

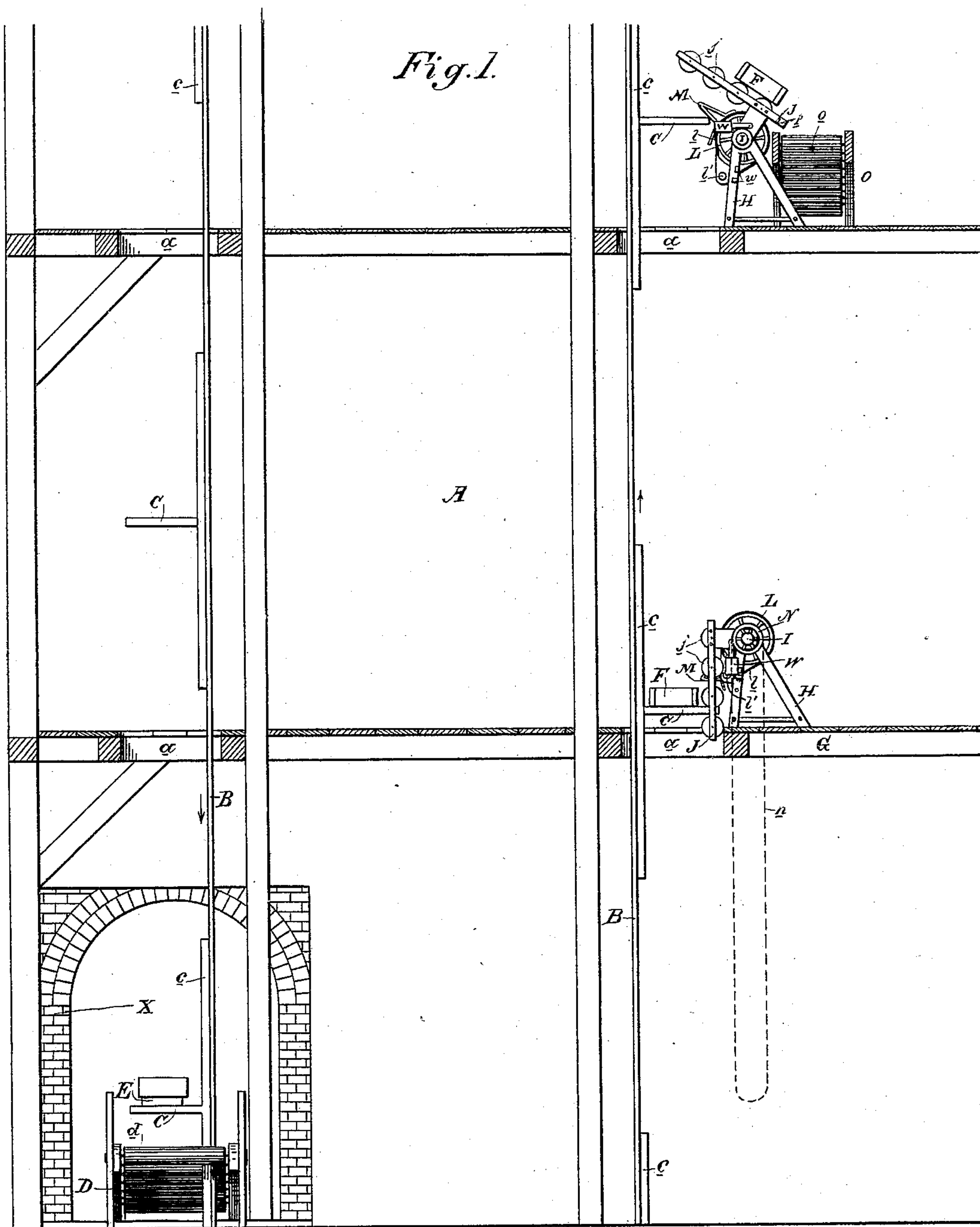
(No Model.)

3 Sheets—Sheet 1.

F. L. PALMER.
ELEVATOR.

No. 376,340.

