

(Model.)

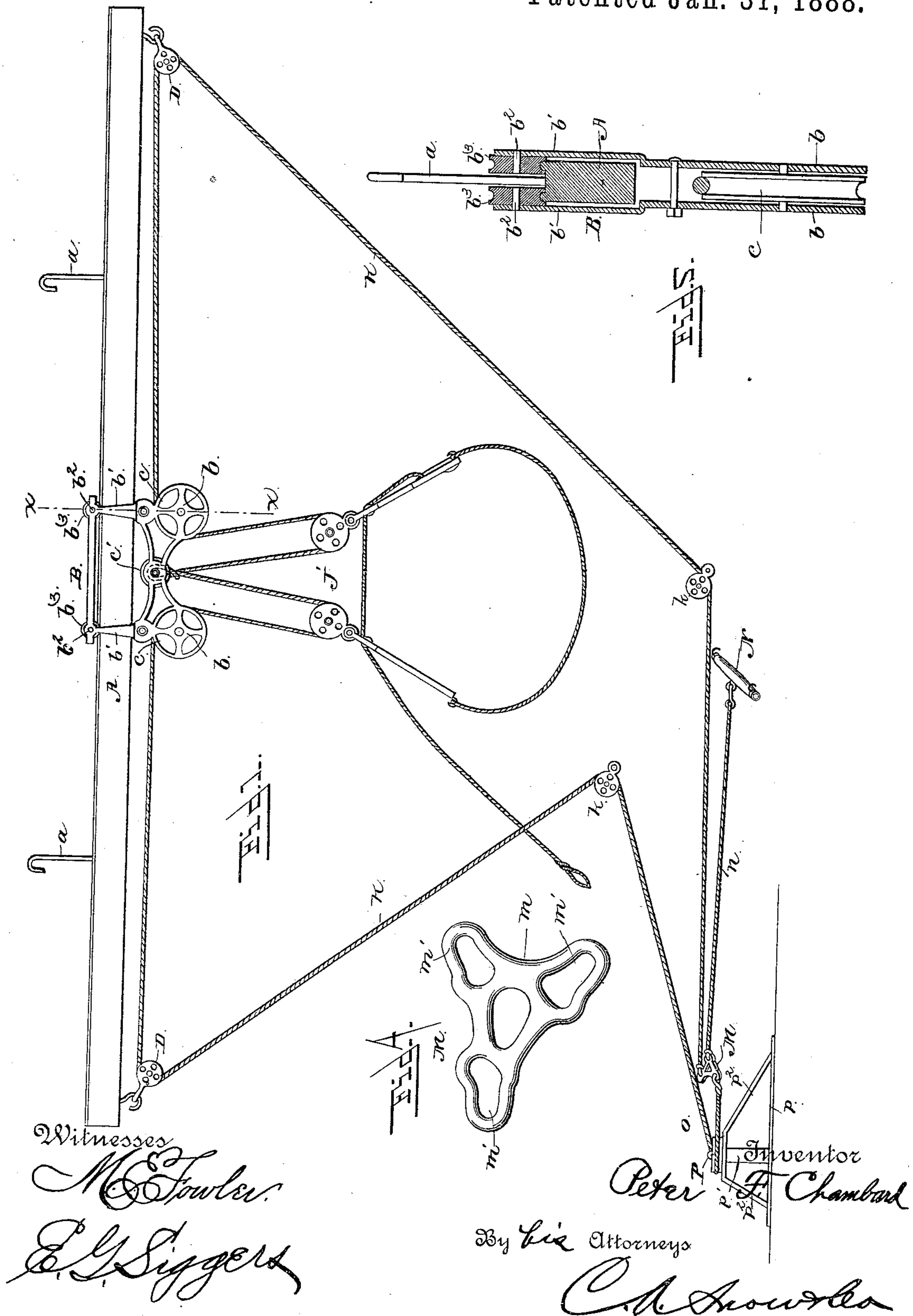
P. F. CHAMBARD.

2 Sheets—Sheet 1.

HAY ELEVATOR.

