

(No Model.)

2 Sheets—Sheet 2.

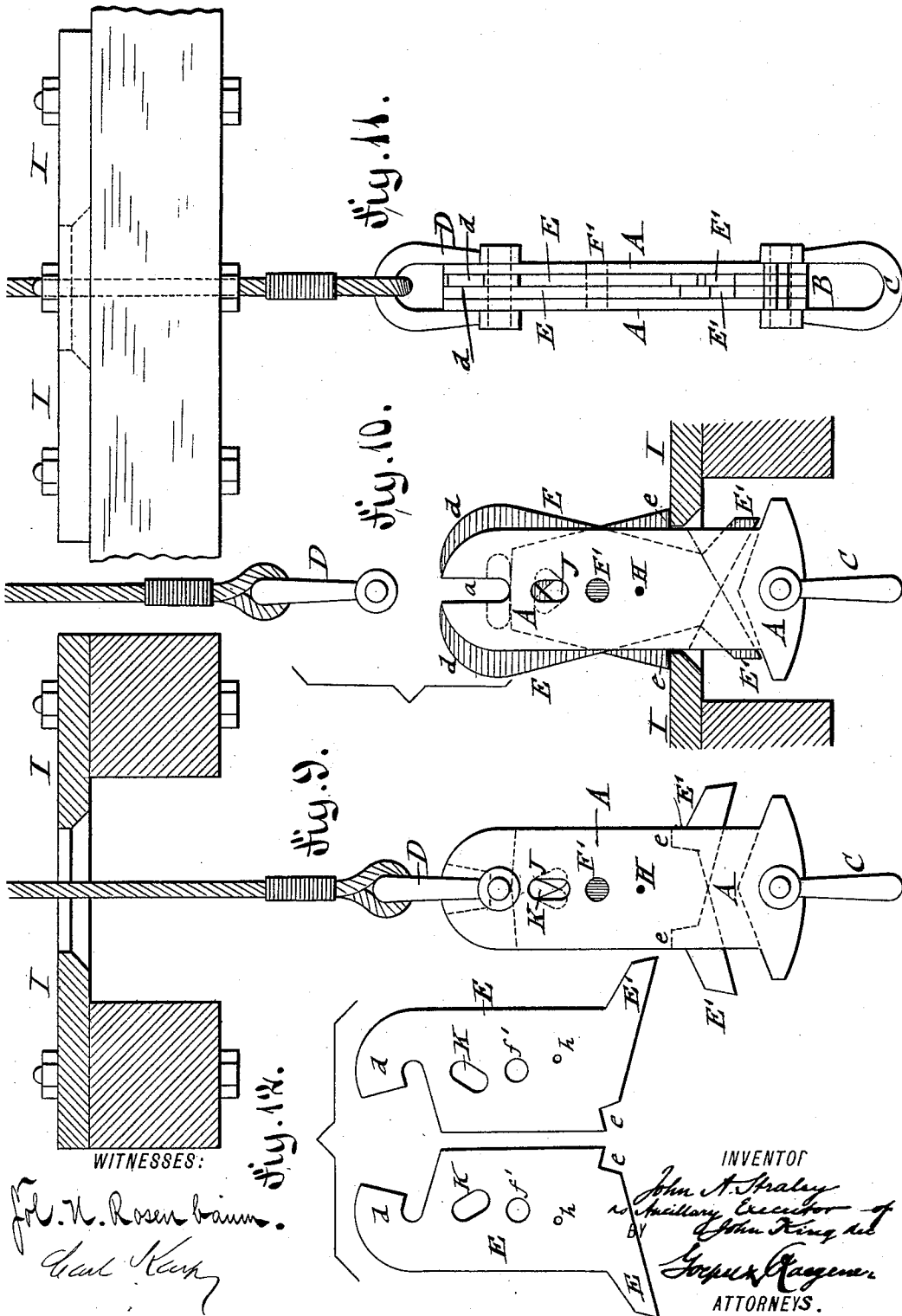
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J. A. STRALEY, Ancillary Executor.

DETACHING HOOK FOR COLLIERY HOISTS.

No. 406,243.

Patented July 2, 1889.



UNITED STATES PATENT OFFICE.

JOHN A. STRALEY, OF BROOKLYN, NEW YORK, ANCILLARY EXECUTOR OF
JOHN KING, DECEASED, ASSIGNOR TO STEPHEN HUMBLE, OF WESTMIN-
STER, ENGLAND.

DETACHING-HOOK FOR COLLIERY-HOISTS.

SPECIFICATION forming part of Letters Patent No. 406,243, dated July 2, 1889.

Application filed February 4, 1889. Serial No. 298,596. (No model.) Patented in England June 27, 1882, No. 3,021.

To all whom it may concern:

Be it known that JOHN KING, late of Pinxton, county of Derby, England, and a subject of the Queen of Great Britain, did invent certain new and useful Improvements in Detaching-Hooks for Colliery-Hoists, (for which Letters Patent were granted to him in Great Britain on the 27th day of June, 1882, No. 3,021,) of which the following is a specification.

