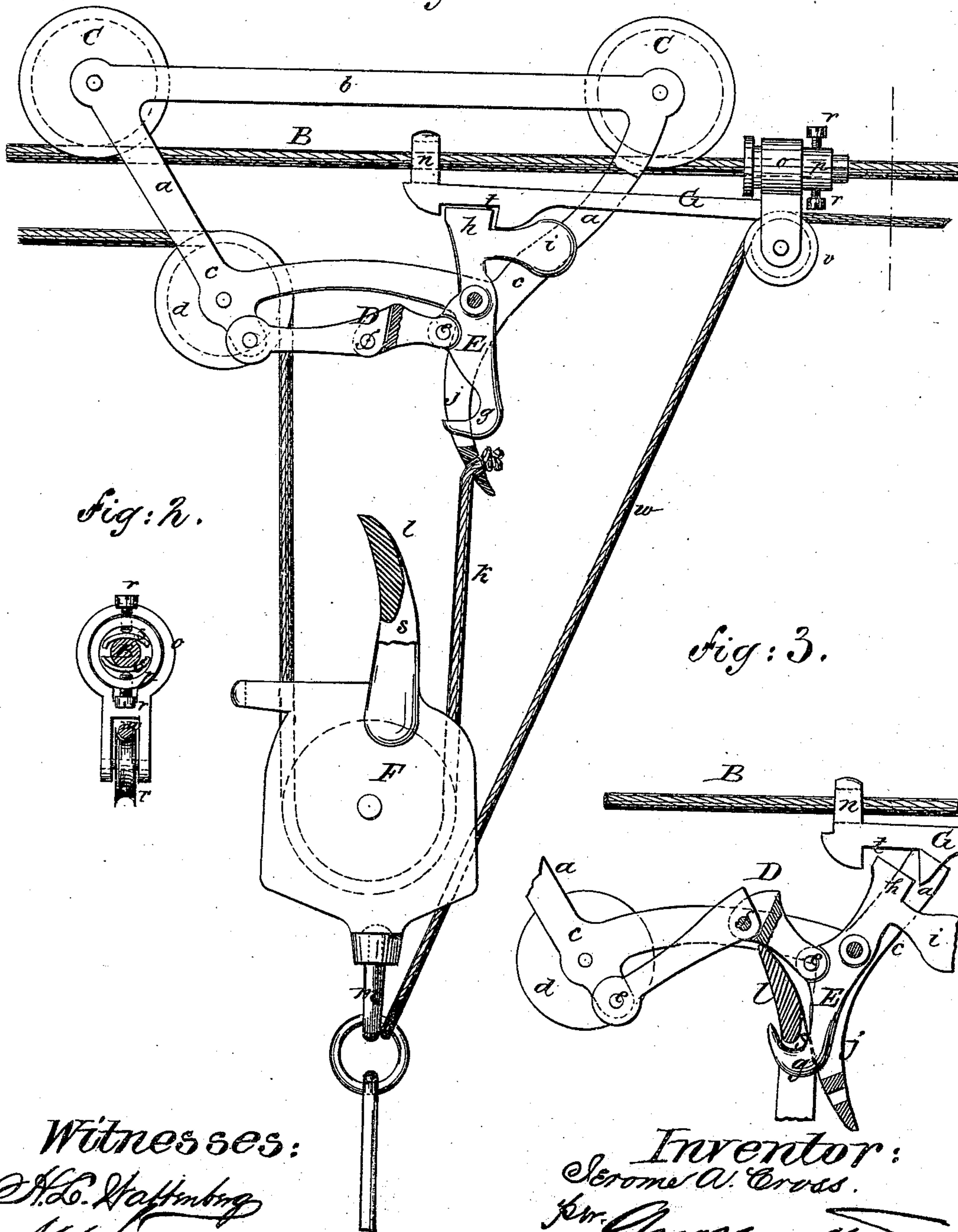


J. A. CROSS.  
HAY-ELEVATOR.

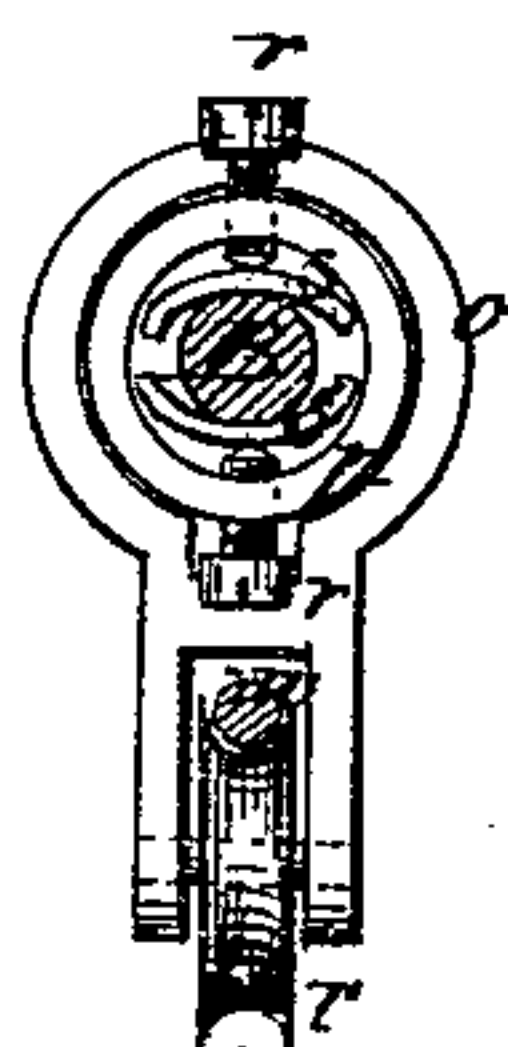