No. 377,063.

Patented Jan. 31, 1888.



(Model.)

2 Sheets—Sheet 2.

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Fig. 2

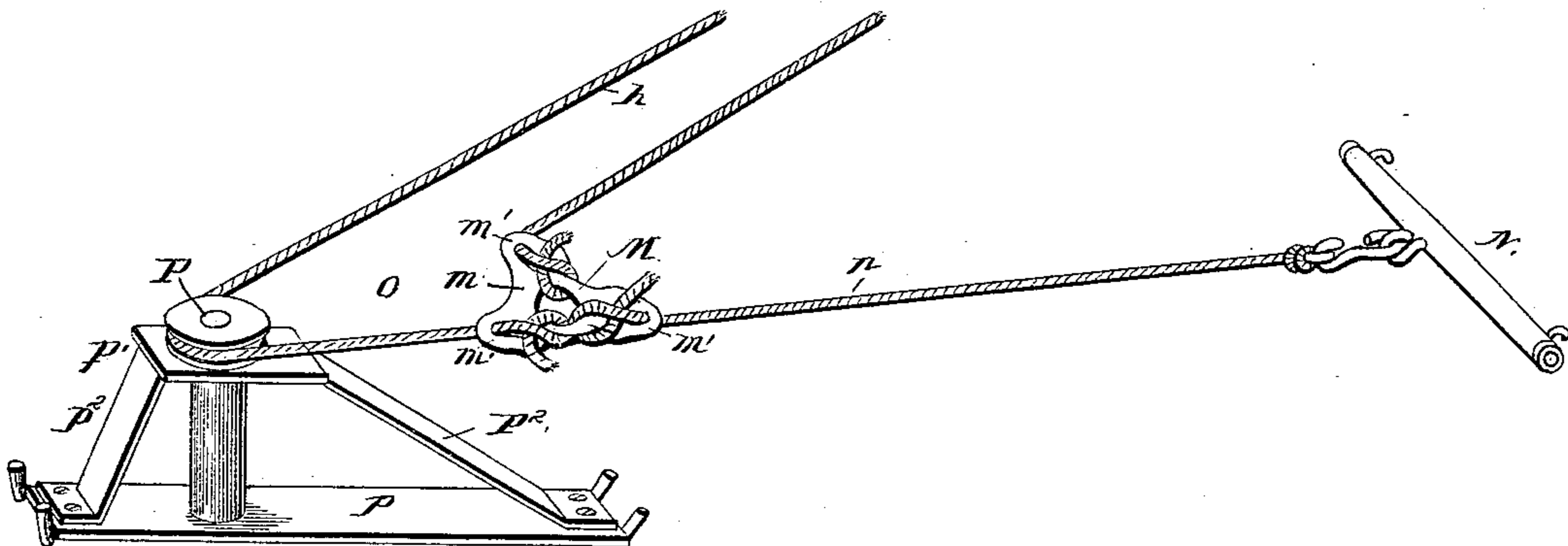


Fig. 3

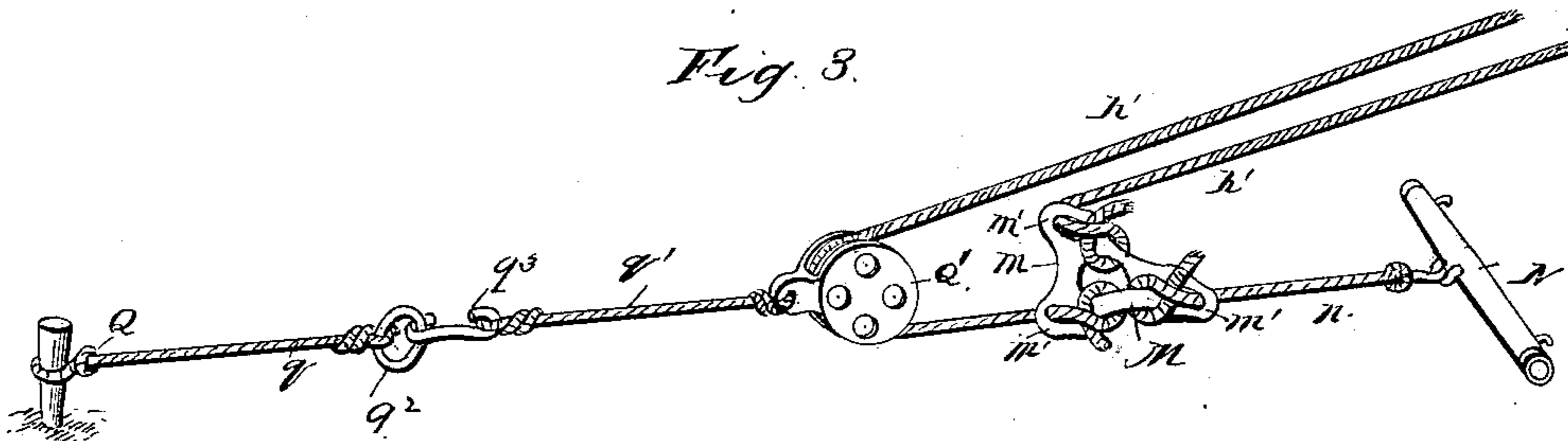
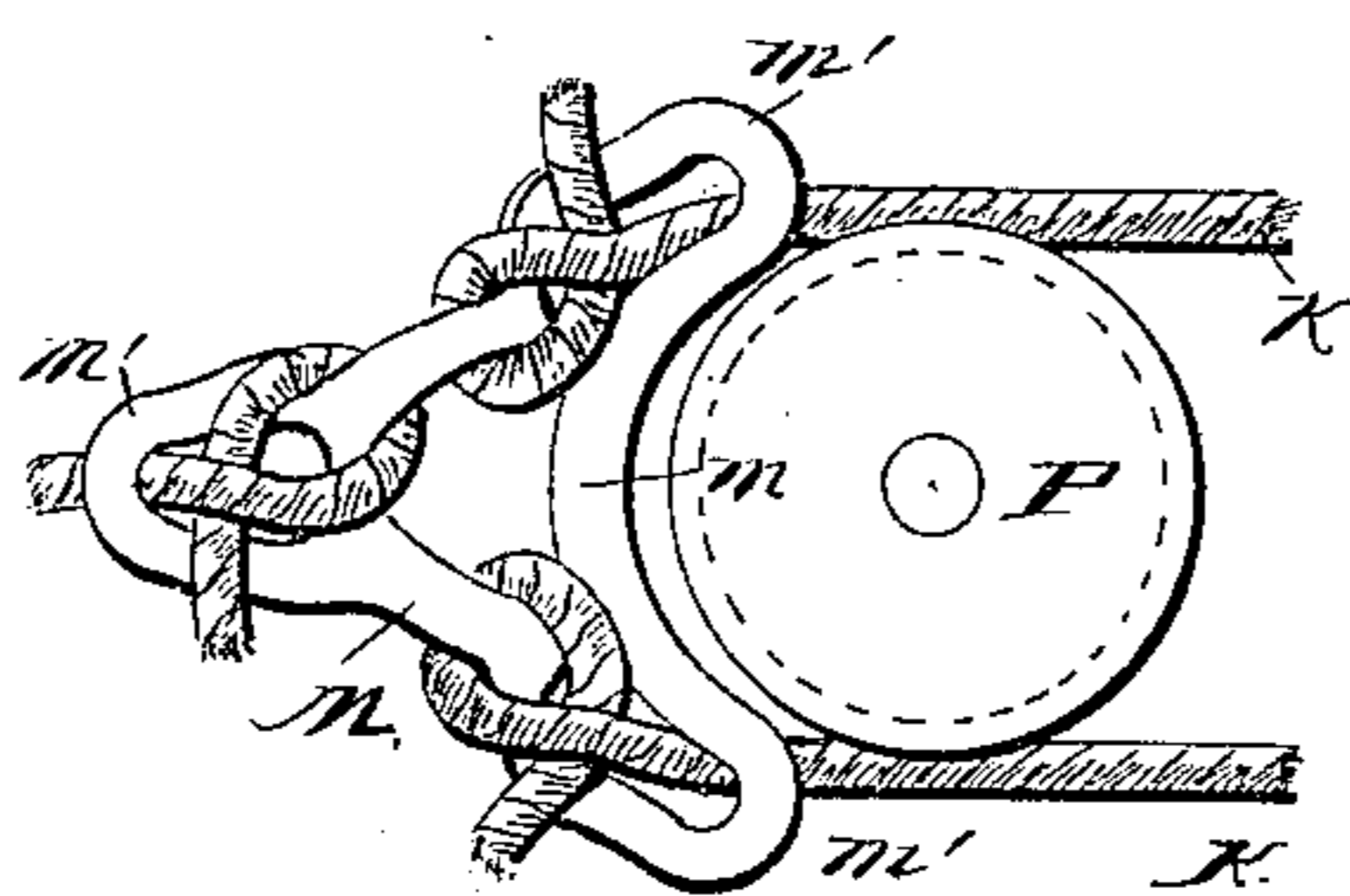


