

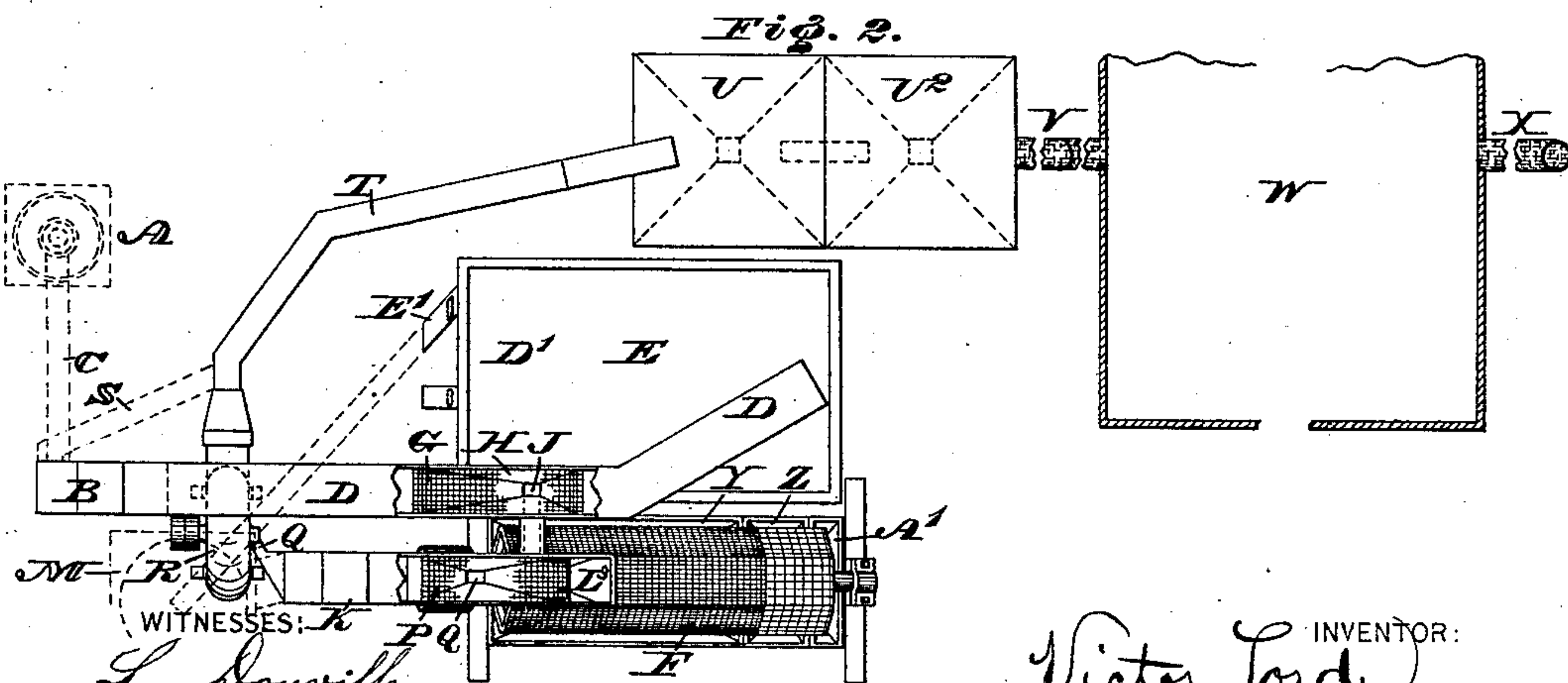
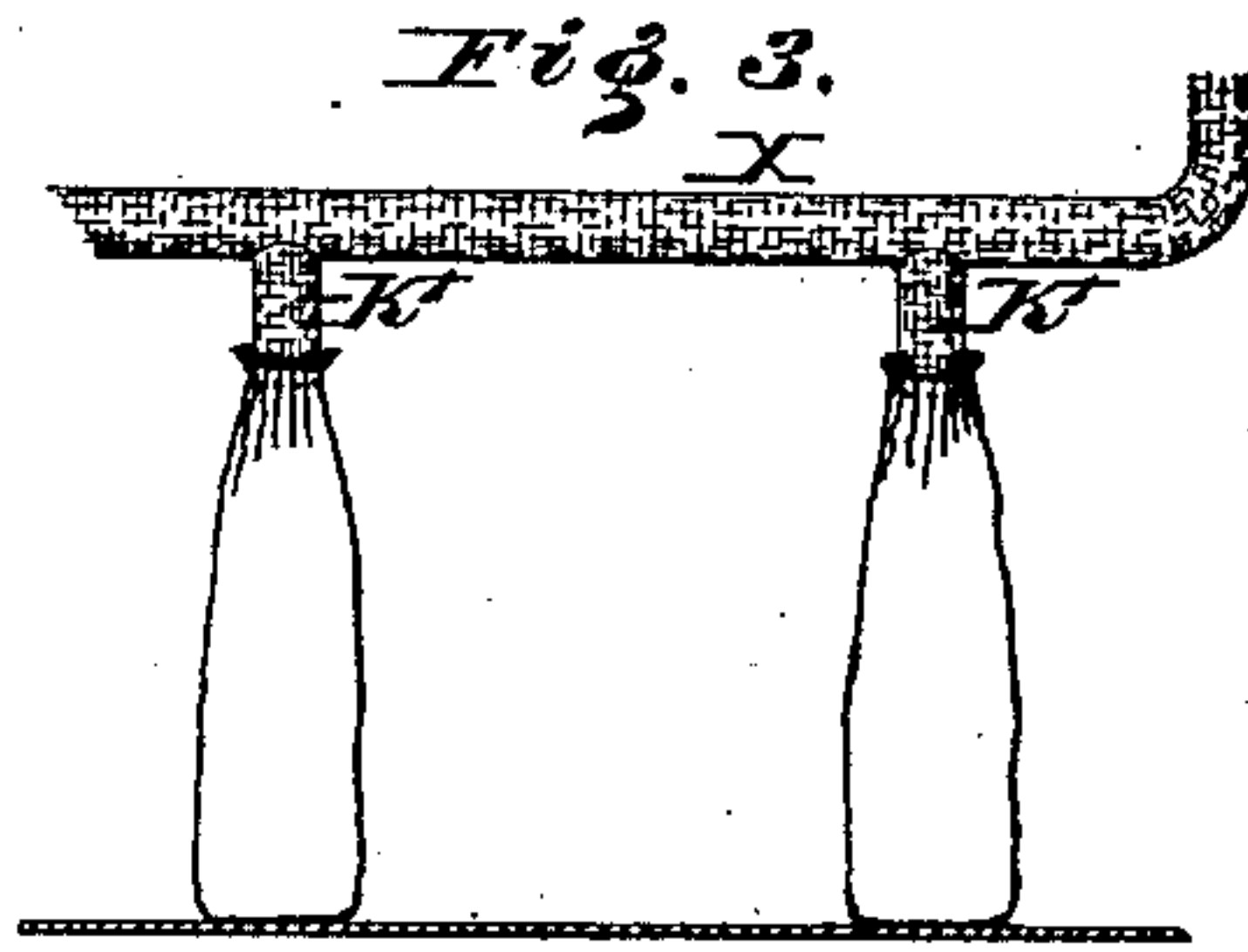
