

(No Model.)

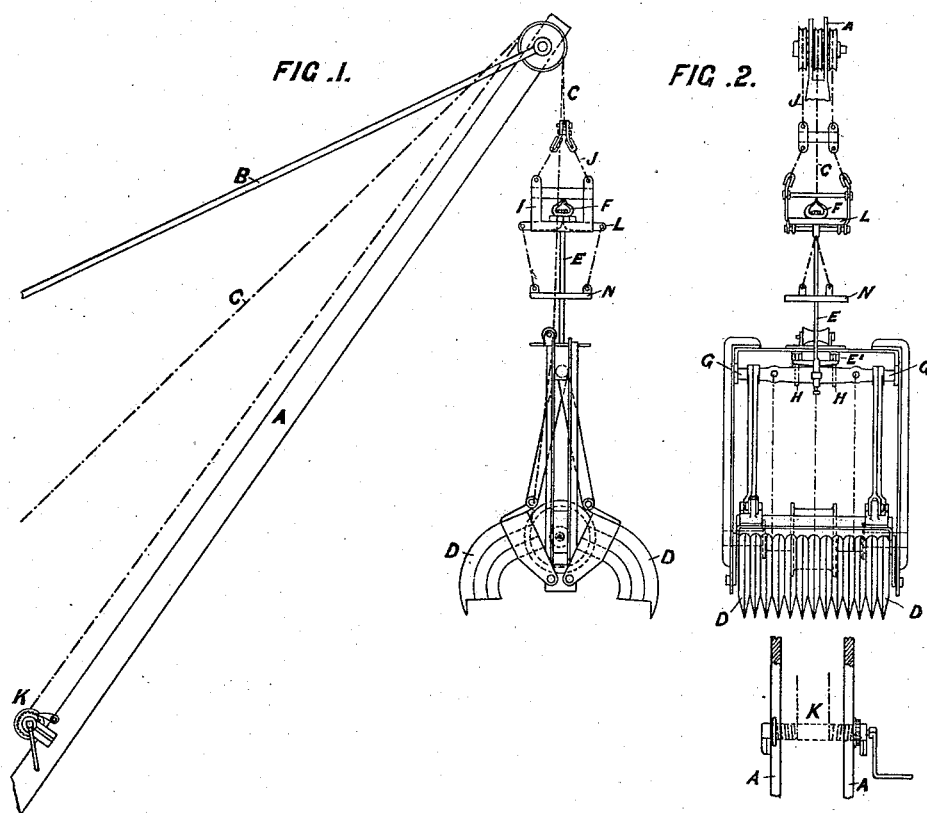
2 Sheets—Sheet 1.

T. WHITAKER.

SELF ACTING EXCAVATOR OR SKEP.

No. 305,493.

Patented Sept. 23, 1884.



Witnesses  
Harry E. Smith  
Eugene V. Brown,

Inventor  
Thomas Whitaker By  
Amos Broadbent

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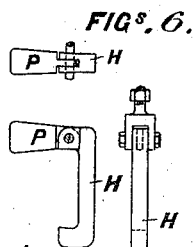
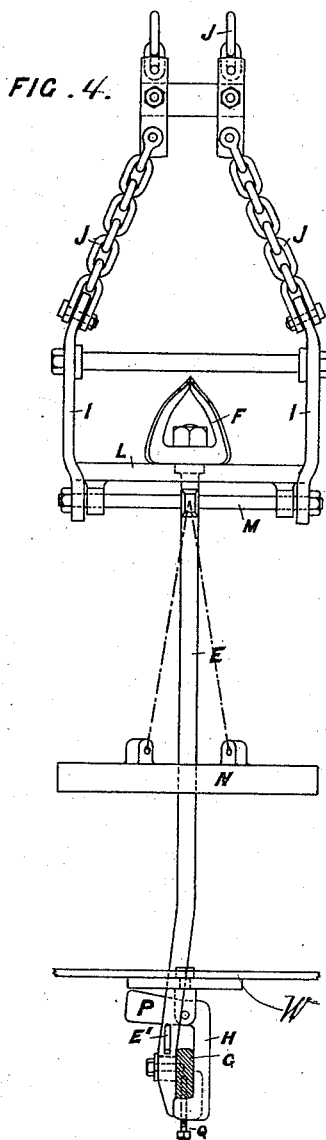
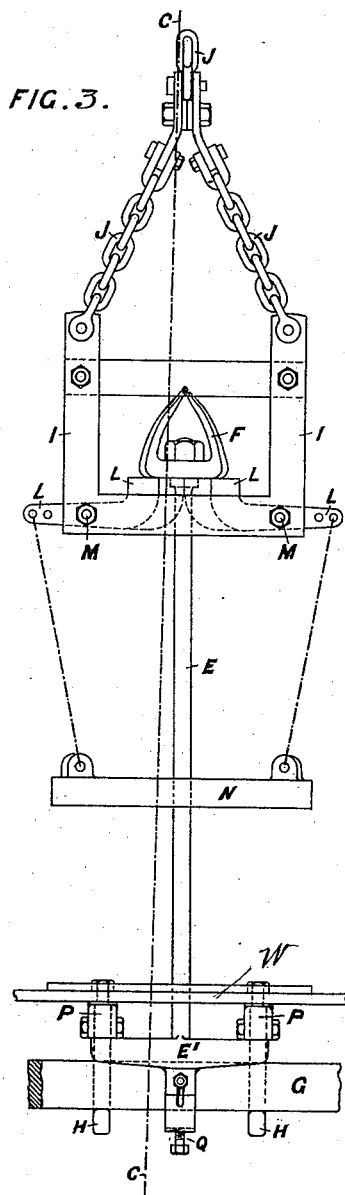
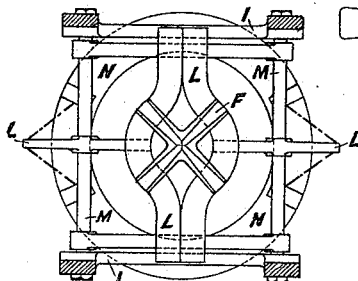