Fig. 6



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UNITED STATES PATENT OFFICE.

PETER FREDERICK CHAMBARD, OF FAYETTE, OHIO.

HAY-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 377,063, dated January 31, 1888.

Application filed January 5, 1887. Serial No. 223,479. (Model.)

To all whom it may concern:

Be it known that I, PETER FREDERICK CHAMBARD, a citizen of the United States, residing at Fayette, in the county of Fulton and State of Ohio, have invented a new and useful Improvement in Hay Elevators and Loaders, of which the following is a specification.

My invention relates to improvements in hay-elevators; and it consists of the peculiar combination of devices and the novel construction and arrangement of the various parts for service, substantially as hereinafter fully described, and particularly pointed out in the claims.

The object of my invention is to provide an improved hay-elevator which can be used for merchandise, which shall be under the complete control of the attendant, and possesses superior advantages over others of its class which have preceded it in points of strength and simplicity of construction, efficiency of operation, and cheapness of manufacture.

In the drawings hereto annexed, which illustrate a hay-elevator embodying my present improvements, Figure 1 is a view showing my invention adapted for use. Fig. 2 is an enlarged perspective view of the anchoring devices over which the elevating-rope passes. Fig. 3 is a like view of a modified form of my anchoring device. Fig. 4 is a detail view of the coupling-plate. Fig. 5 is a transverse vertical section through the carriage on the line X X of Fig. 1. Fig. 6 is a detail view of the coupling-plate for the rope and the pulley of the anchoring device.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the track of a hay-elevator embodying my improvements, which is made in two or more sections, which are united or connected together in any suitable manner at their meeting ends, and are suspended in a barn or other structure by any suitable mechanism, preferably by means of the hooked rods *a*. (Shown in Fig. 1 of the drawings. In this figure we show only one of the sections of the track.)

B designates the traveling carriage of the elevator, which is adapted to travel upon the suspended track and to be supported thereby. The carriage preferably comprises the parallel sides *b*, which are disposed on opposite

sides of the suspended track, and these sides have upwardly-extending arms *b'*, which are extended above the plane of the track, and carry short stub-axes *b''*, on which are journaled the supporting-rollers *b'''*, that rest upon the upper side of the track, these rollers being arranged on opposite sides of the center of the track and out of contact with each other to provide or leave an intermediate space, so that the carriage can travel or move on the track without hinderance from the suspending-rods, which pass through the spaces between two adjoining rollers, as will be very readily understood by reference to Fig. 5.

The lower portion of the carriage has pulleys *c* journaled therein, that are arranged at opposite ends of the sides *b* and between the latter, and between the said end pulleys, *c*, and at the middle of the sides, is arranged a bolt, *c'*.

D designates pulleys or sheaves, which are connected to the track near the ends thereof, or at any other suitable place or structure on opposite sides of the point where it is desired to dump the load of the carriage B.

