(No Model.)

2 Sheets—Sheet 1.

# H. ORROCK.

## PULLEY BLOCK.

No. 551,735. Patented Dec. 17, 1895.

Fig. 2.

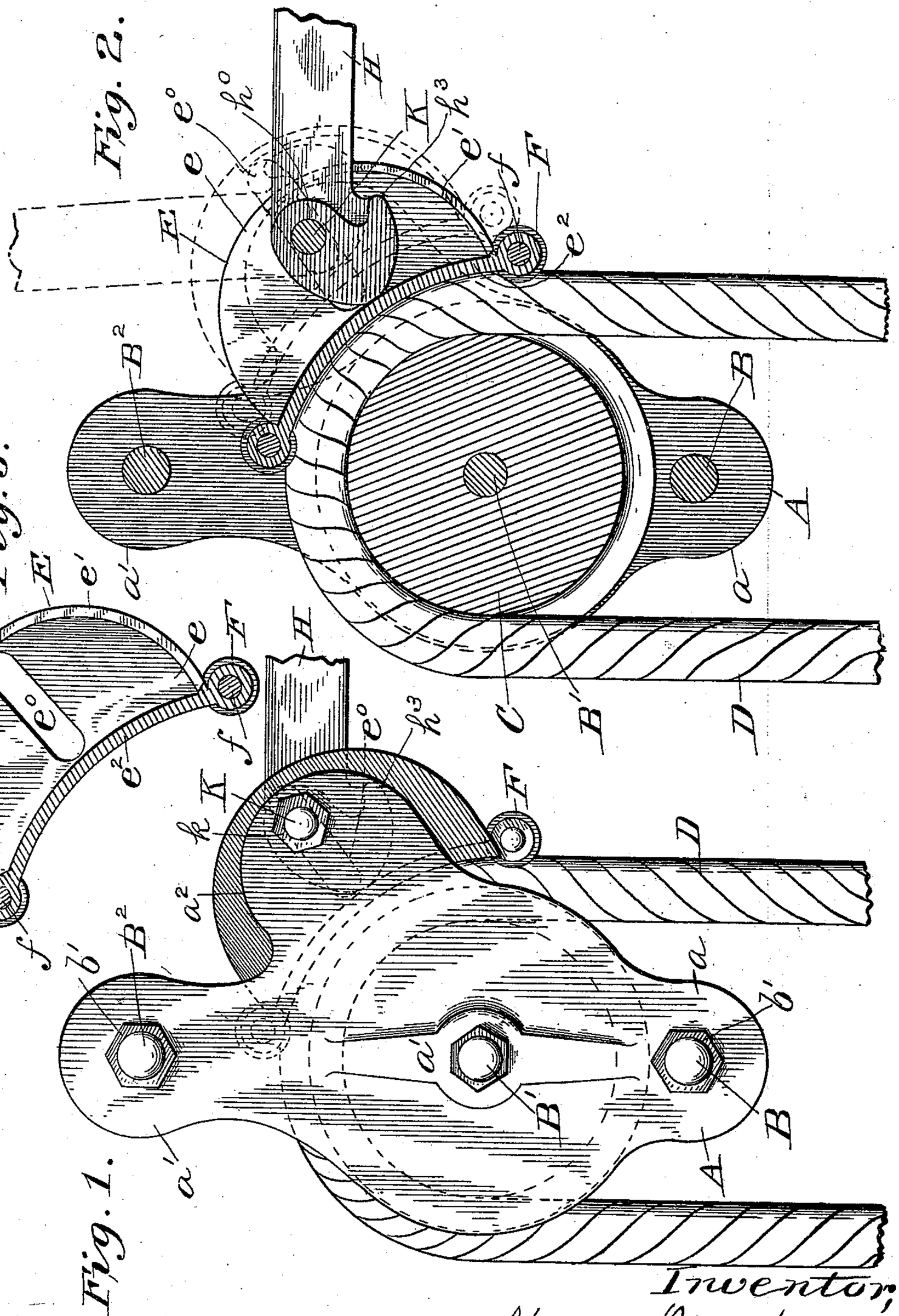


Fig. 3.

Fig. 1.

Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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No. 551,735. Patented Dec. 17, 1895.

Fig. 4.