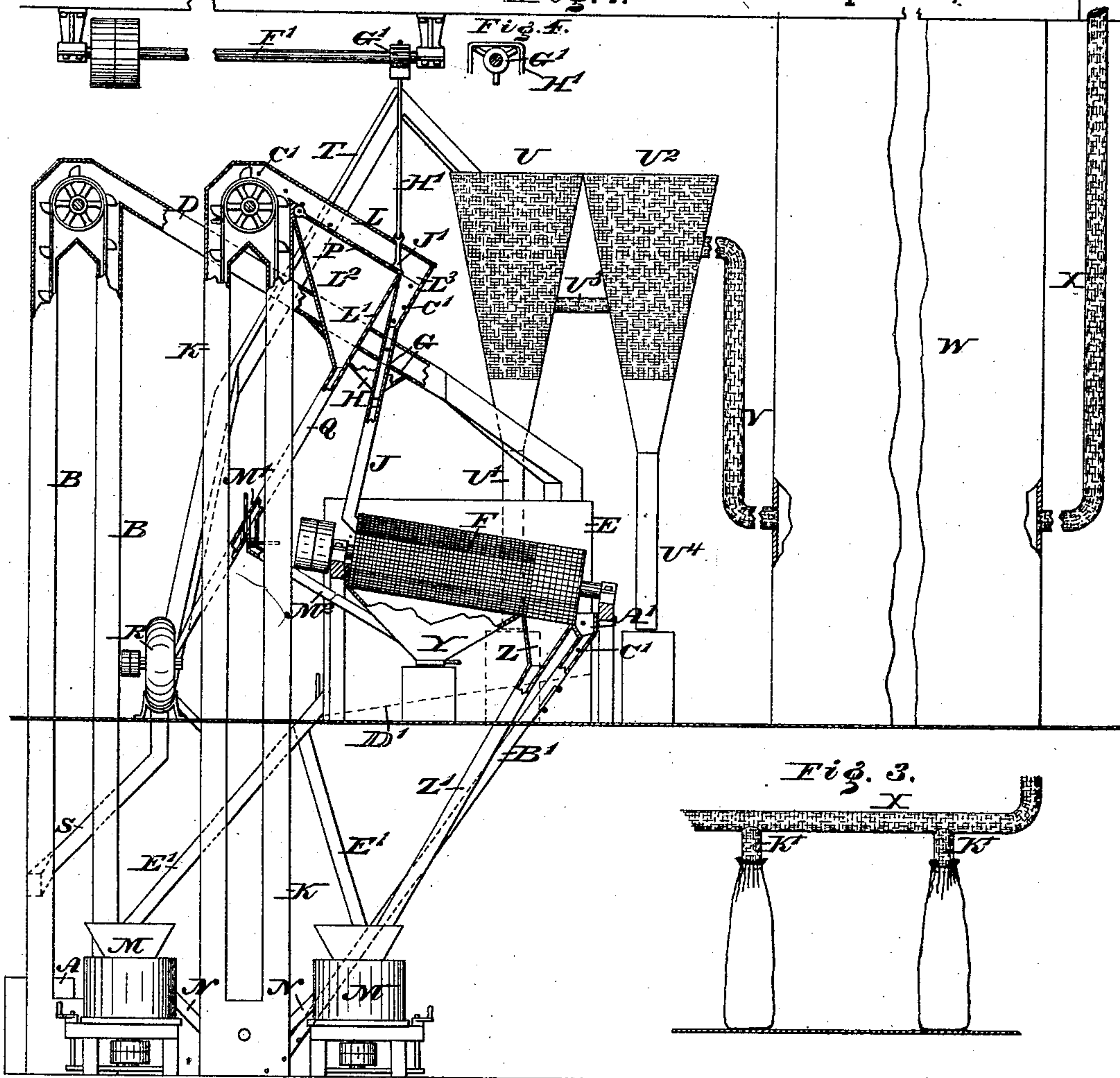
(No Model.)

