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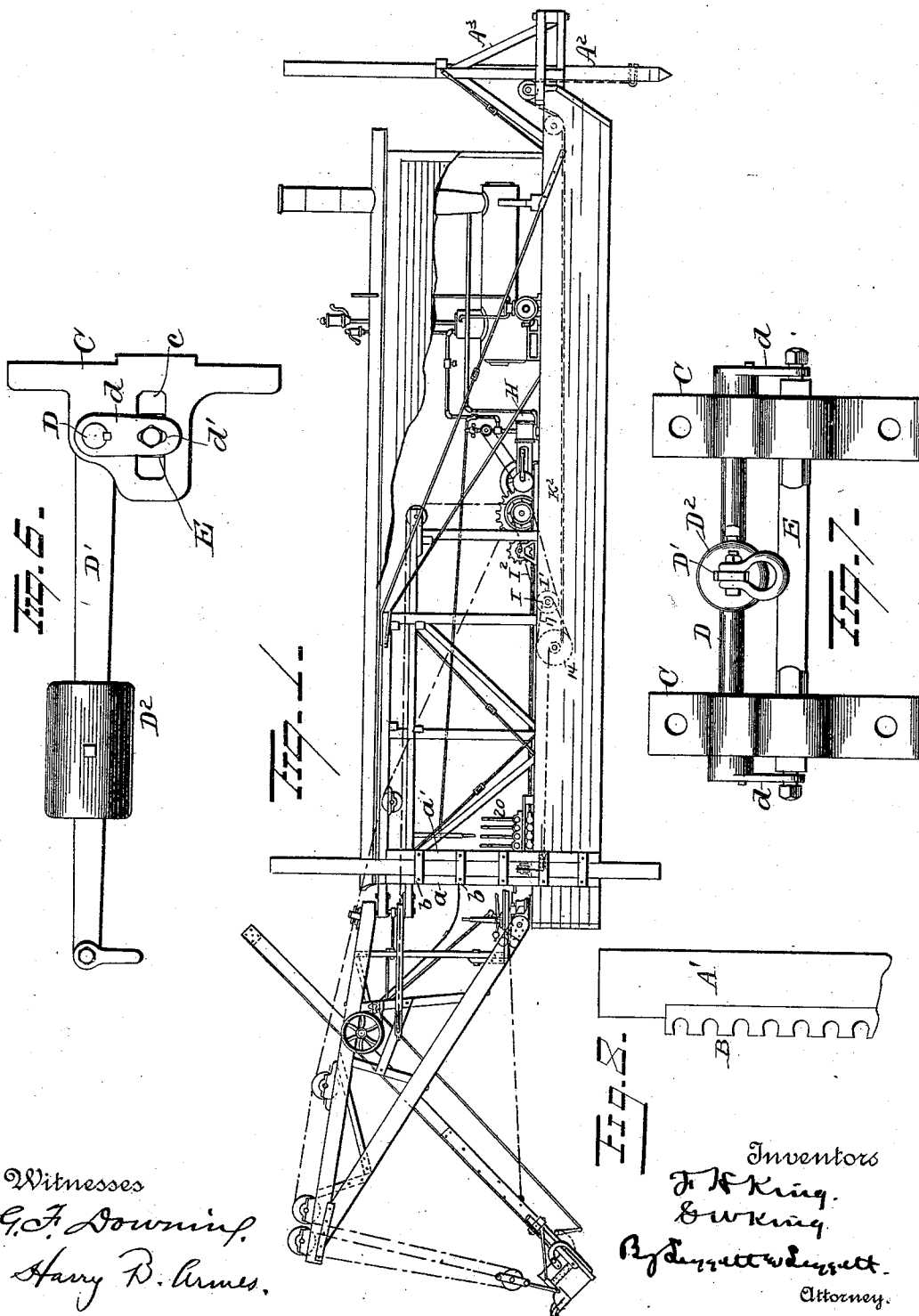
4 Sheets—Sheet 1.

