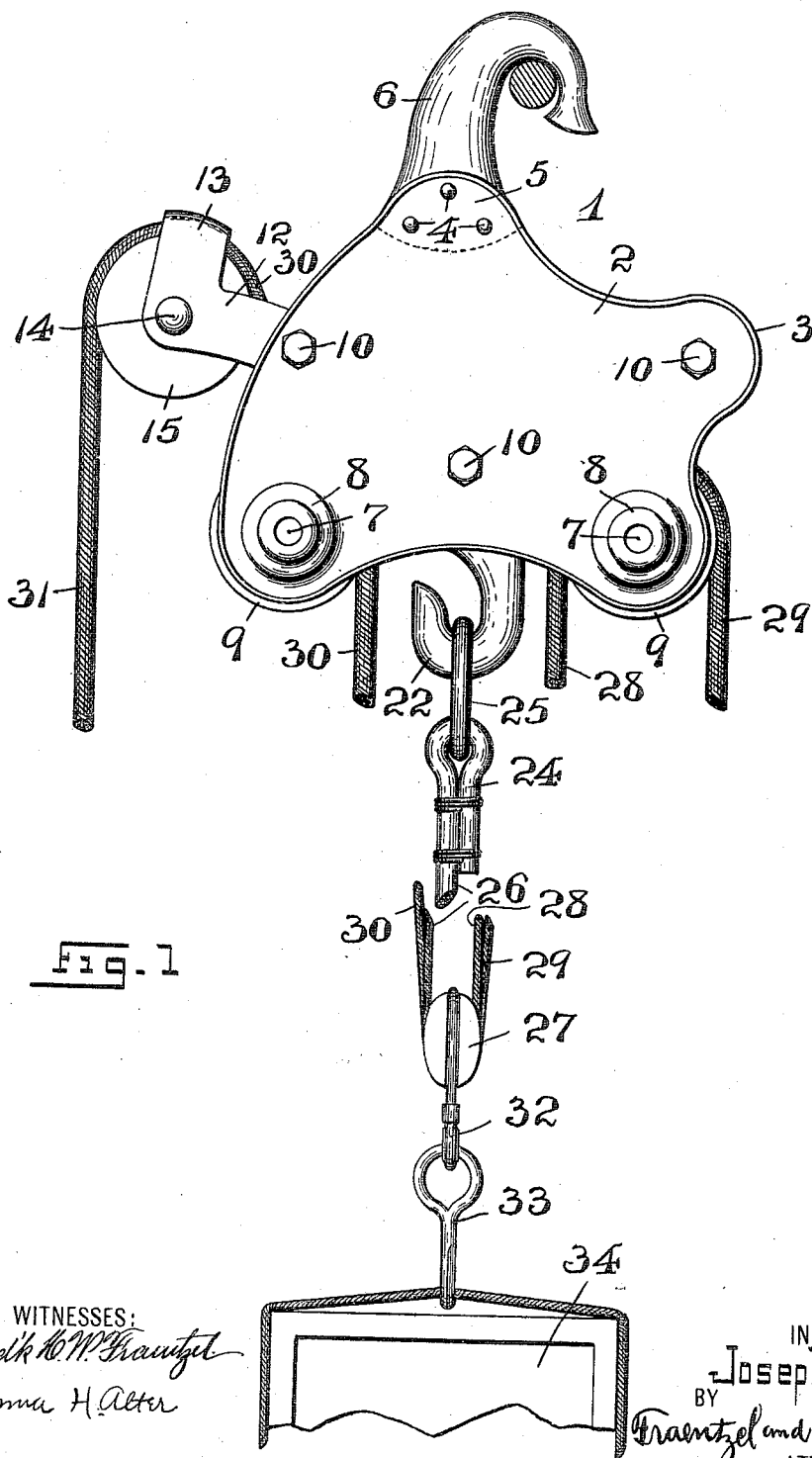


J. OWEN.
HOISTING DEVICE.
APPLICATION FILED MAR. 22, 1910.

979,691.

