

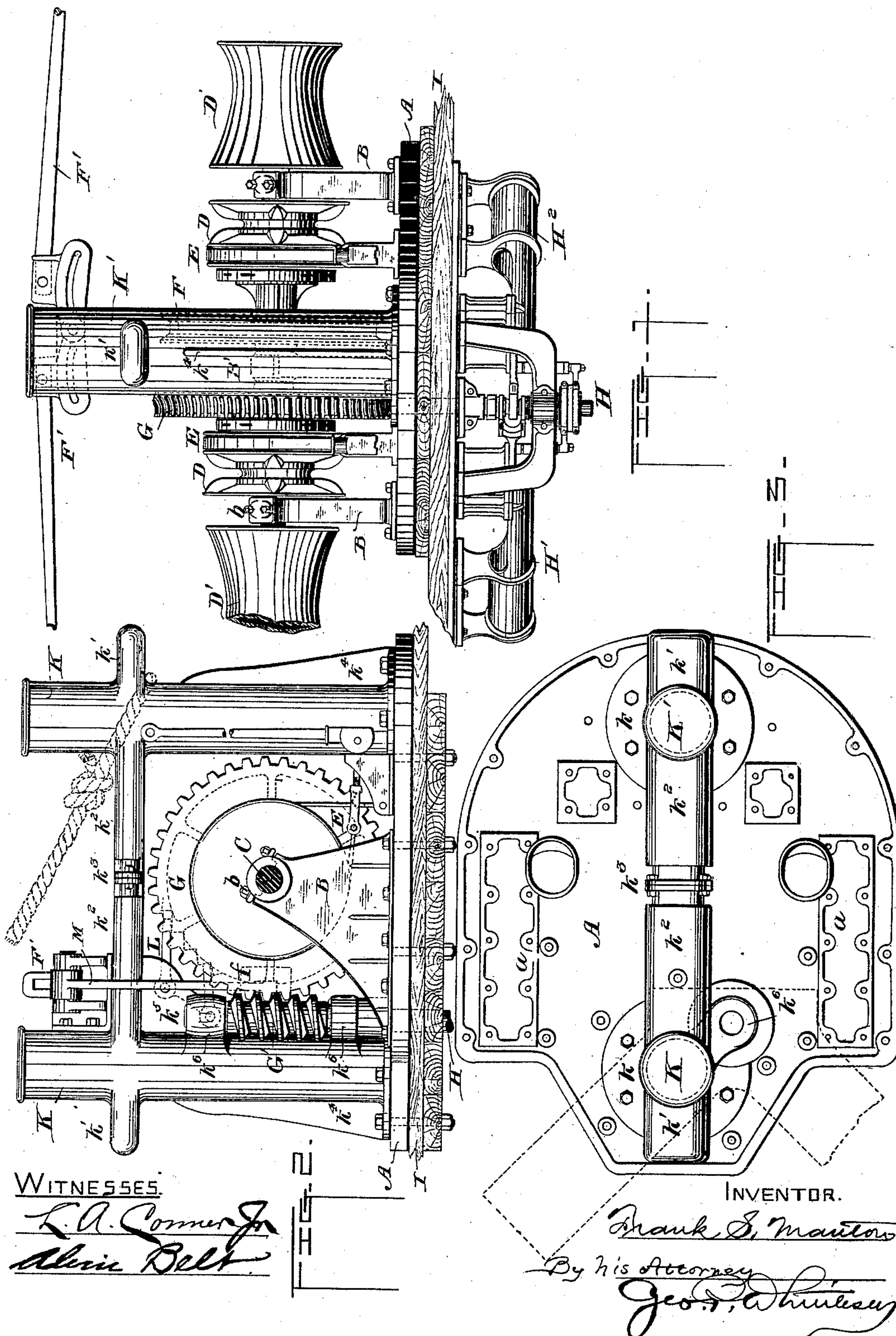
(No Model.)

2 Sheets—Sheet 1.

F. S. MANTON.  
SHIP'S WINDLASS.

No. 426,673.

Patented Apr. 29, 1890.



