No. 827,680. PATENTED JULY 31, 1906.

J. M. BOYD.

PULLEY BLOCK.

APPLICATION FILED JUNE 4, 1904.

Fig. 2.

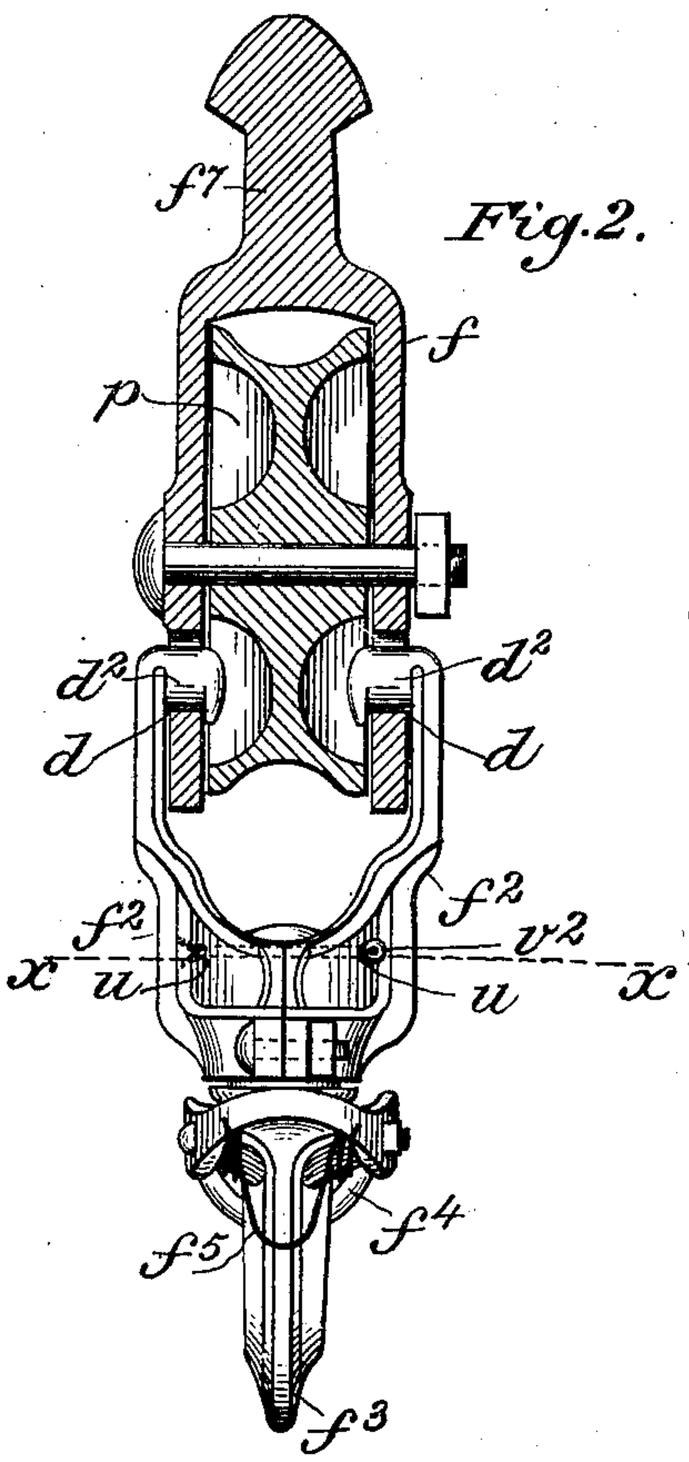


Fig. 1.