Patented Jan. 10, 1888.



Witnesses,
J. H. Hourse.
H. C. Lee.

Inventor,
F. L. Palmer
By Devereux Co.
attys

(No Model.)

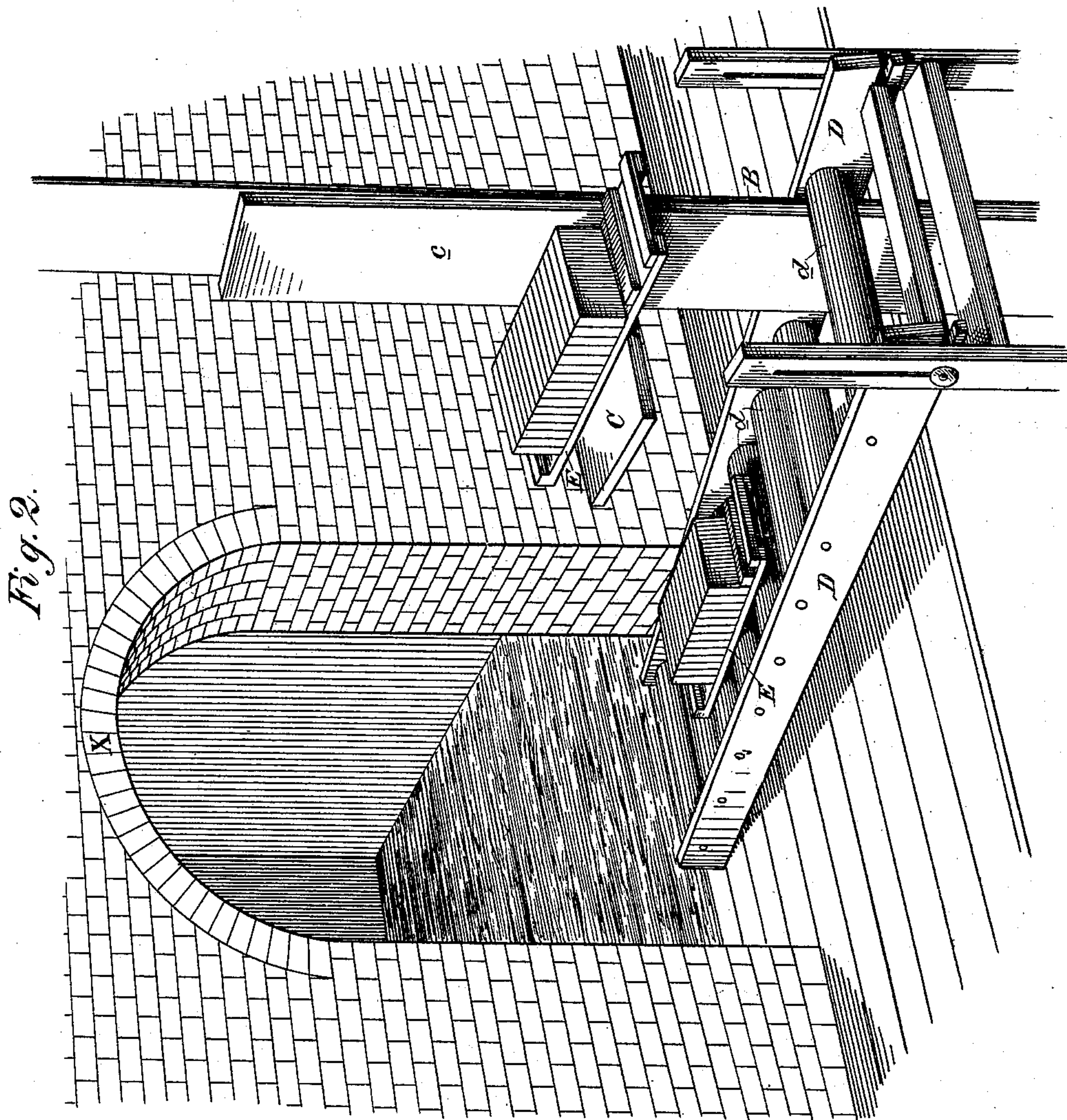
3 Sheets—Sheet 2.