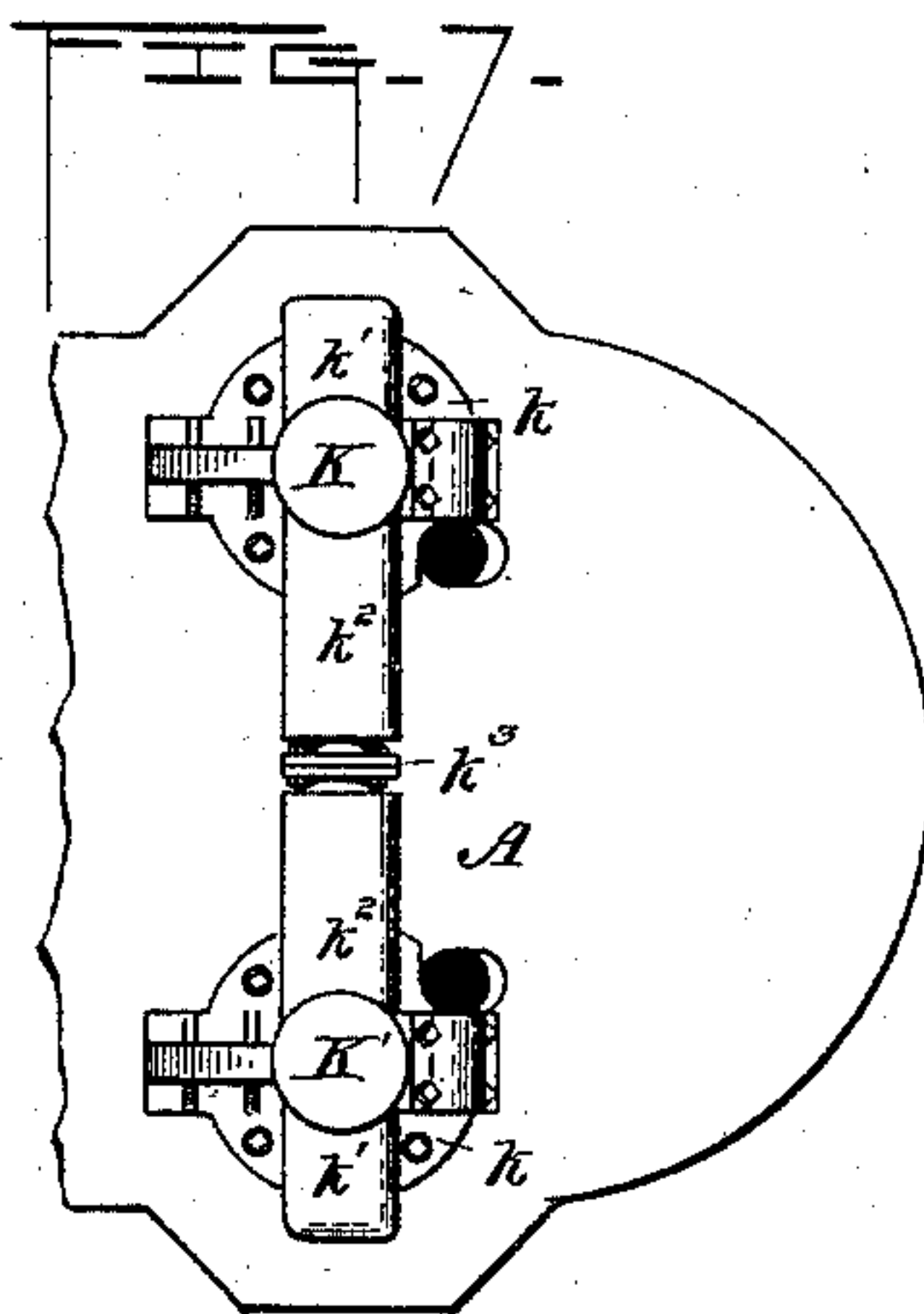
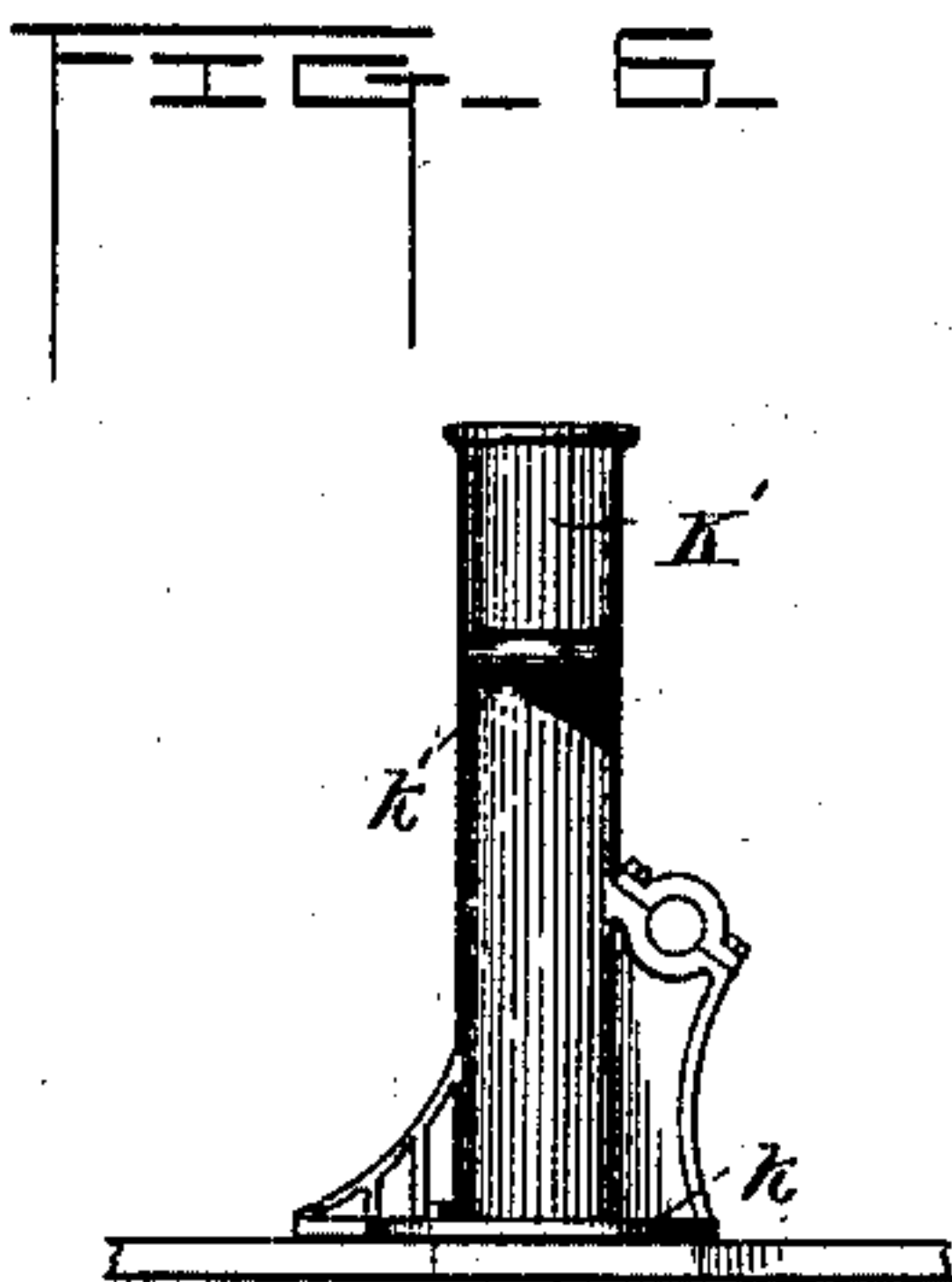
