I. W. Norcross.

Pulley-Block.

No. 73030 Patented Jan. 7, 1868.

Fig: 1.

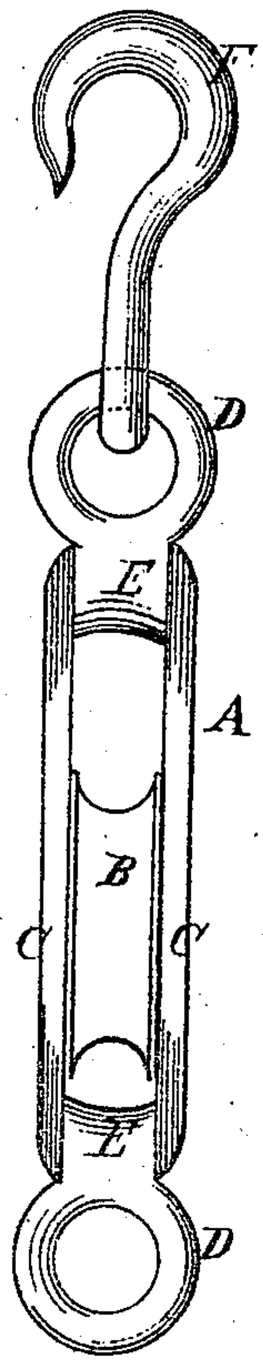


Fig: 2.

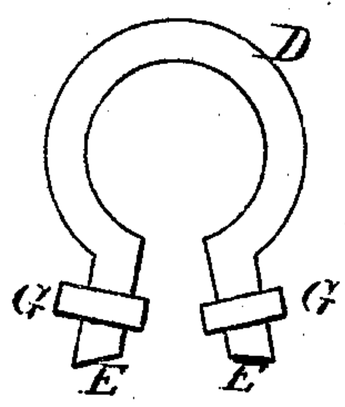


Fig: 3.

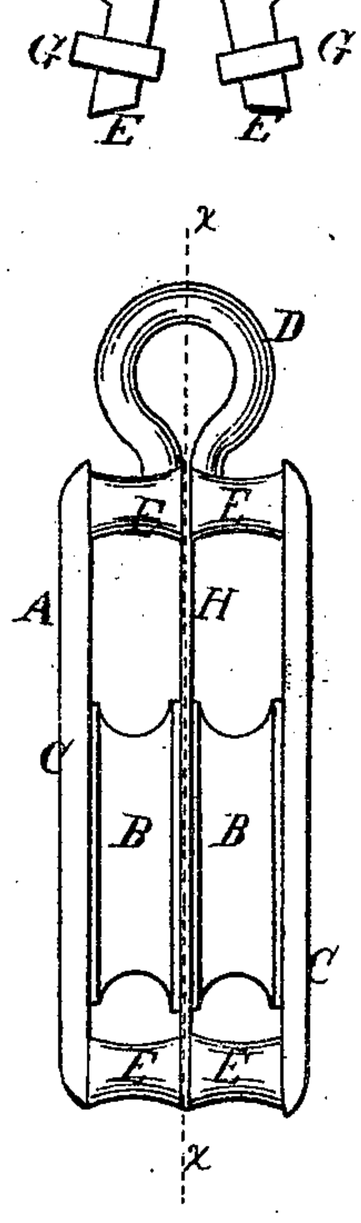


Fig: 4

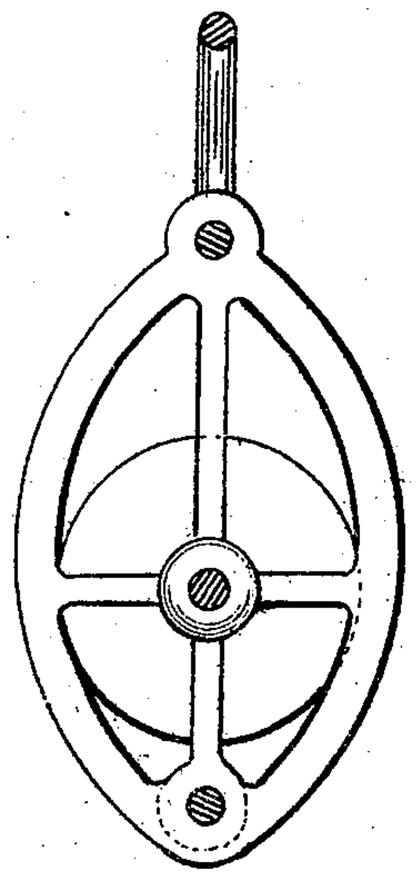


Fig: 5.

