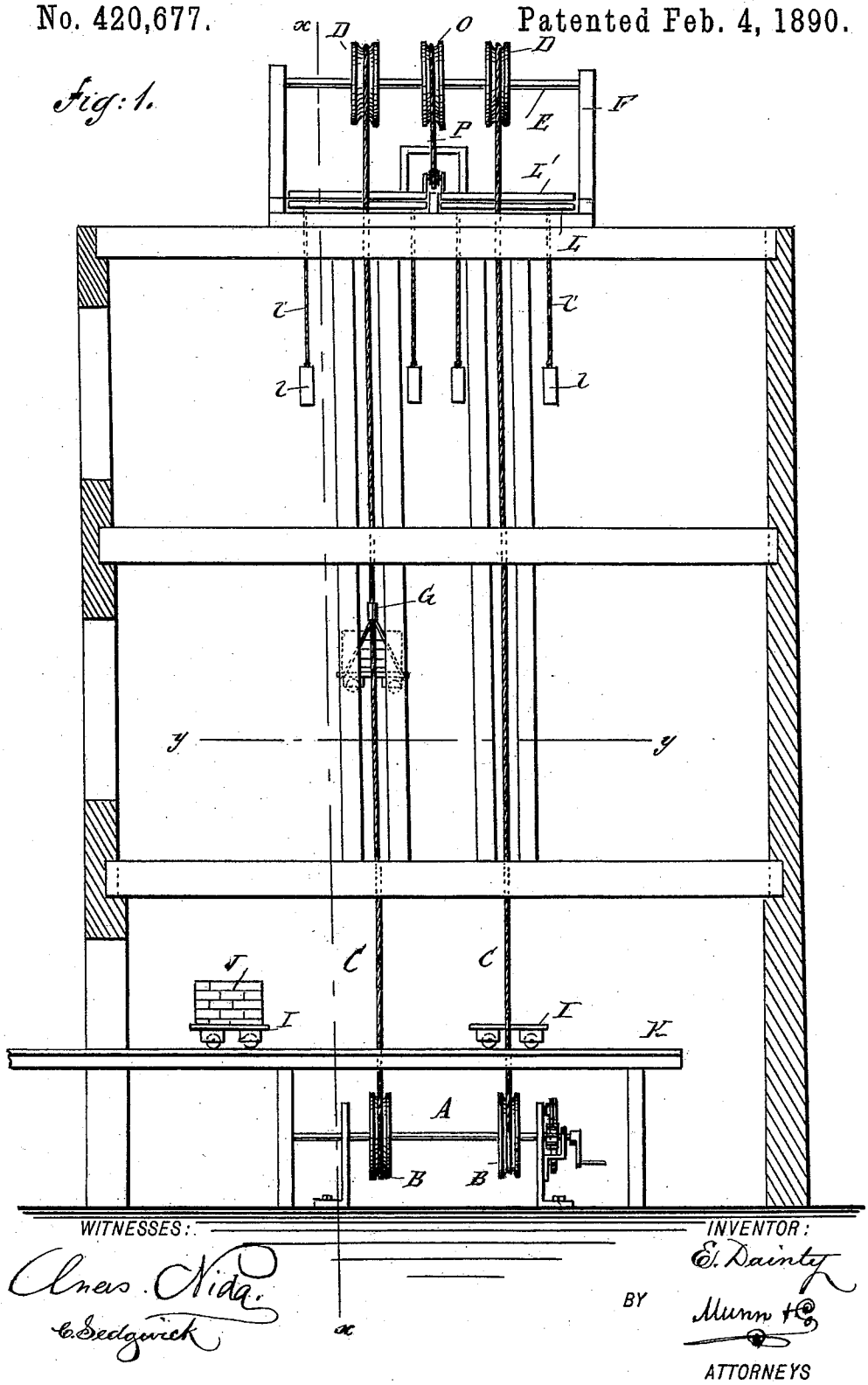
(No Model.) 3 Sheets—Sheet 1.

# E. DAINTY.

## HOISTING MACHINE.

No. 420,677. Patented Feb. 4, 1890.

Fig: 1.




WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

E. Dainty

BY Munn & Co.

ATTORNEYS

(No Model.) 3 Sheets—Sheet 2.

# E. DAINTY.

## HOISTING MACHINE.

No. 420,677. Patented Feb. 4, 1890.

Fig: 2.

