connecting said sprocket wheels, said pitman having an adjustable connection with said lever, substantially as described.

5. The combination of the plumber-block, the pivoted lever J, the crank-shaft, the sprocket wheel on said shaft, the pitman connecting said lever to the crank, the wheel-shaft, the sprocket-wheel on said shaft, and the belt connecting said sprocket wheels, said

pitman having an adjustable connection with said lever and with said crank-shaft, substantially as described.

6. The combination of the plumber-block, the pivoted lever J, the crank-shaft, the sprocket wheel on said shaft, the pitman connecting said lever to the shaft, the wheel-shaft, the sprocket wheel on said shaft, the belt connecting said sprocket-wheels, the fly wheel O, journaled upon a bearing *o*, upon said plumber block, the fly-wheel pulley, and the belt P, leading to crank L, whereby said fly wheel is operated when the lever J, is moved substantially as described.

Witness my hand this 23d day of September, 1893.

ALLAN H. BACON.

Witnesses:
C. D. MOODY,
L. W. STEBBINS.