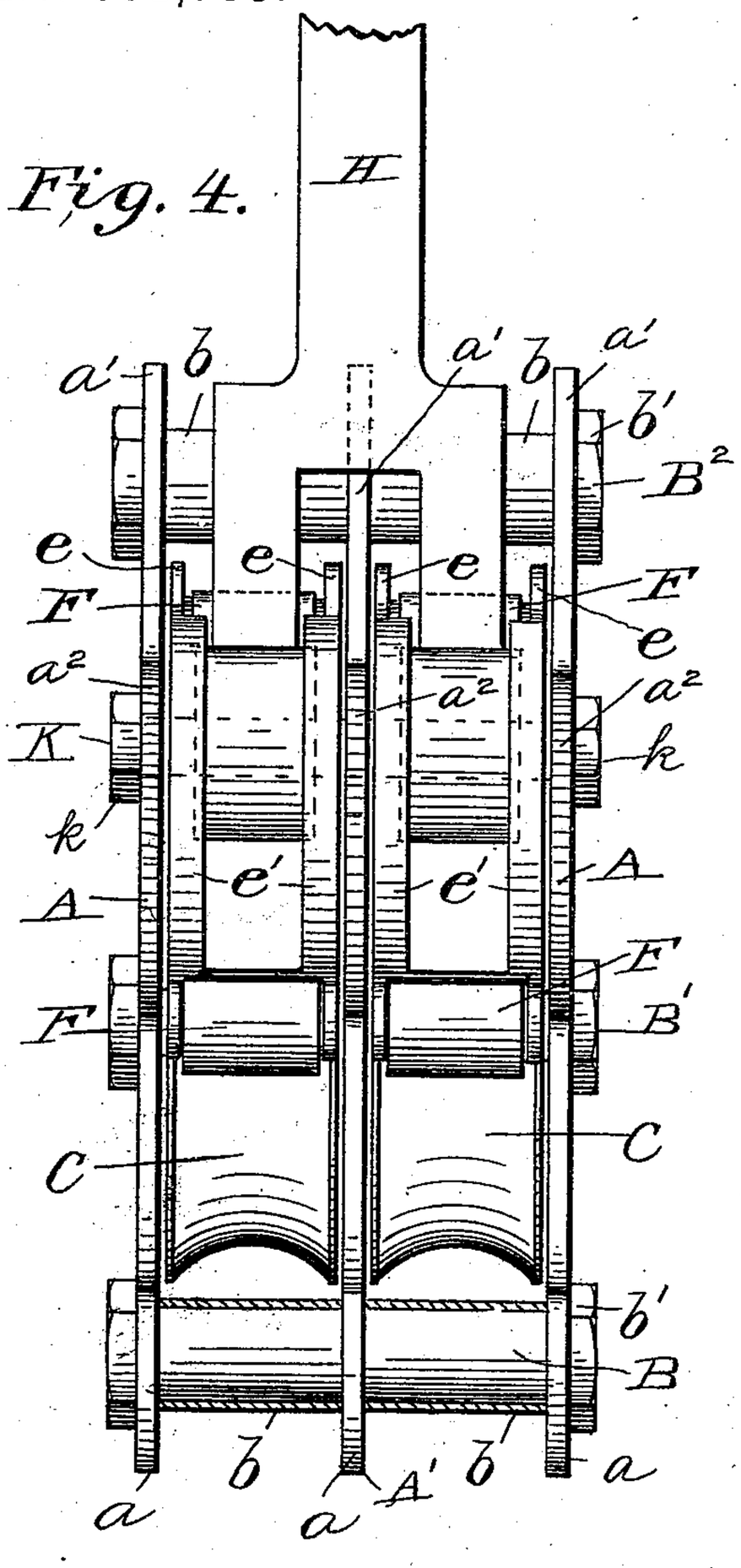



Fig. 5.