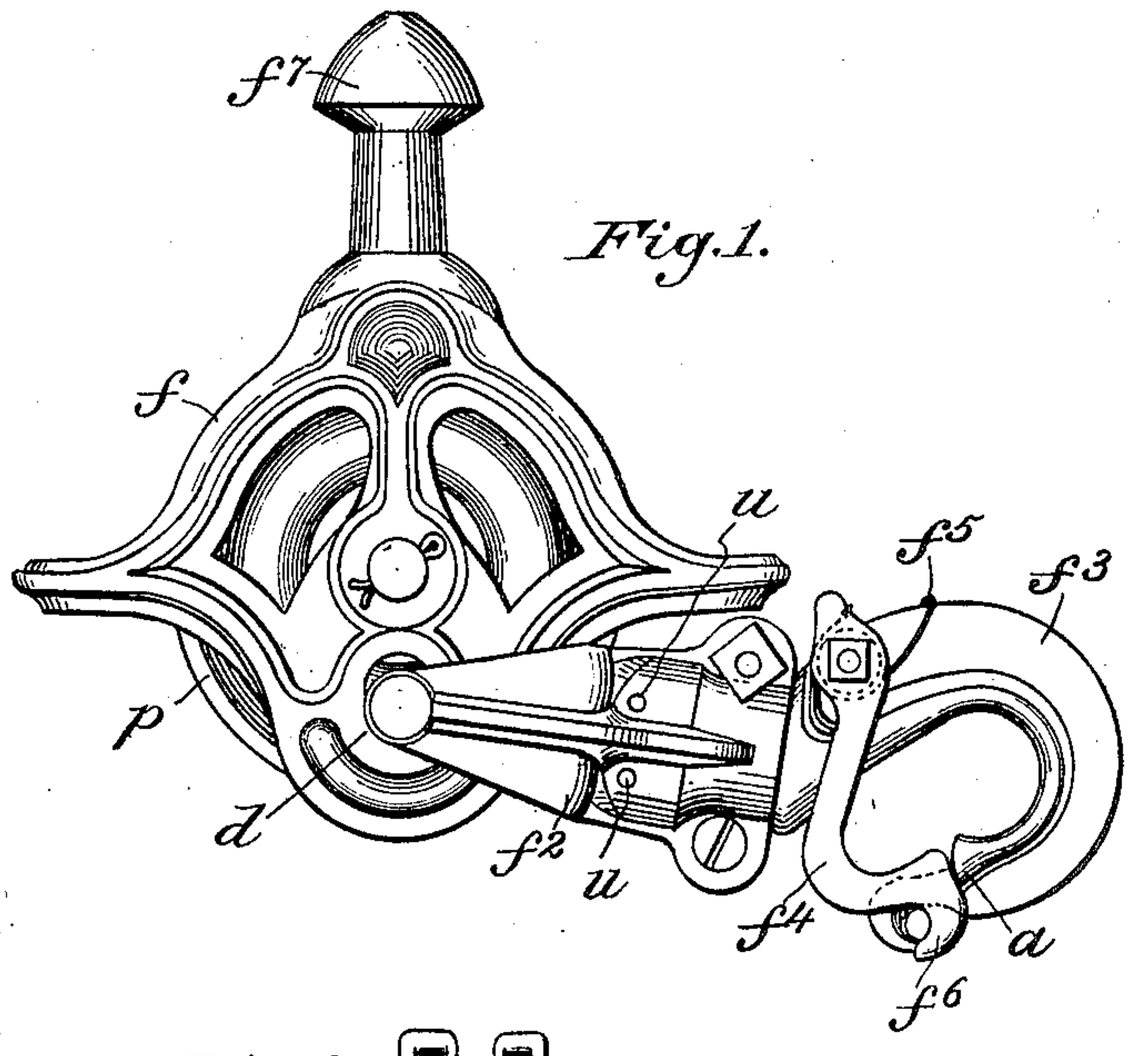


Fig. 3.

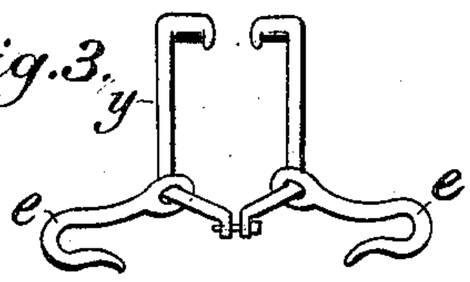


Fig. 5.

