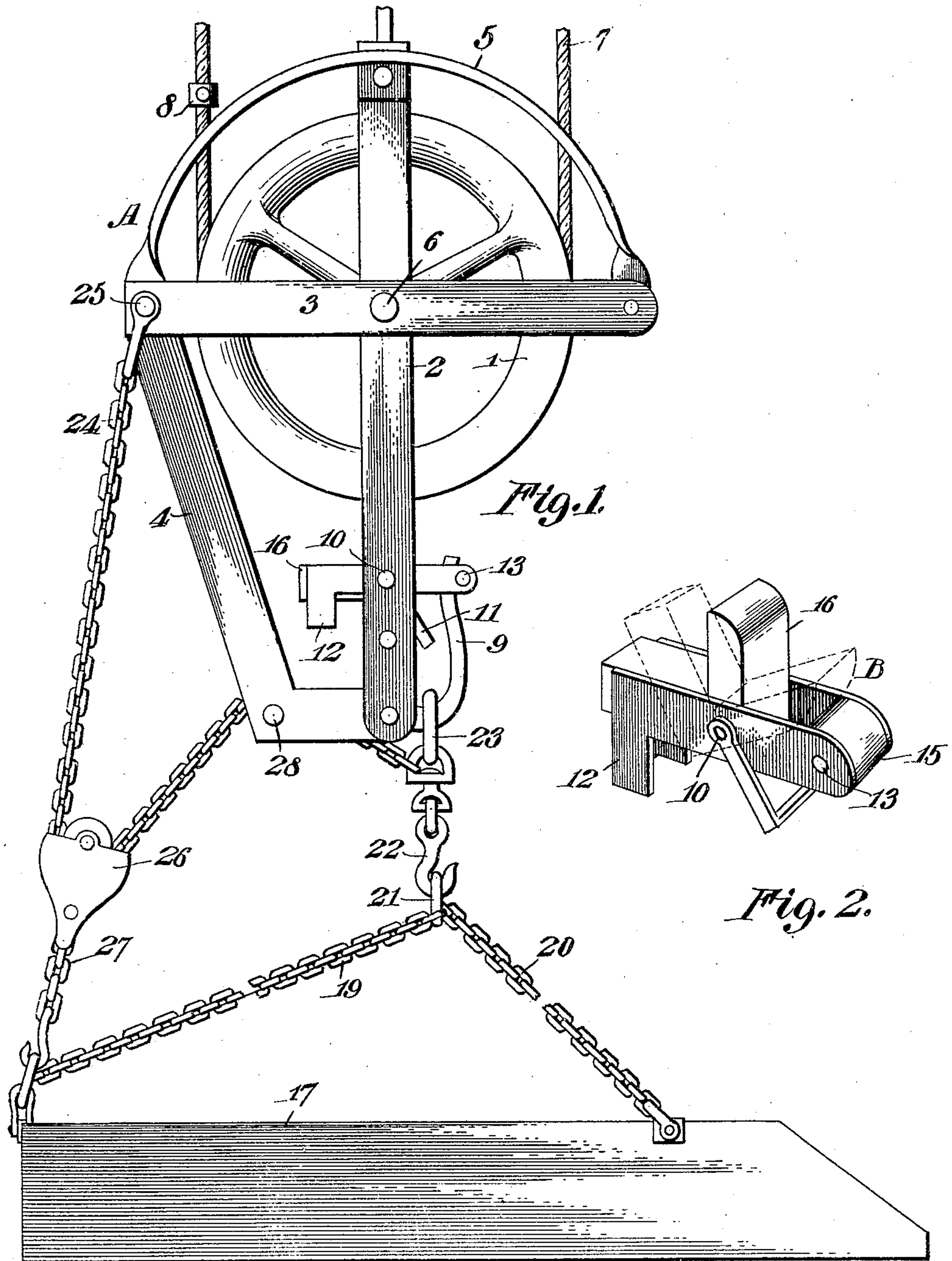


D. O. JONES & G. E. ROBERTS.  
HOISTING AND AUTOMATIC LOAD DUMPING MECHANISM.  
APPLICATION FILED MAY 4, 1909.

945,547.

Patented Jan. 4, 1910.