Patented Dec. 27, 1910.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

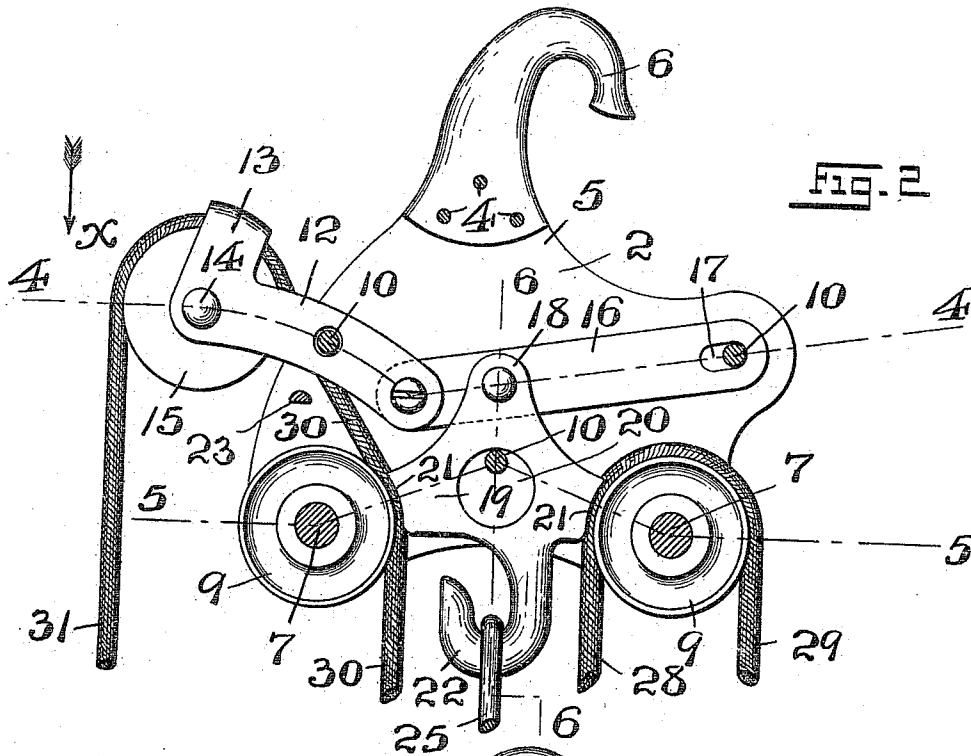


FIG. 2

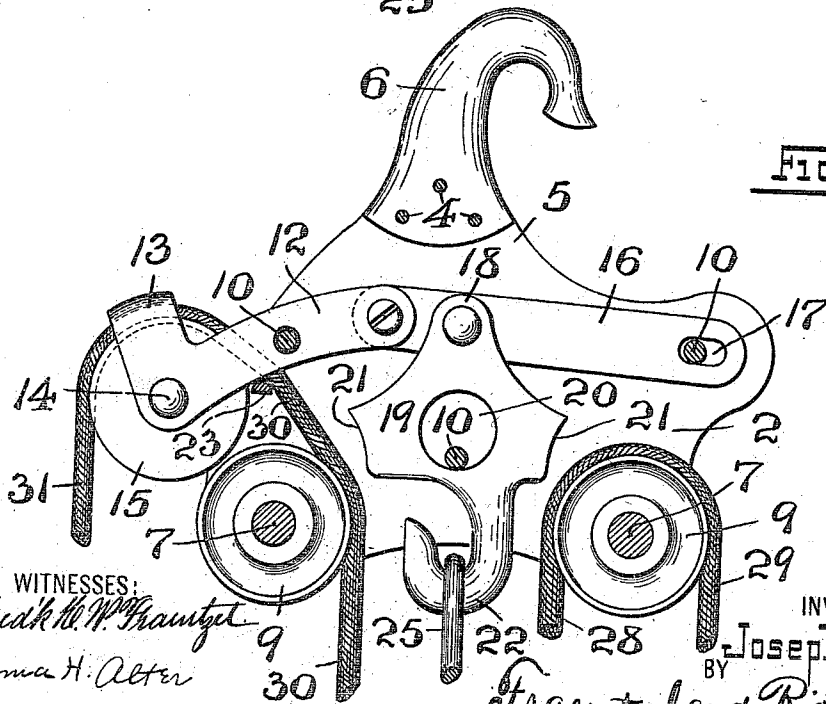


FIG. 3

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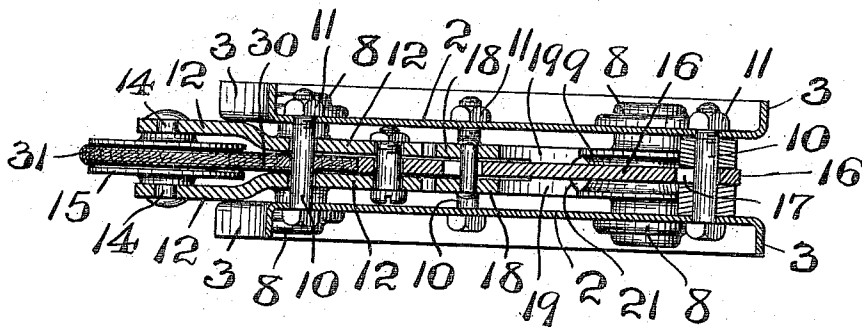


Fig. 4

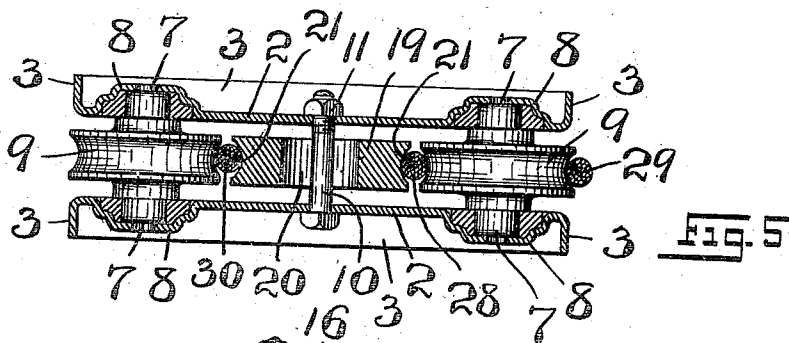
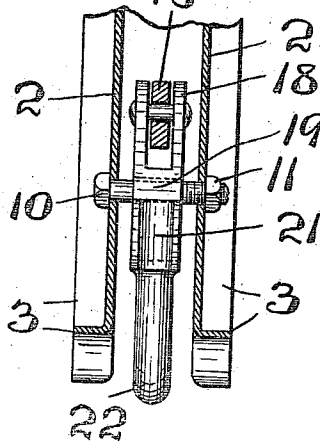


Fig. 5

Fig. 6



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HOISTING DEVICE.

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To all whom it may concern:

Be it known that I, JOSEPH OWEN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hoisting Devices; 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 characters of reference marked thereon, which form a part of this specification.

The present invention relates, generally, to an improvement in block and falls or hoisting apparatus; and, the present invention has reference, more especially, to an automatically operating lock-mechanism for locking the hoisting ropes as they run through the pulley-block for the purpose of holding the weight as it is being hoisted at any desired elevation.

The invention has for its principal object to provide a novel and simply constructed hoisting apparatus or pulley-block comprising in connection therewith, means for automatically locking and holding the hoisting ropes, or the like, which are passed over the sheaves of the block, when the pulling or hoisting operations upon said hoisting ropes, or the like, are ceased.

The invention has for its further object to provide a safety hoisting-apparatus which automatically locks and holds the hoisting ropes, thus preventing any accidental falling or slipping of the load or weight which is being raised and is carried by said hoisting apparatus.

Other objects of the present invention not at this time more particularly enumerated will be clearly understood from the following detailed description of my present invention.

