(No Model.)

C. A. POTTER.

LOCKING GEAR FOR WINDLASSES.

No. 332,287. Patented Dec. 15, 1885.

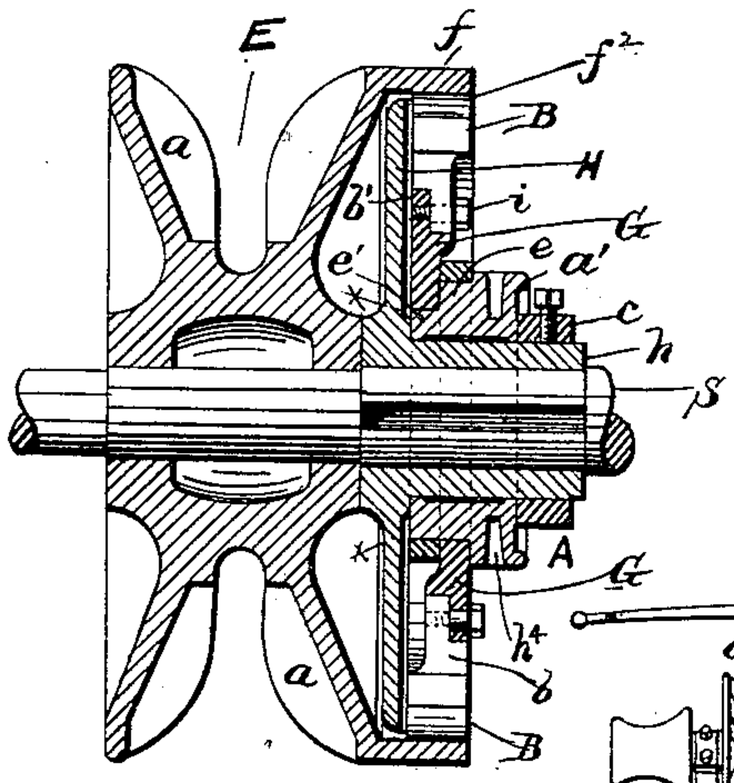

FIG. 2.

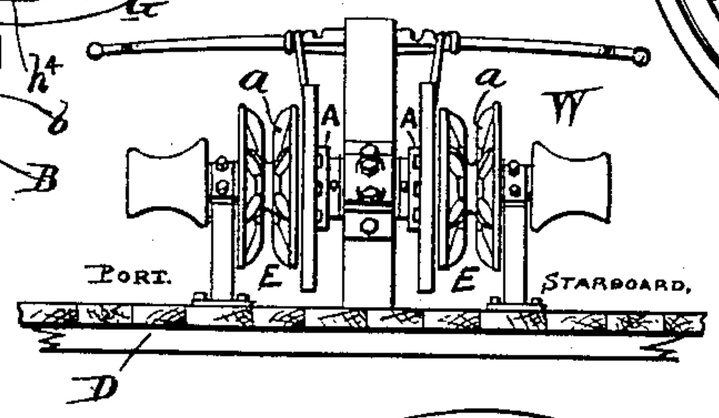

FIG. 1.

