

H. G. Porter.

Elevator.

N^o 92,092.

Patented Jan. 29, 1869.

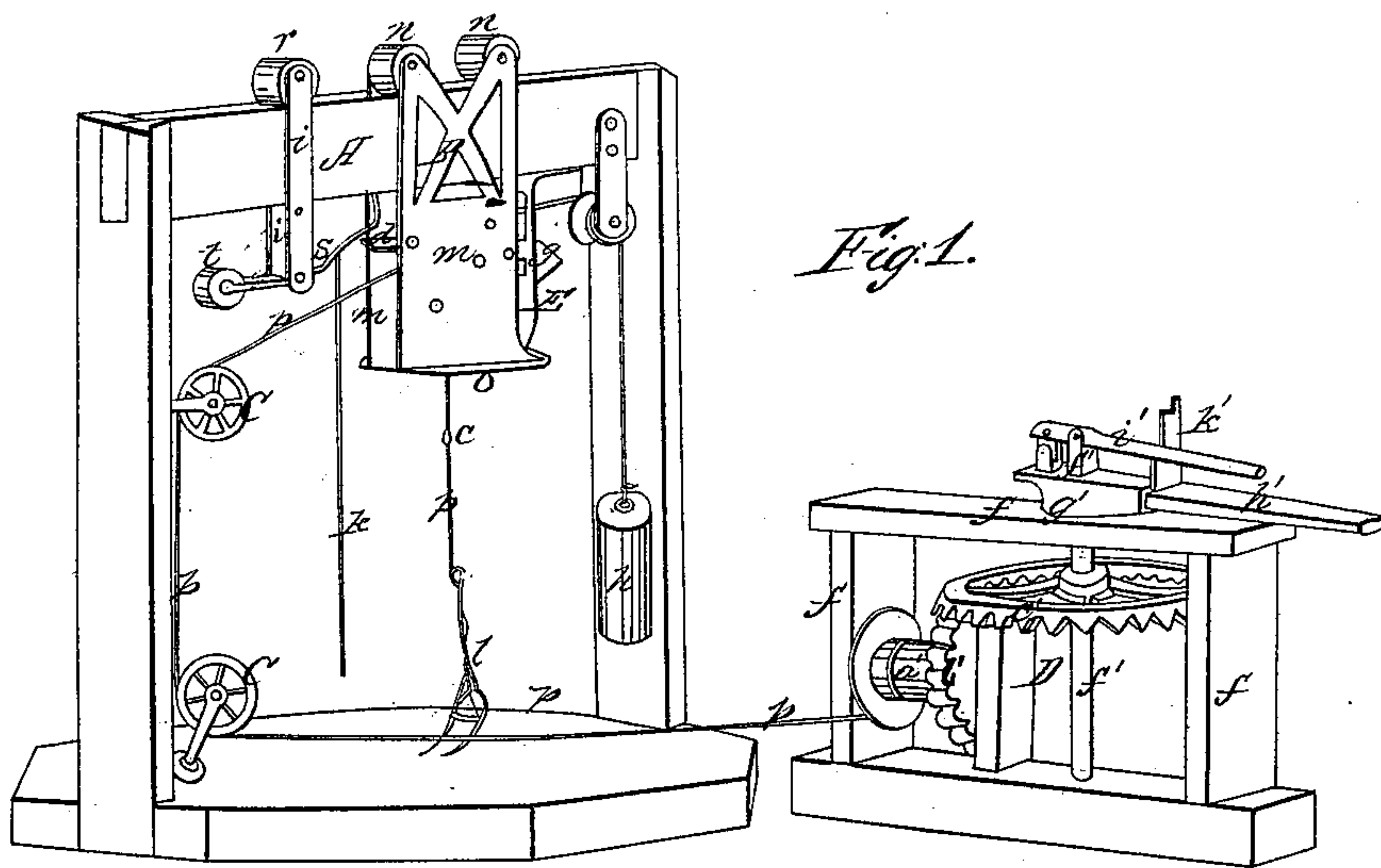


Fig. 1.

