

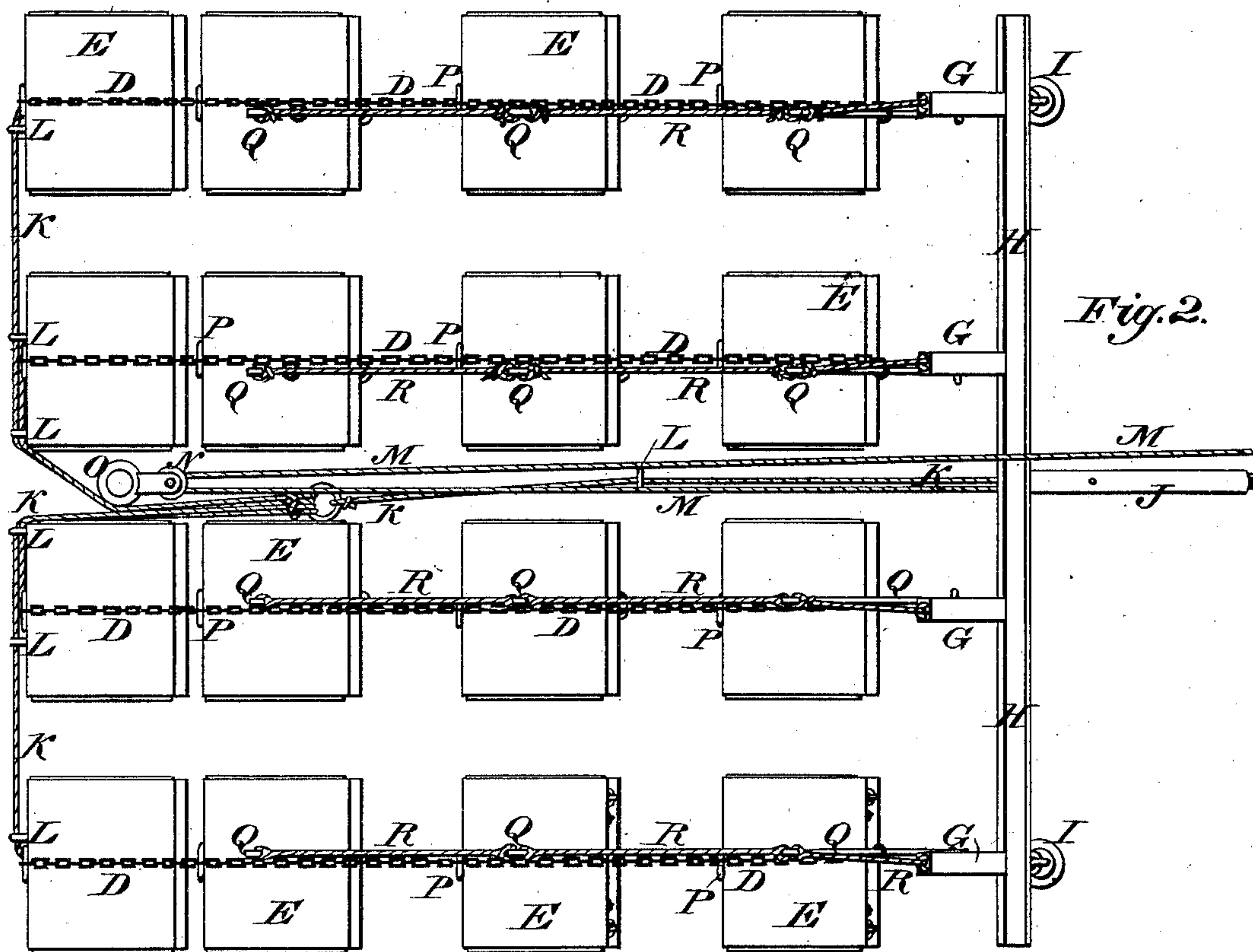