No. 185,432.

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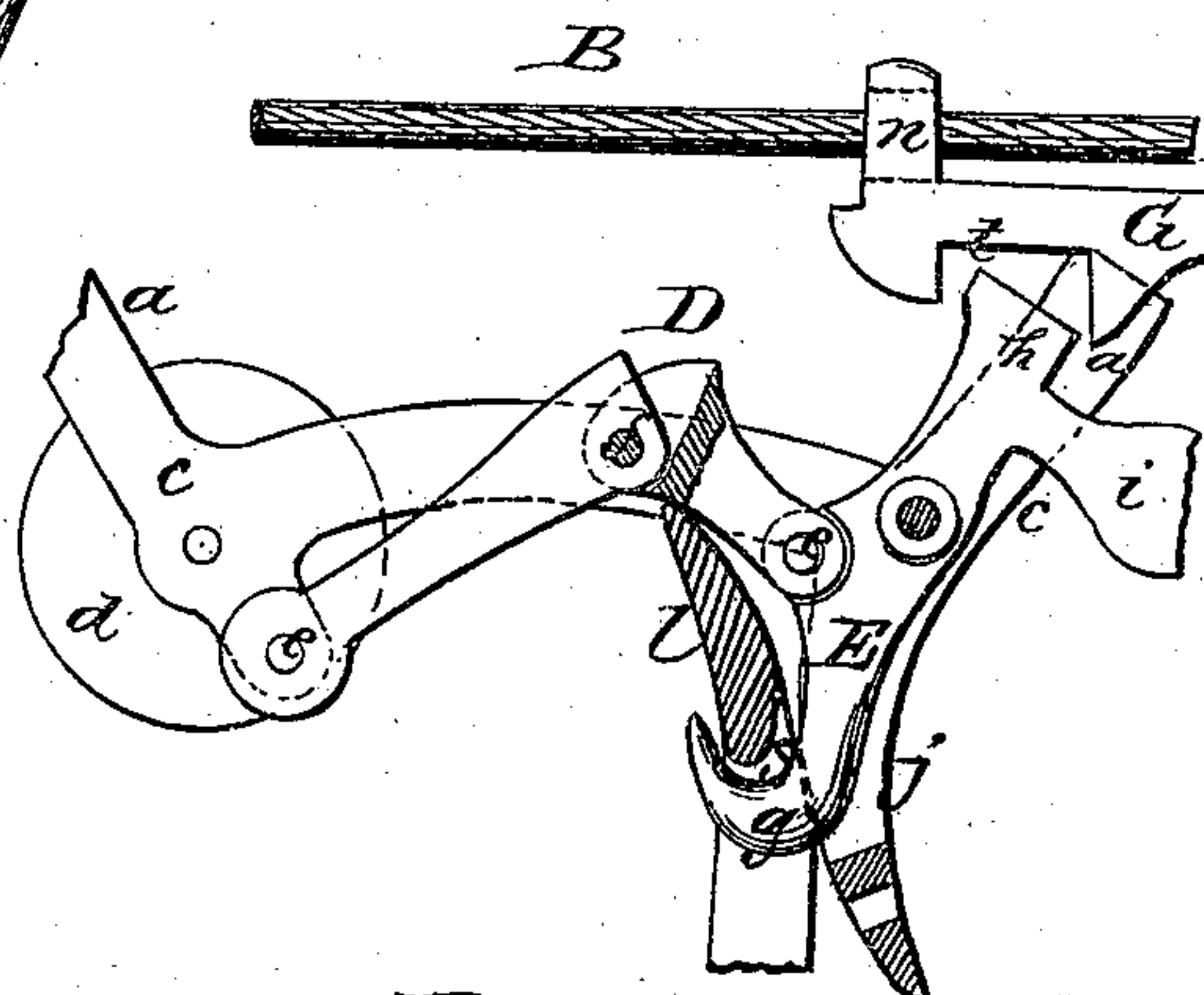
*Fig: 1.*



