

No. 719,119.

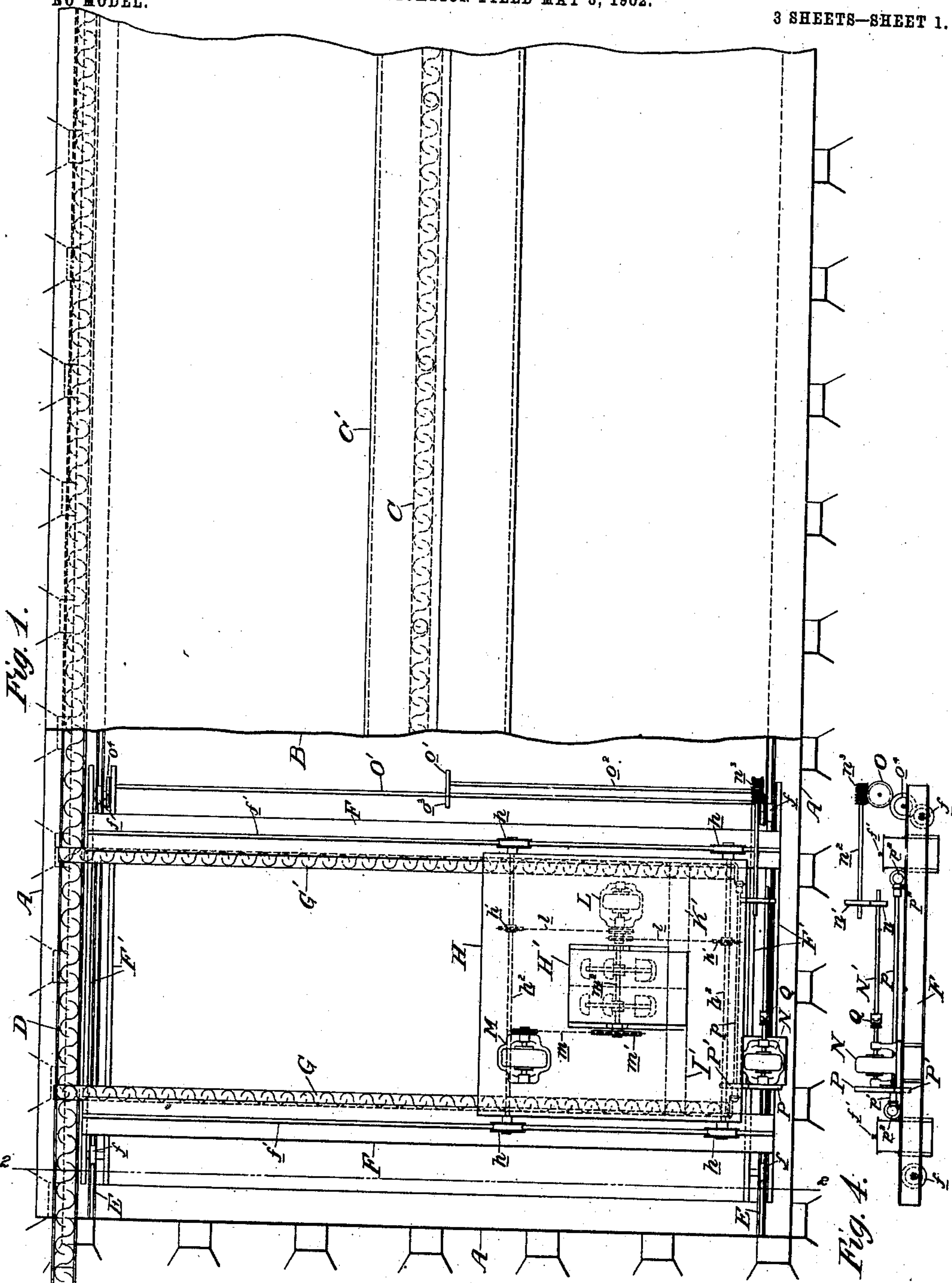
PATENTED JAN. 27, 1903.