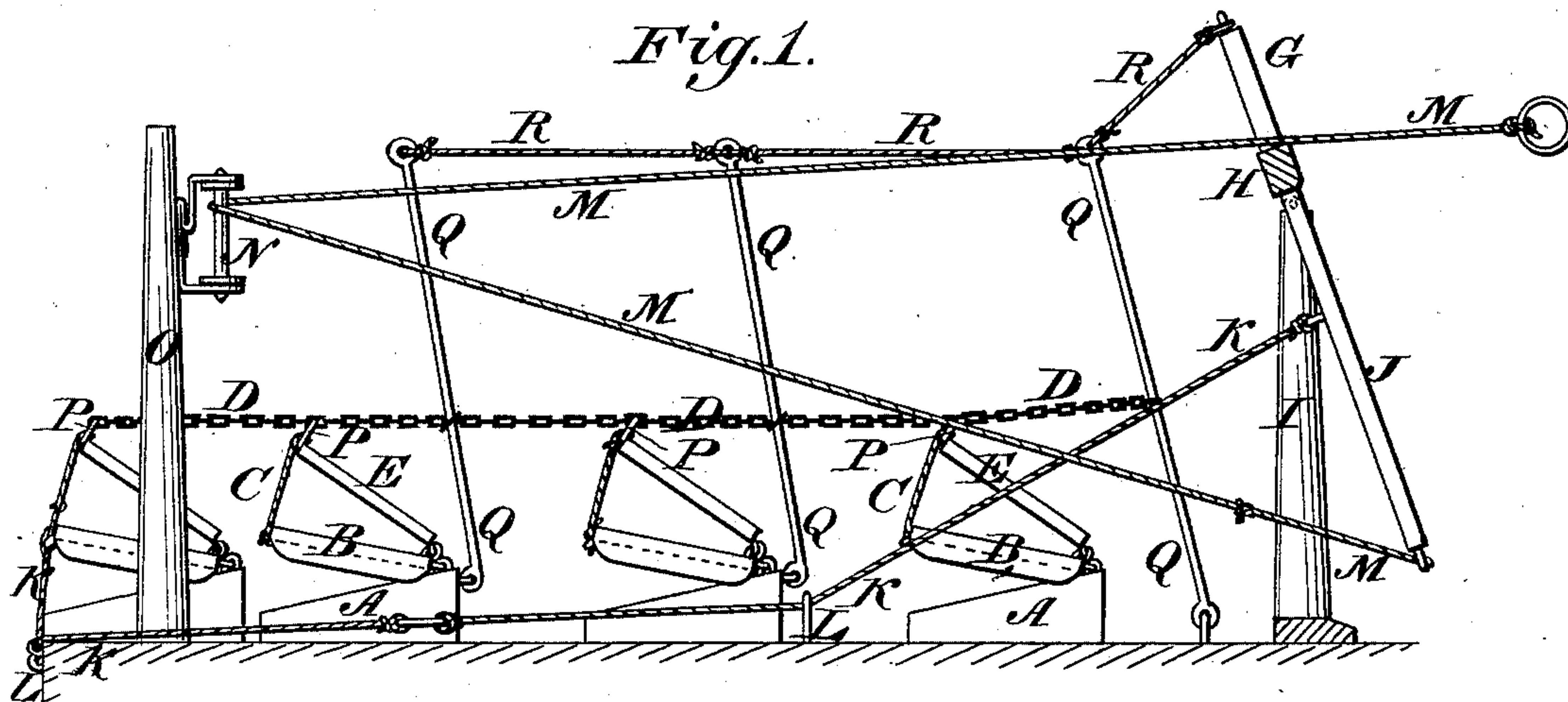
(No Model.)