With these various objects of the present invention in view, the said invention consists, primarily, in the novel construction of safety pulley-block for hoisting apparatus hereinafter set forth; and, furthermore, this invention consists in the several novel arrangements and combinations of the various devices and parts, as well as in the details of the construction thereof, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claim which are

appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a face view of a safety pulley-block illustrating one embodiment of the principles of the present invention. Fig. 2 is a longitudinal vertical section of the safety pulley-block, said view showing the automatic hoisting-rope locking devices in their locked engagement with said hoisting-rope. Fig. 3 is a view similar to that shown in said Fig. 2, except that the automatic hoisting-rope locking devices are shown in their disengaged or unlocked relation with the hoisting-rope. Fig. 4 is a horizontal section of the safety pulley-block, said section being taken on line 4—4 in said Fig. 2, looking in the direction of the arrow *x*; and Fig. 5 is another horizontal section, taken on line 5—5 in said Fig. 2, looking also in the direction of said arrow *x*. Fig. 6 is a detail transverse vertical section, said section being taken on line 6—6 in said Fig. 2.

Similar characters of reference are employed in all of the said hereinabove described views, to indicate corresponding parts.

Referring now to the several figures of the accompanying drawings, the reference-character 1 indicates a complete safety pulley-block, showing one embodiment of the principles of my present invention, the same consisting of a suitable frame-work comprising, a pair of walls or members 2 which are preferably made of pressed sheet-steel, and are provided with reinforcing flanges 3 which extend outwardly from the marginal edge-portions of the members 2. Secured between said walls or members 2, by means of rivets 4, or the like, at or near the upper portion 5 of said members 2, is a hook or hanger-portion 6, by means of which said safety pulley-block 1 may be conveniently supported or suspended from any suitable fixture. Mounted upon axle-members or spindles 7, which are journaled in suitable bearing-portions 8, forming parts of said walls or members 2, and located at or near the lower edge-portions of said walls or members, are grooved pulley wheels or sheaves 9.

In order to rigidly maintain the walls or members 2 in their fixed position with relation to each other, and the internal parts arranged between the same, suitable bolts 10

are provided, said bolts being secured in place in the usual manner by means of nuts 11. Pivotally mounted upon one of said bolts 10, as a fulcrum, is a lever or arm 12, the outer end of which extends beyond the marginal edges of said walls or members 2. This said lever or arm 12 is made in two parts, and the outer ends of said parts are connected by an upwardly extending yoke-like portion 13, which also forms a rope-guard or guide to prevent any accidental displacement of the rope from the grooved wheel or sheave 15 which is rotatably mounted upon an axle or spindle 14, said spindle being secured in the outer end-portions of said lever or arm 12, substantially as illustrated in the several figures of the drawings. Pivotally connected with the inner end-portions of said lever or member 12 is a link or arm 16, said link or arm 16 forming with said lever or arm 12 a compound lever, and said link or arm 16 being provided at its opposite end with an elongated slot 17, by means of which the said link or arm is mounted upon another of said cross bolts 10, and which serves as the fulcrum of said second link or arm 16. Pivotally connected with said second link or arm 16, by means of its forked end 18, is a brake-block 19 which extends downwardly between the said grooved pulley-wheels or sheaves 9. The said brake-block 19 is provided with a centrally disposed opening 20 to permit the free play of said brake-block 19 over another of said cross-bolts 10, said bolt passing through said opening, substantially in the manner shown in the several figures of the drawings. The said brake-block 19 is further provided with a pair of oppositely extending grooved shoes or grip-portions 21, corresponding in their arc of curvature to the portion of the circumference of said grooved pulley-wheels or sheaves 9 which they respectively face, or toward which they respectively present themselves. The said brake-block 19 is still further provided with a downwardly extending hook-shaped member 22, which extends below the lower marginal edges of the said walls or members 2. Suitably secured and located between the said walls or members 2 is a stop-pin 23 which serves to limit the downward movement of said lever or arm 12 and the pulley-wheel or sheave 15 which it carries. The arrangement of the hoisting rope, as it runs through said novel safety pulley-block herein-above described is as follows: One end 24 of said hoisting rope is secured in any suitable manner, preferably, however, by the metallic connecting link or ring 25 to the hook-shaped member 22 of said brake-block 19, thence extending or running in a downward direction, and forming the downwardly extending portion 26 which is passed through a tackle-block 27. The rope