F. L. PALMER.

ELEVATOR.

No. 376,340.

Patented Jan. 10, 1888.



Witnesses,
J. H. House
H. C. Lee.

Inventor,
F. L. Palmer
By Devereux
Catty

(No Model.)

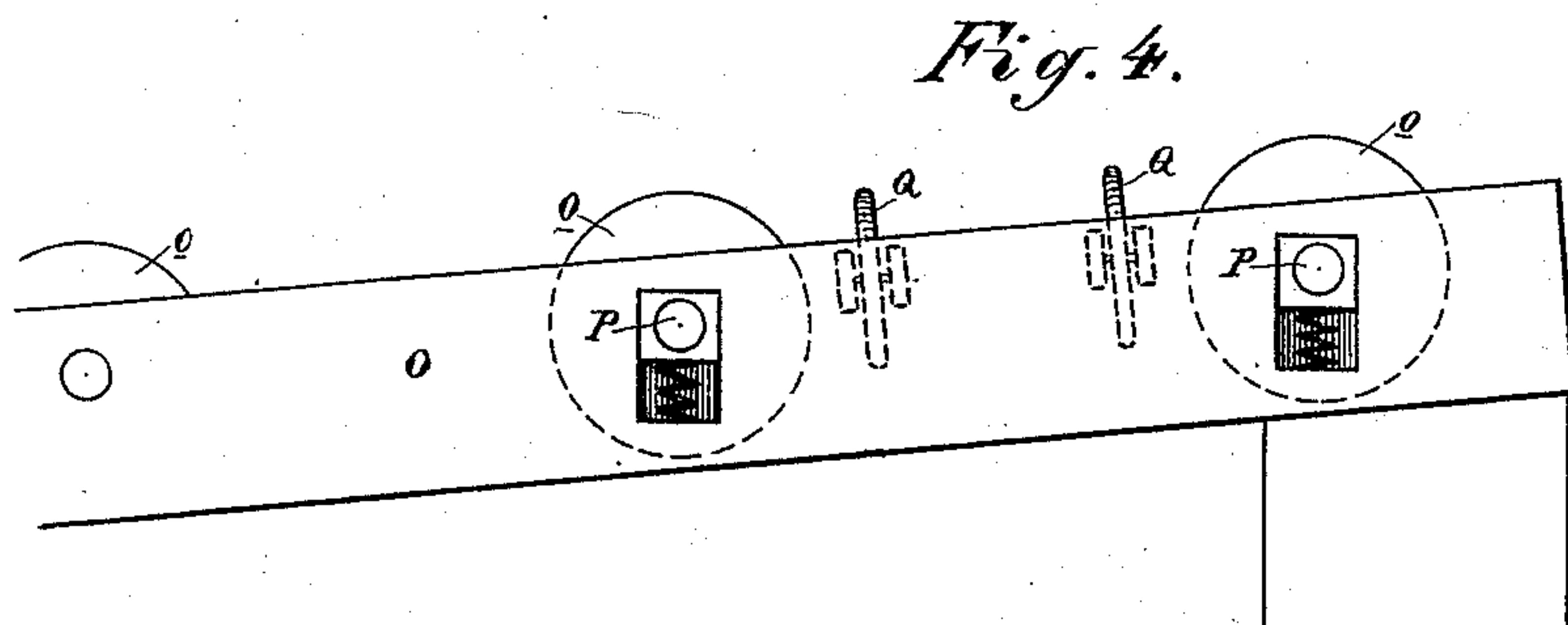