F. H. & G. W. KING.

DEVICE FOR LOCKING AND OPERATING DREDGING SPUDS.

No. 492,687.

Patented Feb. 28, 1893.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

4 Sheets—Sheet 2.

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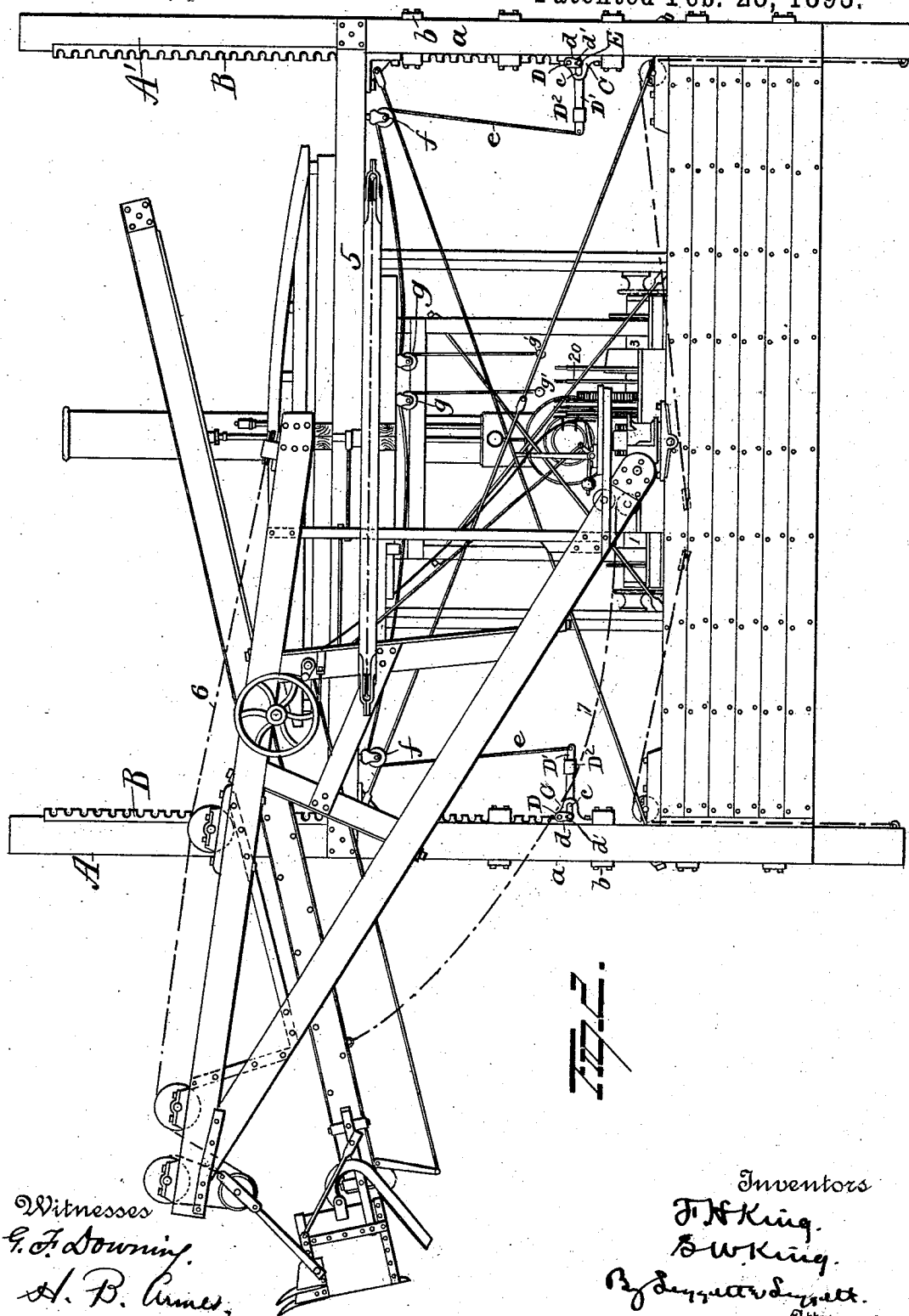


Fig. 2.

