

J. S. M^cMillin,

Capstan.

N^o 52,730.

Patented Feb. 20, 1866.

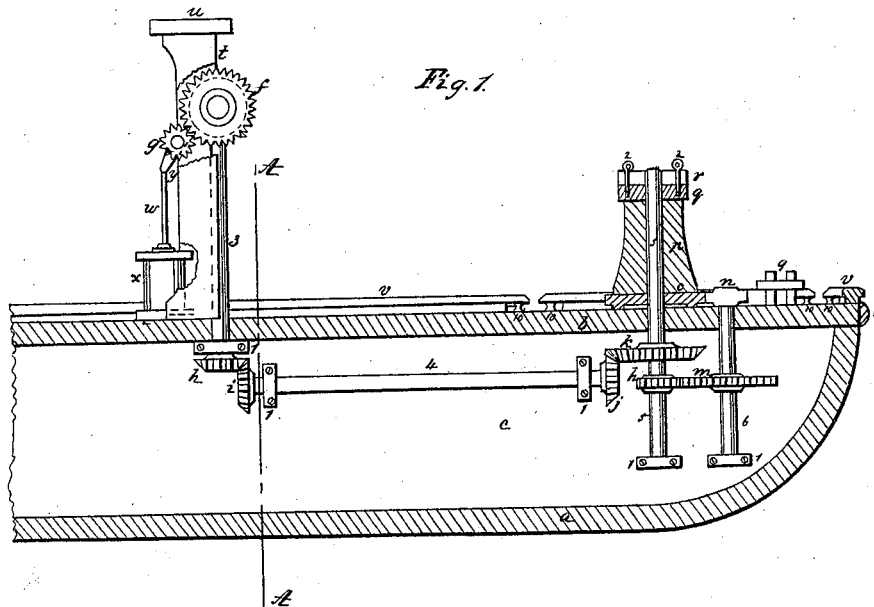
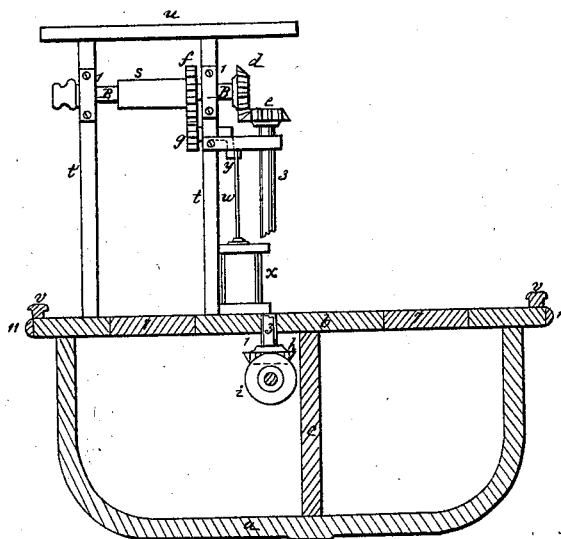


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN S. McMILLIN, OF PITTSBURG, PENNSYLVANIA.

MODE OF WORKING A CAPSTAN BY STEAM.

Specification forming part of Letters Patent No. 52,730, dated February 20, 1866.

To all whom it may concern:

Be it known that I, JOHN S. McMILLIN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Capstans for Steamboats and other Vessels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in an arrangement of shafting and gear for the purpose of connecting the capstan with the "little nigger" engine and for regulating the power and motion of said capstan so as to correspond to the work required of it, the whole being constructed, arranged, and operating in the manner hereinafter described.

To enable others skilled in the art of constructing capstans for steamboats and other vessels to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 represents a longitudinal section of a hull of a steamboat forward of the boilers. Fig. 2 represents a transverse section of the same at the point indicated by the line marked A.

The point at which my invention starts is with the placing of the wheel *d* on the shaft B, and connecting said wheel with the capstan by means of suitable intermediate gearing, the whole being driven by the engine (little nigger) used for handling freight.

In the drawings, *a* represents the hull of the boat. *b* represents the deck. *v* represents the guards around the deck *b*. 10 represents small pulleys, (called "chocks,") which are placed in the guards *v*, and used when hauling in or giving out cable or chain. 11 represents the nosing around the edge of the deck *b*. *c* represents the bulk-head. 9 represents the keys which are used for hitching to the cable or chain in belaying the boat. *t* and *t'* represent stanchions. *u* represents a section of one of the cross-beams on which the floor of the upper deck rests.