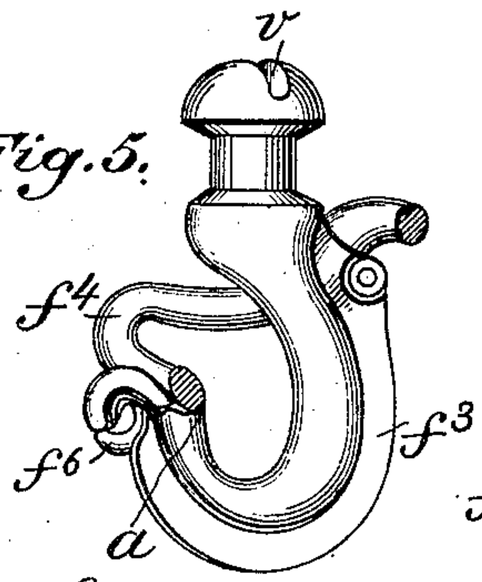


Fig. 4.

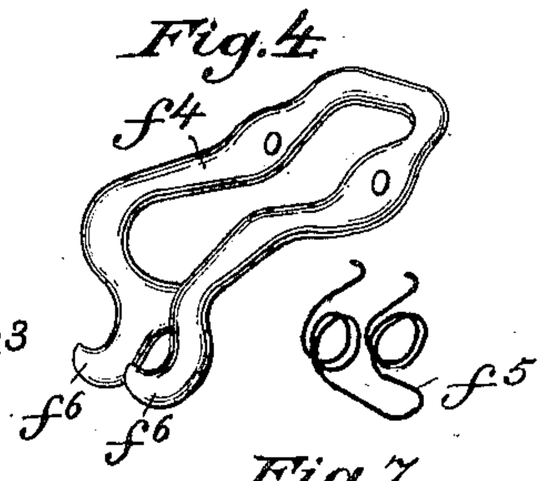


Fig. 7.

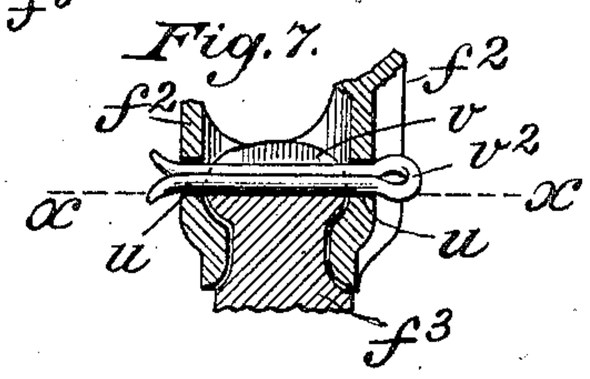
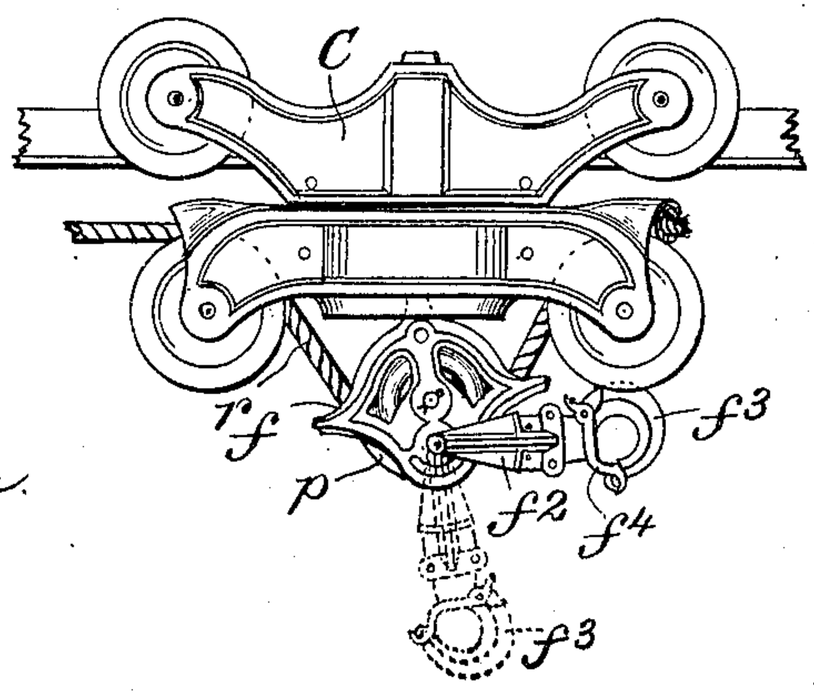