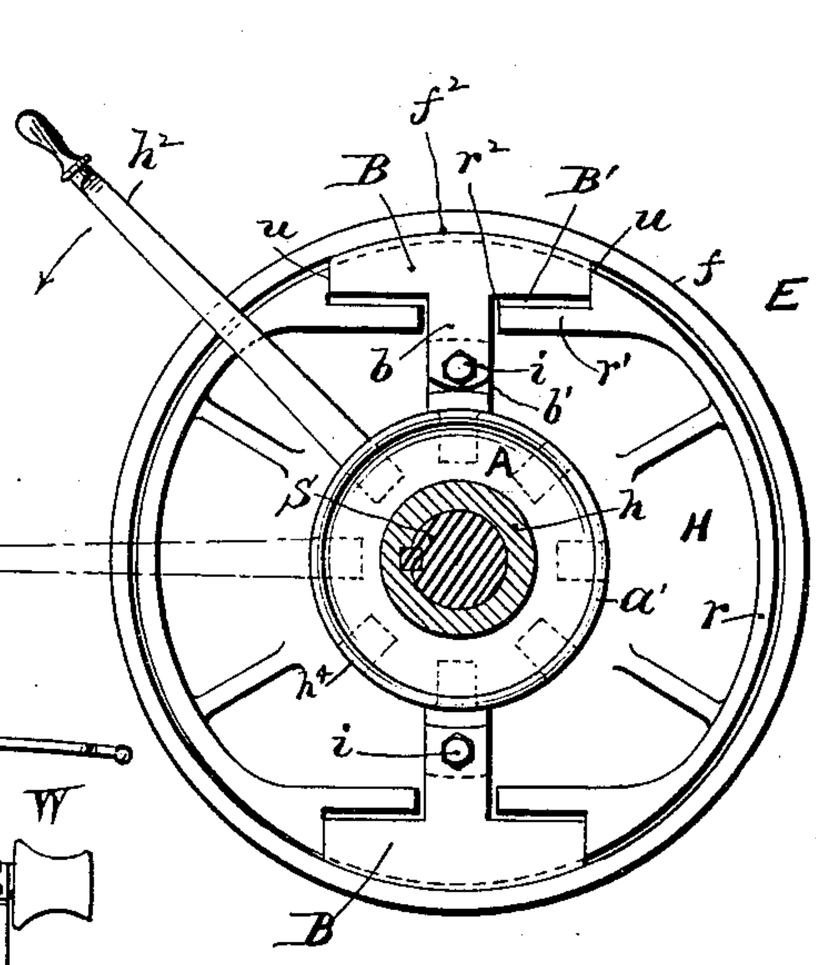

FIG. 3.

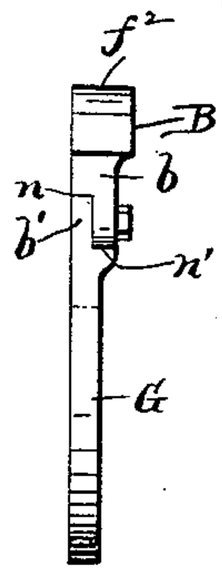

FIG. 8.

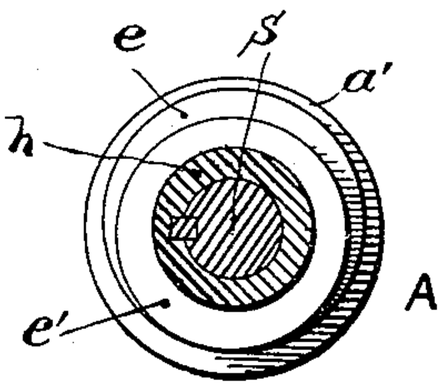

FIG. 4.

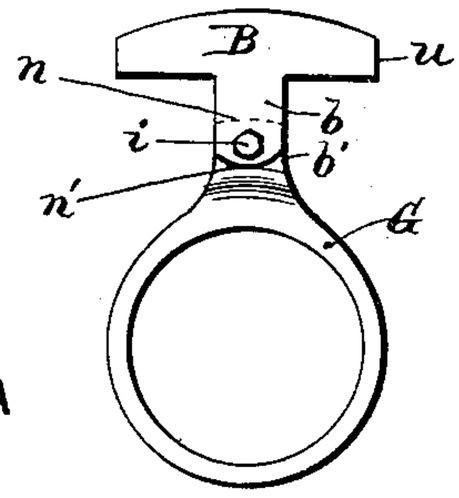

FIG. 5.

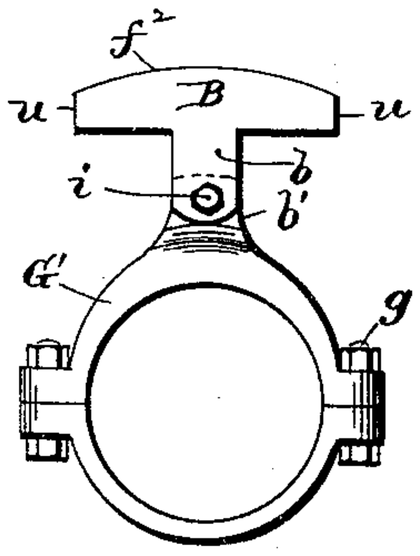

FIG. 6.

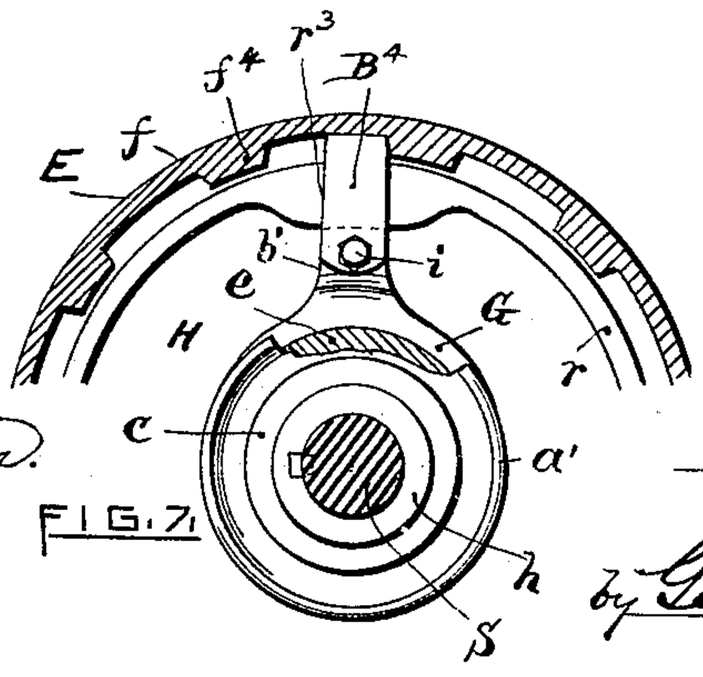

FIG. 7.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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LOCKING-GEAR FOR WINDLASSES.