The rope is attached to the bolt *c'* of the traveling carriage by a loop or in any other suitable manner, then passes through the pulleys *J'* of a suitable hay fork or sling, then through the pulleys *c* of the carriage, after which it is passed through the pulleys D, and finally the ends thereof are united or connected by an intermediate coupling-piece, M, so as to form practically a continuous rope, the ends of the rope where they are united to the coupling-piece being passed through suitable pulleys, *k*, which are anchored in any suitable manner to the ground or a fixed object, the said pulleys being arranged near one another and at a sufficient distance apart to prevent the ends of the rope where it is connected with the coupling-piece from becoming entangled together.

The coupling piece or plate M is preferably a single casting, and is made substantially in the form of a triangle, with one of the sides thereof curved, as at *m*, to resemble or approximate the segment of a circle, for a purpose presently described. The angles or corners of this triangular coupling-plate are provided with eyes or openings *m'*, through two of which are passed the ends of the continu-

ous elevating-rope K of the apparatus, and through the other eye or opening in the coupling-plate is passed one end of a rope, n , which is connected at its opposite end with a whiffletree, N, of any approved pattern, so that the draft-animal can be hitched or connected to the coupling-plate to draw upon the ends of the continuous cord with uniform tension, in order to elevate the sling to the desired height.

O designates the anchoring mechanism for holding the coupling-plate against movement toward the guide-pulleys k under weight of the load in the sling when the sling and its load have reached the desired point of elevation. As shown in Figs. 1 and 2 of the drawings, this anchoring device comprises a horizontal sill, p , to which is rigidly affixed a short vertical standard, p' , that is strengthened by intermediate braces, p'' , which are connected at their ends to the said standard and the horizontal base-sill, as shown. This vertical standard carries a horizontally-rotating pulley or sheave, P, which is suitably journaled or held thereon, and around this sheave passes one end of the continuous rope K, the coupling-plate being adapted to have its concave side m thereof bear or fit against the convex side of the sheave, in order to lock or hold the coupling-plate and the elevating-rope against reverse or rearward movement under the weight of the load in the sling. This anchoring device is located at a suitable distance from the elevator-carriage to permit the continuous rope to be drawn upon a sufficient length of time to elevate the sling and its load to the desired point before the concave side of the coupling-plate comes in contact with the roller or sheave, the base-sill of the anchoring device being adapted to be held against displacement or movement by means of suitable stakes, which are properly driven to engage the said base-sill to effect the desired end.

In Fig. 3 I illustrate a modified form of my anchoring device, the combination and operation of which are as follows:

Q represents a stake, which is driven into the ground at a suitable distance from the carriage. To this stake is attached one end of a rope, q , which has at its free end a ring, q^2 .

Q' represents a block, in which is journaled a sheave around which the elevating-rope passes. A short rope, q' , is attached to the block and has a hook, q^3 , at its outer end, adapted to engage the ring q^2 , as shown.

When the sling is being loaded, the block is disconnected from the stake by disengaging the hook q^3 from the ring q^2 . When the horse travels toward the stake in elevating the carriage, the block is drawn along with the elevating-rope, and when the carriage is lifted to the required height the attendant engages the hook with the ring, thereby securing the block to the stake, so that the coupling-plate may come in contact with the block and hold the carriage in the elevated position, as in the previous instance.

This being the construction of my improved

hay-elevator, the operation thereof is as follows: The track is first properly suspended and the carriage placed thereon, after which the elevating-rope is passed through the pulleys of the sling, the several pulleys of the carriage, and the pulleys D and k in the manner hereinbefore described. The ends of the rope are connected or united by the coupling-piece, and the draft-rope from the whiffletree is also connected to the coupling-piece. The anchoring device is now placed at a proper distance from the elevator and carriage, it being necessary for the attendant to determine by experiment with the carriage and the elevating-rope the point where the said anchoring device is to be located. The coupling-plate which connects the meeting ends of the continuous elevating-rope comes in engagement with the sheave or pulley of the anchoring device at the same time that the sling has attained the desired elevation, the anchoring device being placed at a distance from the carriage and sling to attain this result. This coupling or plate is prevented from rearward or reverse movement by reason of its engagement with the sheave or pulley of the anchoring device, so that the sling and its load are prevented from descending, and are thereby maintained at the desired elevation.