4 SHEETS—SHEET 1.



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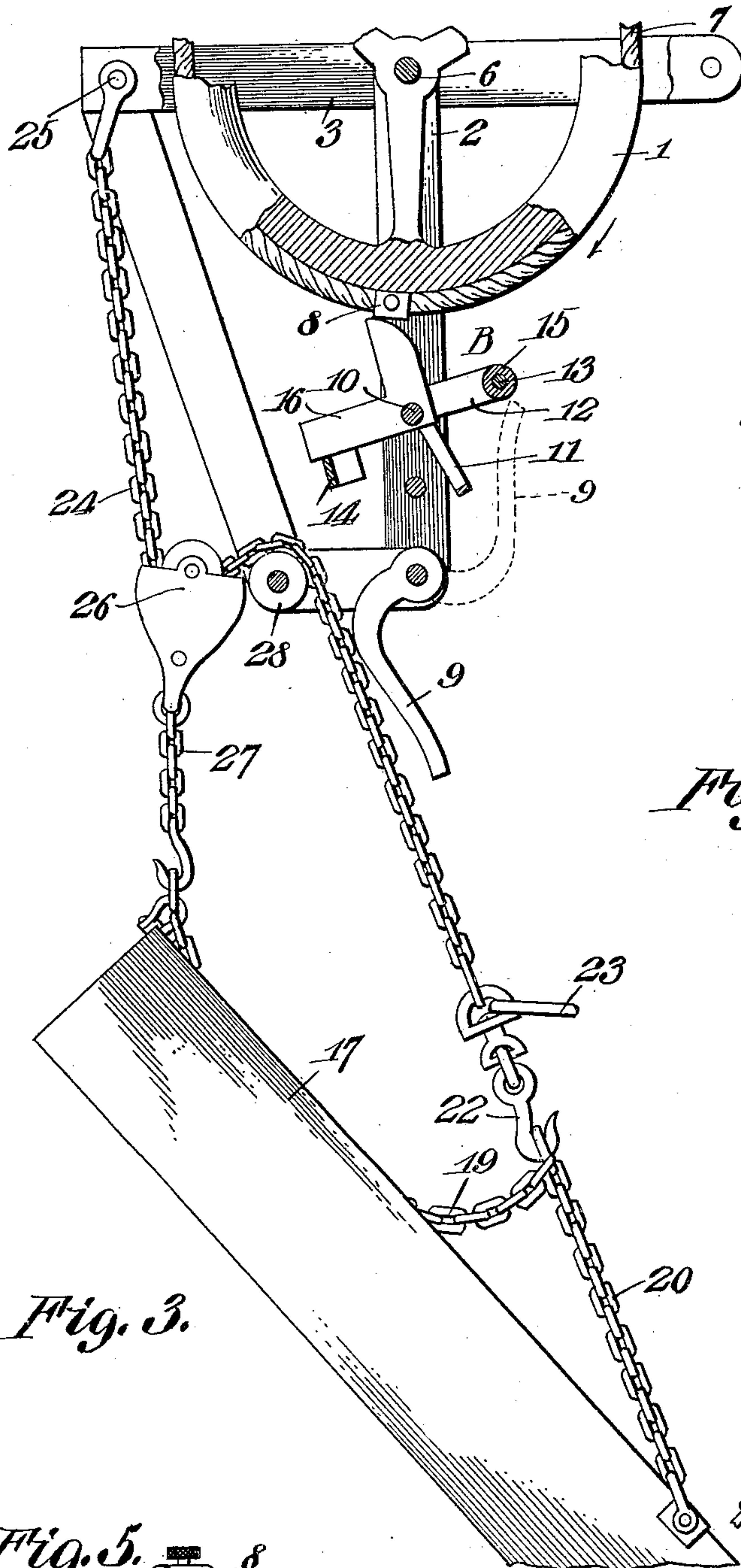


Fig. 3.