SPECIFICATION forming part of Letters Patent No. 332,287, dated December 15, 1885.

Application filed July 1, 1885. Serial No. 170,324. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. POTTER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Locking-Gears for Windlasses; and I 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to the locking-gear for ships' windlasses, more particularly those in which the loosely-mounted wild-cat or chain-wheel is locked to the driving-head by means of frictional contact; and it consists, essentially, of one or more eccentrics combined with a rim or ring, all loosely mounted on the hub of said driving-head, straps encircling the eccentrics, and friction-blocks connected therewith adapted to engage the rim of the wild-cat, said blocks being let into pockets or recesses formed in the head, whereby the operator, by means of a bar inserted in said ring, is enabled to force the friction-block outwardly or radially against the overhanging rim of the wild-cat, thus frictionally connecting said chain-wheel with the driving portion of the windlass for the purpose of taking in the anchor-chain, &c., a reversal of the operation permitting the chain to be paid out, as desired, the same being under the complete control of the operator.

The object of this invention is to provide a ship's windlass with simple, inexpensive, yet efficient means for controlling the wild-cats both in taking in and paying out the chain cable. The device, moreover, requires less space longitudinally upon the main shaft, thereby enabling me to correspondingly reduce the distance between the bits. A further advantage is derived by means of the invention, as I dispense with the friction-bands, stands, and the necessary connections therefor, as heretofore generally required in letting go the anchor, all as will be more fully hereinafter set forth and claimed.

In order to illustrate my invention I have prepared the accompanying sheet of drawings, in which—

Figure 1 represents in elevation a view (looking forward) of a pump-brake windlass embodying the improvements. Fig. 2 is an enlarged longitudinal sectional view through the wild-cat, driving-head, and locking mechanism. Fig. 3 is an end view of the same, showing the head frictionally connected to the wild-cat by means of the oppositely-arranged friction blocks or shoes. Fig. 4 is a transverse sectional view through the shaft and hub of the driving-head, viewed from the rear, showing the relation of the two eccentrics, &c., said view being taken on line *x x* of Fig. 2. Fig. 5 is a front view of one of the eccentric-straps and friction-blocks connected together. Fig. 6 is a modification of the same, showing the eccentric-strap as made in two parts. Fig. 7 is an end view (in partial section) showing the device adapted to connect with a wild-cat provided with locking-lugs formed on the inner circumference of the overhanging rim; and Fig. 8 represents a side or edge view of the strap, &c., shown in Fig. 5.

The following is a more detailed description of my invention, including the manner of its operation and use.

E, again referring to the drawings, designates a "wild-cat" (so called) loosely mounted on the windlass-shaft S, having the circular flange or rim *f* projecting from one side thereof, as shown in Figs. 2 and 3, the inner peripheral surface of said rim being turned off true and smooth.

H designates the driving-head, which is firmly secured to the main shaft, said head being provided with one or more peripheral pockets, B′, connected by the rim *r*, as fully shown in Fig. 3. The head is further provided with the central hub, *h*, which is turned off true, to receive the locking ring or rim and eccentrics.

A indicates (as drawn) a casting loosely mounted upon the said hub, and consisting of the two eccentrics *e′ e* and ring or rim portion *a′*, the latter being provided with openings h^4, adapted to receive the end of the operating or locking lever h^2. (See Fig. 3.) Said casting

may be lined with bronze or other metals, if desired, for the purpose of reducing the friction.

G designates straps which encircle the eccentrics, the same terminating in the short extension b', its extreme end n being slightly convex.

B indicates a T-shaped friction block or shoe, pivoted to said strap by means of the pin or bolt i, the shoe being fitted to loosely fill the pocket B′ of the driving-head before described, the post or stem portion b of the shoe at the same time being guided in the recess r^2, formed in the tie r' of the head, all as fully shown in Fig. 3. The periphery or curved surface f^2 of the block is adapted to bear against the inner surface of the rim f of the wild-cat. The post b is adapted to bear against the end n of the strap by means of the offset formed therein, as shown in Fig. 8.

The eccentric e', as drawn, is somewhat smaller in diameter than its fellow e, by means of which I am enabled to make the straps whole, thus materially reducing the cost; otherwise the straps would necessarily be in halves, as indicated in Fig. 6.