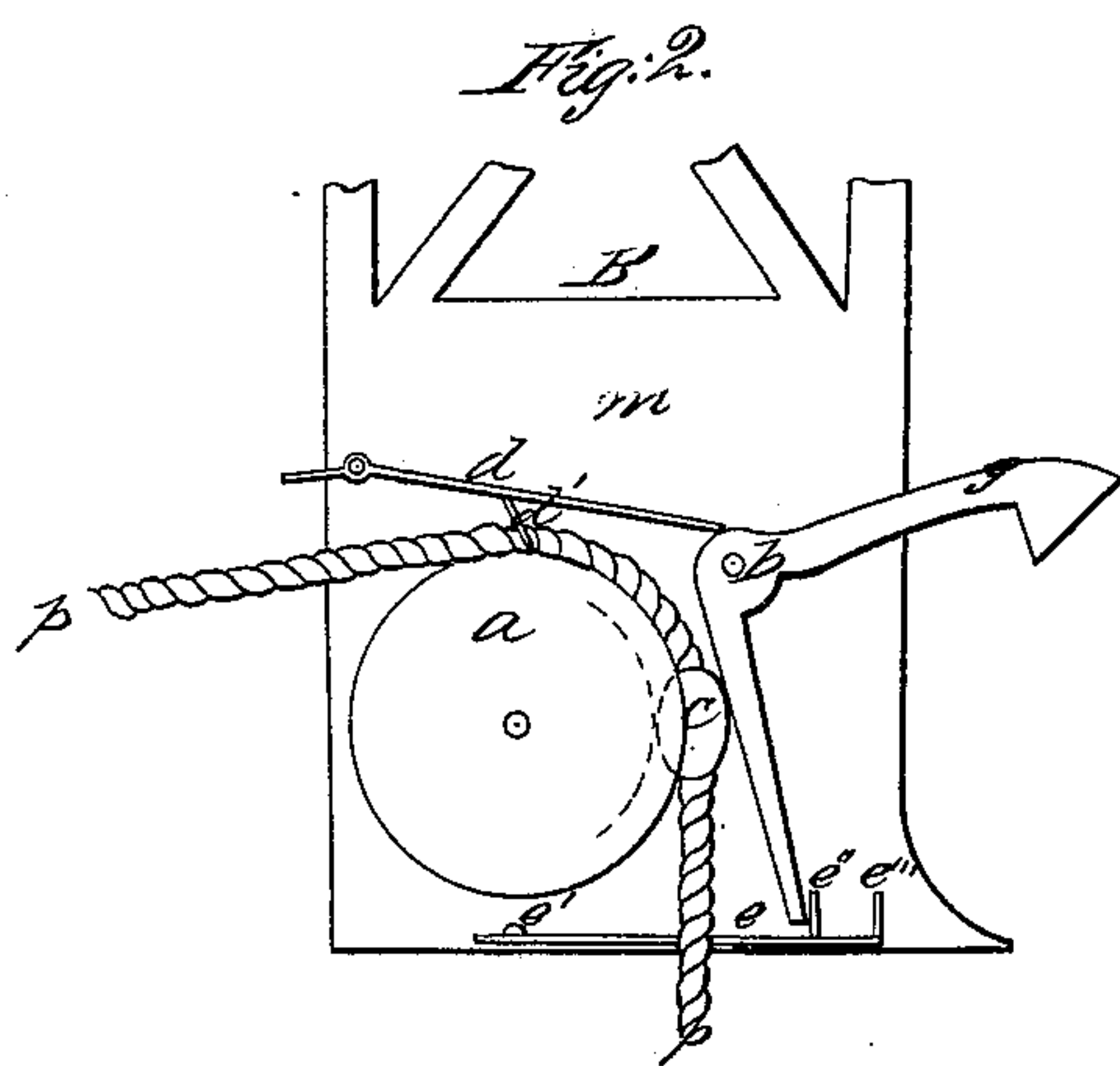


Fig. 2.

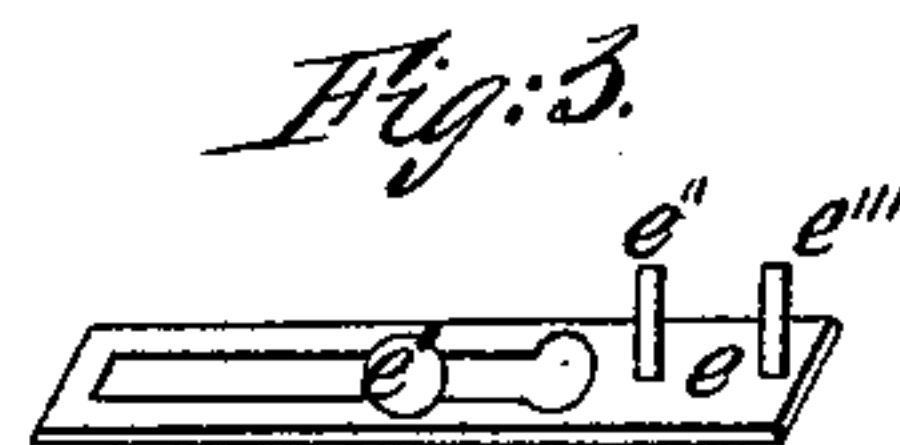


Fig. 3.