V. LORD.

MECHANISM FOR PREPARING ROCK, &c., FOR FERTILIZERS AND CEMENTS.

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WITNESSES:
L. Douville
W. F. Kircher

INVENTOR:
Victor Lord
BY John A. Diederheim
ATTORNEY.

UNITED STATES PATENT OFFICE.

VICTOR LORD, OF ODESSA, DELAWARE.

MECHANISM FOR PREPARING ROCK, &c., FOR FERTILIZERS AND CEMENTS.

SPECIFICATION forming part of Letters Patent No. 349,229, dated September 14, 1886.

Application filed January 19, 1886. Serial No. 189,040. (No model.)

To all whom it may concern:

Be it known that I, VICTOR LORD, a citizen of the United States, residing at Odessa, in the county of New Castle, State of Delaware, have
5 invented a new and useful Improvement in Mechanism for Preparing Rock, &c., for Fertilizers and Cements, which improvement is fully set forth in the following specification and accompanying drawings, in which—

10 Figure 1 represents a partial side elevation and partial vertical section of mechanism for preparing rocks, &c., for fertilizers and cements embodying my invention. Fig. 2 represents a partial top or plan view and a partial
15 horizontal section thereof. Figs. 3 and 4 are views of detached parts.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of mechanism for preparing rocks, &c., for fertilizers and cements, wherein provision is made for separating the fine and coarse particles thereof and collecting the same and returning the coarse particles to the mill to be reground and again sub-
25 jected to the bolting operation, as will be hereinafter fully set forth and claimed.