then forms an upwardly extending portion 28, running over one of said grooved pulley wheels or sheaves 9, so as to pass between said pulley-wheel or sheave and one of the shoes or grip-portions 21, and thence over said pulley-wheel or sheave in a downwardly extending portion 29 which again passes through said tackle-block 27. The rope then runs in an upwardly extending portion 30 which passes between the other of said grooved pulley wheels or sheaves 9 and the other shoe or grip-portion 21, and thence over said grooved pulley-wheels or sheaves and upwardly over the grooved pulley-wheel or sheave 15 which is mounted in the free end of said lever or arm 12, and thence in the downwardly extending portion 31 which forms the hauling rope or running end of said hoisting rope or tackle. The said tackle-block 27 is provided with rings or hook-shaped elements, as 32, adapted to engage with and support the hooks or other tackle 33 by means of which a load or weight 34 may be secured, so as to be hoisted or manipulated by said tackle and the novel safety hoisting apparatus herein-before described.

Having thus set forth the general construction of the safety pulley-block and the hoisting tackle connected therewith, I will proceed to describe the operation of the same.

When a load or weight 34 to be lifted is properly secured to the tackle and all is ready for hoisting, a pulling pressure is exerted upon the portion 31 of said hoisting-rope. This first pull serves to draw downwardly the pulley or sheave 15, rocks the lever or arm 12 upon its fulcrum and thereby throws upwardly the link or arm 16, which raises the brake-block 19 and removes the shoes or grip-portions 21 thereof from close proximity to the hoisting-rope as it passes over the respective grooved pulley wheels or sheaves 9. The stop-pin 23, limiting the downward movement of said lever or arm 12, the hoisting-rope rides freely over said pulley-wheels or sheaves 9 and the weight or load 34 begins to rise, the parts of the safety pulley block being in the position shown in Fig. 3. Now, assume that control of the hauling rope is lost, so that the load or weight 34 pulling upon the hoisting rope in an opposite direction tends to drop or lower. Immediately the pull caused by the load or weight 34 is transmitted through the portion 26 of the hoisting rope to said brake-block 19 which is thereupon pulled downwardly until its shoes or grip-portions 21 press upon the hoisting-rope as it passes over the pulley-wheels or sheaves 9, and said shoes or grip-portions being angularly disposed with relation to said pulley wheels or sheaves 9, the hoisting-rope is caught between the same and said pulley-wheels or

sheaves; and, their traveling movement is quickly arrested, the parts of the safety pulley-block being positively clamped or locked in the position, shown in Fig. 2. It will be clearly understood, that the greater the load or weight, and the harder the pulling pressure upon said hoisting-rope exerted thereby, the tighter will the said shoes or grip-
 5 portions grip and restrain the said hoisting rope, thus holding the load or weight suspended until control of the hauling end of said hoisting-rope is regained.

When it is desired to lower the load or weight, the hauling rope is first pulled downwardly until the respective levers or arms 12 and the link or arm 16 are operated to release the binding engagement of said brake-block with said hoisting rope, and by holding the hauling end of the rope with sufficient pressure to retain the parts in this position, the said hauling-end of the rope may be caused to gradually slip through the hands, or other hauling agency, and thus allow the hoisting-rope to travel freely
 15 through said safety pulley-block.

It will thus be clearly understood that the various novel features of my safety pulley-block renders the handling and hoisting of heavy loads or weights free from danger or accidents, which are due to the loss of the control of the hauling rope at least, since it is impossible for the load or weight to fall from this cause, the very tendency of the load or weight to fall serving to arrest this
 20 danger by causing a quick and automatic locking or clamping of the hoisting rope in said novel safety pulley-block.