In Fig 7 the inner or concave peripheral surface of the wild-cat rim f is provided with a series of lugs, f^4, the same being adapted to bear against the outer end of the locking-block B^4, the latter being guided in the radial groove r^3, formed in the outer face of the driving-head's rim, the straps G, &c., being substantially as before described, except that in this case the "throw" of the eccentrics is increased.

The operation may be described substantially as follows: The lever h^2 is first inserted in the rim or ring portion a' of the casting A, and moved in the arrow direction, Fig. 3, thereby forcing the blocks B outwardly or radially, the surfaces f^2 thereof engaging the inner surface of the rim f, thus locking the wild-cat E to the driving-head H. The shaft S of the windlass is now worked or revolved by suitable means, (the drawing shows pump-brakes for the purpose,) thereby causing the wild-cat to revolve and take in the chain cable.

I would state here that the forward thrust or pressure of the head in working is borne by the ends u of the blocks, the same being retained in the pockets B′, as shown in Fig. 3.

In Fig. 7 the key B^4 is represented as being guided and driven by means of the groove r^3, formed in the head, the radial thrust or compression being borne by the surfaces n n' and the eccentrics before described. A collar, c, adjustably secured to the hub of the head, serves to retain the device in position.

In practice I prefer making the eccentricity of the said eccentrics e e' about one-eighth of an inch, by means of which the purchase or everage is greatly increased, an angular movement of forty-five degrees of the lever h^2 at the same time being sufficient to fully lock and unlock the wild-cat. By means also of the device the operator is enabled to readily control the chain in running out, as before stated. When used for this purpose, however, the bearing-surface f^2 of the blocks should be lined or covered with copper or other suitable material. The form or cross-section of the blocks may be made angular or otherwise changed without departing from the spirit of the invention.

It is obvious that the device is adapted to be employed in capstan, pump-brake, and other types of windlasses. It is further evident that the eccentrics may be loosely mounted on the shaft direct, although such construction necessarily reduces the length of the hub h. When convenient and desirable, I prefer also to provide the strap G and locking-block with a screw-threaded connection or other equivalent arrangement for the purpose of effecting an adjustment between said parts.

I am of course aware that it is not new in a windlass to operate one or more locking keys or shoes simultaneously by means of the partial rotation of a loosely-mounted ring connected therewith, and therefore I do not claim such construction, broadly; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a windlass, the combination, with a wild-cat loosely mounted on the driving-shaft, of a driving-head rigidly secured to the shaft and having one or more locking-blocks, each connected with a strap or band encircling an eccentric loosely mounted on the main shaft or hub of the driving-head, said eccentric or eccentrics being provided with means for rotating or operating the same, whereby the blocks are forced outwardly or radially, substantially as shown, and for the purpose hereinbefore set forth.

2. In a ship's windlass having a loosely-mounted wild-cat and a driving-head rigidly secured to the main shaft, the combination therewith of one or more locking-blocks mounted within the head, each block being connected with and adapted to be operated by means of an eccentric loosely mounted on said shaft, substantially as shown and set forth, and means, substantially as shown and described, for operating the eccentrics.

3. The casting or piece A, substantially as herein shown and described, the same consisting of the oppositely-arranged eccentrics e' e and circular rim or ring a', provided with openings h^4, the whole adapted to be loosely mounted on the shaft or driving-head of a windlass, as set forth.

4. The locking device for ship's windlasses herein described, consisting of one or more locking-blocks, B, each having a stem, b, one or more loosely-mounted eccentrics provided with an apertured rim, a', and straps G, each connecting with said stem by means of the pin or bolt i, the whole combined and arranged within the driving-head of the windlass, whereby said eccentrics, &c., are adapted to move

the blocks B in an outward or radial direction, substantially as and for the purpose hereinbefore set forth.

5. The improved locking device herein described, substantially as shown in Fig. 7, consisting of one or more locking-keys, B^4, one or more eccentrics loosely mounted on the hub of the driving-head H, said eccentric being provided with an apertured rim, a', and straps or links, each connecting with said keys B^4, the whole combined and arranged within the driving-head of the windlass, whereby said eccentrics are adapted to move the locking keys or blocks in an outward or radial direction, for the purpose of interlocking with lugs formed on the rim or edge of the loosely-mounted wild-cat, as set forth.

6. In a ship's windlass, the combination, with the loosely-mounted wild-cat provided with the projecting circular flange, of a driving-head secured to the shaft, two oppositely-arranged eccentrics (having equal throw) provided with a series of pockets, h^4, and loosely mounted on said shaft or hub of the driving-head, a strap encircling each eccentric, and friction blocks or keys connected with or forming a part of the strap, said blocks or keys being fitted into pockets or grooves formed in the driving-head, the whole arranged and adapted for use substantially as shown, and hereinbefore set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES A. POTTER.

Witnesses:
GEO. H. REMINGTON,
CHARLES HANNIGAN.