L. G. STOCKING.

Apparatus for Raising and Lowering Sashes.

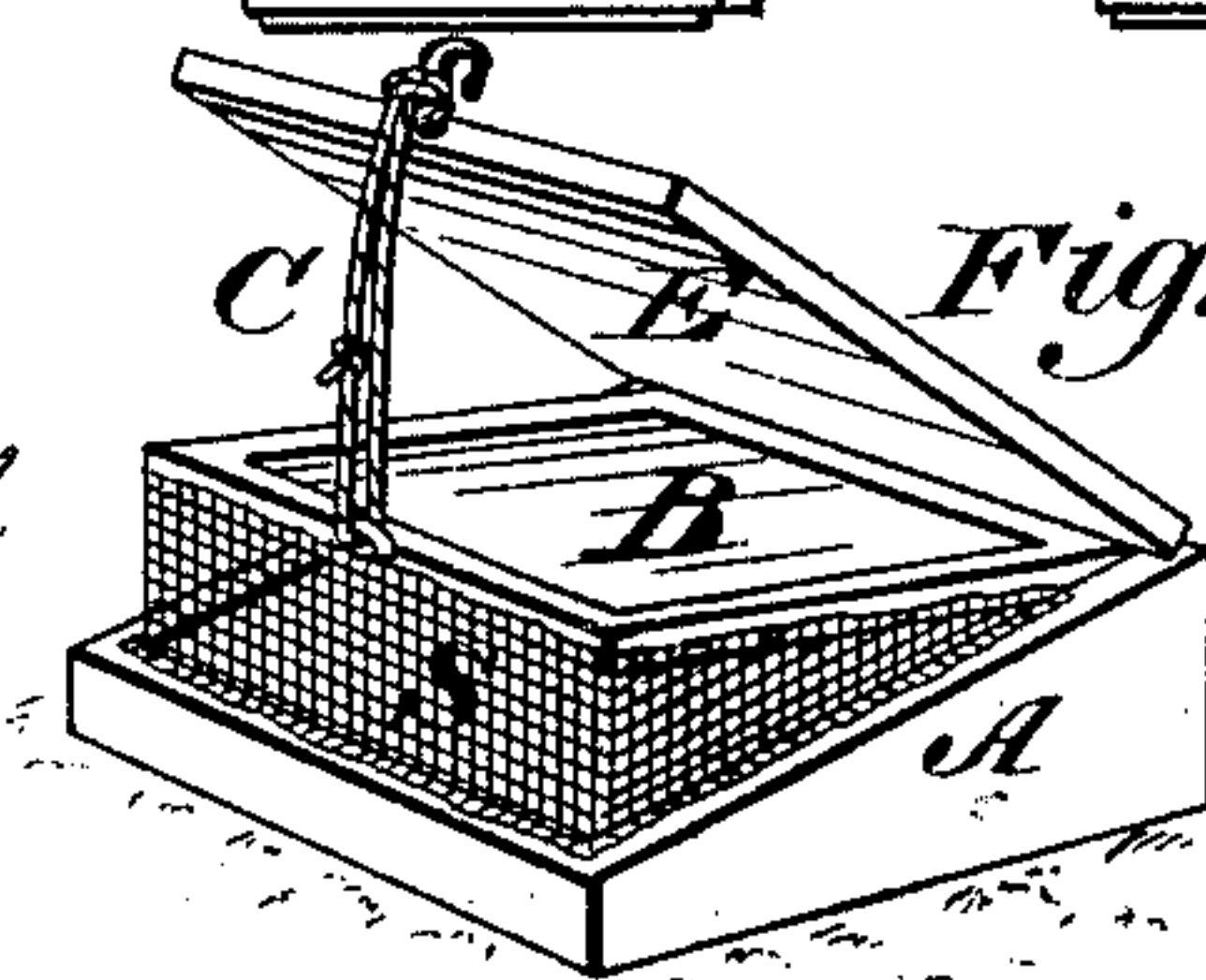
No. 232,313.

Patented Sept. 14, 1880.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

LEWIS G. STOCKING, OF BURLINGTON, IOWA.

## APPARATUS FOR RAISING AND LOWERING SASHES.

SPECIFICATION forming part of Letters Patent No. 232,313, dated September 14, 1880.

Application filed July 1, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS G. STOCKING, of Burlington, in the county of Des Moines and State of Iowa, have invented a new and Improved Apparatus for Raising and Lowering Sashes and Covers for Forcing-Boxes, Cold-Frames, and Similar Uses, of which the following is a specification.

Figure 1 is a sectional elevation of the improvement. Fig. 2 is a plan view. Fig. 3 is a perspective view of one of the boxes provided with sash, cover, and mosquito-netting.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an apparatus for raising and lowering the sashes and covers of forcing-boxes, cold-frames, and similar uses, so constructed that a number of sashes and covers can be raised at the same time and by the same operation.