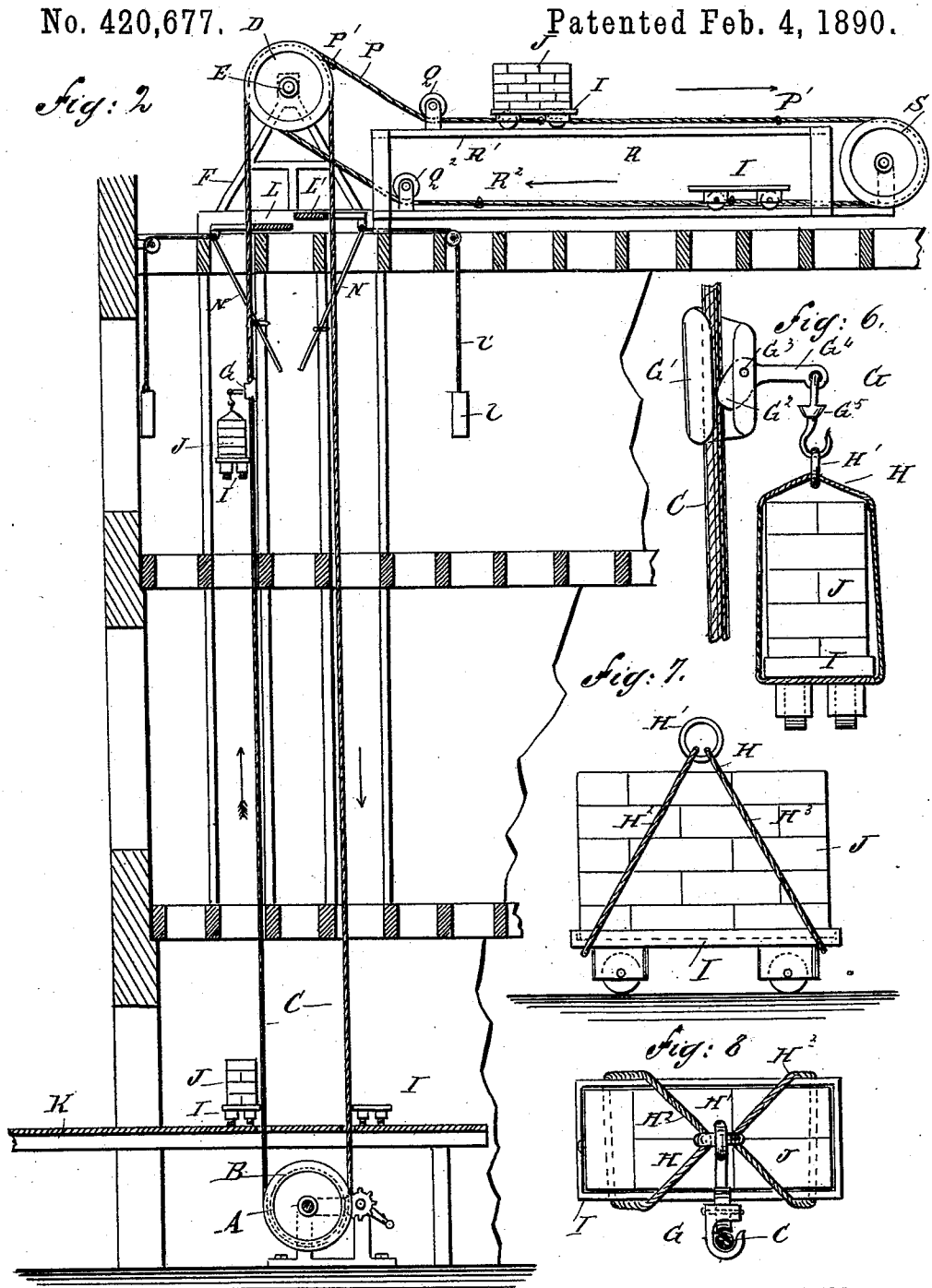



Fig: 6.




Fig: 7.




Fig: 8




WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

E. Dainty

BY Munn & Co

ATTORNEYS

(No Model.)

3 Sheets—Sheet 3.

# E. DAINTY.

## HOISTING MACHINE.

No. 420,677. Patented Feb. 4, 1890.

Fig. 3.