FIG. 5.



Witnesses  
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# UNITED STATES PATENT OFFICE.

THOMAS WHITAKER, OF HORSFORTH, COUNTY OF YORK, ENGLAND.

## SELF-ACTING EXCAVATOR AND SKEP.

SPECIFICATION forming part of Letters Patent No. 305,493, dated September 23, 1884.

Application filed December 11, 1883. (No model.) Patented in England February 12, 1883, No. 776.

*To all whom it may concern:*

Be it known that I, THOMAS WHITAKER, a citizen of Great Britain, and a resident of Horsforth, in the county of York, in that part of the United Kingdom of Great Britain and Ireland called England, have invented certain new and useful Improvements in Self-Acting Excavators and Skeps, and in the Apparatus connected therewith, and that the same has not been patented to me or to others with my knowledge or consent except in the following country, to wit: Great Britain, by Letters Patent No. 776, dated February 12, 1883; and I do hereby declare that the following is a full, clear, and exact description of my invention, sufficient to enable others skilled in the art to which it appertains or with which it is most nearly connected to make, use, and put the same into practice, reference being had to the sheets of drawings making a part of this specification, and to the letters and figures of reference marked thereon, which correspond with those used in this specification, like letters and figures being used to denote the same or corresponding parts throughout the various views and figures.

My invention has for its object to so construct self-acting excavators or skeps and their accessories that they can be worked by a single chain, and can be discharged when suspended in the air; and it consists in the combination of certain mechanical devices arranged to coact with reference to each other to produce the result above specified, the points of novelty being designated in the claims concluding this specification.

In the working of self-acting excavators or skeps previous to my invention it has been the usual practice to use two chains—one for closing or lifting the excavator or skip, and the other for opening, discharging, and lowering. It has also been proposed to lift and lower the excavator or skip by a single chain, the discharging of the bucket being either effected by a fixed suspending and discharging frame or mechanism, or by a trigger or like mechanism on the skip frame-work. In each of these cases a secondary rope or light chain is used in the first case to release the open skip from the discharging-frame, and in the second case to operate a trigger mechanism which allows the bucket to open and discharge

its contents, this rope or chain being worked by an attendant. Now, by my invention I work the skip by a single chain, the discharging being effected by an adjustable discharging-frame, such discharging being worked automatically and without the use of any secondary cord or chain.

The following illustrates my invention, reference being had to the annexed drawings, in which—

Figure 1 is a side elevation. Fig. 2 is an end elevation of Fig. 1, with the upper part of the jib broken away. Figs. 3, 4, 5, and 6 are enlarged views of the operating mechanism for working the opening and closing of the skip.

In the drawings, A is the jib, B the rod, and C the hoisting-chain, of the crane. D is an excavator, with its jaws, barrels, shafts, and usual attachments.

To discharge the skip by suspending the opening mechanism of the skip, I use a novel device consisting of the rod E, having a conical catch-head, F, the rod E being attached to the opening slide-bar G of the skip. The rod E is also provided with wings E' E', and the opening slide-bar G is provided with an adjustable stud, Q, on the head of which rests the rod E. The rod E has a slot which allows it to move on the bolt which keeps the rod E to the slide-bar G. The frame of the skip is provided with the catches H H, which engage with the opening-bar G. The catches H have weighted levers P P, which act to superpoise and disengage the catches H H.