Fig. 6.



Witnesses:

A. J. Ricker.

Helma B. Wells.

Inventor:

John M. Boyd.

UNITED STATES PATENT OFFICE.

JOHN M. BOYD, OF FOND DU LAC, WISCONSIN.

PULLEY-BLOCK.

No. 827,680. Specification of Letters Patent. Patented July 31, 1906.

Original application filed December 23, 1901, Serial No. 87,029. Divided and this application filed June 4, 1904. Serial No. 211,220.

To all whom it may concern:

Be it known that I, JOHN M. BOYD, a citizen of the United States, residing at Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Pulley-Blocks for Elevators and Carriers, of which the following is a specification (this being the second divisional application of that filed by me December 23, 1901, Serial No. 87,029, for hay-carriers and track apparatus) such as will enable others skilled in the art 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 improvements in pulley-blocks adapted to work with an elevator and carrier, especially those commonly known as "trip" or "fork" pulleys used with hay-carriers, &c., and has for its object to provide a pulley-block of simple, strong, and durable construction adapted to safely support its load and to engage with and trip the carrier mechanism and to be drawn in close up to the track on which the carrier runs in the minimum amount of space and over obstructions, &c., when necessary without the danger of cramping or breaking either the carrier or the pulley-frame as ordinarily constructed and for use with a twisting or kinky rope when necessary and with other features making it desirable and convenient, as hereinafter pointed out; and it consists in the improved construction, combination, and arrangement of the different parts, substantially as hereinafter described and as shown in the drawings and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved pulley-block, showing the hook swung up to one side, as when connected to a carrier and drawing a load into a small space or over obstructions, &c., a flexible or jointed connection being provided for said hook. Fig. 2 is a sectional view crosswise through the main part of the pulley-block, showing the hook f^3 (hanging straight below said pulley-block) and the connecting parts edgewise from the rear and showing how said connecting parts, side arms, or links are preferably connected to the main frame of the pulley-block. Figs. 3, 4, and 5 are detail views of different parts. Fig. 6 is a view of the pulley-block in use with a hay-carrier, showing the hook in dotted lines as hanging below the carrier in the ordinary manner, as in Fig. 2, and in full lines as swung up to one side, as in Fig. 1, as hereinafter described; and Fig. 7 is a cross-section on line $x\,x$ of Fig. 2 with the parts above and below broken away.

In the drawings, in which similar letters of reference indicate corresponding parts, f is the main frame of the pulley-block or trip-pulley, formed with a head f^7 or other form of trip at its upper end, according to the carrier it is to be used with, to engage the tripping or locking mechanism of the carrier in the usual manner, (except where the carrier uses a separate tripping device, when no head or trip would be needed on this pulley-block.)

p is the pulley-wheel or sheave, adapted to travel upon the elevating-rope r of the carrier C in the usual manner.