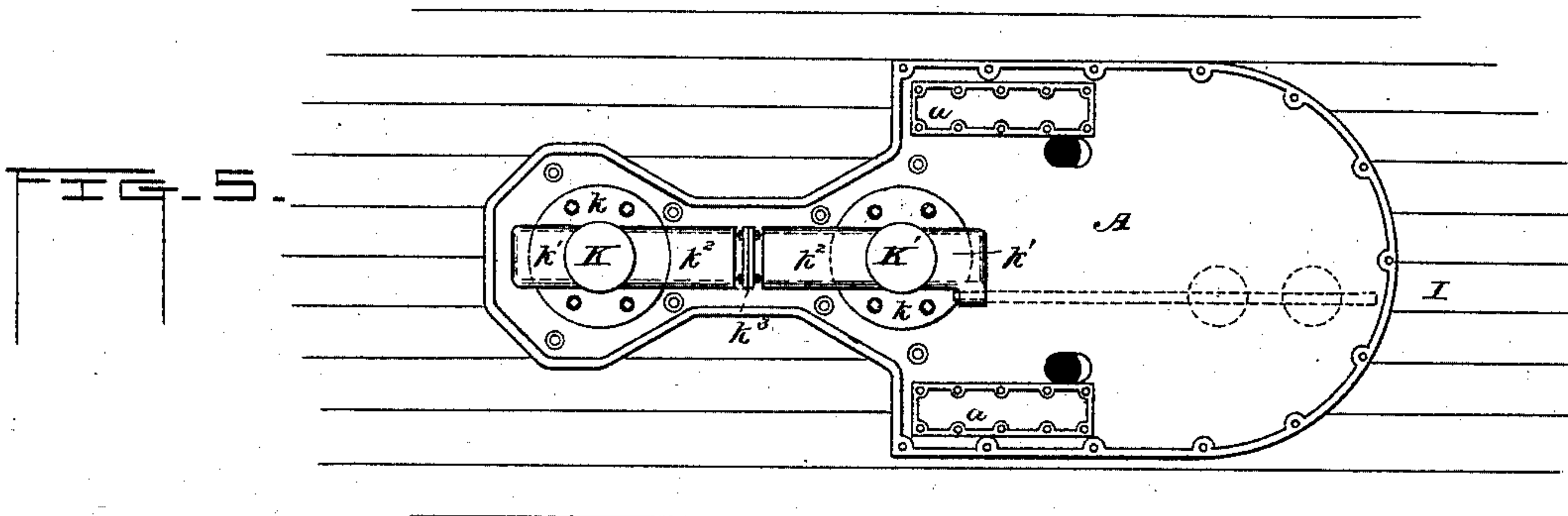
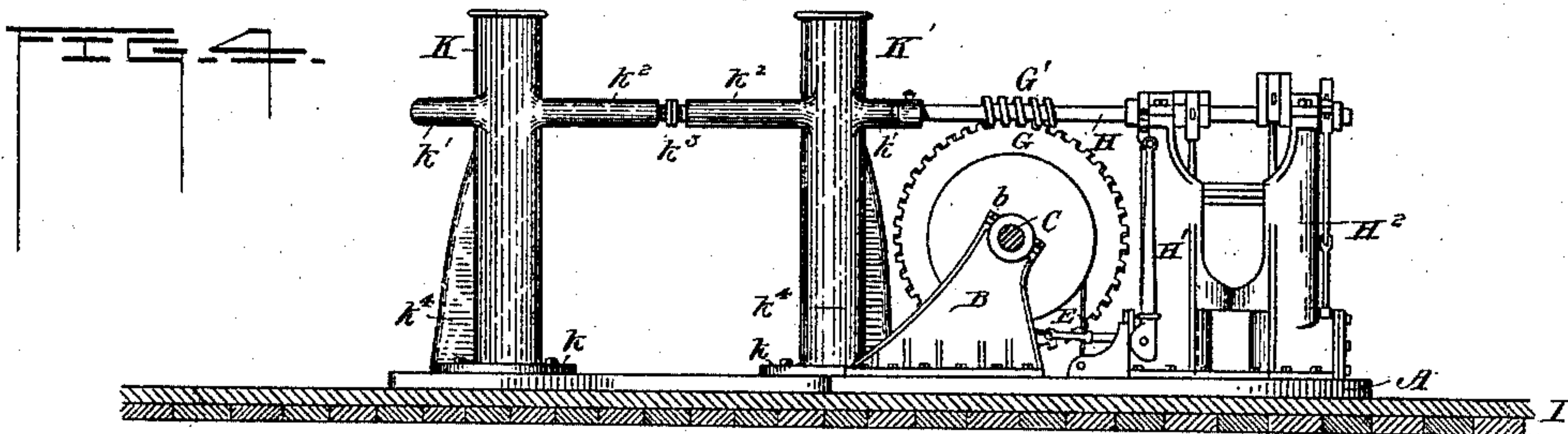
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**WITNESSES**