*Fig: 2.*



*Fig: 3.*



Witnesses:  
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Per. *[Signature]*  
atty.



# UNITED STATES PATENT OFFICE.

JEROME A. CROSS, OF FULTONVILLE, NEW YORK.

## IMPROVEMENT IN HAY-ELEVATORS.

Specification forming part of Letters Patent No. **185,432**, dated December 19, 1876; application filed November 1, 1876.

*To all whom it may concern:*

Be it known that I, JEROME A. CROSS, of Fultonville, in the county of Montgomery and State of New York, have invented a new and Improved Hay Conveyer and Stacker; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention is in the nature of an improvement in hay conveyers and stackers; and the invention consists in a hay conveyer and stacker constructed with a toggle-joint, combined with a hooked and counterweighted lever, and a swivel-stop combined with an adjustable clamping device, whereby it is secured to the supporting rope or track, and the combination with a swivel-stop of a pivoted, hooked, and counterweighted lever with a toggle.

In the accompanying sheet of drawings, Figure 1 is a side elevation of my improved hay conveyer and stacker. Fig. 2 is an end view of the clamping device, swivel-catch, and tripping-rope pulley; and Fig. 3 is a side view, showing the operation of the toggle and the hooked lever, when it is tripped by the traveling pulley.

Similar letters of reference indicate like parts in the several figures.

Devices called hay conveyers and stackers are, as is well known, used to elevate the hay from the surface of the ground to hay-carts for transportation, or to the hay-mows for storage, and it is desirable to have some of the parts of such a machine work automatically as well as with certainty. To effect this I construct my hay-conveyer with any suitable supporting devices, and extend between them a rope or other track, B. This track should, preferably, incline somewhat from one end to the other when in position. Onto this track B are placed two wheels, C C, with recessed peripheries, so that the track may, to some extent, fit into their peripheries. The wheels C support a frame, *a*, the upper part of the frame *b* connecting the wheels C together, and forming bearings, within which these wheels turn on suitable journals. To the lower arms *c* of the frame *a* is secured, in bearings formed

