

WALKER'S DETACHING HOOK.

 BY W. WALKER.

Patent, No. 1,571.—1871.

ON referring to Plate XII., it will be readily observed that the principle upon which this hook is constructed is of such a simple character as to render it especially applicable to the ordinary work of sinking pits, as well as to the process of raising any load, whether loose, like the kibble at the end of the rope, or secured in its travelling position, as cages are with skeets in ordinary working pits.

The chief feature of this hook is, that the load to which it is attached is made great use of in working, both when it is running in the pit, and when it is required to free the rope from its load, and yet it is so formed that it will work equally well without any load at all, and is thus possessed of a two-fold source of safety.

Fig. 1 is a front view of the hook.

Fig. 2 is an edge view of the hook.

Fig. 3 is a front view of the whole apparatus, with the supporting ring and clamp in section, showing the hook before the lifting rope is liberated.

Fig. 4 is the same, showing the hook just after the liberation of the lifting rope.

The same letters refer to the same parts in all the figures.

The lifting rope is attached to the shackle A, and the load to the connecting link B.

The supporting ring C (through which the rope is constantly working) is fixed in a baulk of timber, or iron girder, as near to the pulley as possible, and must be thoroughly secure.

The hook consists of a pair of jaws, D D, working on a centre pin, E, in such a manner that the weight of the load has a tendency to open the upper limbs, which clip the strong centre pin of the shackle A.

The upper limbs are formed externally with jaw hooks, F F. The jaws are kept together, and made to retain the shackle pin by means of the clamp H, which is held in position by the pins I I.

In case of overwinding, the jaw hooks (held together by the clamp) pass freely into the ring C, but the projections K K of the clamp coming in contact with the bottom flange of the said ring hold the clamp stationary, while the jaws are being pulled through, the result being that the pins I I are sheared off, and the jaw hooks released from the restraint of the clamp. The internal diameter of the ring being the same as the width across the jaw hooks F F, the rope remains secure until the jaw hooks reach the top of the ring, when, by the action of the weight of the load, they are forced open, and so hook on to the top of the supporting ring C, as shown in Fig. 4, the released rope passing harmlessly over the pulley.

The recess O in the ring C is intended to meet an imaginary case that experiment shows to be almost impossible, namely, that if the engine is reversed after the pins I I are cut, and before the hooks reach the top of the ring, the jaws will then hook into the recess, and the load remain suspended in perfect safety.

It will be observed that the upper edge of the ring C is curved to match the sweep of the jaw hooks when opening. By this arrangement all shocks are avoided.

Fig. 5 shows the apparatus applied to a pit in course of being sunk ; and Fig. 6 the case of a regularly working pit, with the cage suspended by the detached hook, in consequence of overwinding.

The internal diameter of ring C for carrying three tons is $4\frac{3}{4}$ inches ; for carrying four tons, $5\frac{1}{2}$ inches ; for carrying five tons, $6\frac{1}{2}$ inches ; for carrying six tons, $7\frac{1}{4}$ inches ; and for carrying eight tons, $8\frac{3}{4}$ inches. Whilst the length, including the shackle A and bottom link B, for a three-ton hook is 18 inches ; for a four-ton hook 1 foot 9 inches ; for a five-ton hook, 2 feet ; for a six-ton hook, 2 feet 2 inches ; and for an eight-ton hook, 2 feet 6 inches ; and the weight of the whole apparatus for carrying a load of six tons only amounts to 84 lbs.

This hook is applied to the ropes of deep sinkings, extensive working pits, and high blast furnace lifts in the north, and has also been thoroughly tested in this immediate locality, at one of the Llynvi Tondy and Ogmere Coal and Iron Company's pits, when their Mining Engineer (Mr. Birbeck), who was present, reported "that it placed the overwinding of any load beyond all possibility, and that it was also so simple as to recommend itself to every practical man, and its adoption would be readily embraced by every one interested in mining." Mr. E. Robson, of Middlesbrough, the

To illustrate Mr. W. Walker's paper on "Detaching Hooks."