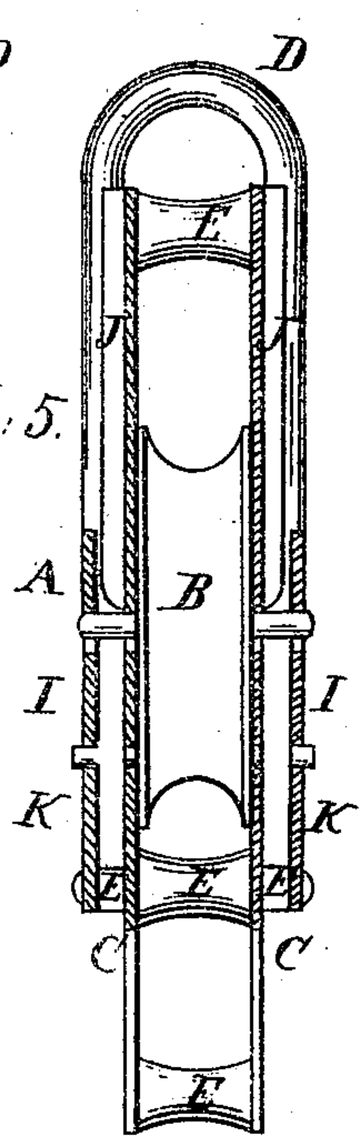
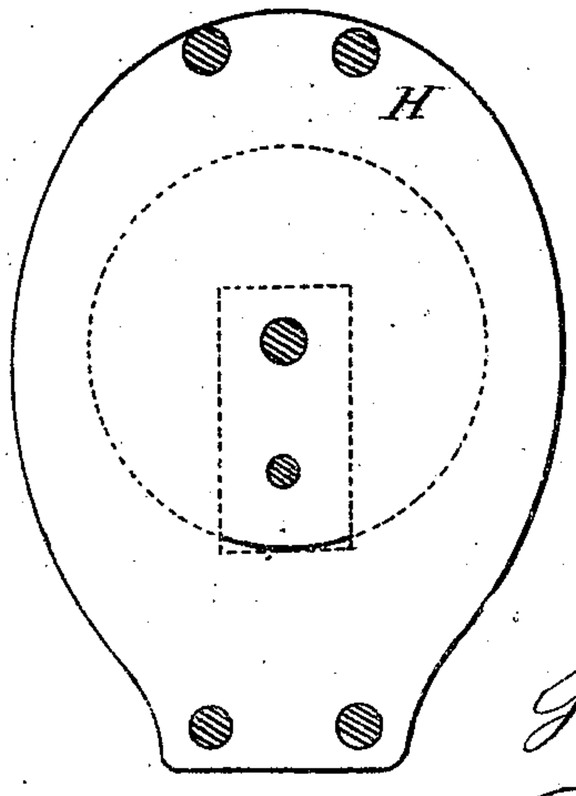


Fig: 7.



Witnesses:

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United States Patent Office.

I. W. NORCROSS, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 73,030, *dated January* 7, 1868.

IMPROVEMENT IN PULLEY-BLOCK.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, I. W. NORCROSS, of Boston, in the county of Suffolk, State of Massachusetts, have invented a new and useful Pulley-Block; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 is an edge view of a pulley-block containing a portion of my improvement.

Figure 2 shows my method of forming the eye in casting it.

Figure 3 is an edge view of a double block.

Figure 4 is a side elevation of a section in the plane of the line *x x*, fig. 3.

Figure 5 is a vertical section of a block, the axle of whose pulley runs on anti-friction rollers.

Figure 6 is a top view of a double block, showing the hollow partition, provided to receive an anti-friction roller, and to allow the eye-strap to pass through from top to bottom.

Figure 7 is a section of the last figure, taken in the plane of the line *y y*, and the same is intended to show how the sides of the hollow partition are cut away or removed to receive the eye-strap.

Similar letters indicate corresponding parts.

This invention relates to pulley-blocks, and consists, among other things, in forming the cheeks or sides thereof, and the studs which join them to each other, by casting them in separate pieces, and in a novel mode of making the eyes by which the hooks of the block are attached to it, and in a novel arrangement for relieving the axle of the pulley of friction. The other novel features will be explained as the description proceeds.

The letter A, in the several figures, designates the block, and the letter B its pulleys. The letter C designates the cheeks of the block, which I cast of any desired size and shape, from malleable iron or brass, each cheek being made independent of and separate from the other, and also independent of the studs and of the other parts of the block.