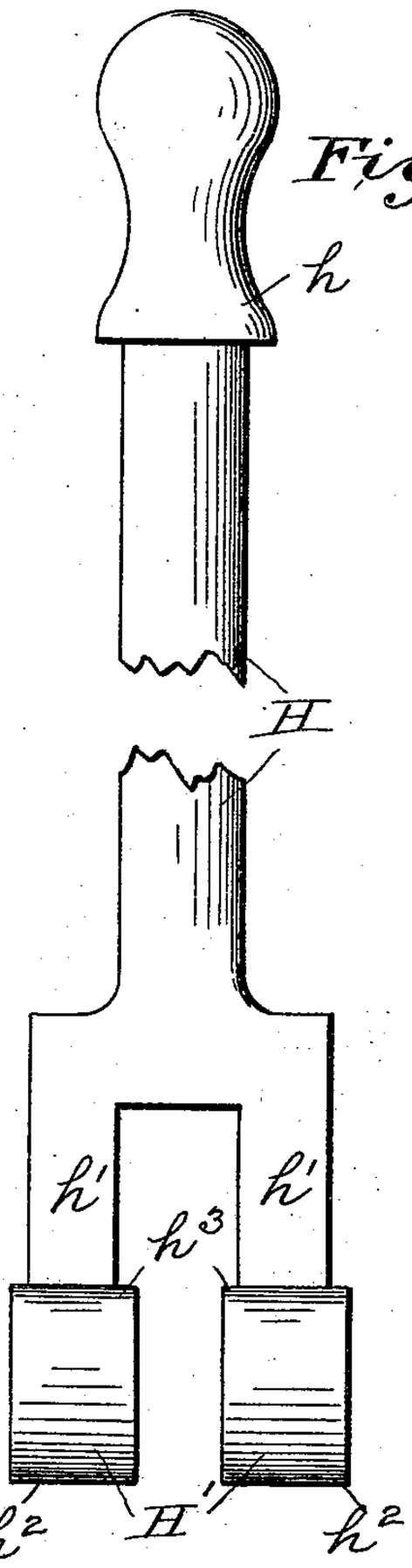
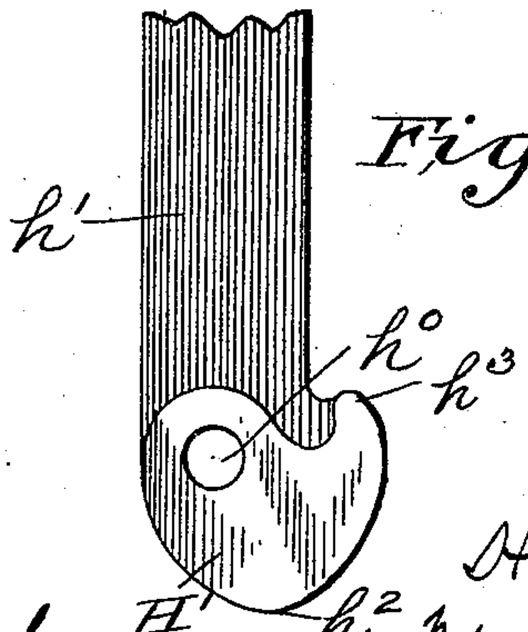



Fig. 6.

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Albert B. Blackwood.

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# UNITED STATES PATENT OFFICE.

HENRY ORROCK, OF SAN FRANCISCO, CALIFORNIA.

## PULLEY-BLOCK.

SPECIFICATION forming part of Letters Patent No. 551,735, dated December 17, 1895.

Application filed June 14, 1895. Serial No. 552,822. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY ORROCK, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Pulley-Blocks; 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.

My invention relates to improvements in blocks for use where weights are to be raised or lowered, and it is especially intended for use in connection with boats' falls, and the said improvement consists in providing a block with a brake or stopper connected thereto whereby the motion of the fall may be checked or arrested.

The said invention also consists in certain novel features hereinafter described and claimed.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a side elevation of a block manufactured in accordance with my invention. Fig. 2 represents a section through one of the sheaves of the said block. Fig. 3 represents a side elevation of the brake-piece detached. Fig. 4 represents an end view of the block shown in Fig. 1, but with the pawls unrove. Fig. 5 represents a detail view of the brake-lever detached from the block, and Fig. 6 represents a detail view of the lower end of one of the cam-arms on the brake-lever.

The block is made preferably entirely of metal, except the sheaves, which may be either of wood or of metal, or of other suitable material, as may be preferred.

A double block is shown; but the same construction is applicable to a block of one, three, or any greater number of sheaves.

The shell of the block consists of the two outer plates A and one or more intermediate plates A′, which are bound together by the bolts B, B′ and $B^2$, which bolts are held in place by suitable nuts or heads $b'$. The lower bolt B passes through the downwardly-projecting lugs $a$ in the plates A and A′, and the upper bolt $B^2$ passes through the upper lugs $a'$ of the said plates, while the said plates are held at the required distance apart by stay-thimbles $b$ on the said bolts B and $B^2$. The central bolt B′ not only assists in holding the plates A and A′ together, but also serves as a journal-bearing for the sheaves C, as shown most clearly in Figs. 1 and 2. The fall D is rove in the usual way, and the lower block to the said fall, which may be of any desired type, not being a part of my invention, is not shown in the drawings. The bolt $B^2$ also serves as a means for suspending the block from the davit-head, or other place where the said block is to be used.

The falls are stoppered or checked in running out by means of the brake-piece E and the brake-lever H. The said brake-piece E, of which one should be preferably provided for each sheave, is formed of a clamp or base-piece $e^2$, curved, as shown in Fig. 3, and terminating in journal-bearings for the axle $f$ of the rollers F, which are preferably made of rubber, leather or like material. To the back of this base-piece $e^2$ vertical webs $e$ are secured, which are slotted, as at $e^0$, and are provided with inwardly-projecting flanges $e'$, which flanges are adapted to limit the play of the cam at the end of the brake-lever, as will be hereinafter described.

