

(No Model.)

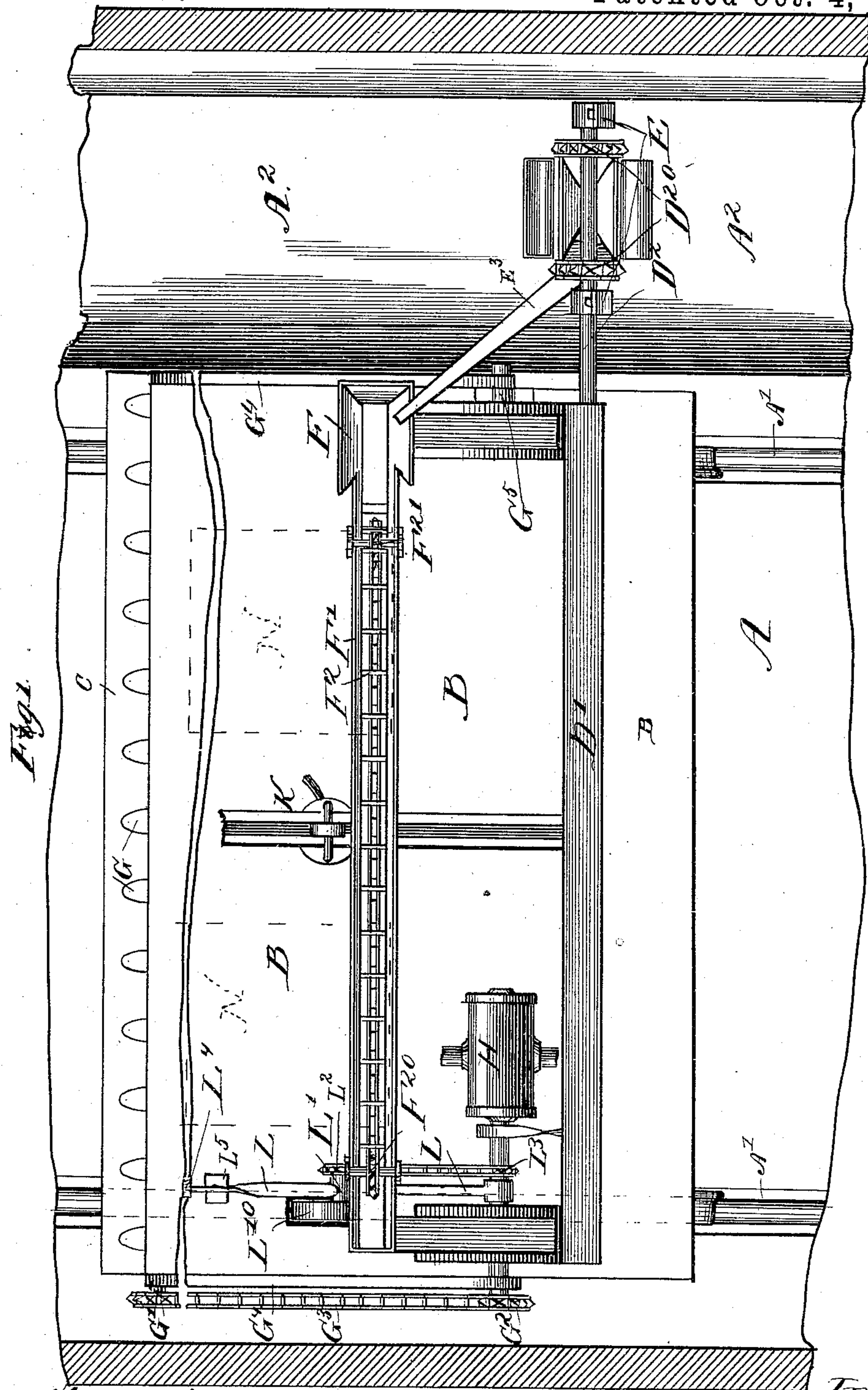
J. F. STEWARD.

4 Sheets—Sheet 1.

MOLDING ROOM.

No. 370,901.

Patented Oct. 4, 1887.



Witnesses:
Fred Berlach.
Cora L. Cadwallader

Inventor:
Jno F. Steward
By Chas E. Burton
Per atty.