In order to elevate the sling after the load has been placed therein, the draft-animal is driven forward away from the pulleys k , so that the ends of the rope connected with the coupling or plate M are drawn upon to an equal degree and are caused to pass through the pulleys D and J', and thereby raise or elevate the sling and load, the length of the rope between the pulleys c of the carriage, and the pulleys J' of the sling being shortened proportionately to the increase of the rope between the coupling or plate M and the guide-pulleys k , as will be readily understood. The draft is driven from the pulleys k toward the anchoring device until the coupling or plate comes in engagement with the sheave or pulley of the anchoring device, and the sling or load having been elevated to the desired point, the sling is thus locked or held against further vertical movement in either direction, and the draft-animal is now driven either to the right or left, according to the direction in which it is desired the carriage and sling should travel. By this latter movement one end of the elevating-rope is drawn upon to slacken one length between the carriage and the pulley of the anchoring device, while the other end between the anchoring device and carriage is correspondingly increased. As the rope is attached firmly to the carriage at the bolt c' , as before described, the carriage is caused to travel when one end of the rope is tightened and the other end thereof slackened, as will be readily understood. The animal is driven in the proper direction until the load shall have reached the dumping-point, when it is unloaded by suitable means and the carriage then returned for a new load.

The anchoring device can be moved farther

from the carriage, in order to raise the sling and its load to a higher point; or it can be moved nearer to the said carriage to lower the point of elevation of the sling. In removing
5 or adjusting the form of anchoring devices shown in Figs. 1 and 2 of the drawings it is necessary to withdraw the stakes and move the frame, together with the pulley, bodily to the desired point; but in the form of my invention shown
10 in Fig. 3 the rope *g* can be lengthened or shortened at will to attain the same result without withdrawing and adjusting the fixed stake, as is obvious.

It will be seen from the foregoing description that I provide a simple and effective hay-elevator, which is under the immediate and direct control of the operator.

I would state that while I deem the mechanisms and devices herein shown and described
20 as best adapted for carrying my invention into practical use, still I reserve the right to make such changes and alterations therein as fairly fall within the spirit of my invention.

I have shown and described the rope as being attached rigidly to the bolt *c'* by looping the rope over the bolt; but I am aware that it can be held rigidly by other means. For instance, hooks may be employed with equal effect. I therefore do not wish to be limited
30 to this particular fastening means.

The coupling plate or piece *M* may be connected to the rope in various ways not necessary to point out herein; also, other forms of tracks may be used in place of the one shown
35 and the devices will work with equal effect.

Having thus fully described my invention,

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

1. In a hay-elevator, the combination, with a traveling carriage, the hay grasping or lifting device, and the guide-pulleys, of an elevating-rope connected to the carriage and passing through the guide-pulleys, a coupling-plate connected with the rope, and an anchoring device having a guide-pulley over which the cord
40 passes and with which the coupling-plate comes in contact when the hay-grasping device and the load thereon attain their desired elevation, substantially as described, for the purpose set forth. 50

2. In a hay-elevator, the combination, with the traveling carriage, of an anchoring device having the guide-pulley, a rope, and a coupling-plate to which the rope is connected, and provided with the concave side adapted to
55 impinge against the convex side of the pulley, substantially as described.

3. The combination of the track, the carriage traveling thereon and having the bolt *c'* and the pulleys *c*, the hay-grasping device
60 having the pulleys *J'* and the endless elevating-rope attached to the bolt *c'* and passing over the pulleys *c* and *J'*, and guiding-pulleys for the endless elevating-rope, substantially as described. 65

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

PETER FREDERICK CHAMBARD.

Witnesses:

JOHN KELLER,

JUDSON TROWBRIDGE.