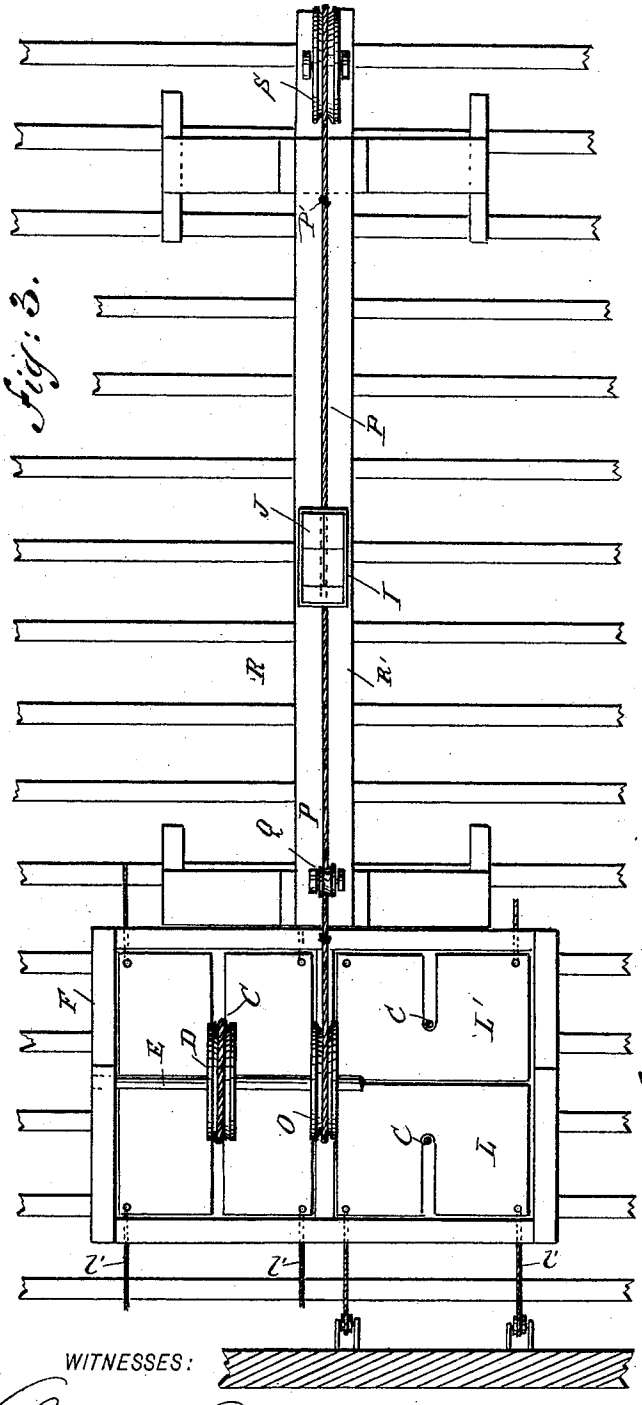



Fig. 5

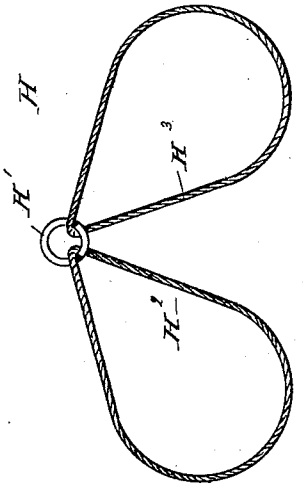
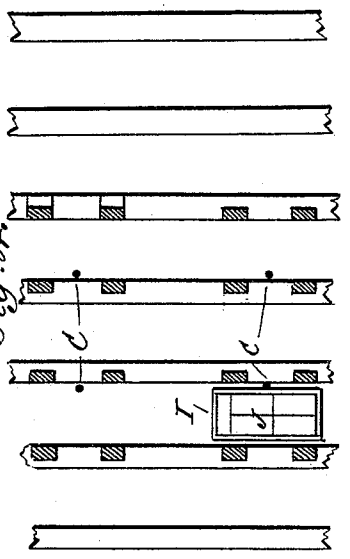



Fig. 4.




WITNESSES:

Chas. Neal

C. Sedgwick

INVENTOR:

E. Dainty

BY

Munn & Co

ATTORNEYS

# UNITED STATES PATENT OFFICE.

ELIJAH DAINTY, OF COAL BLUFF, PENNSYLVANIA.

## HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,677, dated February 4, 1890.

Application filed October 15, 1889. Serial No. 327,095. (No model.)

*To all whom it may concern:*

Be it known that I, ELIJAH DAINTY, of Coal Bluff, in the county of Washington and State of Pennsylvania, have invented a new and Improved Hoisting-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved hoisting-machine specially adapted for hoisting bricks in buildings in the course of erection and for transporting merchandise in wagons or loading or unloading vessels, &c.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter more fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of the improvement as applied for carrying bricks in a building in the course of erection. Fig. 2 is a transverse section of the same on the line *x x* of Fig. 1. Fig. 3 is a plan view of the same. Fig. 4 is a sectional plan view of part of the same on the line *y y* of Fig. 1. Fig. 5 is an enlarged perspective view of the loop for supporting the load. Fig. 6 is an enlarged side elevation of the hoisting-rope, grip, and loop supporting the load. Fig. 7 is a front view of the loop supporting the load; and Fig. 8 is a plan view of the same, showing the grip attached to the loop.

The improved hoisting-machine is provided with a shaft A, mounted to turn in suitable bearings and adapted to be turned by suitable hand or other power. The shaft A is located in the basement or lower floor of the building, and on it are secured one, two, or more pulleys B, according to the number of the hoisting devices to be used. As shown in the drawings, two such hoisting devices are used; but only one may be employed, or more, if desired. As they are all alike in construction, it suffices to describe one. Over the pulley B passes an endless rope C, extending upward between the beams of the building and passing over a pulley D, secured on a shaft E, mounted to turn in suitable bearings in a movable frame F, supported on the top beams in the building. The rope C is adapted to be engaged by a grip G, preferably of the construction shown in the drawings, the grip being provided with a shoe G′, through which passes the rope, the latter being clamped in the shoe by a cam $G^2$, pivoted at $G^3$ to a projection on the shoe G′, and provided with an outwardly-extending arm $G^4$, carrying a downwardly-extending hook $G^5$, adapted to be engaged by a ring H′ of a loop H, supporting the load to be hoisted. The loop H is provided, besides the ring H′, with two endless ropes $H^2$ and $H^3$, engaging said ring H′ and adapted to pass over the ends of the platform of a car I or other receptacle in the manner shown in Figs. 6, 7, and 8.

The car or receptacle I supports the load J, and the endless ropes $H^2$ and $H^3$ are made sufficiently long so as to pass over the sides of the load, the ring H′ being on top and in the center of the load, as is plainly shown in the figures. The shoe G′ is open on one side, so as to be easily passed onto the rope C when the loop H, carrying the load, is detached. The arm $G^4$ is then swung upward, so that the cam $G^2$ swings outward and permits the entrance of the rope C into the shoe G′. The ring H′ is then hung on the hook $G^5$, so that the load, pulling on the lever $G^4$, presses the cam $G^2$ in firm contact with the rope C, and the latter against the shoe G′, so that the grip travels with the rope. The grip is then secured, and the cam $G^2$ is pressed in firm contact with the rope C by the increase of the weight of the load G.

In building, the cars I are loaded with several layers of brick set up in a regular manner, as is shown in Figs. 6, 7, and 8, said cars being pushed directly from the wagon onto a platform K, located over the pulleys B, and through which the rope C passes. The loaded car I is pushed up in position alongside that part of the rope C which travels upward, so that the operator, after placing the loop H in position, hooks the ring H′ into the ring $G^5$ of the grip G, so that the upward-traveling part of the rope C carries the car I and its load J upward to the top of the building.

The frame F is preferably covered by slid-

ing platforms or doors L and L′, held in a closed position by weights *l*, secured to ropes *l*′, passing over pulleys and fastened to the said platforms, as is plainly shown. On the under side of each door or platform L or L′ is secured an inclined rod N, which extends in the pathway of the upwardly-traveling load, so that the latter presses against the said inclined rod N, thereby pushing the platform or doors L to open the passage-way for the load at the time when the latter arrives near the platform. As soon as the load has passed the platform the weights pull the platforms back into their former position, and the motion of the rope is reversed for a moment, so that the car I rests on the platform L or L′, and an operator detaches the grip G by lifting the arm $G^4$ and disengaging the shoe G′ from the rope C.