A represents the boxes or frames, which are constructed in the ordinary manner. To the upper edge of the highest side of the boxes A are hinged the sashes B, which are provided with glass in the usual manner. To the free edges of the sashes B are attached the ends of short cords, chains, or other suitable connections, C, the other ends of which are attached to a cord, chain, or wire, D, five (more or less) sashes B being connected with each chain, wire, or cord D. When covers E are used they are placed above the sashes B, and are hinged to the same edges of the boxes A as the said sashes B. The forward edges of the covers E are connected with the upper ends of the connections C, or with the cords, chains, rods, or wires D, by an open ring, P, so that the said chains D can be readily attached, detached, and adjusted. When the covers E are used the connections C should be flexible, so that the said covers E can shut down upon the said sashes. The connections C should be made of such a length that the covers E may be raised far enough to give the sun full access to the plants without raising the sashes B.

To the chains, cords, wires, or rods D are attached levers Q, the lower ends of which are pivoted to the boxes A or to supports set in the ground. The upper ends of the levers Q are attached to a chain, cord, wire, or rod, R, so that all the covers and sashes E B connected

with the cords D' R and levers Q can be raised and lowered by operating the cord, chain, wire, or rod R.

If desired, the end of the cord, wire, chain, or rod R can be attached to an arm, G, rigidly attached to a shaft, H. Any desired number of cords, chains, or wires R may be connected with the shaft H, the only limit being the attendant's power to operate the said shaft. The shaft H works upon hinges or in bearings attached to posts I or other suitable supports.

To the shaft H is rigidly attached an arm, J, projecting in the opposite direction from the arms G, so that the shaft H and the arms G J may operate as a lever for raising and lowering the sashes B and covers E. To the arm J, at the same distance from the axis of the shaft H as the ends of the arms G, is attached the end of a cord, chain, or wire, K, which passes through guides L, secured to the ground or to the boxes A. The cord, chain, or wire K is branched, and the end of each branch is connected with the free edge of the forward sash in each set, or with the connection C of the said sash. With this construction the sashes B and covers E are raised and lowered with a positive movement, and are held securely in position while being raised and when raised, so that they cannot be blown down by the wind.

To the end of the arm J is attached the end of a cord or chain, M, which cord or chain passes around a pulley, N, attached to a post, O, or other support, and may then be led to any desired part of the garden or field, or to the house, so that the covers E and sashes B can be raised from any desired distance or position.

To protect the plants from insects, mosquito-netting S may be attached to the edges of the sashes B and of the boxes A, as shown in Fig. 3, which netting S should be sufficiently slack to allow the sashes B to be raised to the desired height. The netting S may have small weights attached to it, so that when the sashes are lowered the said netting may sink down into the boxes A, so as to be shut in and protected.

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

1. An apparatus for raising and lowering sashes and covers, constructed substantially as herein shown and described, consisting of the cords or wires C D R, the levers Q, the  
5 rock-shaft H, having arms G J, the branched cords or wires K and guides L, and the cord or chain M and pulley N, as set forth.

2. In an apparatus for raising and lowering sashes and covers, the combination, with the  
10 sashes B and covers E, of the flexible connections C, the cords or wires D and R, and the levers Q, substantially as herein shown and described, whereby the sashes and covers can be raised at the same time and by one opera-  
15 tion, as set forth.

3. In an apparatus for raising and lowering sashes and covers, the combination, with the sashes B and covers E, of the connections C,

the cords or wires D R, the levers Q, and the shaft H, having arms G J, substantially as  
20 herein shown and described, whereby the sashes and covers can be raised and lowered at the same time and by the same operation, as set forth.

4. In an apparatus for raising and lowering  
25 sashes and covers, the combination, with the sashes B and covers E and the arm J of the shaft H, of the cords or wires K and the guides L, substantially as herein shown and described, whereby the sashes and covers are  
30 kept in place while being raised and held, as set forth.

LEWIS GROVE STOCKING.

Witnesses:

FRANK C. STOCKING,

Mrs. ANTHA STOCKING.