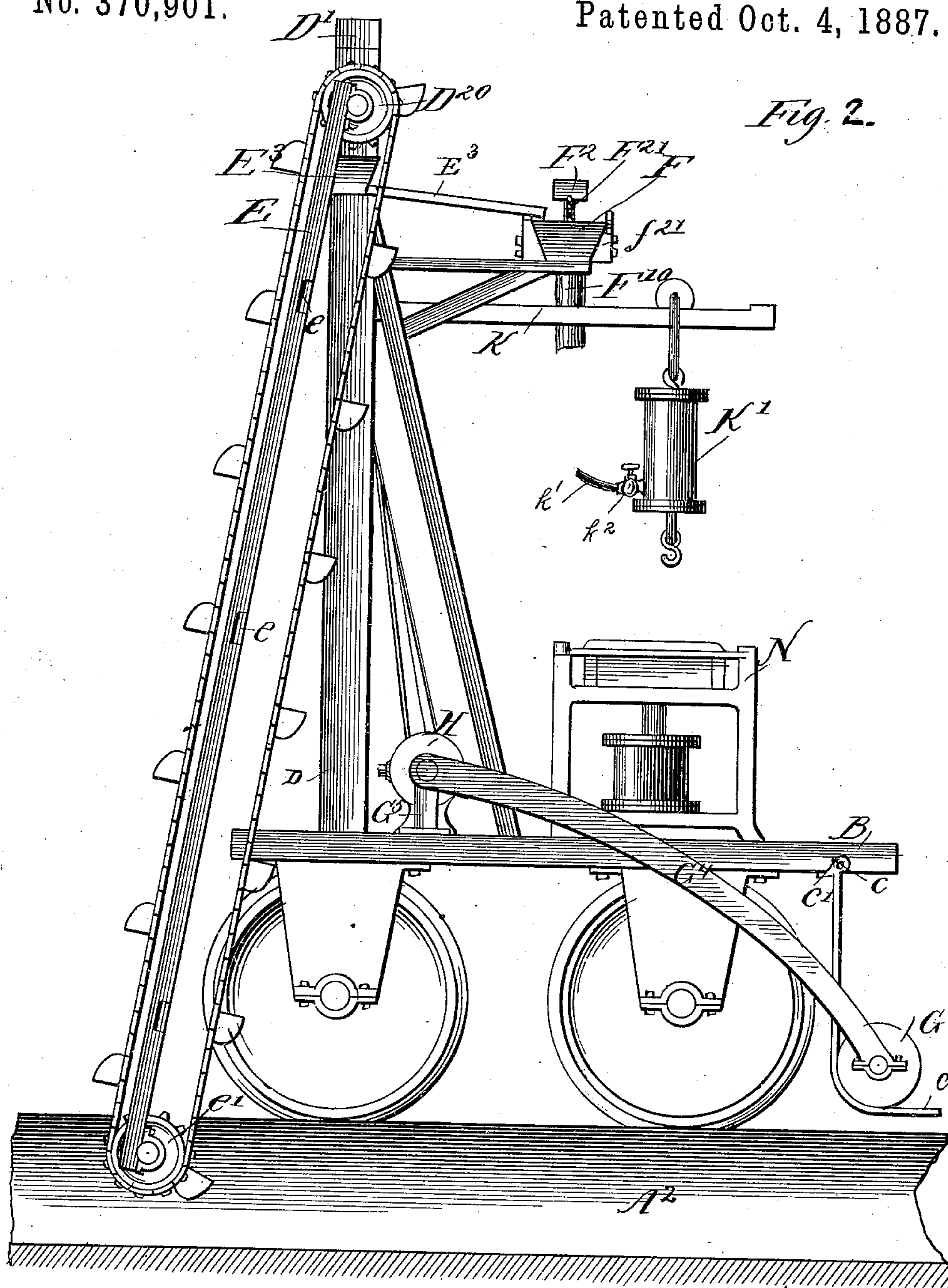
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