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APPARATUS FOR HANDLING STORED PULVERIZED OR GRANULAR
MATERIALS.

NO MODEL.

APPLICATION FILED MAY 3, 1902.

3 SHEETS—SHEET 1.



Witnesses.
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L. F. Forning

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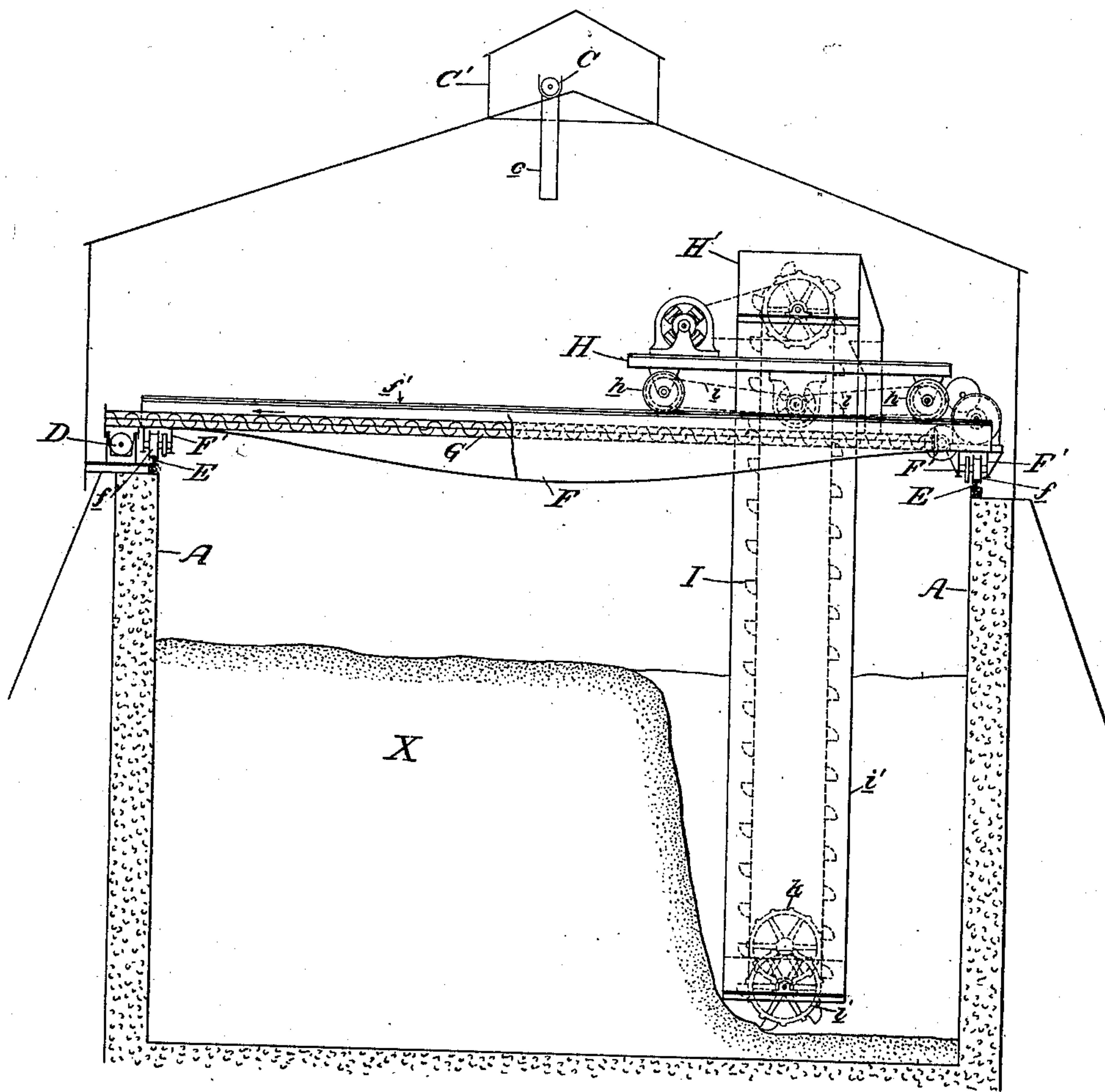
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Fig. 2.