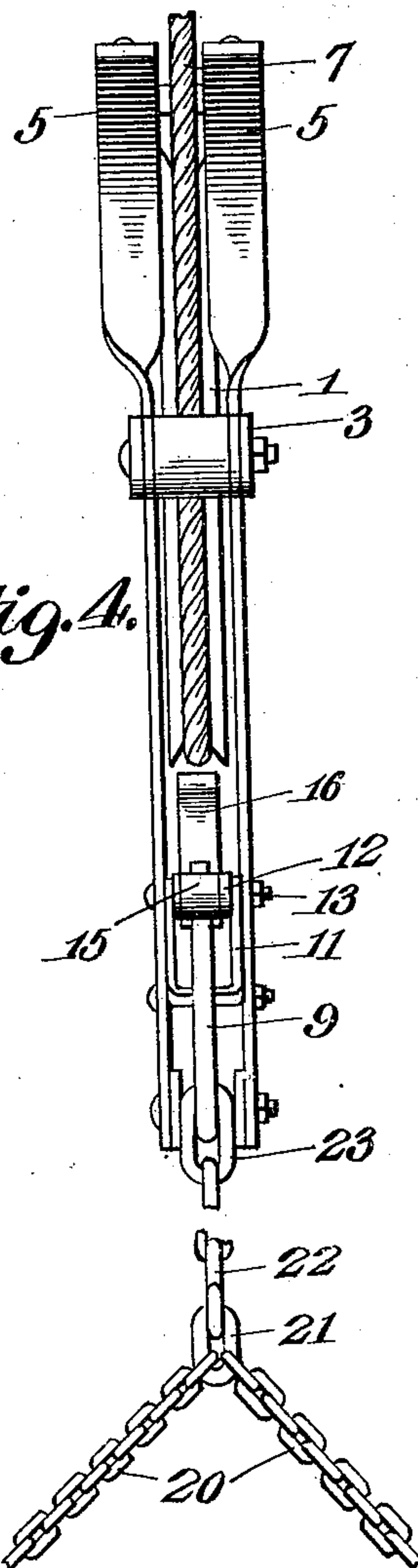


Fig. 4.



Fig. 5.

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4 SHEETS—SHEET 3.



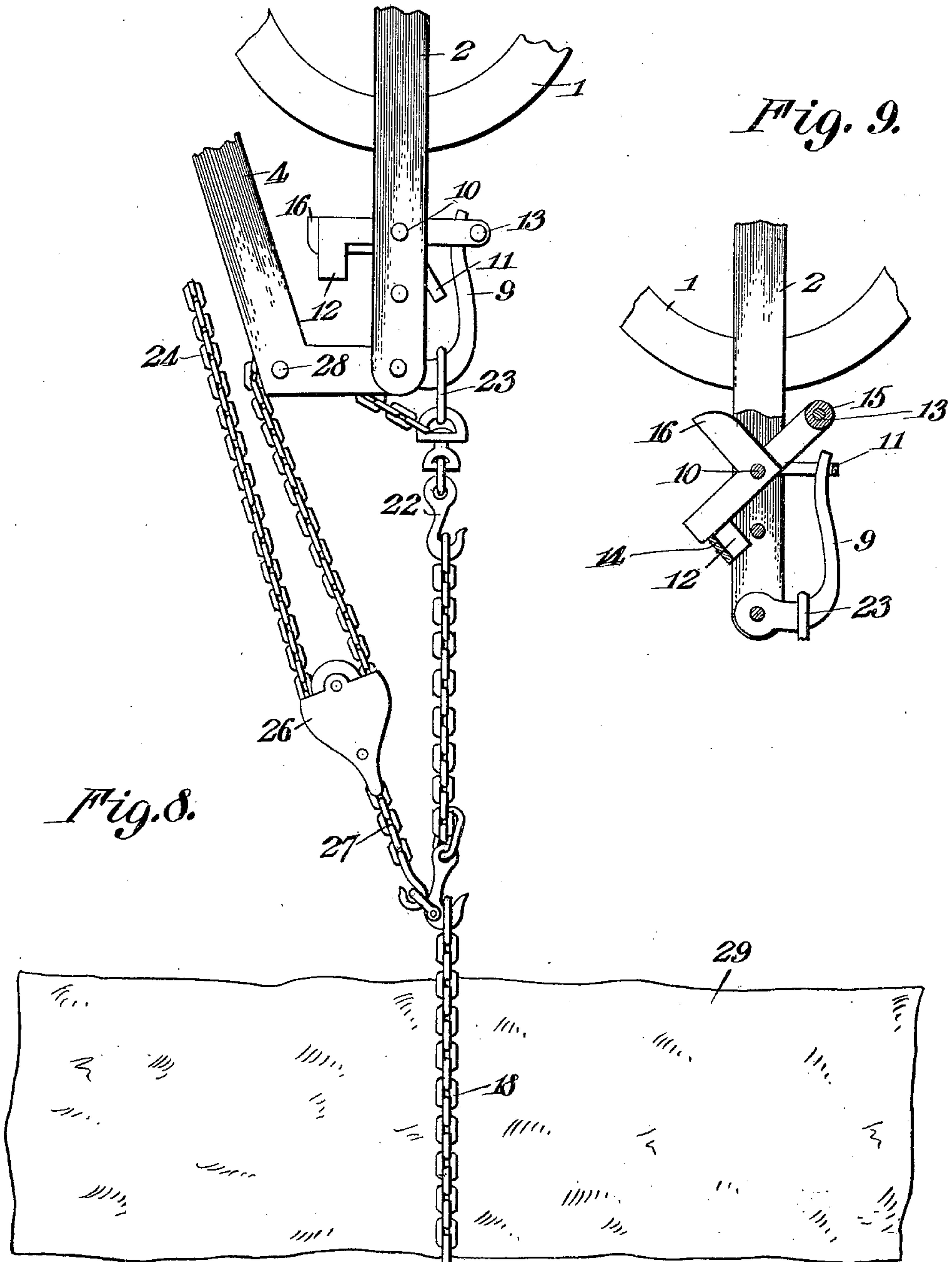
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# UNITED STATES PATENT OFFICE.