f^3 is the hook by means of which the load is attached to the main frame of the pulley-block, as will be understood; but instead of connecting this hook to a rigid extension or loop of the main frame extending down below the sheave in the usual manner I pivot said hook f^3 between the lower ends of two arms, hangers, or side links f^2, which in turn are also swung or pivoted at their upper ends in bearings in the sides of the pulley-frame f at the sides of the pulley-wheel or sheave, preferably below its center and above its lower edge, as at d, Figs. 1 and 2, thus allowing the inner ends of the hooked inward extensions of pivots d^2 at the upper ends of said side arms or links f^2 to project inside the frame into the groove around the outer sides of the sheave, as shown, Fig. 2, to hold said pivots or hooks in their bearings and also by carrying the load a little below the center of said pulley to better guide the head or trip f^7 to enter and trip the carrier properly as the load is raised, also thus allowing the hook f^3 to swing out or fold up at one side of the pulley-frame, (together with side links f^2,) as in Figs. 1 and 6, (see also my application for patent on elevator and carrier, Serial No. 87,029, above, intended to bear same date of issue as this, of which application this is a division,) and greatly save the strain and jerk or cramping, binding, and leverage on the carrier C and pulley-frames as when constructed in the ordinary manner, as the carrier starts off suddenly from the stop after being tripped, jerking the load after it, or when pulling the load over obstructions, &c., as when pulling hay into a mow nearly

full or a large load into a small or high end door or over beams rather high up, &c., this flexible or jointed connection allowing the hook to swing or fold up and allowing the load to be pulled in behind the carrier, as in full lines in Fig. 6, thus requiring much less space than when carried below in the ordinary manner and saving much cramping or binding on the carrier and track, as well as the head of the pulley-frame, as will be readily understood. The head of the hook f^3 is also provided with a slot or recess v across its top, (see Fig. 5,) and the arms or links f^2 are provided with holes u u, Fig. 1, to register with said slot or recess, through which a small bolt, pin, or key, as v^2, may be passed to lock the hook, as in Figs. 2 and 7, when it is desired to use a stiff hook, as when a new or kinky rope is being used, to prevent twisting, &c., said bolt or key being removed as the rope becomes more pliable, if a swiveled hook is desirable. It is also evident that this construction of hook may be used with a rigid pulley-frame without the arms or side links f^2 by providing holes u u in the sides of the rigid frame to register with the slot v in the head of the hook in the same manner; also, that a ring could be used in place of the hook f^3, with a head formed in a similar way and the registering head f^7 omitted from the pulley, if desired for use with some styles of carriers, or having a crooked arm or block or lever to bunt against to trip, or as an adjustable end pulley for guiding the draft-rope in a barn, &c., (though said head is convenient even in the latter case for holding the pulley up in position by means of a cord, &c.,) or that where the fork, &c., is attached to the pulley by means of a clevis instead of a hook the head of the pivoted block used in some cases, to which the clevis is attached, could be slotted in the same way for the same purpose as this hook, being merely a substitute for the hook, all of which will be readily understood. A closing or safety link f^4 is also attached to the rear upper part of said hook f^3, as shown in Figs. 1, 2, and 5, and extends forward across the open part of said hook and rests when closed upon a shoulder rest or guard a, provided near the point of the hook on its inner edge, the sides of said link being curved outwardly and upwardly to allow it to be opened up against the arms, links, or hangers f^2 wide enough to allow it to be unhooked from the fork or other object, the outer ends being curved downwardly and inwardly and brought together toward the point of the hook f^3 to form a hook-shaped end to catch over the fork or sling head, &c., and prevent its jumping out if it jumps up and opens said link, thus allowing said link to give or rise as the fork or sling head, &c., strikes it, said link being held flexibly in closed position by means of a spring f^5, Figs. 1, 2, and 4, so it can be easily and quickly opened when desired to release from a fork or sling head or other object, and, if desired, said closing or safety link may also be provided with two outwardly and upwardly curved extensions, guards, or hooks f^6 f^6 at its outer end, as shown, to drop astride the point of the hook f^3 as the link is closed, when a key may be inserted above said hooks f^6 f^6 and underneath the curved point of the hook f^3 to lock said link, (or these parts may be otherwise formed to receive a key or small bolt,) making the large hook f^3 virtually a clevis, which may be desirable when it is to be used continuously with the same fork, &c., or these small hooked extensions f^6 f^6, &c., may be omitted, if desired.