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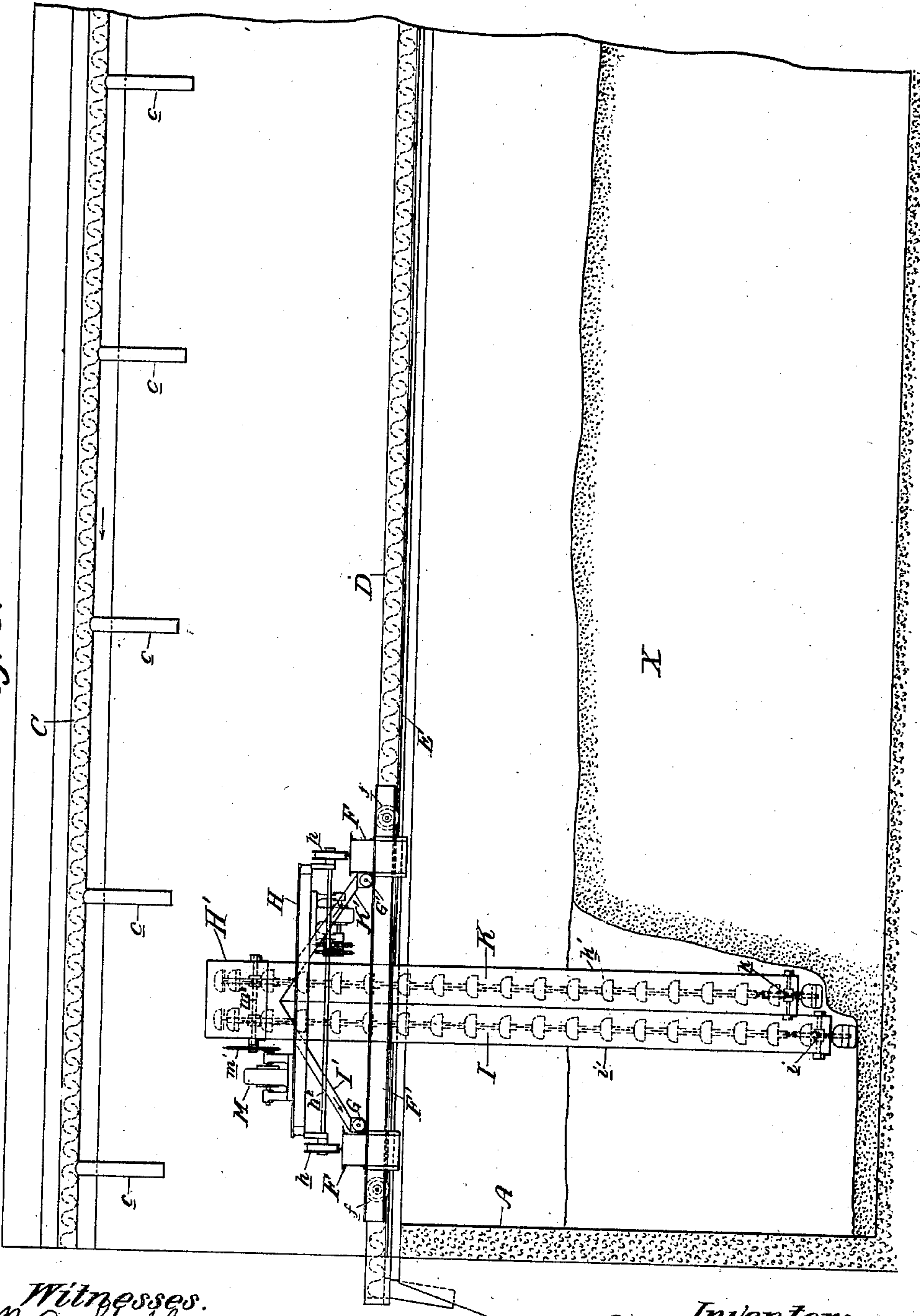
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD HENRY HURRY, OF BETHLEHEM, AND HARRY JOHN SEAMAN, OF
CATASAUQUA, PENNSYLVANIA.