DAVID O. JONES AND GORDON E. ROBERTS, OF POULTNEY, VERMONT.

HOISTING AND AUTOMATIC LOAD-DUMPING MECHANISM.

945,547.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed May 4, 1909. Serial No. 493,799.

*To all whom it may concern:*

Be it known that we, DAVID O. JONES and GORDON E. ROBERTS, citizens of the United States, residing at Poultney, in the county of Rutland and State of Vermont, have invented new and useful Improvements in Hoisting and Automatic Load-Dumping Mechanism, of which the following is a specification.

The purpose of this invention is to provide a novel load mechanism for hoisting loads of various kinds and automatically discharging the same at the predetermined elevation.

The invention contemplates a unique arrangement of hoisting tackle, trip devices, and load suspending means whereby the load may be raised to the required point and automatically released by hoisting rope through intermediate trip devices without necessitating the provision of an additional pull rope such as a chain provided in connection with the loading machinery, to trip the load when it is required to dump the same.

The invention embodies a fall and block, a hoisting rope or cable, a load carrier, a catch, a trip for releasing the catch to permit discharge of the load, a stop adjustable upon the hoisting rope to release the catch at the given point in the lift of the load, and a tilting chain or analogous connection to insure complete and full discharge of the load, all of said parts being combined and arranged to operate in a manner hereinafter to be more fully explained.

For a full understanding of the invention reference is to be had to the accompanying drawings and to the subjoined description in which corresponding and like parts are indicated by the same reference characters.

The invention consists of the novel features, details of construction, and combinations of parts which hereinafter will be more particularly set forth, illustrated and pointed out in the appended claims.

In the drawings which illustrate an embodiment of the invention, Figure 1 is a side view of a fall and block, load carrier, and adjunctive parts illustrative of the invention. Fig. 2 is a perspective view of the catch, trip and link. Fig. 3 is a view of the parts shown in Fig. 1 illustrating their relation after the load carrier has been tripped to discharge the load. Fig. 4 is a front view of the parts illustrated in Fig. 1 in normal position. Fig. 5 is a detail perspective view

of the stop which is adjustable upon the hoisting rope or cable to effect release of the load at the predetermined point in its lift. Fig. 6 is a view similar to Fig. 1, parts being broken away to show more clearly the construction and arrangement of the cooperating elements. Fig. 7 is a detail view showing a portion of the pulley, the hoisting rope or cable, the load suspending hook, the catch and trip. Fig. 8 is a view in elevation showing an adaptation of the invention for elevating solid bodies. Fig. 9 is a detail view of the parts shown in Fig. 7 having the load suspending hook engaged by the link to permit raising and lowering of the load without automatically discharging the same.