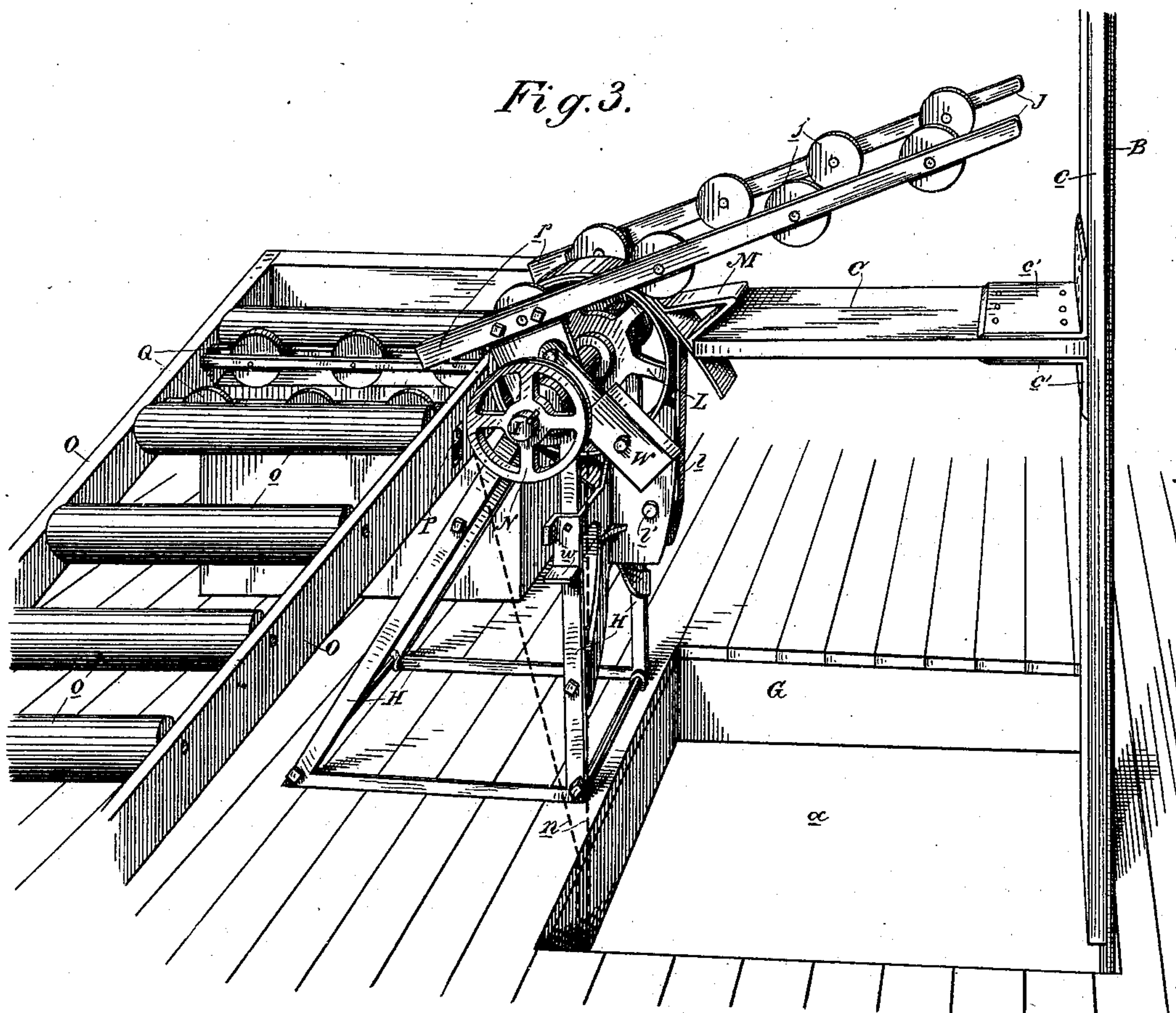
3 Sheets—Sheet 3.

F. L. PALMER.

ELEVATOR.

No. 376,340.

Patented Jan. 10, 1888.



Witnesses,
J. H. House
H. C. Lee.

Inventor,
F. L. Palmer
By Dewey C.
att'y

UNITED STATES PATENT OFFICE.

