

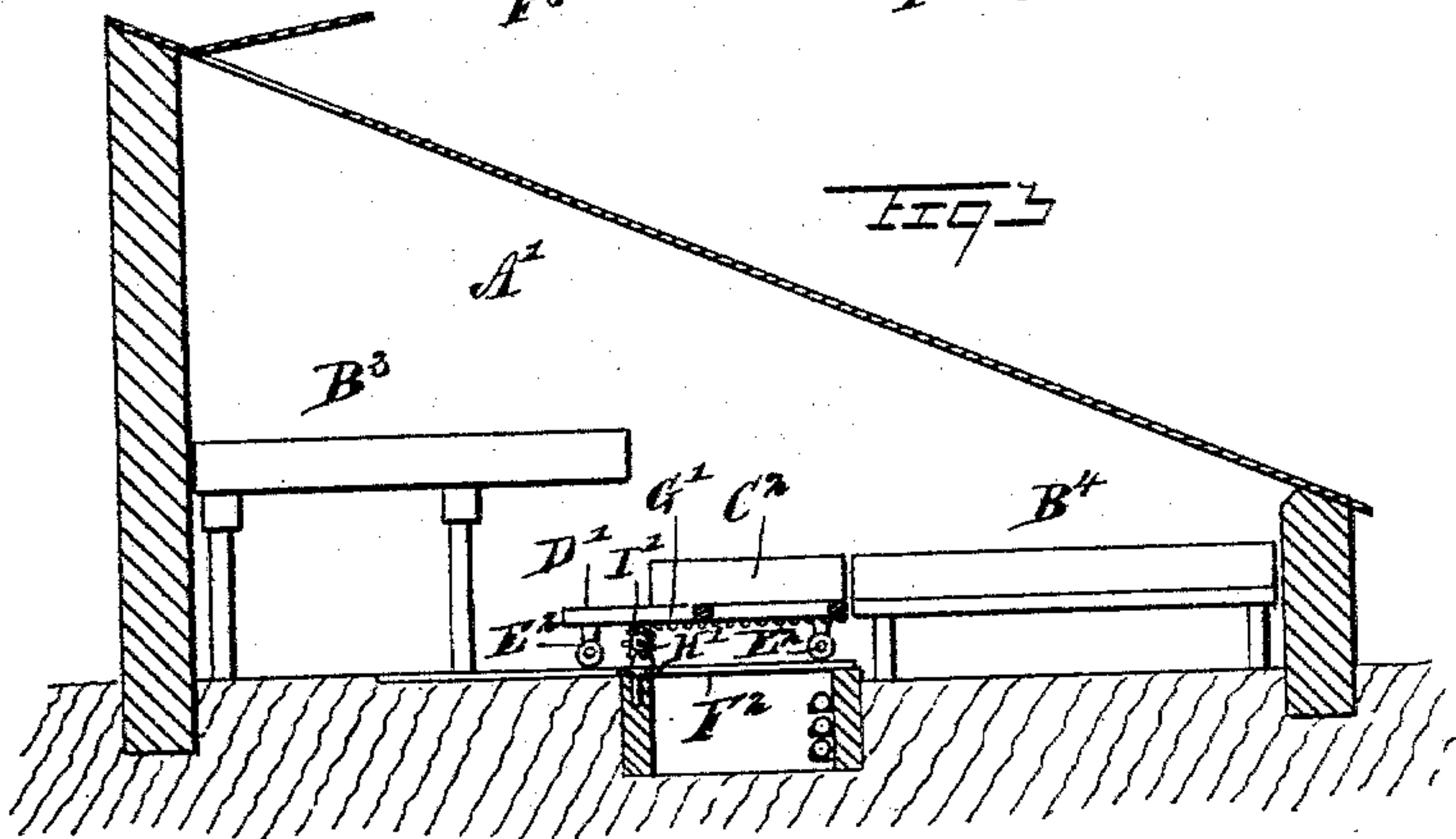