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(No Model.)

4 Sheets—Sheet 3.

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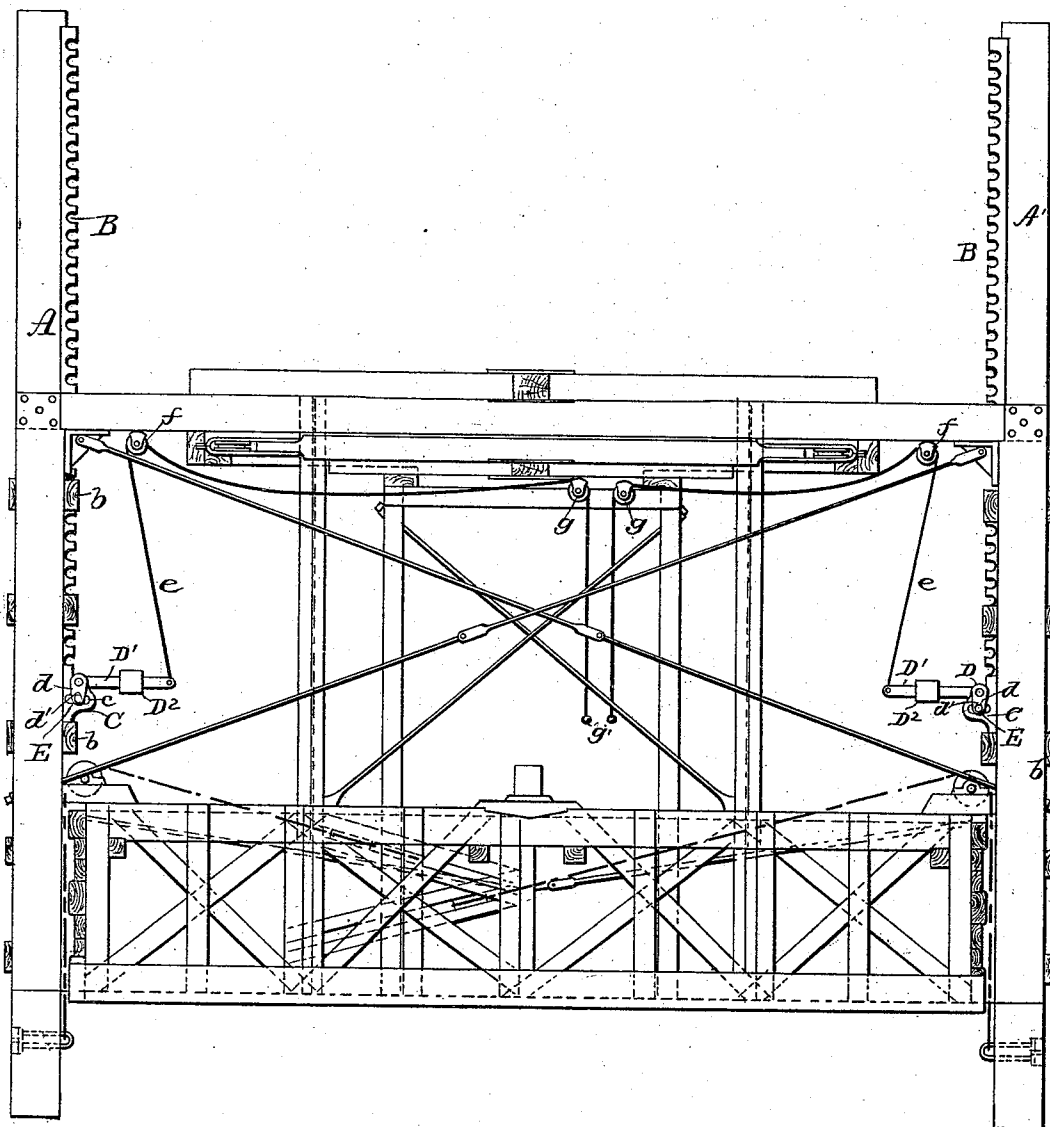


Fig. 3.