The fall block A comprises a pulley 1 and a pulley frame, the latter comprising similarly formed side pieces transversely connected by bolts or pins, each side piece consisting of an upright 2, a cross piece 3, a brace 4, and an arch 5, the latter connected at a middle point to the upright 2 and at its extremities to the outer ends of the cross piece 3. The pulley 1 is mounted upon a transverse pin or axle 6 supported at its ends in the members 2 and 3 of the side pieces at the points of crossing of said members. The hoisting rope or cable 7 passes beneath the pulley and is adapted to cooperate with an elevated pulley block, not shown, in the manner well understood. A stop 8 is adjustable upon the hoisting rope or cable 7 and is adapted to be secured in the adjusted position by means of a set screw and threaded into an opening formed in a side thereof. The stop 8 may be of any construction and any means may be employed for securing the same upon the rope or cable 7 in the required position.

A load suspending hook 9 is pivotally mounted upon the lower end of the pulley frame and is adapted to be held in operative position by means of a catch B which is pivotally mounted upon a pin 10 supported at its ends in the uprights 2. A link 11 is also provided to engage the hook 9 and hold the same in fixed position particularly when it is required to raise and lower the load without automatically discharging the same. This arrangement is illustrated in Fig. 9. The link 11 is also mounted upon the same pin 10 with the catch B.

The catch B comprises transversely spaced L-members 12 connected to the same by means of a fastening 13 and a cross piece 14.



The fastening 13 may consist of a pin, bolt or the like and receives a roller 15 which reduces the friction between the catch and the hook 9 to a minimum amount so that the catch may be easily operated when it is required to discharge the load. The cross piece 14 besides connecting the side members 12 also acts as a stop to hold the trip 16 in normal position. The trip 16 is of L-form and is mounted upon the pin 10 to rock thereon, one member extending vertically and adapted to be engaged by the stop 8 and the other member projecting horizontally and engaged by the cross piece 14. The trip is located between the side members 12 comprising the catch. The link 11 is of U-form and is mounted upon the pin 10.

The load may consist of a shovel or like receptacle 17, or it may comprise a binding chain 18, the latter being employed for encompassing solid bodies such as stone or other objects admitting of advantageous use of a binding chain 18 or analogous device. In the event of the load carrier consisting of a shovel or like receptacle 17, chains 19 and 20 cooperate therewith to properly sustain the same.

Chains 19 are connected at one end to the rear portion of the shovel, both chains 19 and 20 converging upwardly to a ring 21 which is adapted to engage a hook 22 having a ring 23 connected therewith and which ring is adapted to engage the load suspending hook 9.

A chain 24 is connected at one end to the pulley frame at 25 and its opposite end has connection with the ring 23 and hook 22 and supports a pulley block 26 which latter has a short chain 27 terminating in a hook to engage a ring at the rear end of the shovel or load carrier 17. The chain or like part 24 passes over a roller 28 at the lower end of the pulley frame. When the parts are in normal position, the pulley block 26 is supported in a bight of the chain or like part 24 as indicated most clearly in Figs. 1, 6 and 8. Since, the purpose of the chain or flexible connection 24 is to effect a positive tilting of the load carrier to insure discharge of the load, it will be designated hereinafter and in the claims as a tilting chain.

In the operation of the invention, the parts being assembled substantially as herein indicated and the load being applied to the load carrier the latter connected by means of the hook 22, operation of the hoisting rope or cable 7 effects a lifting of the fall block and the load connected therewith. When the load reaches the predetermined elevation, the stop 8 previously adjusted upon the hoisting rope or cable passes by the vertical member of the trip 16 as indicated in Fig. 7 without releasing the catch from the suspending hook 9. The hoisting rope is now slackened to permit the stop 8

to move backward so as to operate the catch and effect disengagement thereof from the hook 9, as indicated in Fig. 3, thereby permitting the free operation of the shovel or receptacle 17 to drop and discharge the load. As the load carrier descends when released from the suspending hook 9, the chain or like connection 24 is pulled upon thereby lifting the rear end of the shovel or load carrier 17 as indicated in Fig. 3 and tilting the same to such an angle as to insure positive discharge of all the load. When the load is a stone or other solid body as indicated at 29 in Fig. 8, the binding chain 18 is passed therearound and engaged with the hook 22. The tilting chain 24 is connected with the binding chain to support the same when the hook 22 is released from the suspending hook 9.