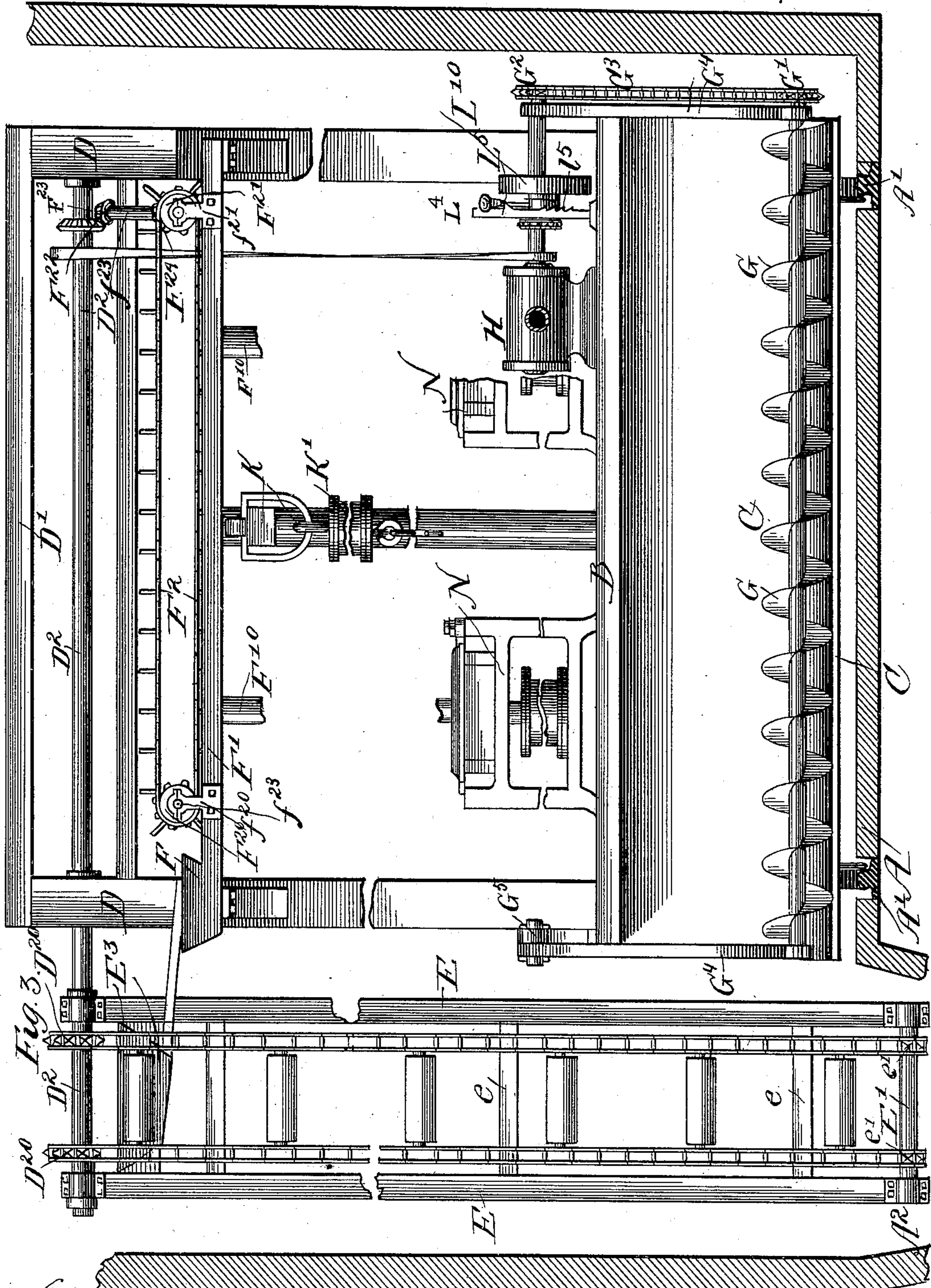
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Patented Oct. 4, 1887.