I am aware that changes may be made in the various arrangements and combinations of the several devices and parts, as well as in the details of the construction of the same, without departing from the scope of the present invention, as described in the foregoing specification, and as defined in the claims which are appended thereto. Hence, I do not limit my invention to the exact arrangements and combinations of the various devices and parts as herein set forth, nor do I confine myself to the exact details of the
 25 construction of the said parts, as illustrated in the accompanying drawings.

I claim:

1. A safety pulley for hoisting tackle comprising a frame-work, pulley-wheels or sheaves over which the hoisting rope runs, said pulley-wheels or sheaves being rotatably mounted in said frame-work, a brake-block movably disposed between said pulley-wheels or sheaves, said pulley-block being provided with a plurality of grip-portions, each grip-portion being adapted to be brought into engagement with portions of the hoisting rope arranged over said pulley-wheels or sheaves, and means
 30 connected with said brake-block and extend-

ing downwardly between the said pulley-wheels or sheaves for the attachment of the load-carrying end of the hoisting rope thereto, and all arranged so that the brake-block is operated by the direct downward pull of the load lifted to bind said hoisting rope and arrest the movement of the same over the pulley-wheels or sheaves when the pull is removed from the hauling or running end of the rope, and means for releasing the binding and arresting engagement of said brake-block with the hoisting rope when the hauling or running end of the rope is manipulated to raise the load, consisting of a compound lever, said compound-lever having one arm connected to the brake-block, and a pulley-wheel or sheave carried by the other arm of said compound lever over which the hauling portion of the hoisting rope is adapted to be arranged and runs, said compound lever when operated being adapted to lift said brake-block from its frictional holding engagement with the rope, substantially as and for the purposes set forth.

2. In a safety pulley block for hoisting tackle, the combination with a pair of wall-like members, of rotatable grooved sheaves or pulley-wheels over which a hoisting-rope runs, journaled between said wall-like members, a movable brake-block supported between said grooved sheaves or wheels, shoe or grip-portions connected with said brake-block so as to respectively present their gripping surfaces opposite each of said sheaves or wheels, means connected with the lower end of said brake-block for securing thereto one end of said hoisting rope, said brake-block being operated by the pull of the weight lifted, to bind said hoisting rope and arrest the movement of the same over said sheaves or pulley-wheels, an arm pivotally disposed between said wall-like members, and a pulley-wheel or sheave carried by said arm over which the hauling portion of the hoisting rope runs, and a means of connection between said arm and said brake-block for releasing the binding and arresting engagement of said brake-block with said hoisting rope when the latter is manipulated to raise a weight, substantially as and for the purposes set forth.

3. In a safety pulley-block for hoisting tackle, the combination with a pair of wall-like members, of rotatable grooved sheaves or pulley-wheels over which a hoisting-rope runs, journaled between said wall-like members, a movable brake-block supported between said grooved sheaves or wheels, shoe or grip-portions connected with said brake-block so as to respectively present their gripping surfaces opposite each of said sheaves or wheels, means connected with the lower end of said brake-block for securing thereto one end of said hoisting rope, said