To the stanchions *t* and *t'* are secured the journal boxes or bearings of the shaft B, which is armed with a hoisting-drum, *s*, and wheels *f* and *d*. The journal boxes or bearings of the crank *y* and small cog-wheel *g* and the

upper bearing of the shaft 3 are placed on the stanchion marked *t*.

x represents the small engine (called "little nigger") used for handling freight, the construction and operation of which engine are well known and understood. 3, 4, and 6 represent shafts. *d*, *e*, *h*, *i*, *j*, and *k* represent bevel-wheels. *g*, *f*, *l*, *m*, *n*, and *o* represent ordinary cog-wheels. The journal boxes or bearings of the various shafts are marked 1, and the upper bearings of the spindle 5 and shaft 6 are placed in the deck *b*.

p represents the capstan-drum, which is furnished with a head-piece, (marked *q*,) which is constructed in the ordinary manner, with openings in it for hand-levers used for operating the capstan by hand-labor. On the lower end of the capstan-drum *p* is placed a cog-wheel, (marked *o*.) The capstan-drum is also furnished in the ordinary manner with pawls and ratchet.

5 represents the spindle of the capstan-drum *p*. On the upper end of this spindle 5 is permanently secured a head-piece, (marked *r*.) in which are two openings or holes for the pins, (marked 2.) In the head-piece *q* of the capstan-drum *p* are also two openings or holes which correspond in size, form, and position to the openings in the head-piece *r*. The capstan-drum *p* and its head piece *q* revolve on the spindle marked 5.

The wheels *d* and *e* should be arranged on the shaft B or 3, so that one or other of said wheels can be readily shipped into or unshipped out of gear, for the purpose of making the capstan and intermediate gearing operative or inoperative at will. The small cog-wheel *n* should also be arranged on the shaft 6, so that it can be removed and replaced for the purpose of making the wheels *o*, *n*, *m*, and *l* operative or inoperative with relation to the capstan.

The construction of the various parts herein described and represented being well known and understood by the skillful mechanic, I will proceed now to describe the operation of my improvement, which is as follows: Having all things arranged and connected as herein described, with piston *w* of the engine *x* (called "little nigger") attached to the crank *y*, motion is imparted by said engine to the crank, which will give motion to the small cog-wheel *g*, which will cause the wheel *f*,

shaft B, and wheel *d* to revolve, which will revolve the wheel *e*, which will revolve the shaft 3, wheels *h i*, shaft 4, and wheels *j* and *k*, which will revolve the spindle 5 and its head-piece *r*. Now, when I desire to operate the capstan when but little power is required, but speed in the motion of the capstan is desired, I place the pins 2 in the openings of the head-pieces *r* and *q*, as represented in Fig. 1, and remove the small cog-wheel *n* from off the shaft 6, which will allow the capstan-drum *p* and its wheel *o* and head-piece *q* to revolve with the spindle 5 and its head-piece *r* without relation to the motion of the wheels *l* and *m* and shaft 6; but when I desire to obtain great power by the capstan for sparring and hauling or otherwise handling the boat, I remove the pins 2, which will disconnect the head-pieces *r* and *q*. I then place the small cog-wheel *n* on the shaft 6, thereby connecting the wheels *o*, *n*, *m*, and *l* with the other operating-gear, so that in revolving or giving motion to the wheels *d*, *e*, *h*, *i*, and *j* motion will be imparted to the wheel *k*, which will revolve the spindle 5, which will revolve the small cog-wheel *l*, which will revolve the large cog-wheel *m*, which will revolve the shaft 6, which will revolve the small cog-wheel *n*, which will revolve the wheel *o*, attached to the capstan-drum *p*. Now it will be observed that in operating the capstan so as to obtain great power therefrom speed is given to the spindle 5 of the capstan, but a very slow motion is imparted to the capstan *p*, which in this case revolves on the spindle 5. The manner of operating and handling the cables and chains in connection with the capstan being well known and understood by the boatmen, I will therefore not describe said handling and mode of operating said cables and chains in connection with the capstan.

It will readily be observed that the shaft B can be extended over both of the hatchways, which are marked 7, and that two hoisting-drums can be used when so desired.

The advantages of my improvement are as follows:

First, I save labor, time, and expense in sparring and handling boats by connecting the capstan with the engine (called "little nigger") by means of the intermediate gearing herein described.

Second, a less number of men are required for sparring and otherwise handling the boat, the capstan being operated by steam.

Third, the dangers to which the men are exposed by the breaking and falling of spars and the snapping of cables or chains while engaged in sparring and handling the boat are avoided, for by the use of my improvement the men are not required to travel under hanging spars and over cables and chains which are subjected to great strain and liable to snap and break at any moment.

Fourth, in the absence of steam, and at times when the engine cannot be worked, then the capstan can be worked by hand-levers in the ordinary manner.

Having thus described the nature, construction, operation, and advantages of my improvement in capstans, what I claim as of my invention is—

The arrangement of the wheels *l*, *m*, *n*, *o*, *k*, *j*, *i*, *h*, *e*, and *d*, shafts 6, 5, 4, 3, and B, capstan-barrel *p*, heads *q* and *r*, and pins 2, the whole being constructed, arranged, and operating substantially as herein described, and for the purpose set forth.

JOHN S. McMILLIN.

Witnesses:

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