Witnesses:
Fred Schlach.
Corra L. Cadwallader.

Inventor:
Jno. F. Steward
By Chas. S. Rowton
his atty.

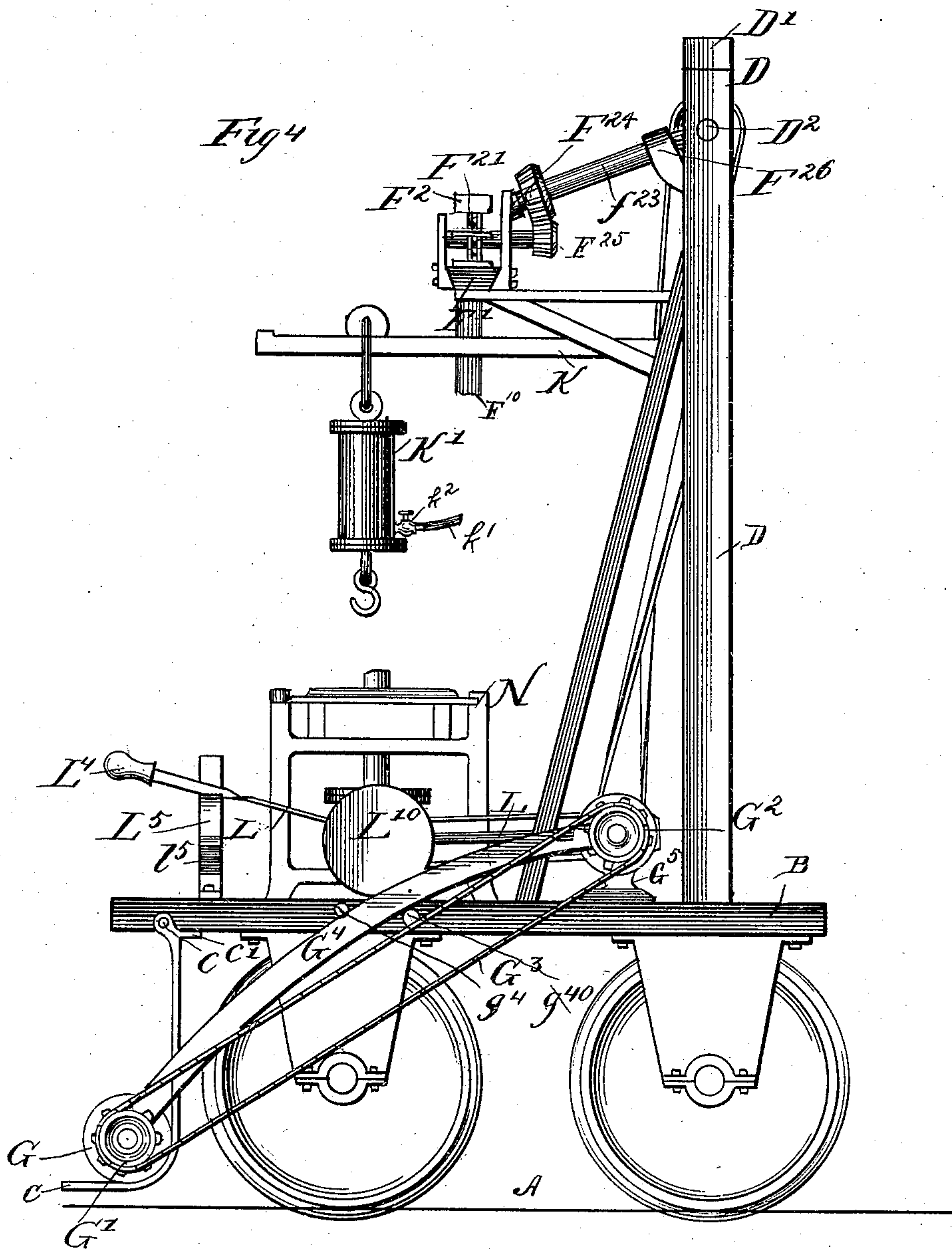
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his atty

UNITED STATES PATENT OFFICE.

JOHN F. STEWARD, OF CHICAGO, ILLINOIS.

MOLDING-ROOM.

SPECIFICATION forming part of Letters Patent No. 370,901, dated October 4, 1887.

Application filed August 8, 1887. Serial No. 246,408. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. STEWARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Molding-Rooms, of which the following specification contains a full and exact description, reference being had to the accompanying drawings, forming part thereof.

The purpose of this invention is to provide facilities for operating molding-machines of various forms which are now in use in such manner as to dispense with a great part of the labor which is involved in handling the flasks to and from the machine, and in arranging them in position to receive the metal.