Referring to the drawings, A represents a mill for breaking or crushing rock, cement, &c., the same being in communication with an
30 elevator, B, by means of a pipe or tube, C.

Connected with the top of the casing of the elevator B, is a chute, D, which extends in an inclined direction to a box or case, E, which is adjacent to a bolt, F, the latter being properly mounted and operated in any suitable
35 manner. On the under side of the chute D is a sieve, G, and below the same is a spout, H, which is connected with a pipe, J, the latter entering the bolt F.

40 K represents an elevator, which is properly supported, and has the upper end of its casing in communication with a separator, L, for fine and coarse particles of rock, &c., supplied to the elevator from the grinding-mills M, which latter are in communication with the
45 elevator by means of pipes or spouts N. The separator L is formed with compartments L¹ L². At the top of the compartment L² is a sleeve, P, and at the bottom thereof a pipe, Q, which leads to a fan, R, the latter being properly supported.

Connected with a branch of the fan-case is

a pipe, S, and with the wall of the case is a pipe, T, the pipe S leading to the elevator B and the pipe T to a bag or case, U, the upper por- 55 tion whereof is formed of burlap or other similar material, the bottom of said bag having a discharge pipe, U'.

Adjacent to the bag U is a bag, U², which is in communication with said bag U by means 60 of a pipe, U³, of burlap or other suitable material, said bag U² having a discharge-pipe, U⁴, both bags being properly supported.

Connected with the bag U² is a pipe, V, which leads to a chest, W, and leading from 65 said chest is a pipe, X, which opens into the atmosphere, said pipes V X being formed of burlap or other suitable material. The bolt has different grades of meshes, and below the same are chutes Y Z, the chute Y directing 70 the fine material that has been bolted to a place of collection, and the chute Z being in communication with a pipe, Z', which leads to one of the mills M. The lower end of the bolt has adjacent to it a chute, A', the same having 75 connected with it a pipe, B', whose lower end is in communication with the case of the elevator K. It is remarked here that a series of balls, C', are employed in the bolting operation, the same being directed into the bolt so 80 as to act on the material therein, and to assist to bolt the same, said balls escaping into the chute A', and then entering the pipe B', from whence they are directed into the elevator K, and conveyed to the separator L, where, roll- 85 ing over the sieve P, they reach the pipe J, and are so caused to re-enter the bolt. The bottom of the case E is inclined, as at D', and to the side of said case, near the lower end of said bottom, is secured pipes E', which lead 90 to the mills M.

F' represents a shaft, which is provided with pulleys whereby power may be communicated to certain parts of the bolting mechanism, said shaft being properly mounted above the sepa- 95 rator L, and carrying jogs G', which engage with a collar on a rising and falling arm, H', whose lower end is attached to a projection, J', on sieve P. This projection passes through the top wall of the separator L, and is adapted 100 to vibrate the sieve P therein for assisting the action of said sieve.

In the horizontal part of the pipe X, where it leaves the chest W, are openings K', forming

outlets for directing the fine bolted material from said pipe.

The operation is as follows: The rock, cement, &c., is broken or crushed in the mill A, and is directed by the pipe C to the elevator B, by which it is conveyed to the chute D. The finer particles fall through the sieve G into the spout H, and are passed by the same through the pipe J into the bolt, from which the fine particles fall into the spout Y, and are thus directed to a place of collection. The tailings from the bolt enter the spout Z, and are conveyed by the pipe Z' to one of the mills M, where they are ground. The coarse particles in the chute D escape into the case E, and are directed by the inclined bottom thereof to the pipes E', and so reach the mills M, wherein they are ground. The materials ground by the mills leave the same and reach the elevator K by means of the pipes N, and enter the separator L, where the fine particles escape through the sieve P into the compartment L², and so reach the pipe Q, whereby they are conveyed to the fan R. The coarser particles pass over the sieve P and enter the compartment L³, and escape therefrom into the pipe J, thus reaching the bolt F, where they are subjected to the bolting action, the fine particles and tailings dropping into the spouts Y Z, from whence they are collected and reconveyed similar to the material admitted to the bolt through the chute D. The light material from the pipe Q reaching the fan is blown by the latter into the pipe or chute T, and from thence into the bag U. Whatever heavy material enters the pipe Q and leaves the fan-case with the lighter particles, drops into the pipe S, so as to reach the elevator B, and thence the chute D, and eventually one of the mills M, where it is re-ground. Some of the light material in the bag U is blown through the pipe U³ into the bag U², then into the chest W, and finally through the pipe X, where it is discharged at the spouts or openings K' into suitable bags, &c., provided to collect the same. The main portion of the light material admitted into the bags or hoppers U U² escapes through the discharge-pipes U' U⁴ at the bottom thereof, whereby it may be collected in any suitable manner. The air driven into the bags U U² and pipes U³ and V serves to keep the fine particles from matting, but escapes through the burlap or material of which they are formed, avoiding blowing of said particles into the atmosphere at the outer end of the pipe X, said end, however, permitting the escape of what little air enters said pipe. Should the bolt be rendered unserviceable from any cause, the sieve or screen P is raised or removed, and the material from the elevator K is discharged into the compartment L² of the separator and directed into the pipe Q, which is provided with a valve or cut-off, M', which, being opened, permits the escape of the material into a pipe or chute, M², which leads from the pipe Q to the spout Y, and conveys