In making up the block, the cheeks are brought opposite each other, the pulley being placed between them, with the ends of its axle resting in bearings in the cheeks. I connect the cheeks to each other by means of studs, which are interposed at the top and bottom of the block, through which studs are placed rivets that go also through the cheeks, and are riveted to them in the usual manner. In fig. 1 these studs compose part of the eyes D, by means of which the block is connected to a hook or other attachment. The lower stud E is part of the lower eye D, both being cast in one piece; and the upper stud E is likewise part of the upper eye D; but the upper stud E is made in two divisions in casting, so as to allow the eye of hook F to be interlocked with it. The hook F, having an eye at the end of its shank, as usual, is made separate and independent of the upper stud and eye D E; and in order to interlock them, I cast the said upper stud in a divided state, pursuing the following method, observing fig. 3: In said figure the stud is seen with its divisions separated, as they appear in the mould, the letters G G designating the core-pins for making the rivet-holes. After the casting is completed, the eye of hook F, or of whatever other attachment is to be used, is interlocked with the eye D, and the divisions of the stud are brought together.

This method of making the stud can be applied and used also when a hook or swivel is combined with the stud. It is obvious that one-half of each stud and bearing may be connected with the side; but as in that case the hook could not be inserted, I propose to cast each and all parts separate and independent of each other.

In fig. 3, I have shown a pulley-block that has two pulleys, B, separated by a partition, H, whose top is confined between the divisions of the divided upper stud E, and its bottom between the lower studs E E. When a lower eye is used, the said partition H is held between the divisions of the stud in the manner shown in the top of the block, the stud, in that case, being made in divisions.

The partition H, figs. 3 and 4, is not solid, but consists of a skeleton-plate, of the proper outlines to form the exterior of the block, and to furnish bearings for the axles of anti-friction rollers, when the latter are employed. I make the exterior cheeks C also in the same manner, of skeleton or open-work plates, to obtain lightness, and to effect a saving of material.

The axle or axles of the pulley or pulleys run on anti-friction rollers I I, which are arranged, in the example shown in fig. 5, below the pulley-axles. This figure is a vertical section of a block, the sides of whose

upper eye, D, are extended downwards so as to form straps K K outside of the cheeks C C, and fit in grooves formed by ribs J J, the lower parts of said straps K taking the form of plates, in which the ends of the pulley-axles have bearings as well as the outer ends of the anti-friction rollers I, the inner ends of the axles of the latter having their bearings in the cheeks C C. The lower ends of the straps or plates K are supported upon and held out from the cheeks by small studs E E, which are attached to the cheeks C, and straps or plates K, by rivets. The cheeks C are cast with ribs J upon them.

When more than one pulley is used in a block, I provide anti-friction rollers for the inner ends also of their axles; and in order to obtain a place for them, I make the partition H hollow. The mode of construction which I have adopted in this example is by casting the same in two parts, each part having a rim raised at right angles to its sides, so that when the two parts are brought together, the rims pointing inwards, a hollow partition is produced.

In fig. 6, I show, in top view, an example of a partition of this construction, its parts being held together by the rivets which go through the outer cheeks and the studs E. The top of the partition has an opening, L, through which is inserted the shank of the top eye of the block; and the bottom of the partition has a like opening to let the lower end of the shank of the said eye go through.

The sectional side elevation, fig. 7, shows the exterior of one side of partition H, and it also shows, in red outline, the openings which are made in its sides to give room for the forks, into which the shank of the eye is divided, to pass down each side of the anti-friction roller, which is to be placed within the partition, the said forks being bent out so as to occupy the said openings, at which place they furnish bearings for the axles of the pulleys and of the said anti-friction rollers.

In large blocks I put anti-friction rollers on either side of the axles of the pulleys, but I have not thought it necessary to show an example of that arrangement as it is embraced in the principle of my invention, and the skillful mechanic will not need any further explanation to enable him to apply such additional rollers.

My invention enables me to produce a pulley-block of better character, more easily made, and much cheaper than those heretofore known. It will be observed that I round off the edges of the hollow partition, so as not to present sharp edges to the ropes.

What I claim as new, and desire to secure by Letters Patent, is—

1. In pulley-blocks, making the several cheeks by casting them independently and separate from the other parts, substantially as described.

2. The cast studs E, interposed between the cheeks, and held thereto by rivets or other suitable fastenings, substantially as described.

3. Dividing the stud E, and combining the same with the eye D, substantially as described.

4. The skeleton partition or cheek H, substantially as described.

5. Arranging anti-friction rollers I beneath the axles of the pulley, substantially as above described, in combination with a pulley-block of any form or construction.

6. The hollow partition H, made substantially as described, for the purpose of containing an anti-friction roller, one or more, to support the axles of the pulleys, and to form a recess for the shank of the eye.

This specification signed by me, this 15th day of November, 1867.

I. W. NORCROSS.

Witnesses:

W. HAUFF,

GUSTAV BERG.