It consists of a room or space in a room in which the molding-sand is deposited between parallel tracks upon which travels a platform-car supported upon wheels at the two ends and moving laterally, and carrying beneath its platform devices for taking up the sand from the floor as the car advances sidewise over it and depositing it within reach of an elevator at one end of the car, by which it is carried up overhead and by means of suitable chutes directed into the flasks or into the proper place for the action of the molding-machines, which are supported upon the platform of the car, which also supports suitable crane and air-hoist or other equivalent mechanism for handling the flasks to place them in proper relation to the machines, and when ready for the molten metal to remove them from the platform and deposit them upon the floor behind the moving car, that portion of the floor having been cleaned up by the car passing over it.

In the drawings, Figure 1 is a plan, the molding-machines being omitted from the car. Fig. 2 is an elevation of the end having the elevator, the propelling mechanism which is at the other end being omitted. Fig. 3 is a front elevation. Fig. 4 is an elevation of the end opposite the elevator, the elevator being omitted.

A is the molding-room floor. A' A' are tracks laid thereon for the car B.

C is a scoop, quadrant-shaped and open forward, secured to the platform-car B under-

neath the same, and having its forward and lower edge within a very short distance—say about an inch—from the floor.

G is an endless conveyer-screw journaled upon suitable hangers from the car-platform B, in front of the scoop C, and by suitable mechanism at one end revolved within the arc of the quadrant-shaped scoop, whereby it is adapted to feed the sand which is gathered by the scoop to one end of the car, at which there is formed along the entire side of the room a trough, A², into which the sand thus conveyed is discharged.

D D are uprights secured to the platform B, and connected at their upper ends by the cross-bar D', and suitably braced to render the entire upright frame thus formed sufficiently rigid to support the mechanism which it sustains. At the upper part of said upright frame there is journaled a horizontal shaft, D², extending transversely to the movement of the car, and projecting beyond the end of the car and overhanging the trough A².

Upon the overhanging end of the shaft D² there is pivoted or hung the elevator-frame, comprising side bars, E, and suitable cross-bars, e, and in the lower end of said frame there is journaled the counter-shaft E', having sprocket-wheels e' e'; and between the bars of the frame, on the shaft D², are located the sprocket-wheels D²⁰, and elevator-chains carrying suitable buckets pass around said driving-wheels D²⁰ and around sprocket-wheels e' e' at the lower end of the frame, carrying the sand from the trough A² to the upper end of the elevator-frame, where it is emptied from the buckets in passing over the shaft D² and received by the chute E³, which is secured to the elevator-frame immediately below the sprocket-wheels, and has a spout extending inward below the inner wheel and overhanging and discharging into the hopper F, which is the commencement of the trough F', which extends lengthwise of the platform overhead, being sustained by suitable brackets fastened to the upright frame composed of the posts D and their braces. This trough F' has two discharge-openings in the bottom, from each of which extend flexible discharge ducts or pipes F¹⁰ F¹⁰, which are designed to be connect-

ed with and conduct the sand into the flasks located on the molding-machines N N. Over the entire length of the trough F' extends the conveyer-chain F², carried on sprocket-wheels F²⁰ and F²¹, and having scrapers f², which feed the sand toward the discharge-pipes F¹⁰. The sprocket-wheels F²⁰ and F²¹ are journaled on brackets f²⁰ f²¹, secured to the trough F', and power is communicated to them from the shaft D² by means of the beveled gear F²² on said shaft, which drives the beveled gear F²³, fixed on the shaft f²³, on the other end of which is fixed the beveled gear F²⁴, which meshes with and drives the beveled gear F²⁵ on the end of the shaft of the driving sprocket-wheel F²¹. The shaft f²³ obtains bearings in the bracket F²⁶, which is secured to the post D and in the upper end of the bracket f²¹.

L is a frame pivoted upon any convenient shaft in the driving-train of any of the continuously - operating mechanisms, as on the shaft of the motor H, and having journaled on its free end the shaft L', which has a friction-wheel, L¹⁰, and a sprocket-wheel, L², both fast upon it, the latter being connected by driving-chain with the wheel L³ on the motor-shaft. The friction-wheel L¹⁰ is in proper position to be brought against the flanges of the car-wheels A¹⁰ and communicate motion thereto to propel the car over the floor of the molding-room. The frame L may be extended into a handle, L⁴, which may be lodged in a notch in the post L⁵, secured to the car-platform, when it is not desired to advance the car, the wheel L¹⁰ being thereby held out of contact with the car-wheel.