Witnesses:

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United States Patent Office.

HENRY G. PORTER, OF GRAND RAPIDS, MICHIGAN.

Letters Patent No. 92,092, dated June 29, 1869.

IMPROVEMENT IN ELEVATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY G. PORTER, of Grand Rapids, in the county of Kent, and in the State of Michigan, have invented certain new and useful Improvements in Railway Hay-Elevator; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the construction and general arrangement of a "Railway Hay-Elevator" with horse-power, by which hay, or any other article, may be hoisted up, and carried over to any part of the barn desired, and which saves the backing up of the horse, when the fork is to be lowered.

In order to enable others skilled in the art to which my invention appertains, to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of the elevator;

Figure 2, an inside view of the carriage; and

Figure 3, a perspective of the slide in said carriage.

A represents a beam, placed horizontally near the roof of a barn, and which beam supports the carriage B.

The carriage B consists of two plates, *m m*, placed vertically, one on each side of the beam A, the upper ends of said plates extending above the beam, and having two rollers, or wheels, *n n*, pivoted between them. The rollers *n n* thus support the carriage, and allow it to move backward and forward on the beam, the main portion of the carriage being suspended below the beam.

To the lower edges of the plates *m m* is secured a circular plate, *o*, which has a hole through its centre.

On the upper side of the circular plate *o*, between the plates *m m*, is placed a slotted slide, *e*, which is secured by a screw, or headed bolt, *e'*, through its slot, so that it may easily be moved back and forth, as occasion may require.

The slot in the slide *e* is, at its forward end, enlarged and rounded, as shown in fig. 3; and the slide is, at its front end, provided with two pins, or projecting flanges, *e''* and *e'''*, placed a suitable distance apart.

Between the plates *m m*, toward their rear part, is pivoted a pulley, *a*, around which the hoisting-rope passes.

Above said pulley is pivoted an arm, *d*, the front end of which rests on a lever, *b*, and the rear end extends slightly beyond the rear end of the carriage.

The arm *d* is, on its under side, provided with two prongs, *d'*, which extend downward, resting on the flanges of the pulley *a*, leaving sufficient room between them to allow the hoisting-rope to pass freely between them over said pulley.

In front of and slightly above the pulley *a*, is pivoted a bent lever, *b*, one arm of which extends in front

of the carriage B, and is provided with a hook, *g*; and the other arm extends downward in front of the pulley *a*, its lower end being placed in rear of and against the pin, or flange *e''* on the slide *e*, room being left between this arm and the pulley *a*, sufficient to allow the hoisting-rope to pass, without interfering with, or in any manner disturbing said lever.

The hoisting-rope *p*, to one end of which the fork *l* is attached, passes up through the circular plate *o*, and through the slot in the slide *e*, said slide being so placed, that the round portion of its slot is just over the hole in the plate *o*.

The hoisting-rope *p* then passes over the pulley *a*, as shown in fig. 2, and out at the rear side of the carriage B, passing over pulleys *C C*, placed at suitable points inside or outside the barn, connecting with the horse-power D.

At a suitable point on the rope *p*, above the fork *l*, is placed a round metal ball, *c*, which, when the fork is being hoisted, passes through the rounded portion of the slot on the slide *e*, and after rising above the same, strikes the lower arm of the lever *b*, which then coming in contact with the pin *e''*, moves the slide *e* forward, so that the rounded portion of the slot thereon moves away from the hole in the circular plate *o*, thus preventing the rope from sliding down again.

The hook *g* of the lever *b* is caught in the slotted bar E, which extends downward from the end of the beam A, at such a point, that when the carriage B strikes the same, the fork will be just above the place from which the hay is to be hoisted, thus preventing the carriage from moving on the beam, until said hook shall have become disengaged.

Now at the same time as the iron, *c*, forces the lower arm of the lever *b* to move the slide *e*, the upper arm of said lever is raised, and the hook *g* disengaged from the slotted bar E, when the carriage will at once move on the beam A, to the place where it is desired to unload the hay. It will be seen, that while the carriage is so moving on the beam, the prongs *d'* on the arm *d* prevent the fork from being raised any higher, said prongs catching on the iron, *c*.

At the point on the beam A where it is desired to unload the hay, is placed the stop-arrangement, which consists of two metal bars, or plates, *i i*, placed one on each side of the beam A, their upper ends having between them a roller, or wheel, *r*, which rests on the beam A, the plates, or bars *i i* extending below said beam.