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# UNITED STATES PATENT OFFICE.

FRANK S. MANTON, OF PROVIDENCE, RHODE ISLAND.

## SHIP'S WINDLASS.

SPECIFICATION forming part of Letters Patent No. 426,673, dated April 29, 1890.

Application filed February 8, 1890. Serial No. 339,653. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK S. MANTON, 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 Ships' Windlasses; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to windlasses, and its object is to combine in one compact structure a windlass and the warping-bits of a vessel.

In tugs, barges, and tow-boats generally the warping or towing bits are large and heavy timbers occupying that portion of the forward deck where it is desirable to place the windlass. The narrowness of this part of the vessel and the consequent necessity for economizing room to the greatest possible extent render it important that if a windlass is placed here it should be so arranged as not to interfere with the warping-bits. The warping-bits usually extend down to the futtock timbers in order to be strong enough to resist the strains put upon them, and thus occupy valuable space between decks. Moreover, the windlasses that I use are provided with a solid bed-plate fastened rigidly to the deck-beams and large enough to afford a firm foundation for the side bits and pawl-bit, and for the engine-frames in case the windlass is driven by steam-power. This bed-plate covers the deck at the places where the warping-bits would naturally pass through it. In order, then, to combine in one compact structure both the windlass and the warping-bits it is necessary not only to change the construction of the latter but to make them of metal instead of timber, and to provide for their attachment to the bed-plate of the windlass. This is best accomplished by merging the warping-bits into the frame of the windlass to a greater or less extent; and my invention, therefore, consists in the construction by which I combine with a windlass having a bed-plate for securing it to the deck a

pair of metallic warping-bits forming a part of its frame-work, and so arranged that both windlass and bits are mutually strengthened.

In the drawings, Figure 1 is a rear elevation of a windlass embodying my improvements. Fig. 2 is the port elevation thereof, the gipsy end being removed. Fig. 3 is a plan of the bed-plate and warping-bits. Figs. 4, 5, 6, and 7 are modifications.

Any suitable windlass may be employed. The one illustrated is designed to be driven by either hand or steam power. It is erected upon a bed-plate A, which is cast with suitable seats *a a* for the attachment of the various parts. The side bits B B carry bearings *b*, in which is journaled the windlass-shaft C. The middle of the shaft may be journaled in a center bit B', if desired, for additional strength. The windlass D and the locking-gears may be of the usual construction, and may be arranged to take a hawser, if desired. The windlass may have the customary gipsy ends D' and friction-bands E. A driving-head F is secured to the shaft, with which engage friction-clutches *f* connected by rods *f*<sup>2</sup> with the slotted pump-brake handles F' for operating the windlass by hand. The windlass has also a worm-gear G secured to its shaft, driven by a worm G', secured upon the engine-shaft H, which is rotated by the engines H' H<sup>2</sup>, fastened to a bed-plate that is bolted to the deck I. These parts are all well known and do not need further description here, especially since they may be varied or in part omitted, the specific kind of windlass used being immaterial to my invention.

On the median line of the bed-plate are formed seats for the attachment of the warping-bits K K'. These consist of upright posts, round or rounded in cross-section so as not to injure a hawser, and preferably cored out to reduce their weight. Each bit has a broad flange *k* at its base by which it is united to the bed-plate by bolts. The bits stand well above the windlass, and at a suitable distance below their tops the arms *k'* *k*<sup>2</sup> project horizontally fore and aft. The arms *k*<sup>2</sup> are perfectly flat, as shown, and are of such length that they abut and are fastened rigidly together, preferably by bolts passed through flanges *k*<sup>3</sup>, thus forming a cross-bar or kevel