In order to transport the load from the frame F to the walls of the building in course of erection, the following device is used: On the shaft E is secured a pulley O, over which passes an endless rope P, also passing under a small pulley Q, mounted on the top plate R′ of a frame R, extending from the frame F to within a short distance of the wall to be built, said frame being adapted to be placed into any desired position, horizontal or inclined.

The endless rope P passes over a large pulley S on the end of the frame R, and then returns over the bottom plate $R^2$ of the frame R, passing under a small pulley $Q^2$ on the front end of the said bottom plate $R^2$, and then back over the pulley O. The rope P may be provided with a suitable gripping device or with knots P′, adapted to engage corresponding apertures formed in the under side of the platform of the car I. The latter is adapted to travel outward on the top plate R′, being carried forward by the endless rope P; but when the desired destination is reached the operator lifts the car I with the load off of the rope and dumps the load J at the desired place. The empty car is again placed on the lower part of the rope P on top of the bottom plate $R^2$, so that the car is returned to the platform L or L′. The operator at the platform L or L′ again attaches the loop H to the car I and hangs the loop on the grip G, placed on the downgoing part of the rope C, so that the empty car travels downward, and is removed from the rope C on the platform K to be returned to the brick-pile to be filled.

It is understood that when the shaft A is set in motion in any suitable manner the rope C travels in the direction of the arrows shown in Fig. 2, so as to hoist the car and load by the grip G, as previously described, until they reach the platforms L and L′, on which the cars and loads with the grip are detached from the upgoing part of the rope C, are placed on the top plate R′ of the frame R, and propelled outward by the endless traveling rope P, which is set in motion from the shaft E, turned by the rotation of the pulley O. The empty cars are returned, as previously described, by the lower part of the rope P being then attached again to the downgoing part of the rope C by means of the loop H and the clamp G until they reach the platform K. Thus it will be seen that by a very simple device loads, especially loads of brick, can be hoisted in buildings in course of erection to any desired wall on which the masons are at work.

It is understood that when a story of the building has been completed the rope C is lengthened and the frame F is moved to the floor above, and the brick can then be hoisted in the same manner as previously described.

In practice the bottom plate $R^2$ of the frame R is preferably in line with the platforms L and L′, and the top plate R is only a short distance above the bottom plate $R^2$, as the cars are empty and low when returning on the bottom plate $R^2$.

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

1. A hoisting apparatus comprising a vertically-traveling endless rope, a grip adapted to engage the endless rope and to support a load, a horizontally-traveling endless rope provided with means for engaging a car, and a frame provided with a top and bottom plate, and over which the horizontal endless rope passes, substantially as herein shown and described.

2. A hoisting apparatus comprising two shafts, pulleys secured on the said shafts, and an endless rope passing over the said pulleys, a second endless rope passing over a pulley on one of the said shafts and turning with the latter, a movable frame provided with a top and bottom plate, over which passes the said second rope, and pulleys held on the said frame, and over which passes the said second rope, substantially as shown and described.

3. A hoisting apparatus comprising two shafts, pulleys secured on the said shafts, and an endless rope passing over the said pulleys, a second endless rope passing over a pulley on one of the said shafts and turning with the latter, a movable frame provided with a top and bottom plate, over which passes the said second rope, pulleys held on the said frame, and over which passes the said second rope, and cars adapted to travel on the top and bottom plate of the said frame and propelled by the said second rope, substantially as shown and described.

4. In a hoisting-machine, the combination, with an endless rope mounted to travel, of a movable frame provided with a top and a bottom plate and pulleys mounted on the said frame, and over which passes the said endless rope to travel on the said top and bottom plate, substantially as shown and described.

5. In a hoisting-machine, the combination, with an endless rope mounted to travel, of a movable frame provided with a top and a

bottom plate, pulleys mounted on the said frame, and over which passes the said endless rope to travel on the said top and bottom plate, and cars adapted to travel on the top and bottom plate of the said frame and propelled by the said endless rope, substantially as shown and described.

6. In a hoisting apparatus, the combination, with an endless rope and a grip adapted to engage the rope and to support a load, of sliding doors or platforms through which the endless rope passes, ropes secured to the doors or platforms, weights on the ends of the ropes, and rods secured to the doors or platforms and adapted to be engaged by the load to open the said doors or platforms, substantially as herein shown and described.

ELIJAH DAINTY.

Witnesses:
THOS. A. MILLAR,
W. H. LYNCH.