The handle L⁴ may be made to have considerable flexile elasticity, and several notches or ratchet-teeth, L⁶, may be formed on the side of the post L⁵, and the handle may thereby be locked down to any desired point to cause the friction-wheel to press upon the car-wheels to any desired degree, whereby the amount of power communicated, and therefore the resultant speed of the car, may be varied according to the necessities of the case.

The operation of this assemblage of mechanisms is as follows: The room having been filled to a suitable depth with sand, the car being at one end of it, power applied by the motor through the friction-wheel L¹⁰ to the car-wheels will advance the car against the sand and cause the quadrant scoop to enter it. At the same time the endless screw D, being revolved by its connection with the motor, will convey the sand gathered by the scoop across the room and cause it to be discharged into the trough A². The elevator being in operation, its buckets will enter and dip up the sand from the trough, carry it to the chute E³, and, there dumping it, cause it to pass by way of the hopper F and chutes F' and F² to the proper point for supplying the flasks under the action of the molding-machines on the car-platform. The operator, standing upon the car, will, by means of any suitable and convenient hoisting devices,

such as K K', first place the flasks in proper relation to the molding-machines, and when the operation of the machine upon them is completed he will by the same means cause each such completed flask to be removed and deposited in the rear of the car upon the floor of the room, which has been cleaned up by the passage of the machine over it. When two molding-machines are mounted on the car, he will alternate his attention from one to the other, attending to the removal of the completed flask and the supplying of another to one of the machines while the other machine is performing its work upon a flask previously supplied to it. The operation is thus made continuous and without loss of time.

If the operation is sufficiently uniform in speed and the distribution of sand upon the floor sufficiently uniform, the car may be kept constantly traveling over the floor until the entire floor has been cleaned up; but it may sometimes be found more desirable to advance the car by short stages only, forcing the scoop to enter the sand to its full depth, and then halting the machine while the conveyer takes up the sand thus gathered and deposits it within reach of the elevator.

Since the elevator is pivoted and hangs freely on its driving-shaft, it may swing freely at the lower end, and if the car advances faster than the elevator takes up the sand its lower end will swing rearward, resting against the pile of accumulated sand and advancing onto and into it by virtue of its weight and inclined position as it cuts way for itself by removing the sand from before it. The slight change of position of the chute E³ caused by this change in the position of the elevator will not prevent the sand from being dumped into the chute, nor prevent its being discharged by the chute into the hopper F, whose receiving-mouth is made wide enough to allow for such change of position.

For the purpose of handling the flasks to and from the molding-machines, any convenient hoisting apparatus may be employed. I have shown a crane, K, and a simple form of air-hoist, K', running thereon, operated by compressed air supplied through a flexible pipe, K', and controlled by the stop-cock K² at the will of the operator.

In order that the machine may be backed up over the floor after the same is covered with the filled flasks, it is necessary that the scoop C and conveyer G should be adapted to fold up out of the way, and to permit such action the scoop is hinged at c to the platform, and has the heel c' to form a stop, which prevents it from folding backward, but permits it to fold forward as desired. The conveyer-shaft g is journaled in the oscillating ends of lever-arms G⁴, which are pivoted, one of them on the motor-shaft and the other on a bracket, G⁵, at the other end of the platform, the pivot being in line with the motor-shaft, and the conveyer is driven by the chain G³, which

passes around the sprocket-wheel G^2 on the motor-shaft and around the sprocket-wheel G' on the conveyer-shaft. The conveyer is thus adapted to be lifted up in front to clear the
 5 flasks, as desired; but to insure its fixedness in the proper position when in action the lever-arms G^4 are held between removable stop-pins g^4 g^{40} , set into the edge of the platform. Only the upper pin, g^4 , need be removable.

10 I claim—

1. In combination with the molding-room floor, a platform-car moving over such floor, a horizontally-operating sand-conveyer carried by and operating underneath the car in a
 15 direction transverse to that in which the car travels over the floor, an elevator carried by the car and located at the end at which the horizontal conveyer discharges, and one or more molding machines and flasks carried by the car, and a suitable conduit to convey the
 20 sand from the elevator thereinto, substantially as set forth.