APPARATUS FOR HANDLING STORED PULVERIZED OR GRANULAR MATERIALS.

SPECIFICATION forming part of Letters Patent No. 719,119, dated January 27, 1903.

Application filed May 3, 1902. Serial No. 106,106. (No model.)

To all whom it may concern:

Be it known that we, EDWARD HENRY HURRY, a subject of the King of Great Britain, residing in Bethlehem, county of Northampton, and HARRY JOHN SEAMAN, a citizen of the United States, residing at Catasauqua, county of Lehigh, State of Pennsylvania, have jointly invented an Improved Organization of Apparatus for Handling Stored Pulverized or Granular Materials, of which the following is a specification.

This invention comprises a conveyer system designed especially for handling Portland cement, but may be used in connection with other materials.

It consists generally of a vertically arranged conveyer adapted to be moved transversely to and longitudinally of the area or inclosed space within which the material is stored, in conjunction with a system of worm or other suitable conveyers horizontally disposed and so arranged as to receive material from the vertical conveyer in whatever position it may be and deliver it at the desired point.

In the accompanying drawings, Figure 1 is a plan view of a storehouse or bin of large size with the roof or cover removed equipped with elevator and conveyer apparatus in accordance with this invention. Fig. 2 is a transverse section on the line 2 2 of Fig. 1; Fig. 3, a longitudinal section. Fig. 4 is a detached elevation showing one end of the bridge-truck with the motor and connections for driving it as well as for actuating the conveyers carried thereby.

A A indicate the walls of a rectangular structure or storehouse having a roof B. The material, as Portland cement, for instance, is deposited in the storehouse, as here shown, by a worm conveyer C, passing longitudinally through the cap or hood C' of the roof and having multiple discharge chutes or pipes c. In this way the storehouse may be filled to the desired extent. At or near the top of one of the longitudinal walls, preferably on the top thereof, is a worm conveyer D, working in a suitable trough and discharging into any appropriate chute or at any desired point. This conveyer may be driven in any appropriate way. On each of the longitudinal walls is a

rail E, and on these rails is mounted to travel a bridge-truck or rectangular frame, formed, primarily, by cross-beams F and end beams F', the four wheels *f* of which run upon rails E E. This bridge-truck is provided with two worm conveyers G G', both of which discharge into the main conveyer D and are driven as hereinafter described or otherwise. On the transverse girders F of the bridge-truck are rails *f'*, upon which travels a platform-trolley H, having four carrying-wheels *h*, running on the rails *f'*. In an opening of the platform of this trolley, covered by a hood or box frame H', are mounted two vertically-disposed endless bucket elevators I K, the former of which reaches to a somewhat greater depth than the latter, and both extend into appropriate proximity to the floor of the storehouse. The elevator I delivers to a chute I', carried by the trolley or car, discharging into the worm G, and the elevator K discharges into the chute K', also carried by the car, that delivers the material to the worm conveyer G'. By moving the bridge-truck longitudinally of the storehouse and the conveyer-trolley transversely thereto on the bridge-truck the whole area of the storehouse may be traversed and the material therein be lifted by the elevators I K, discharged to the worms G G', and by them to the worm conveyer D, which delivers it at the desired point. Of course but one elevator and one worm conveyer G or G' need be employed; but we prefer to use at least two. The elevator K, as will be seen in Fig. 3, operates upon a layer of the material overlying that upon which the elevator I operates.