Between their lower ends is pivoted an arm, *s*, the rear end of which is provided with a roller, *t*, of sufficient weight to raise the front end of the arm up against the under side of the beam. This front end being bent upward and pointed, keeps the stop-arrangement steady in any place desired.

To the front end of the arm *s* a rope, *k*, is suspended, so that, by pulling on said rope, the rear end of the arm

can be raised, until the roller *t* strikes the beam *A*, when the whole stop-arrangement is easily moved to any point desired, by the aid of the rope, *k*.

The stop-arrangement having been placed in proper place, when the carriage *B* strikes the same, the front end of the arm *s* will strike the rear end of the arm *d*, raising its front end, also the prongs *d'*, which then allow the iron, *c*, to slip over the pulley *a*, until the fork *l* strikes the circular plate *o*.

The fork *l* being of the construction described in my patent of March 3, 1868, the act of the fork striking said circular plate, will trip the fork without the aid of any trip-rope, straighten the tines, and unload the hay.

The raising of the hay upward, and the moving of the carriage, is accomplished by the horse-power *D*; and as soon as the hay is unloaded, the hoisting-rope *p* will be let loose, in a manner hereinafter to be described.

To the front end of the carriage *B* is attached a rope, which passes over suitable pulleys either inside or outside of the barn, and has a weight, *h*, at its lower end for the purpose of moving the carriage *B* forward again on the beam *A*. As soon as the hay is unloaded, and the hoisting-rope *p* slackened, the carriage *B* will move forward again. The weight of the fork *l* will then carry the iron, *c*, around the pulley *a*, raising the arm *d* for that purpose, until the said iron rests on the slide *e*, said slide having, as above described, been moved forward. The hook *g* then catches in the slot on the bar *E*, holding the carriage in place. The lower end of the bar *E* is bent, so as to strike the pin *e''* on the slide *e*, when the carriage arrives up to it. This moves the slide *e* backward again, so that the rounded portion of the slot in said slide comes over the hole in the plate *o*, thus allowing the iron, *c*, to pass downward, and the fork to descend.

The horse-power *D* consists of a frame, *f*, in which is placed a roller, *a'*, to which the end of the hoisting-rope *p* is secured.

The roller *a'* is, at one end, provided with a mitre-wheel, *b'*, and turns freely on its journals.

The mitre-wheel *b'* gears into a large wheel, *c'*, on a vertical shaft, *f'*.

Said shaft passes up through the frame *f*, and is provided with a collar, *g'*, to which the sweep *k'* is secured.

The collar *g'* is placed in the upper part of the frame *f*, and so arranged, that by turning the sweep *k'*, the shaft *f'* and wheel *c'* are turned also; but the shaft *f'*

can be raised upward, without interfering with the collar and sweep.

The shaft *f'* extends above the sweep, and is, at its upper end, pivoted to a lever, *i'*, which is pivoted, in some suitable manner, at its front end; and the rear end fits into notches on a bar, *k'*, also placed on the sweep.

By raising the lever *i'*, the shaft *f'* and wheel *c'* are raised up from the mitre-wheel *b'*.

It will be seen, that when the team is attached to the sweep *k'*, the lever being down, and the team started, the roller *a'* will turn, winding up the hoisting-rope *p*, and as soon as the fork is unloaded, it will not be necessary to back up the horse, but only to raise the lever *i'*, when the wheels *b'* *c'* become disengaged, and the carriage *B*, moving forward, will at once unwind the rope from the roller. As soon as it is desired to start the team again, lower the lever *i'*, and the machine is ready.

The carriage *B* may move on rails, ropes, &c., as well as on a beam, and the weight *h*, which moves the carriage forward, may be dispensed with, by raising the rear end of the beam *A*, when the carriage will move forward of its own weight.

The beam *A* need not, necessarily, be stationary; it may be suspended from the peak of the barn, or at any place desired.

I do not confine myself, in the use of this machine, to elevating and transferring hay, as it may be used for any articles whatever.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement, in the carriage *B*, of the pulley *a*, bent lever *b*, slotted slide *e*, pins *e''* *e'''*, and arm *d*, with its prongs *d'*, all substantially as and for the purposes herein set forth.

2. In combination with the above, the plate *o*, for the purpose of dumping, or tripping the hay-fork, substantially as herein set forth.

3. The "stop-arrangement," consisting of the bars *i* *i'*, roller *r*, pointed arm *s*, and roller *t*, all constructed and operating substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 22d day of January, 1869.

Witnesses:

HENRY G. PORTER.

JAMES A. ROGERS,

JOS. H. WÜRZLUNG.