2. In combination with the molding-room floor having parallel tracks, a platform-car
 25 moving laterally over such tracks, a horizontally-operating conveyer carried by and operating underneath the car longitudinally thereof, an elevator carried by the car and located at the end thereof at which the horizontal conveyer discharges, and one or more molding
 30 machines and flasks carried by the car, and a suitable conduit to convey the sand from the elevator thereinto, substantially as set forth.

3. In combination with the molding-room floor, a platform-car moving over such floor and having a forwardly-open scoop attached to it and depending therefrom nearly to the floor, a horizontally-operating sand-conveyer carried by and operating underneath the car
 35 within the cavity of such scoop in a direction transverse to that in which the car travels over the floor, an elevator carried by the car at the end thereof at which the horizontal conveyer discharges, and one or more molding
 40 machines and flasks, and a suitable conduit to conduct the sand from the elevator thereinto, substantially as set forth.

4. In combination with the molding-room floor, a platform-car moving over such floor and having a forwardly-open quadrantal scoop attached to it, an endless screw-conveyer operating in said quadrantal scoop underneath the car in a direction transverse to that in which
 45 the car travels over the floor, an elevator carried by the car and located at the end thereof at which the horizontal conveyer discharges, one or more molding machines and flasks carried on the car, and a suitable conduit to convey the sand from the elevator thereinto, sub-
 50 stantially as set forth.

5. In combination with the molding-room floor having a trough along one side, a platform-car moving over such floor in the direction of the length of such trough, a horizon-
 55 tally-operating conveyer carried by and operating underneath the car toward the side of

the room having the trough, an elevator carried by the car at the end at which said trough is located and having its lower end depending
 60 into such trough, one or more molding machines and flasks carried upon the car, and a suitable conduit to convey the sand from the elevator thereinto, substantially as set forth.

6. In combination with the molding-room floor, the car traveling over it, the upright
 65 frame-work supported by the car, the horizontal shaft journaled on such frame-work and extending beyond the car at one end, the elevator-frame hung on said shaft at the overhanging end, the elevator driving-wheels on
 70 the same end of said shaft, and the endless conveyer with suitable buckets carried by said driving-wheels and guided by suitable wheels at the lower end of the elevator-frame, substantially as set forth.

7. In combination with the molding-room floor, the car traveling over it, the upright
 75 frame supported by the car, the elevator driving-shaft journaled in said frame, the elevator having its frame hung on said shaft, the chute
 80 E^3 , secured to the elevator-frame, one or more molding machines and flasks supported on the car, and a suitable hopper and conduit, the hopper receiving the discharge from the chute
 85 E^3 and the conduit communicating with the molding machines and flasks, substantially as set forth.

8. In combination with the molding-room floor having a trough along one side, the car
 90 traveling over the floor in the direction of the length of the trough, the upright frame-work on the car, and the elevator driving-shaft journaled thereon, the elevator having its frame pivoted on said driving-shaft and the lower
 95 end dipping into the trough, substantially as set forth.

9. In combination with the molding-room floor, a car traveling over it, a horizontally-
 100 operating sand-conveyer carried by the car and operating underneath it in a direction transverse to that in which the car travels, an elevator carried by the car and located at the end thereof at which the horizontal conveyer discharges, and one or more molding machines
 105 and flasks carried by the car and supplied with sand by the elevator, and a crane supported on the car and carrying suitable hoisting devices to handle the flasks, substantially as set forth.

10. In combination with the molding-room floor and the car adapted to travel over it, and
 110 carrying molding machines and flasks, and mechanism, substantially as described, for gathering the sand from the floor and supplying it to the molding devices, a motor carried
 115 by the car and driving its several mechanisms, substantially as set forth.

11. In combination with the molding-room floor and the car adapted to travel over it, and
 120 carrying molding devices, and mechanisms, substantially as described, for gathering the sand from the floor and supplying it to the
 125

molding devices, a shaft in the driving train of said mechanisms, a frame pivoted on said shaft carrying a friction-wheel which may be made to bear upon the flange of the car-wheel, and a wheel on the pivotal shaft and a wheel on the friction-wheel shaft, the former driving the latter, substantially as set forth.

In testimony whereof I have hereunto set my hand, at Chicago, Illinois, this 4th day of August, 1887, in the presence of two witnesses. 10

JOHN F. STEWARD.

Witnesses:

E. F. BENTON,

CORA L. CADWALLADER.