The operation of this improved flexible or folding pulley-block and its different parts will be readily understood from the above description. A modified form of the arms, links, or hangers f^2 is also shown in Fig. 3, forming a sort of clevis y, which may be used in place of the links f^2 when it is desired to attach two hooks instead of one for use with a hay-sling, &c., or to attach to two objects, as two forks, &c., or directly to a fork-head or other object by passing said clevis through said fork-head, &c., as through the eyes of the hooks e e, as will be readily understood. It is also evident that some parts of this apparatus may also be used for similar purposes with apparatus of different construction otherwise, that different modifications of various parts may also be made, and that this apparatus either with slight modifications or as shown and described may also be used with machines of various constructions for handling loads of different kinds, and having shown and claimed the apparatus in what I consider its most desirable form I wish it distinctly understood that I explicitly reserve to myself all such modifications, parts, and combinations, as well as uses, as properly come within the scope of my invention.

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

1. In a fork or trip pulley frame adapted for use with an elevator and carrier, a flexible connection below the axle of the pulley and at each side of said frame, to connect it with means for attaching to its load, substantially as and for the purposes set forth.

2. In a trip-pulley frame adapted for use with an elevator and carrier, the combination of the main frame, and arms, links, or hangers, attached in sockets at the sides of said main trip-pulley frame, and below its journal, to connect it with its load, whereby said load may act as a guide for its head or trip, and adapted to swing out sidewise, substantially as and for the purposes set forth.

3. In combination with the trip-pulley frame, arms or hangers depending from bearings at the sides of said trip-pulley frame below the axle of the pulley, and curved to meet

underneath said frame, whereby it may be connected with its load, said arms or hangers being adapted to swing sidewise in a plane parallel with said pulley-frame, substantially as and for the purposes set forth.

4. In combination with the trip-pulley frame provided with a sheave or pulley, and formed with sockets or bearings at each side above the rim of the pulley and below its center, arms or hangers adapted to swing in said sockets or bearings, and means for connecting the same with the load, substantially as and for the purposes set forth.

5. In combination with the trip or elevating pulley, a trip-pulley frame, and means whereby the load may be flexibly connected to said trip-pulley frame at the sides of the same and between the axle and the rim of the pulley, and hooked extensions engaging inside said frame to secure said connecting means in place, substantially as and for the purposes set forth.

6. In combination with the elevating sheave or pulley, a trip-pulley frame formed with bearings in said frame at each side of its sheave or pulley, and suitable arms or hangers depending from said bearings and provided with hooked extensions engaging therein and adapted to carry the load underneath said pulley, or allow it to swing up at one side, substantially as and for the purposes set forth.

7. In combination with the trip or elevating pulley, a suitable trip-pulley frame, and arms or hangers f^2 provided with hooked inward extensions or pivots d^2 at their upper ends, pivoted in the sides of said pulley-frame below the axle of the pulley, and carrying a swiveled means for attaching a load at their lower ends, substantially as and for the purposes set forth.

8. In a trip-pulley block adapted for use with an elevator and carrier, in combination with the main pulley-frame, a hook or other load-attaching device pivotally attached to said frame, and provided with an opening or recess in its head, or pivot, and means to engage in said opening or recess to hold said pivot rigidly when desired, substantially as and for the purposes set forth.

9. The combination of a pulley-frame provided with a socket or bearing for supporting the head of the load-supporting device, a load-supporting device formed with a head adapted to rest in said socket or bearing, and to engage with suitable locking means, and suitable locking means adapted to pass through the side of said frame, and to engage and lock said head.