This invention relates to an improved detaching-hook for the cages of colliery-hoists, which is so constructed that when overwinding takes place the shackle of the hauling rope or chain is detached from the detaching-hook by the opening and spreading of two pivoted plates of the same, which serve also to support the cage until the shackle is brought back and the cage lowered again for the readjustment of the detaching-hook to the shackle of the hauling rope or chain; and the invention consists of a detaching-hook for the cages of colliery-hoists formed of two exterior plates, an intermediate or distance plate between the same, and two interior shifting-plates pivoted to the upper parts of the exterior plates, said shifting-plates having hook-shaped upper ends for engaging the shackle of the hauling rope or chain, and shoulders at the lower ends that engage a stationary slotted stop-plate at the top of the hoist whenever overwinding takes place and the detaching-hook is passed upwardly through said stop-plate.

The invention consists, further, of certain details in the construction of the exterior plates and shifting-plates, which will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side view of the improved detaching-hook, showing the position of its several parts while in use. Fig. 2 is a side view of the same hook, showing the position of its several parts when released from the shackle attached to the hauling-rope. Fig. 3 is an end view when in the position shown at Fig. 1. Fig. 4 is a side view of Fig. 2, with the exterior plates removed; and Figs. 5 to 8, inclu-

sive, are separate views of the parts of the detaching-hook, severally referred to hereinafter. A modification of the improved detaching-hook is shown in side view in Fig. 9, showing the position of its several parts while in use. Fig. 10 is a side view of the same hook, showing the position of its several parts when released from the shackle attached to the hauling-hook. Fig. 11 is an end view when in the position shown at Fig. 9, and Fig. 12 side views of the interior shifting-plates of the hook.

Similar letters of reference indicate corresponding parts.

In order to prevent overwinding of a cage or hoist two modifications may be employed of detaching-hooks, the first being shown at Figs. 1 to 8, inclusive, the other in Figs. 9 to 12. The first form of detaching-hook consists of two parallel plates A, one of which is shown in Fig. 6, a thicker or distance-plate B, between the plates, and two shifting-plates E, which are pivoted to the upper part of the plates intermediate the same. Through the lower parts of the plates A and distance-plate B is passed the lower pin of a double shackle C, which is shown in side view in Fig. 8. The loop of this shackle is secured to the cage or hoist by chains in the usual way. The upper ends of the parallel plates A are recessed vertically to receive the pin of a shackle D, the loop of which is secured to one end of the hauling rope or chain. Each plate A has a hole *f*, through which the upper pin of the shackle C is passed, said pin being also passed through corresponding holes *f'* in the inner shifting-plates E. This pin forms an axle upon which the plates E are shifted. The plates E are shown separately in Fig. 5. Between the two holes for the shackle-pins in each of the plates A is a vertical slot *g*, in which a locking-pin G (hereinafter referred to) slides. The plates E have at their lower ends a shoulder *e*, projecting at one side, and hook-shaped upper ends *d*, which when in use overlap the pin of the shackle D when it is in the vertical slots of the parallel plates A. The inner plates E are kept in the overlapping position by a steel or iron pin G, (shown by dotted

lines in Figs. 1 and 2,) which pin is passed through angular or curved slots g' in the plates E, through the vertical slots g in the plates A, and also through a hole in each of two short plates F, one of which is shown in side view in Fig. 7. One of the plates F is arranged on each side of the parallel plates A and inside of the lower shackle C, as shown in Fig. 3. The upper ends of the angular or curved slots g' in the plates E are made straight and parallel to the sides, the straight portions when engaged by the locking-pin G preventing the plates from opening until the plates F, which carry the locking-pin G, are forced downward by striking against the under side of a stationary ring or stop-plate l , which is secured to and carried by the overhead framing under the groove of the pulley of the hauling rope or chain.

To keep the short plates F in the locked position shown in Fig. 1, I employ two copper or other metal pins H, driven tight into holes h near the edges of the plates A. These pins project outside each of the plates A the thickness, or nearly so, of the short plates F. The outer plates A are provided below the upper recesses a with an additional straight slot J, and the inner plates E with reversely-inclined slots K. The slots J and K serve for the purpose of applying the pin of the shackle D to the plates A and E, whenever, after the overrunning of the engine, the cage is to be lowered again by releasing the detaching-hook and lowering it below the stationary ring or stop-plate l . This is accomplished by displacing the pin of the shackle D, after bringing back the hauling rope or chain, and passing the pin through one hole of the shackle, then through the slots K and J of the plates A and E, and then through the other hole of the shackle D. The engine is then set in motion, so that the hauling rope or chain is wound up and the shackle lifted, together with the detaching-hook, chains, and cage.

By the lifting-action the inner plates E are shifted inwardly in the outer plates A back to the normal position, so that on lowering the cage onto props the detaching-hook can pass downward through the stationary ring or stop-plate l . The shackle D and the detaching-hook are then restored to their proper position for working in the usual way. By arranging the slots J and K in the plates A and E considerable time in lowering the cage is saved and the employment of lashing-chains and a number of workmen dispensed with.