FRANK L. PALMER, OF BERKELEY, ASSIGNOR OF ONE-HALF TO N. CLARK
& SONS, OF SAN FRANCISCO, CALIFORNIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 376,340, dated January 10, 1888.

Application filed September 10, 1887. Serial No. 249,403. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. PALMER, of Berkeley, Alameda county, State of California, have invented an Improvement in Elevators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of elevating apparatus for use in warehouses, stores, and manufactories, and other places where material and goods of various descriptions have to be carried up or down and discharged.

My invention consists in an endless traveling belt carrying projecting shelves, on which the materials or goods are placed, an inclined series of rollers at a station or stations along the descending sides of the belt and between which the belt and its shelves pass, whereby the goods are arrested and directed by gravity to any given point, an inclined series of rollers at a station or stations along the ascending side of the belt, and swinging arms operated by mechanism affected by the passing shelves of the belt, whereby the goods are lifted from them by the arms and deposited on the rollers for direction to any given point, all of which, together with details of construction and arrangement, I shall hereinafter fully describe.

The object of my invention is to provide a means, automatic in action, for carrying goods or materials up or down and directing them properly at the several stations for which they are intended.

Although my invention is adapted for use in any warehouse, store, manufactory, or other similar place of business where such work has to be done, I have herein illustrated it in connection with the manufacture and handling of bricks.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is an elevation of my elevator as a whole. Fig. 2 is a perspective view of the discharging apparatus on the descending side. Fig. 3 is a perspective view of the discharging apparatus on the ascending side. Fig. 4 is a side elevation of a portion of the roller-frame O, showing the depressible rollers.

A is the structure or building in which the elevator is to work, and through the floors of which are made the passages *a* for the passage of the endless traveling belt B, which is

mounted above and below on suitable drums and driven by power unnecessary herein to describe.

C are the projecting shelves, which are carried by the belt. These shelves are secured to the belt in the following manner: A board, *c*, is secured to the face of the belt and parallel with it, and the shelf C is secured to the board at right angles by means of angle-iron plates *c'*, bolted to its upper and lower surfaces, and also to the board *c*. There may be as many of these projecting shelves as desirable, and they pass up and down with the traveling belt.

On the descending side of the belt, and at any station at which it may be desired to remove the goods or material carried by the shelves, is placed an inclined frame, D, carrying a series of rollers, *d*. I have here shown this frame at the lowest station of the elevator, and having one end arranged in connection with a brick-kiln, X, to which it is desired to deliver the bricks, Fig. 2. The belt and its shelves, as will be seen, pass down between two rollers of the series, so that the brick tray or carrier E, whose ends project beyond the shelf which carries it, is arrested by the rollers as its shelf passes down, and said tray, being now upon the inclined series of rollers, moves by gravitation down to the kiln, so that the bricks are delivered automatically, Fig. 2.

In sending goods or materials up from a lower to a higher station—as, for example, in the present case in sending the trays E or the brick-molds F up—I have the following mechanism for automatically taking them from the shelves and in the case of the molds directing them, Fig. 3.

At a station, which is here represented by G, is located a removable frame, H, in the upper portion of which is journaled a shaft, I, to which, at each end, are secured the lifting-arms J, which are arranged in such relation to the uprising side of the belt and its passing shelves that they may come up on each side of the shelf, and, coming in contact with the projecting ends of the tray or the brick-mold, raise it from the shelf and deliver it backwardly; and in order to avoid friction I mount upon said arms a series of anti-friction rollers, *j*, down which the brick-tray or

the mold travels from an inclined position. These arms are operated automatically in the following manner:

Upon the shaft I is keyed a pulley, L, to which an endless belt, l, is attached, said belt being guided at its lower end by a guide-pulley, l'. To the belt is secured a lug, M, which projects outwardly into the path of the uprising shelf, so that said shelf, coming in contact with it, turns the belt and pulley, causing the shaft also to turn, which affects the swinging arms J, so that they come up under the brick-tray or the mold on the shelf and raise it therefrom.