between the two bits. The cross-bar lies above the shaft and driving-head so as not to interfere with their proper operation and gives plenty of room for manipulating the hawsers on the bits. To avoid the inconvenience of a projecting flange midway of the kevel, which would foul the hawsers and be liable to chafe them, the ends of the arms  $k^2$  may be reduced in size, so that the flanges need be of no greater diameter than the main portions of the arms. Other modes of splicing the arms  $k^2$  will readily suggest themselves, and I do not confine myself to the one shown and specifically described. The posts, when thus united, form a strong pair of warping-bits, durable and handsome. They may be further stiffened by webs  $k^4$ , running vertically from the bases up to or toward the kevel on the forward side of the bit K and on the after side of the bit K'. The forward bit K takes the place of and serves as the pawl-bit of the windlass. In the angle between the bit and its arm  $k^2$ , underneath the kevel, is cast a hollow bracket  $k^5$ , which serves as a pawl-box for the pawls L and also stiffens the structure. On the upper side of the kevel and against the upper part of the bit K is bolted the casting M, that serves as a bearing for the brakes in case the windlass is designed to be operated by hand-power. The steam-windlasses shown would not require the hand-power mechanism to be connected up, except when the vessel was lying idle without steam in her boilers. Ordinarily it would all be taken down—bearing-blocks, brakes, rods, and clutches—and stowed away. The forward bit also affords a convenient and firm support for the bearings of the vertical engine-shaft shown in Figs. 1 and 2, in which the lugs  $k^6$  are cast integral with the post K, and are then suitably bored and bushed to receive the shaft H.

When my improvements are to be applied to a windlass having its engines standing on the same bed-plate as the windlass-bits rather than secured to a bed-plate bolted up under the deck, as shown in Figs. 1 and 2, I prefer to arrange the parts as shown in Figs. 4 and 5. The bits are here both placed forward of the windlass-shaft rather than one forward and one aft of the shaft, as in Figs. 1 and 2. The bed-plate is extended to give a foundation for the forward bit, and the rear bit thus becomes the pawl-bit and also affords a bearing for the worm-shaft. It is evident, however, that this arrangement of the bits can be adopted with any style of windlass, whether hand or steam. For convenience in construction and transportation, the bed-plate and its forward extension can be made in separate pieces, instead of all in one piece, as shown.

Should it be necessary to arrange the warp-

ing-bits athwartships, they can be conveniently formed integral with the side bits of the windlass, as shown in Figs. 6 and 7, the kevel being made in two parts and spliced, as above described.

It is obvious that in some cases the two bits and the kevel can be cast all in one piece instead of in two separate parts.

The advantages of combining the windlass and the warping-bits, as above set forth, will be apparent to those skilled in maritime matters, and need not be set forth at length.

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

1. A windlass having a bed-plate for securing it to the deck and having its shaft arranged athwartships, and a pair of metallic warping-bits secured to said bed-plate on a line perpendicular to the shaft, substantially as described.

2. A windlass having a bed-plate for securing it to the deck, and a pair of metallic warping-bits secured to the bed-plate on a line transverse to the windlass-shaft and united by a kevel, substantially as described.

3. A windlass having a bed-plate for securing it to the deck, and a warping-bit secured to said bed-plate in the fore-and-aft line of the pawl-bit and united to said pawl-bit by a kevel, substantially as described.

4. A windlass having a bed-plate for securing it to the deck, a metallic warping-bit secured to the bed-plate on the fore-and-aft line of the pawl-bit, a kevel uniting the two bits, and a pawl-box cast integral with the pawl-bit and kevel, substantially as described.

5. A windlass having a bed-plate for securing it to the deck, and two warping-bits secured to the bed-plate and provided with abutting arms suitably spliced together, substantially as described.

6. A windlass having a bed-plate for securing it to the deck, a warping-bit K, secured to the bed-plate and serving as a pawl-bit, the bit K' also secured to the bed-plate, each bit being provided with an arm  $k^2$ , having a flange  $k^3$ , and bolts uniting the flanges, substantially as described.

7. A windlass having a bed-plate for securing it to the deck, a warping-bit K, secured to the bed-plate and serving as a pawl-bit, the bit K', secured to the bed-plate, each bit having arms  $k' k^2$ , the latter having reduced ends and flanges  $k^3$ , and bolts uniting said flanges, substantially as described.

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

FRANK S. MANTON.

Witnesses:

ALVIN BELT,  
S. G. HOPKINS.