Witnesses

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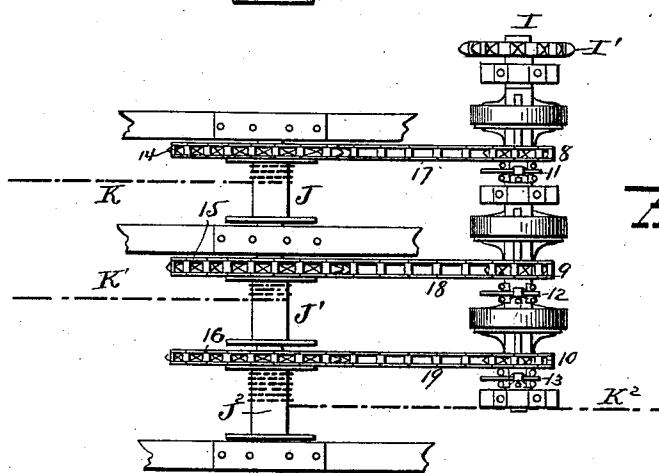
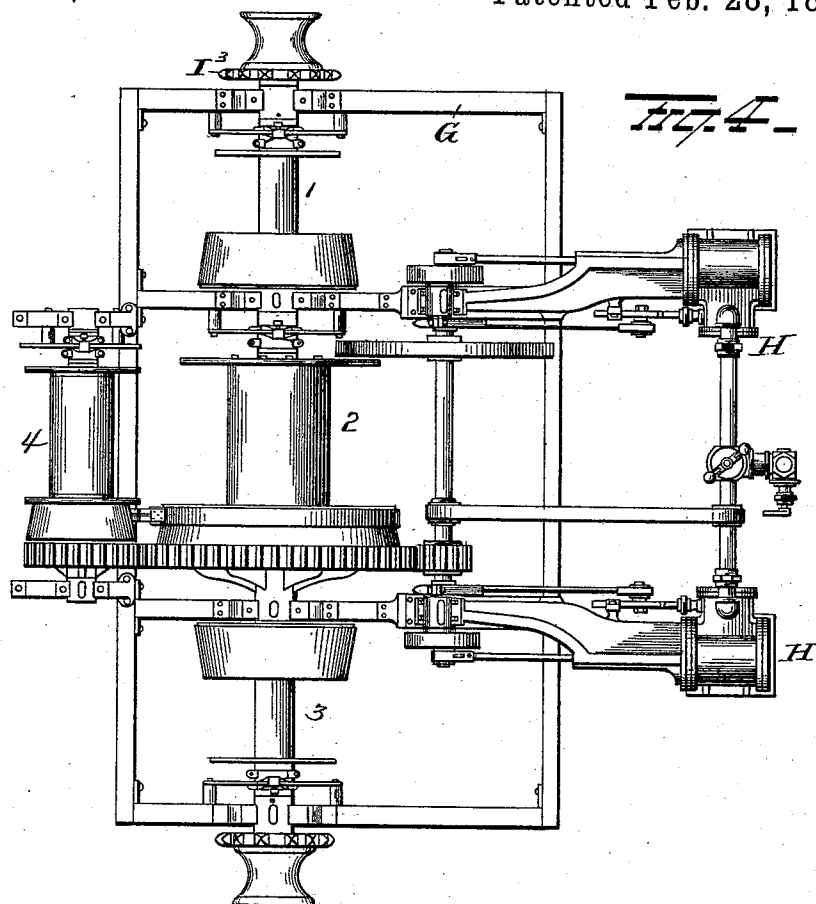
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UNITED STATES PATENT OFFICE.