The bridge-truck, the worm conveyers thereon, the elevator-trolley, and the elevators carried thereby may all be operated by power, which may be most conveniently furnished by electric motors. The trolley H carries, mounted below its platform, an electric motor L, connected by sprocket-chains or belts *l l* with wheels or pulleys *h' h'* on the axles *h² h²* of the trolley. Another electric motor M, mounted on the platform of the trolley H, is connected by a belt or chain *m* with the driving wheel or pulley *m'* on the driving-shaft *m²* of the elevators I K. The lower sprocket-wheels *i k* of the respective

conveyers are mounted in bearings in pendant frames or conveyer-housings $i' k'$, carried by the platform-trolley H. The electric motor for driving the bridge-truck is marked N and is mounted upon one of the end beams or frame-bars F' . The shaft N' of the motor carries at one end a spur-gear n , meshing with a spur-gear n' on a counter-shaft n^2 , carrying a worm n^3 , driving a worm-wheel O. A spur-gear o' on one end of the worm-wheel shaft o^2 and located approximately about midway between the two sides of the bridge-truck drives a pinion o^3 on a transverse shaft O' , extending between the two sides of the truck. Pinions o^4 on the ends of the shaft O' gear with corresponding pinions on the short axles of the bridge-truck wheels f . On the other end of the shaft N' of the motor N is a gear-wheel P, meshing with a pinion P' on a counter-shaft p , at the ends of which are beveled pinions $p' p'$, meshing with corresponding pinions p^2 on the ends of the shafts of the worm conveyers G G'.

The circuit connections for the several motors, as well as the bearings for the several shafts, have been omitted, as their presence would detract from the clearness of the drawings, and they may of course be of any appropriate character.

Any suitable clutch (indicated by Q, Fig. 4) may be interposed in the driving connection between the motor N and the wheels f of the bridge-truck in order that the motor may be run continuously for the operation of the conveyers G G' and the wheels of the bridge-truck connected therewith by means of the clutch when the bridge-truck is to be moved.

In Figs. 2 and 3, X indicates the material upon which the elevators are operated. The angle of repose of Portland cement which has been lying for a considerable length of time in a storehouse or bin is quite steep or acute.

We claim as our invention—

1. An organization for handling stored granular materials comprising the combination of a storehouse, a horizontally-disposed elevated main conveyer, a bridge-truck traveling along the storehouse above the material therein and having a conveyer discharging into the main conveyer, an elevator-trolley traveling on the bridge-truck transversely to the line of travel

of the latter and a vertically-disposed elevator carried by the trolley and discharging into the conveyer carried by the bridge-truck.

2. An organization for handling stored granular materials comprising the combination of a storehouse, a horizontally-disposed elevated main conveyer, a bridge-truck traveling along the storehouse above the material therein and having a conveyer discharging into the main conveyer, an elevator-trolley traveling on the bridge-truck transversely to the line of travel of the latter and a vertically-disposed elevator carried by the trolley and discharging into the conveyer carried by the bridge-truck, combined with means for driving the bridge-truck, the elevator-trolley, the elevator and the conveyers.

3. An organization for handling stored granular materials comprising the combination of a storehouse, a horizontally-disposed elevated main conveyer, a bridge-truck traveling along the storehouse above the material therein and having two conveyers discharging into the main conveyer, an elevator-trolley traveling on the bridge-truck transversely to the line of travel of the latter, two vertically-disposed elevators of unequal length carried by the trolley and respectively discharging into the two conveyers carried by the bridge-truck.

4. An organization for handling stored granular materials comprising the combination of a storehouse, a horizontally-disposed elevated main conveyer, a bridge-truck traveling along the storehouse above the material therein and having two conveyers discharging into the main conveyer, an elevator-trolley traveling on the bridge-truck transversely to the line of travel of the latter, two vertically-disposed elevators of unequal length carried by the trolley and respectively discharging into the two conveyers carried by the bridge-truck, combined with means for driving the bridge-truck, the elevator-trolley, the elevator and the conveyers.

In testimony whereof we have hereunto subscribed our names.

EDWARD HENRY HURRY.
HARRY JOHN SEAMAN.

Witnesses:

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LILLIE F. BROWNING.