the same to the latter, from which it may be discharged.

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

1. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising mill A, elevator B, the inclined spout D, having sieve G in the under side thereof, spout H, pipe J, bolt F, chest E, having inclined bottom, pipe E', and mill M, substantially as and for the purpose set forth.

2. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising the mill A, elevator B, chute D, having sieve G in under side thereof, spout H under said sieve G, pipe J, leading from said spout H to the bolt F, the bolt F having screens of different-sized meshes, spouts Y and Z, the latter having pipe Z' leading to the mill M, and mill M, substantially as and for the purpose set forth.

3. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising the mills M, elevator K, separator L, having compartments L² and L³, said compartment L² having pipe Q, the fan or blower R, the pipe S, leading into elevator B, the elevator B, the chute D, with sieve G, spout H, pipe J, and bolt F, substantially as described.

4. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising elevator K, separator L, having compartments L² and L³, the compartment L² having outlet-pipe Q, the fan R, pipe T, bags U U², and the pipe U³, said bags and pipe being composed of burlap and having outlet-pipes U' U⁴, substantially as and for the purpose set forth.

5. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising the elevator K, the separator L, composed of two compartments and provided with sieve P, the rising and falling arm H', adapted to vibrate the sieve P, and means, substantially as described, to operate said arm, substantially as and for the purpose set forth.

6. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising the elevator K, the separator L with compartments L² L³, and sieve P, the pipe Q, the fan R, the pipe T, the pipe J, and the bolt F, operating substantially as described.

7. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising the separator L, having compartment L², the pipe Q, fan R, and case E, said pipe Q leading from said separator to said fan, a cut-off, M', in the said pipe, and a chute, M², leading from the said pipe Q to the said case E, substantially as described.

8. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising the grinding-mill, an elevator connected therewith, an inclined chute connected to said elevator and having a sieve on its under side, a box located at the end of said chute and provided with an inclined bottom, a second grinding-mill, a pipe

leading from said box to said second grinding-mill, a second elevator, a separator having two compartments connected to the last-mentioned elevator, a fan, one of said compartments having an outlet leading to said fan, and a connection from said fan leading to the first-named elevator, substantially as and for the purpose set forth.

9. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising a grinding-mill, an elevator in connection therewith, a chute connected to said elevator and having a sieve on its under side, a spout under said sieve, a rotary bolt, a pipe leading from said spout to said bolt, a second mill and a second elevator and pipes leading thereto from said bolt, a separator connected with the second elevator and having compartments, a pipe leading from one of said compartments to a

fan, a fan having a pipe leading therefrom, and a series of connected bags of burlap, all of said parts being arranged and operated substantially as described.

10. Mechanism for preparing rocks, &c., for fertilizers and cements, comprising a grinding-mill, an elevator leading therefrom, an inclined chute connected to said elevator, a box located at the end of said chute, having an inclined bottom, a pipe leading from said box, a second grinding-mill; a second elevator, a separator and a pipe leading to a bolt, and a bolt, all arranged and operating substantially as and for the purpose set forth.

VICTOR LORD.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. GRANT.