FRANK H. KING AND GEORGE W. KING, OF MARION, OHIO.

DEVICE FOR LOCKING AND OPERATING DREDGING-SPUDS.

SPECIFICATION forming part of Letters Patent No. 492,687, dated February 28, 1893.

Application filed April 23, 1892. Serial No. 430,388. (No model.)

To all whom it may concern:

Be it known that we, FRANK H. KING and GEORGE W. KING, citizens of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented certain new and useful Improvements in Devices for Locking and Operating Dredger-Spuds; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an improvement in dredging machinery and more particularly to the construction and arrangement of the spuds for anchoring the dredger in position,—the object of the invention being to provide simple and efficient means for locking said spuds after they shall have been embedded in the bottom of the stream or other body of water.

A further object is to provide simple and efficient mechanism for operating said spuds.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a side elevation of a dredger with a portion broken away and showing our improvements applied thereto. Fig. 2 is an end view. Fig. 3 is an enlarged end or front view, showing our improvements, the boom being removed. Figs. 4 and 5 are detail views of operating mechanism. Figs. 6 and 7 are detail views of the spud or anchor lock. Fig. 8 is a view in detail of a portion of a spud showing the peculiar construction of rack teeth.

A, A', represent spuds or anchors adapted to have a vertical movement in suitable guides formed by vertical timbers *a*, and cross bars *b*.

Secured to the inner face of each spud or anchor A, A', is a rack bar B of suitable length to suit the work for which the dredge is to be used. These rack bars are preferably made of steel and riveted on either side of the spud. The notches of the rack bars are preferably made slightly "hooking,"—that is to say, the notches are made slightly larger at the points nearest the spuds as shown in Fig.

8 so that the locking device hereinafter described will have a sure or positive engagement with the rack bars and thus support the great weight put upon them, without liability of the disengagement of the locking devices.

Secured to the spud frames or vertical timbers *a*, are brackets C, each having a horizontal elongated slot *c*,—said brackets serving to assist in guiding the spuds or anchors in their vertical movements.

Mounted in each pair of brackets C is a rock shaft D, to which an inwardly projecting arm or lever D' is secured, said lever being provided with a counterbalance weight D². From the ends of the rock shaft D, arms or links *d* depend and are provided in their lower ends with elongated slots *d'*. A bar or dog E is mounted at its ends in the elongated slots *c* of the brackets C, and are connected at its ends in the elongated slots *d'* of the arms or links *d*. Connected to the inner ends of the arms or levers D' are cords or ropes *e*, which extend upwardly and pass over pulleys *f* located in the upper portion of the framework of the machine,—from whence they extend inwardly and pass over pulleys *g* located near the center of the forward portion of the machine. The ropes or cords, after passing over the pulleys *g* extend downwardly and are provided at their free lower ends with rings *g'* or other suitable devices whereby to manipulate them. When it is desired to anchor the dredger, the cords or ropes *e* are first pulled to raise the arms or levers *d*, to withdraw the bars or dogs E out of engagement with the rack bars (with which they are held normally in engagement by the weights arms or levers D'), and the spuds will thus be permitted to lower until they touch solid ground. The boat or dredger is then locked and the lock at one side made to engage the rack bar at a point above the lower end thereof, and then by swinging the boom F around toward this spud, the latter will be forced into the ground by the weight of the boom and attached parts. The spud at the opposite side of the boat or dredger is operated in the same manner until both spuds find a solid bearing in the bottom of the stream or lake, or are pushed into the ground deep enough to hold the boat steady during the operation of dredging. At the

stern of the boat a spud A^2 is located, and is suitably guided by means of a frame A^3 .