By means of a detaching-hook constructed as above described, the whole of the weight, when the hoist is at work, is carried by the two strong plates E and the axle-pins of the shackles C and D.

In the modification of the detaching-hook, (shown in Figs. 9 and 12, inclusive,) the short plates F and locking-pin G are dispensed with and the outer plates A held at the required

distance apart by the interposition of a thicker plate or distance-piece B of the bottom, the plates A and B receiving the pin of a shackle C, which is secured to the cage or hoist by chains in the usual way.

The upper ends of the plates A are recessed vertically to receive the pin of the shackle D, the loop of which is secured to one end of the hauling rope or chain. Below the recesses a of the plates A is a second vertical slot J, and below the slot J the plates are drilled out to receive the pivot-pin F' of the inner shifting-plates E, which are shown separately in Fig. 12. These plates, besides having holes f'' for the pivot-pin of the plates E, are reversely slotted at K, the upper ends of these slots coinciding with the upper ends of the vertical slots J in the plates A when in work, as shown in Fig. 9; but when the hook has released the hauling-shackle D and is holding the cage suspended, the hook being in the position shown in Fig. 10, the lower ends of the slots K coincide with the lower end of the vertical slots J. The plates E are hook-shaped at their upper ends, and when at work overlap the pin of the shackle D. At the lower inner ends of the plates E is a shoulder e and a projecting arm E' at the opposite edge. The shoulders e rest upon a stop ring or plate l when the hook has released the shackle D through the hauling rope or chain being carried away by the overrunning of the engine, said shoulders being placed in the position shown in Fig. 10 when the projecting arms of the plates E strike the lower edge of the ring or plate l when overhauled. The plates E are kept in the locked position shown in Fig. 9 by a copper or other metal pin H driven tightly into corresponding holes h of the four plates A and E, the pin being cut across as the plates E open or spread by the contact of the lower ends E' with the stop-ring l .

The detaching-hooks act as follows: The shackle end of the hauling rope or chain is passed through the ring or plate l , the orifice of which just allows of the passage of the upper part of the detaching-hooks; but when the projecting sides of the plates F (shown in the first modification) or of the projecting arms E' of the plates E (shown in the second modification) strike the lower edge of the ring or plate l the copper or other metal pins or pin H are shorn off, the plates E close in at their lower ends on one side and project at the opposite side, so that the hooked ends open and release the hauling-shackle. The projecting lower ends of the plates E pass at the same time over and rest upon the upper edge of the ring or plate l , and thus securely suspend the cage when the hauling rope or chain is overwound.

For lowering the cage, the detaching-hook is first raised above and then lowered below the stop-ring or stop l , by passing the pin of the hauling-shackle D through the slots J

and K of the plates A and E, and finally the shackle restored to its normal position on the detaching-hook, as before described.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A detaching-hook for the cages of colliery-hoists, consisting of outer plates having central recesses at their upper ends and straight slots below said recesses in the upper parts of the plates, an intermediate or distance plate between the outer plates at the lower end of the same, a cage-suspending tackle applied to the outer and distance plate, inner shifting plates pivoted to the outer plates and provided with hook-shaped upper ends, reversely-inclined slots between said ends and the pivot of the shifting plates, and stop-shoulders at the lower ends, and means, substantially as described, for causing the outward shifting of the inner plates and the release of the hauling-shackle when overwinding takes place, substantially as set forth.

2. A detaching-hook for the cages of colliery-hoists, consisting of outer plates A, having slots *g* and J, and recesses at the upper ends, an intermediate or distance plate B, a cage-suspending shackle C at the lower ends of the plates A and distance-plate B, inner shifting plates E, pivoted to the plates A and

provided with curved slots *g'*, reversely-inclined slots K, stop-shoulders *e*, and hook-shaped upper ends *d*, and slide-plates F, for causing the shifting of the inner plates and the releasing of the hauling-shackle when overwinding takes place, substantially as set forth.

3. A detaching-hook for the cages of colliery-hoists, consisting of outer plates A, having straight slots *g* and J and recesses *a*, an intermediate or distance plate B, a cage-suspending shackle C, and inner shifting plates E, pivoted to the plates A and provided with curved slots *g'*, reversely-inclined slots K, and hook-shaped upper ends *d*, the slots J and K of the plates A and E serving for inserting the pin of the hauling-shackle for lowering the shackle below the stop-plate after overwinding has taken place, substantially as set forth.

In testimony that I, JOHN A. STRALEY, ancillary executor of said JOHN KING, deceased, claim the foregoing as the invention of said JOHN KING, deceased, I have signed my name in presence of two subscribing witnesses; as executor aforesaid.

JOHN A. STRALEY,
Ancillary executor of John King, decd.
Witnesses:

CARL KARP,
SOL. N. ROSENBAUM.