In order to return the arms after the shelf has passed its lug, I have secured to them a weighted arm, W, which finds its resting-place in a bracket or seat, w, on the side of the frame; or, instead of said bracket, I may provide buffers in suitable position for the purpose of avoiding a jar upon the return of the arms.

In order to throw the arms out of action when it is not desired at any particular station to have them operate, I place upon the end of the shaft which carries them a grooved pulley, N, from which a belt, n, may extend down to within reach of the operator at any point below. Therefore by moving this belt the arms may be thrown upwardly out of the way, whereby the mechanism at that station is rendered inoperative.

The frame on which this mechanism is mounted being readily removable enables me to place it in suitable position and at any station or floor. Back of the frame I place an inclined frame, O, in which is a series of rollers, o, adapted to receive the brick-mold from the arms and to direct it automatically to the desired point. When this frame is placed in the position shown in the drawings, it is obvious that in order to avoid friction when the mold is being run on to the rollers it must have a set of supplementary rollers to direct the mold from the arms to its position upon the main set of rollers. Accordingly I journal one end of the uppermost roller in sliding spring-actuated boxes P, so that they may be depressed at that end, and I place projections p on the ends of the arms in such a manner that when said arms are elevated these projections shall come in contact with the ends of the rollers and force them downwardly. This movement is to expose a set of rollers, Q, mounted in the frame between the depressible rollers and at right angles thereto, and which receive the brick-mold and convey it to its position. Then, the arms being relieved, the main rollers spring up under the brick-mold, whereupon it proceeds down the series of rollers to the point desired.

The operation of the elevator is as follows: The brick-trays being sent down upon the descending shelves of the traveling belt are arrested by the lower series of rollers and conveyed by gravity to their proper position.

The brick trays and molds going up are taken off the shelves by the swinging arms, which are automatically set in operation by the uprising shelves coming in contact with the lug projecting in their path, and are delivered by said arms backwardly—the former onto the floor and the latter upon the series of rollers behind them.

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

1. In an elevating apparatus, and in combination with a traveling belt carrying shelves on which the goods are placed, an inclined series of rollers and swinging arms intervening between the rollers and the ascending belt and arranged with relation to the passing shelves thereof, so as to come up on each side and lift the goods therefrom and deposit them upon the rollers, substantially as herein described.

2. In an elevating apparatus, and in combination with a traveling belt carrying shelves upon which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods thereon and lift them therefrom, substantially as herein described.

3. In an elevating apparatus, and in combination with a traveling belt carrying shelves upon which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods thereon and lift them therefrom, and anti-friction rollers on said arms, upon which the goods travel in moving off the arms, substantially as herein described.

4. In an elevating apparatus, and in combination with a traveling belt carrying shelves upon which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods and lift them from the shelves, and a mechanism for turning said arms, consisting of a shaft by which they are carried, a pulley on said shaft, an endless belt secured to the pulley, and a lug secured to the belt and projecting into the path of the uprising shelf, whereby it is raised and the pulley and shaft turned to swing the arms, substantially as herein described.

5. In an elevating apparatus, and in combination with a traveling belt carrying shelves on which the goods are placed, swinging arms arranged in relation to the ascending belt and its passing shelves, so as to come up under the goods and lift them from the shelves, and a mechanism for turning said arms and returning them, consisting of a shaft by which they are carried, a pulley on said shaft, an endless belt secured to the pulley, and a lug secured to the belt and projecting into the path of the uprising shelf, and a weight secured to the arms, substantially as herein described.

6. In an elevating apparatus, and in combination with a traveling belt carrying shelves

on which the goods are placed, swinging arms operated by the uprising shelves to come up under the goods and lift them therefrom, an inclined frame having a series of rollers, the
5 upper ones of which are depressible, a series of smaller rollers mounted in the frame at right angles to the main rollers and adapted to receive the goods, and projections on the arms for depressing the main rollers to temporarily

expose the smaller ones, substantially as herein to described.

In witness whereof I have hereunto set my hand.

FRANK L. PALMER.

Witnesses.

WM. F. BOOTH,
THOS. Y. TALLMAN.