From the foregoing taken in connection with the accompanying drawings, it will be understood that the invention supplies a mechanism which admits of a load of heavy objects being elevated to any point and automatically discharged or raised and lowered in the usual manner according to the purpose to be effected. It is further noted that the load may be released by the hoisting rope or cable without requiring the employment of an additional rope or cord to effect this result as is usually required. It is also observed that by adjusting the stop upon the hoisting rope, the load may be automatically discharged at any desired point in its lift.

Having thus described the invention, what is claimed is,

1. In means for elevating loads and automatically discharging the same, the combination of a fall block embodying a pulley, a hoisting rope or cable cooperating with said pulley, a load suspending hook mounted upon the frame of the fall block, a catch for holding the load suspending hook in operative position, a trip for releasing the catch, and a stop carried by the hoisting rope or cable for actuating said trip to effect release of the catch.

2. In means for elevating loads, and automatically discharging the same, the combination of a fall block comprising a pulley, a hoisting rope or cable cooperating with said pulley, a load suspending hook mounted upon the frame work of the fall block, a catch for retaining the load suspending hook in operative position, a trip cooperating with the catch and limited in its movement in one direction by said catch and free to move in the opposite direction, and a stop adapted to be adjustably connected with the hoisting rope or cable to operate the trip and automatically effect release of the catch from the load suspending hook.

3. In means of the character described, the combination of a fall block comprising a pulley and supporting frame, a hoisting



rope or cable cooperating with said pulley and provided with a stop, load suspending means mounted upon the frame of the pulley block, a catch pivotally mounted upon 5 said frame, and comprising transversely spaced members and connecting cross pieces, the one adapted to engage the load suspending means, and the other constituting a stop, and a trip mounted between the members of 10 the catch and limited in its movement in one direction by the cross piece of the catch forming a stop and having a member extending across the path of the stop carried by the hoisting rope or cable to be actuated 15 thereby.

4. In means of the character set forth, comprising a pulley and supporting frame therefor, a hoisting rope or cable cooperating with said pulley and provided with a 20 stop, a load suspending hook pivotally mounted upon the frame, a catch pivotally mounted between its ends upon said frame and comprising transversely spaced members and cross pieces connecting said members, one of said cross pieces engaging the 25 load suspending hook, and the other cross piece forming a stop, and a trip of substantially L-form pivotally mounted between the members of said catch and having one member extending vertically to be engaged by 30 the stop of the hoisting rope or cable, and having its other member projecting horizontally and normally engaged by the cross piece of the catch forming the stop.

35 5. In hoisting means of the character specified, the combination of a pulley and pulley frame, a hoisting rope or cable co-

operating with the pulley and provided with a stop, a load suspending hook pivotally mounted upon the pulley frame, a catch 40 normally engaging the load suspending hook, a trip cooperating with said catch and with the stop of the hoisting rope or cable, a link adapted to engage the load suspending hook, and a pin connecting the catch, 45 trip and link to said pulley frame and forming a support upon which the said parts are free to turn.

6. In hoisting means of the character described, comprising a pulley, pulley frame, 50 a hoisting rope or cable cooperating with the pulley and provided with a stop, a load suspending hook pivotally mounted upon the said frame, a catch normally engaging said load suspending hook, a trip adapted 55 to be actuated by the stop of the hoisting rope or cable to effect automatic release of the catch from the load suspending hook, a load carrier, and a flexible tilting connection having one end connected with the 60 upper portion of the pulley frame, and its opposite end connected with the load carrier, and having the intermediate portion provided with a pulley block, which is attached to said load carrier, and an end portion 65 having running connection with the lower portion of said pulley frame.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID O. JONES.

GORDON E. ROBERTS.

Witnesses:

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ROBERT O. JONES.