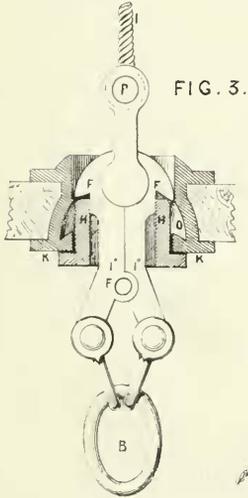
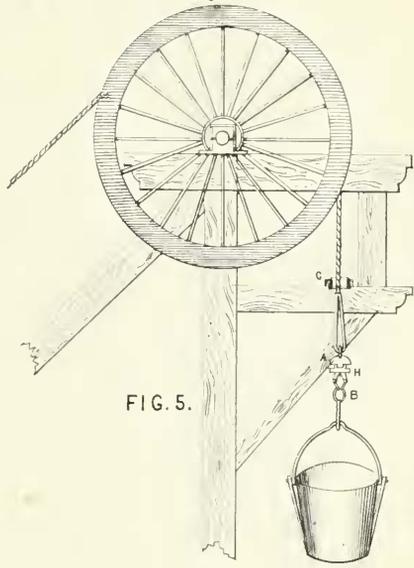
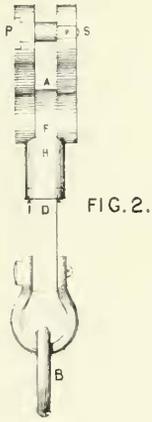
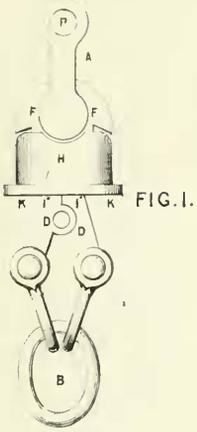


FIG. 3.

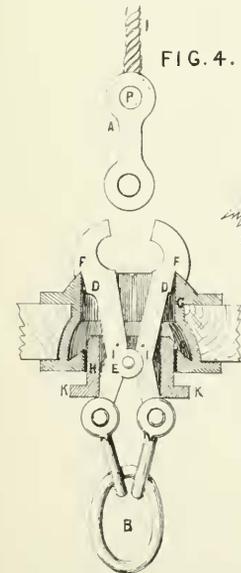


FIG. 4.

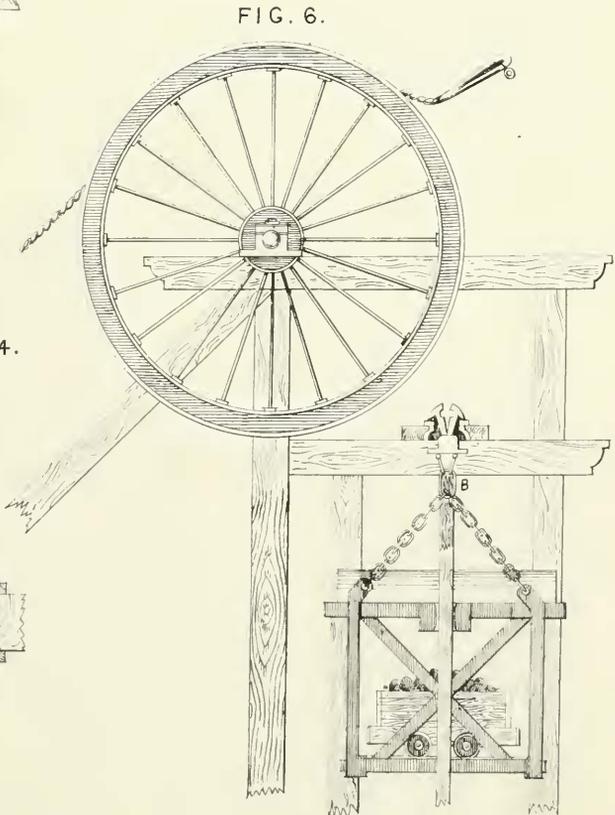


FIG. 6.

managing partner of several collieries and mines, where there are fifteen of these hooks at work, also speaks highly of its value and success.

Though all hitherto done to prevent the loss of life and destruction to property, resulting from accidents by overwinding, has been adopted only at those pits which have become so complete in their development as to be classified as "ordinary working pits," yet, any one practically acquainted with sinking, will readily admit the risk of accidents during this process is very much greater than in the everyday working of a pit yielding coal.

In the absence of any appliance to the ropes of an ordinary working pit, in case of overwinding, the rope will either give way at the socket and the cage fall back on to the keps, or the cage will mount and go over the pulley. While in the case of a sinking pit, where the men are working in the pit bottom, immediately under the load, which has no keps to fall on or skeets to secure its position, in an accident of this nature, the kibble would either fall back into the pit bottom, or, if taken over the pulley, the stones might fall out of the kibble within the pit mouth, and almost certainly cause loss of life.

Serious and often fatal accidents from overwinding are so frequently occurring at pits in all stages of progress and work, that it is hoped the bringing before this meeting of an invention which has already been introduced successfully for their prevention in the mining districts of the North of England may not be considered undeserving the attention of such an important scientific assemblage as the present.

On the motion of the President the thanks of the meeting were awarded to Mr. Walker for his paper.

Mr. WRIGHT, in the absence of Mr. Martin, read that gentleman's paper on "The Publicity or Secrecy of Examinations."