therein, a pulley-wheel, *d*, and to the lower end of the arms *c* is attached one end of a toggle, *d*. This end of the toggle is forked, so that it may pass on either side of the pulley-wheel *d*. The toggle-joint D works freely on pivotal bearings *e*, and is jointed at *f*, near the center of its length, and its other end is pivoted to the front edge of a lever, E. This lever rests likewise in suitable bearings of a cross-bar of the frame-work *a*, so that it may turn freely therein. The lever E thus journaled has at its lower end a hook, *g*, at its upper end a projecting square head, *h*, and on its rear side, immediately below this head, a counter-weight, *i*. From an arm, *j*, of the frame *a* depends a cord, *k*, which passes around a traveling pulley-block, F, the upper part of this pulley-block being constructed with a nose, *l*, and its lower part being furnished with a hook, *m*. Onto the track B, and at or near the lower inclined end of the same, is fixed a catch, G. This catch, at its front end, is provided with an eye, *n*, through which the track B passes, and at its other end with a collar, *o*, that surrounds a sleeve, *p*, the sleeve *p* having a flange on its front end, and being provided with set-screws *r*. Within the sleeve *p* are fitted two pieces of semi-cylindrical metal, *s*, so that when the set-screws *r* in the sleeve *p* are screwed inward, they jam the cylindrical pieces of metal *s* in tight contact with the track B, compressing the track between them, and in this manner retaining the sleeve *p* in position on the track, which, in turn, supports and holds in position the catch G, and at the same time admits of its turning freely on the track and on the sleeve *p*.

Now, my hay-conveyer being constructed substantially as I have above described, it is operated as follows: The hay-fork being attached to the hook *m* on the under side of the traveling pulley-block F, the cord *k* passes around the traveling pulley, and over the pulley *d*. The horse, being hitched to the end of the cord, draws the cord, and in so doing hauls up the traveling block F until the nose *l* of the block is brought in contact with the toggle D, forcing the toggle upward, the toggle, in turn, forcing the hook *g* of the lever E into a slot, *s*, of the nose *l* of the traveling pulley F, and at the same time causing the square head *f* of the lever E



to be withdrawn from the notch *t*, formed in the under side of the catch *G*, in this way detaching the frame-work *a* with the wheels *C*, and leaving the wheels free to travel up the incline of the track as the horse proceeds, conveying the load of hay on the fork to the desired position or place of deposit.

The load being delivered, the cord *k* is slackened, when the wheels *C* will descend, by gravity, the incline of the track, until the square head *h* of the lever *E* is brought in contact with the front end of the catch *G*, which trips or draws out the hooked end of the lever *E* from the recess of the nose *l* of the traveling block *F*, releasing the traveling block, and permitting it to descend with its hay-fork for a fresh load, and at the same time keeping the mechanism again in a fixed position to elevate the hay, as before.

A peculiar advantage of this construction and application of a toggle-joint is, that the force required to disconnect the apparatus from the fixed catch *G*, and sustain the load on the hooked end of the lever, also overcomes the inertia of the moving parts of the device, so that the disconnecting, hooking of the traveling block with its load, and the overcoming of the inertia are accomplished at the same instant of time, without the necessity of increased force, and without shock.

The stop *G*, as before mentioned, is secured to the track by an eye at one of its ends, and by a collar surrounding the sleeve secured to the track at its other end. This construction has a double purpose. It permits the catches to maintain by gravity the proper position to be effective, no matter in what man-

ner the track may be strained out of place, and also permits the front end of the catch to rise slightly and facilitate the entrance of the square head *h* of the hooked lever into the notch *t* of the catch, as before stated.

The toggle-joint *D* being a system of jointed levers, when the nose of the traveling block comes in contact with them at their center, the tendency is not only to uncatch the moving device and throw in the hook to sustain the load, but also tends to overcome the inertia of the traveling carriage.

The hooked lever *E* is provided with a counter-weight, *i*, which facilitates its operation, and the fixed catch *G*, at its rear end, has a pulley, *v*, through which passes a cord, *w*, one end of which cord is secured to the hay-fork, so that the load may be guided.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A hay conveyer and stacker constructed with a toggle-joint, in combination with a hooked lever, substantially as and for the purpose described.

2. In a hay conveyer and stacker, a sleeve for supporting the stop, combined with semi-cylindrical plates and set-screws, substantially as and for the purpose described.

3. In a hay conveyer and stacker, the combination of a hooked lever, a toggle-joint, and a traveling pulley-block, substantially as and for the purpose described.

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Witnesses:

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