I is a discharging device, which is suspended from the jib-head by the chains J. These chains J pass over sheaves, and are carried down to a barrel, K, on the jib. The device I is provided with tumblers L L, which are superpoised by the weight N. The skip on being hauled up causes the catch-head F to open and pass through the tumblers L L, and then engage with them on the skip being lowered. The crane-chain C is attached to the barrel of the excavator D in the usual way. This barrel when hauled upon closes the jaws of the excavator, and when closed the skip is lifted by the said chain C.

In operation, presuming the skip to have discharged its contents, and being in the position shown in Figs. 1 and 2, with the rod E and

catch-head F held up by the catches H H, to lower the skip for another fill, the skip D, with the catch-head F, is slightly raised by the chain C, thus allowing the weight N to throw up the  
 5 tumblers L L. The skip D, with the catch-head F, is then lowered, the catch-head F passing down through the thrown-up tumblers L and ring N, the skip D being kept open by the catches H. In this open position  
 10 the skip is lowered onto the material to be grabbed. By the skip resting on the material the weight of the skip is taken off the chain, the weight of the skip itself thus slightly pushing up the slide G, and thus the catches  
 15 H H are, by the weights P P, thrown out of engagement with the bar G. The rod E will, when disengaged from the device I, rest on the head of the stud Q, on which it works up and down, and thus the levers P P will be free  
 20 to act to disengage the catches H whenever the skip touches the material to be grabbed. The skip thus being free to be closed, the chain C is hauled upon and fills the skip. When the skip is closed, the catch-head F will  
 25 be drawn down close to the frame of the skip. The skip, with its load, is then swung to the desired place of discharge, when the skip-chain is further hauled upon, and the catch-head F passes up through the ring N and toward  
 30 the tumblers L. In thus passing up, and before the tumblers L are reached by the catch-head F, the frame W of the skip will have reached the ring N and carried it up with it. Thus the tumblers L L will be relieved of the  
 35 superpoise-weight N, and will by their own weight take a horizontal position. Then, on the farther up travel of the skip, the catch-head F will push open and pass up through  
 40 and between the tumblers L L, which will, when the head F has cleared them, again fall and take a horizontal position. The catch-head F having cleared the tumblers L L, the hauling up of the skip is stopped and then  
 45 lowered, and in lowering the catch-head F is held by the tumblers L L, and thus the opening mechanism of the skip is suspended by the rod E, and the skip-frame lowers, and the skip opens and discharges its contents. As the skip-frame completes the opening, it brings  
 50 the superpoise-levers P into contact with the wings E' E' of the bar E, and in so taking off the counterpoise-weight P P of the catches H H they fall under the bar G, and so hold the  
 55 bar G to the top of the frame of the skip, thus keeping open the skip on again lowering.

In Figs. 1 and 2 the barrel K and the chains

J are used, so as to regulate the height of the discharging device above the wagon.

My invention allows of any ordinary crane (having a single chain) being used with a few  
 60 simple additions.

Having now described the nature of my invention, I would state that I do not claim as new the excavator itself or its usual parts, nor  
 65 the crane or its usual parts; but what I consider to be novel, and claim as my invention, is—

1. In self-acting excavators or skips and their lifting and lowering apparatus, and which are worked by a single chain, the combination of a discharging-frame, I, levers L, a  
 70 weight, N, and a cross-head, F, with connecting-rod E and catches H, whereby the excavator or skip is automatically caught, suspended, opened, and held open, and discharges  
 75 its contents, and released, as herein set forth.

2. In self-acting excavators, the combination of the discharge-frame I, provided with tumblers L and weight N, chains J, rod E, and winding-barrel K, whereby the discharge-  
 80 frame and the bucket are raised and lowered, substantially as described.

3. In self-acting excavators, the combination of a chain, C, bucket D, automatic catch G H, catch-frame I, and rod E, whereby the  
 85 bucket is closed, and raised, and opened, and lowered by the manipulation of a single chain, C, substantially as described.

4. In self-acting excavators, the combination of a discharge-frame, I, weighted levers  
 90 L, chain C, rod E, provided with a head, F, and cross-bar carried by the frame W of the bucket D, substantially as and for the purpose specified.

5. In self-acting excavators, the combination of a rod, E, provided with rings E', block G, carrying the stud Q, and the weighted  
 95 levers H P, substantially as and for the purpose set forth.

6. In self-acting excavators, the combination of chain C, skip D, and the catch-frame  
 100 I, and rod E, said rod being brought in engagement when the chain C is raised, and being disengaged automatically when it is subsequently raised still farther, substantially as  
 105 and for the purpose set forth.

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