Mounted on the boat is a frame G, which carries a series of drums 1, 2, 3, 4, on which the "swinging" chain 5, and the hoisting and "down-haul" chains 6, 7, are wound,—motion being imparted to the shaft which carries the drums by means of a steam engine H, through the medium of suitable gearing. Located at a point preferably in advance of and below the frame G, is a shaft I, carrying at one end, a sprocket wheel I' , whereby motion may be imparted to said shaft I, through the medium of a sprocket chain I^2 , which chain also passes over a sprocket wheel I^3 carried by the shaft of drums. 1. 2. 3.

Carried by the shaft I is a series of sprocket wheels, 8, 9, 10, and a series of clutches 11, 12 and 13 is also carried by said shaft, whereby any one of the sprocket wheels may be thrown into action, as desired. Located in advance of the shaft I, is a series of drums J, J' , J^2 , each carrying a sprocket wheel 14, 15, 16, which sprocket wheels are adapted to receive motion from the sprocket wheels 8, 9 and 10 through the medium of a series of sprocket chains, 17, 18 and 19.

Connected with the drums J, J' are chains K, K' , which extend forwardly, over suitable pulleys, and are connected at their forward ends, with the lower portions of the spuds A, A' , respectively. A chain K^2 is connected with the drum J^2 and extends rearwardly, over suitable pulleys and connected with the lower portion of the rear spud A^2 . The clutches 11, 12, 13, are connected by means of suitable rods with levers 20 located in the forward portion of the boat, whereby to operate said clutches. From this construction it will be seen that by manipulating the clutches 11, 12 and 13 and releasing the spud locks as above explained, the spuds will be raised and the boat or dredger thus released or unanchored.

Our improved spud locks and means for operating the same and the spuds, are very simple in construction,—can be applied to either harbor or ditching dredgers, are easy to manipulate and very effectual in the performance of their functions.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A spud lock consisting of a rock shaft, an arm carried by said rock shaft, a bar connected with said rock shaft a rack bar carried by the spud, with which said bar is adapted to engage, and weight or equivalent means for automatically throwing the bar into engagement with the rock bar, substantially as set forth.

2. The combination with a spud and a rack bar carried thereby, of brackets carried by the frame work which carries the spud, a rock shaft carried by said brackets, a bar connected with said rock shaft and adapted to engage the rack bar and a weighted arm carried by said rock shaft, substantially as set forth.

3. The combination with suitable framework, a spud located therein and adapted to slide, and a rack bar secured to said spud, of brackets secured to the framework and provided with elongated slots, a rock-shaft mounted in said brackets, an arm carried by said rock-shaft, and a bar connected with said rock shaft and mounted in the elongated slots in the brackets, said bar being adapted to engage said rack bar, substantially as set forth.

4. The combination with suitable framework, a spud located therein and adapted to slide, and a rack bar secured to said spud, of brackets having elongated slots, secured to the framework, a rock shaft mounted in said brackets, an arm or lever carried by said rock shaft, arms or links projecting from said rock shaft and provided with elongated slots, and a bar mounted in the elongated slots in the brackets and connected in the elongated slots in the arms or links secured to the rock shaft, said bar being adapted to engage the rack bar, substantially as set forth.

5. The combination with a dredger, of vertically sliding spuds carried thereby, rack bars secured to said spuds, brackets secured to the framework which carries the spuds, rock shafts mounted in said brackets, a weighted arm or lever carried by said rock shaft, a bar or dog connected with each rock shaft and adapted to engage the rack bars on the spuds, cords or ropes, connected to said weighted arms or levers and pulleys for supporting said cords or ropes, substantially as and for the purpose set forth.

6. The combination with a spud, of a rack bar secured thereto, of a weighted lock adapted to normally engage said rack bar, substantially as set forth.

7. The combination with a spud, of a rack bar, the notches of said rack bar being larger at their ends next to the spud, and a lock adapted to engage said notches, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

F. H. KING.
GEORGE W. KING.

Witnesses:

J. A. WALFORD,
J. F. MCNEAL.