- brake-block being operated by the pull of the weight lifted, to bind said hoisting rope and arrest the movement of the same over said sheaves or pulley-wheels, a compound-lever fulcrumed between said wall-like members, said brake-block being pivotally connected with said compound lever, a sheave or pulley-wheel carried in the free end of said compound-lever over which the hauling portion of said hoisting-rope runs, said compound-lever being operated to lift said brake-block from its operative engagement with said hoisting-rope when the latter is pulled to raise a weight, substantially as and for the purposes set forth.
4. In a safety pulley-block for hoisting tackle, the combination with a pair of wall-like members, of cross-bolts for securing the same in their operative relation with each other, a hanger-portion secured to said wall-like members, grooved pulley-wheels or sheaves over which a hoisting rope runs, said sheaves or wheels being journaled between the opposite lower edge-portions of said wall-members, a brake-block supported between said grooved sheaves or pulley-wheels, grooved shoe or grip-portions connected with said brake-block so as to respectively present their gripping surfaces opposite each of said grooved sheaves or pulley-wheels, a forked portion connected with the upper end of said brake-block, a hook-portion connected with the lower end of said brake-block, means pivotally connected with the forked portion of said brake-block, an arm pivotally connected with said means, and a pulley-wheel or sheave carried by said arm over which the hauling portion of the hoisting rope runs, all arranged for raising said brake-block from its operative engagement with said hoisting-rope when the latter is pulled to raise a weight, substantially as and for the purposes set forth.
5. In a safety pulley block for hoisting tackle, the combination with a pair of wall-like members, of cross-bolts for securing the same in their operative relation with each other, a hanger-portion secured to said wall-like members, grooved pulley-wheels or sheaves over which a hoisting rope runs, said sheaves or wheels being journaled between the opposite lower edge-portions of said wall-members, a brake-block supported between said grooved sheaves or pulley-wheels, grooved shoe or grip-portions connected with said brake-block so as to respectively present their gripping surfaces opposite each of said grooved sheaves or pulley-wheels, a forked portion connected with the upper end of said brake-block, a hook-portion connected with the lower end of said brake-block, a compound-lever pivotally connected with the forked end of said brake-block, said compound-lever being fulcrumed upon one of said cross-bolts, and said compound-lever being adapted to be operated by the hauling portion of said hoisting rope to release said brake-block from its binding or arresting engagement with said hoisting-rope, substantially as and for the purposes set forth.
6. In a safety pulley-block for hoisting tackle, the combination with a pair of wall-like members, of cross-bolts for securing the same in their operative relation with each other, a hanger-portion secured to said wall-like members, grooved pulley wheels or sheaves over which a hoisting rope runs, said sheaves or wheels being journaled between the opposite lower edge-portions of said wall-members, a brake-block supported between said grooved sheaves or pulley-wheels, grooved shoe or grip-portions connected with said brake-block so as to respectively present their gripping surfaces opposite each of said grooved sheaves or pulley-wheels, a forked portion connected with the upper end of said brake-block, a hook-portion connected with the lower end of said brake-block, a lever fulcrumed upon one of said cross-bolts, the free end of said lever being adapted to project beyond the marginal edges of said wall-like members, a sheave or pulley-wheel journaled in the free end of said lever, the hauling-portion of said hoisting rope being adapted to run over said sheave or pulley-wheel, a link pivotally connected with the inner end of said lever, said link being fulcrumed at its opposite end upon another of said cross-bolts, said link being pivotally connected with the forked portion of said brake-block, substantially as and for the purposes set forth.
7. In a safety pulley block for hoisting tackle, the combination with a pair of wall-like members, of cross-bolts for securing the same in their operative relation with each other, a hanger-portion secured to said wall-like members, grooved pulley wheels or sheaves over which a hoisting rope runs, said sheaves or wheels being journaled between the opposite lower edge-portions of said wall-members, a brake-block supported between said grooved sheaves or pulley-wheels, grooved shoe or grip-portions connected with said brake-block so as to respectively present their gripping surfaces opposite each of said grooved sheaves or pulley wheels, a forked portion connected with the upper end of said brake-block, a hook-portion connected with the lower end of said brake-block, a lever fulcrumed upon one of said cross-bolts, the free end of said lever being adapted to project beyond the marginal edges of said wall-like members, a sheave or pulley-wheel journaled in the free end of said lever, the hauling-portion of said hoisting rope being adapted to run over said sheave or pulley-wheel, a yoke-like member

connected with the free end of said lever and adapted to extend over the periphery of said sheave or pulley-wheel to retain the hauling portion of said hoisting rope in proper engagement with said sheave or pulley-wheel, a link pivotally connected with the inner end of said lever, said link being provided in its opposite end with an elongated slotted portion by means of which it is fulcrumed upon another of said cross-bolts, said link

being pivotally connected with the forked portion of said brake-block, substantially as and for the purposes set forth.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 21st day of March, 1910.

JOSEPH OWEN.

Witnesses:

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FREDK. H. W. FRAENTZEL.