The cam-lever or brake-lever H is pivoted on the pin K held between the heads $k$ on the said pin, which heads are exterior to and slide freely over the groove $e^0$ in the lugs $a^2$ of the plates A and A′. This pin K enters freely into the slots $e^0$ of the brake-pieces E. The said cam-lever is provided with a handle $h$ and with a plurality of arms $h'$, one for each sheave of the block on which the fall is to be braked. Although one single arm would be sufficient where it was desired to brake only over one sheave, it would ordinarily be preferred to brake over each sheave of the fixed or upper block. These arms $h'$ terminate in enlarged cam-heads, which are perforated eccentrically, as at $h^0$, to receive the pin K, and have the surface $h^2$ so arranged as to bear down on the base-piece $e^2$ when the lever is in the operative position.

The part $h^3$ of the cam opposite to the surface $h^2$ is adapted to pass under the flanges $e'$ and to engage the same when the brake-lever is thrown in the opposite direction, and thus the said cams serve not only to throw the brake-piece into operation, but also to release

the same when the brake-lever is moved away from the braking position.

By inspection of Figs. 1 and 2 it will be seen that when the brake-piece E is forced down into the position shown in the said figures the rollers F will bite into the fall D, and with the clamp $e^2$ will prevent the same, or at any rate check the same, from rendering around the sheave C. Now if the brake-lever be thrown upward the hook $h^3$ will catch under the flange $e'$, lifting the brake-piece E away from the pawl, while at the same time the pressure of the cam on the base-piece $e^2$ will be relieved, and the fall will be free to render around the sheave.

It will be obvious that the brake-lever H may be controlled either directly by hand, or by a cord leading down into the boat, and fastened at its upper end to the said brake-lever, whereby the boat's crew can control the speed at which their boat is lowered independent of those on deck who are engaged in attending to the fall.

It will be obvious that the curved base of the clamp or base-piece $e^2$ may be faced with rubber, leather, or other material having a high coefficient of friction and yet not likely to cut the fall.

It will be seen that the ribs or webs $e$ will give great rigidity to the brake-piece E, while having the flanges $e'$ extending only a part of the way the cam-heads may be readily slipped in place and the pin K inserted, whereby a quick assembling of the parts is assured.

It will thus be seen that I provide a cheap, simple, powerful, and extremely-efficient means of checking or stopping the running out of a fall, and also of keeping the said fall under ready control. The importance of accomplishing these results is too well known to all seamen to be more fully dwelt upon.

It will be obvious that various modifications of the herein-described apparatus might be made which could be used without departing from the spirit of my invention.

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

1. In a tackle, the combination with a block and a sheave journaled therein, of a brake-piece provided with a curved base piece with a roller at each end thereof, the said base piece sliding in said block, and the said rollers adapted to bear on the fall, and a cam lever pivoted in said block and adapted to operate said brake-piece, substantially as described.

2. In a tackle, the combination, with a fall, of a block and a sheave journaled in the said block, a slotted brake-piece provided with a curved base-piece with a roller at each end thereof, adapted to bear on said fall, a pin passing through said slot, and a cam journaled on said pin, and adapted to operate said brake-piece, with means for rotating said cam, substantially as described.

3. In a tackle, the combination with a block and a fall of a sheave journaled in said block, a slotted brake-piece, provided with a curved base-piece with a roller at each end thereof, adapted to bear on said fall, a pin fast in the frame of the block and passing freely through said slot, a lever pivoted on said pin, and a cam-head fast to said lever, and engaging said brake-piece, substantially as described.

4. In a tackle, the combination with a block, and a fall, of a plurality of sheaves journaled in said block, a slotted brake-piece mounted over each of said sheaves, and each provided with a curved base-piece with a roller at each end thereof, and adapted to bear on said fall, a pin fast in said block, and passing through the slots in each of said brake-pieces, and a lever pivoted in said block, and having a plurality of cam-heads, one for each of said brake-pieces, substantially as described.

5. In a tackle, the combination with a block and a fall, of a plurality of sheaves journaled in said block, a plurality of slotted brake-pieces mounted over said sheaves and each provided with a curved base piece with a roller at each end thereof, and adapted to bear on said fall, flanges projecting inward from the back of said brake-pieces, and cams adapted to press said brake pieces on said fall, when turned in one direction, and to engage said flanges and release said brake-pieces when turned in the opposite direction, substantially as described.

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

HENRY ORROCK.

Witnesses:
FRANK PIERPOINT,
GEORGE HANBERRY SMITH.