10. In a fork or trip pulley block adapted for use with an elevator and carrier, in combination with the main pulley-frame, a load-attaching device formed with a head by which it may be pivotally connected to said frame, and provided with a slot or opening in said head, through which a bolt or key may be passed when desired to prevent its turning, substantially as and for the purposes set forth.

11. In an elevator and carrier for hay or other material, in combination with a trip-pulley frame adapted thereto, the hook f^3 pivotally connected to said frame and formed with a slot or recess v across its head adapted to register with holes or openings $u\,u$ in its supporting-frame, substantially as and for the purposes set forth.

12. The combination of the pulley-frame f, side links or hangers f^2 swung or pivoted in bearings at the sides of said pulley-frame, and carrying a hook f^3 at their lower ends, said hook being provided with an opening in its head adapted to register with holes or openings, as $u\,u$, in the lower ends of the side links or hangers f^2, and suitable locking means, as v^2, adapted to pass through said holes or openings, as $u\,u$, in said side links or hangers, and said opening in its head to lock said hook, substantially as set forth.

13. In a pulley-block adapted for use with an elevator and carrier, in combination with a pulley-frame provided with a hook attached thereto, a closing-link pivoted at the rear of said hook, adapted to reach across the opening in said hook, and curved downwardly to engage with the point of said hook, forming a curved or hook-shaped end reaching over the opening in said hook, substantially as and for the purposes set forth.

14. In a pulley-block adapted for use with an elevator and carrier, in combination with a pulley-frame provided with a hook attached thereto, a curved or hooked closing-link pivoted at the upper rear side of said hook, and reaching across said hook, with its curved or hooked end closing the mouth or opening in said hook, and a spring adapted to hold the same in closed position, substantially as and for the purposes set forth.

15. In a pulley-block adapted for use with an elevator and carrier, in combination with a pulley-frame and a hook attached thereto, a closing-link pivoted at or near the upper end of said hook and adapted to reach across and close the mouth or opening of said hook, and formed with curved or hooked ends adapted to rest down each side of the outer end of said hook, substantially as and for the purposes set forth.

16. In a pulley-block adapted for use in connection with an elevator and carrier, in combination with a pulley-frame, a hook f^3 attached to said frame and provided with a rest or guard near its point, and a closing-link pivoted to said hook at or near its upper end, and adapted to rest at the opposite end on said rest or guard to close said hook, substantially as and for the purposes set forth.

17. In connection with an elevator and carrier, in combination with a pulley for

same provided with a hook, a closing-link for said hook, and a spring f^5 adapted to hold said link in closed position, substantially as and for the purposes set forth.

18. The combination of the hook f^3 closing-link f^4 and spring f^5 substantially as and for the purposes set forth.

19. The combination of the hook f^3 and closing-link f^4 having jaws or hooks $f^6 f^6$ at its outer end, substantially as and for the purposes set forth.

20. The combination of the hook f^3 closing-link f^4 and arms or hangers $f^2 f^2$ to flexibly connect said hook with the sides of the pulley-frame, substantially as and for the purposes set forth.

21. The combination of the pulley-frame f, side links or hangers f^2 provided with hooked inward extensions or pivots d^2 at their upper ends hooked into bearings d at the sides of said pulley-frame, and a socket or bearing at their lower ends for the head of the hook f^3, the hook f^3 provided with a slot or groove v across its head, a pin or key, as v^2, adapted to pass through said slot or groove to lock said hook, a safety or closing link f^4 adapted to close said hook f^3, and means to hold said link in a closed position, substantially as and for the purposes set forth.

In testimony whereof I hereby affix my signature, in presence of two subscribing witnesses, this 2d day of June, 1904.

JOHN M. BOYD.

Witnesses:

ROBT. H. CROSBY,

W. H. CROSBY.