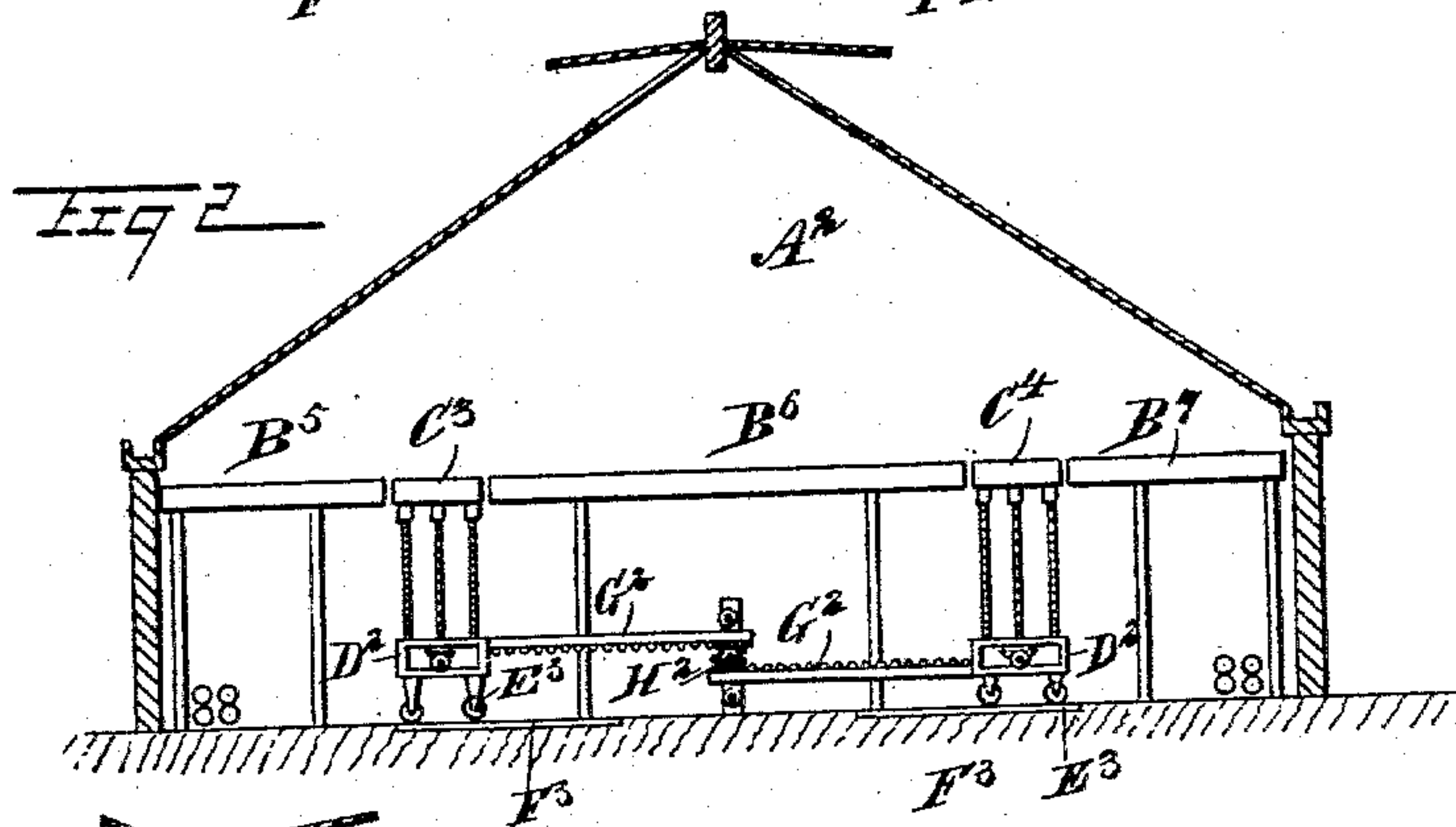
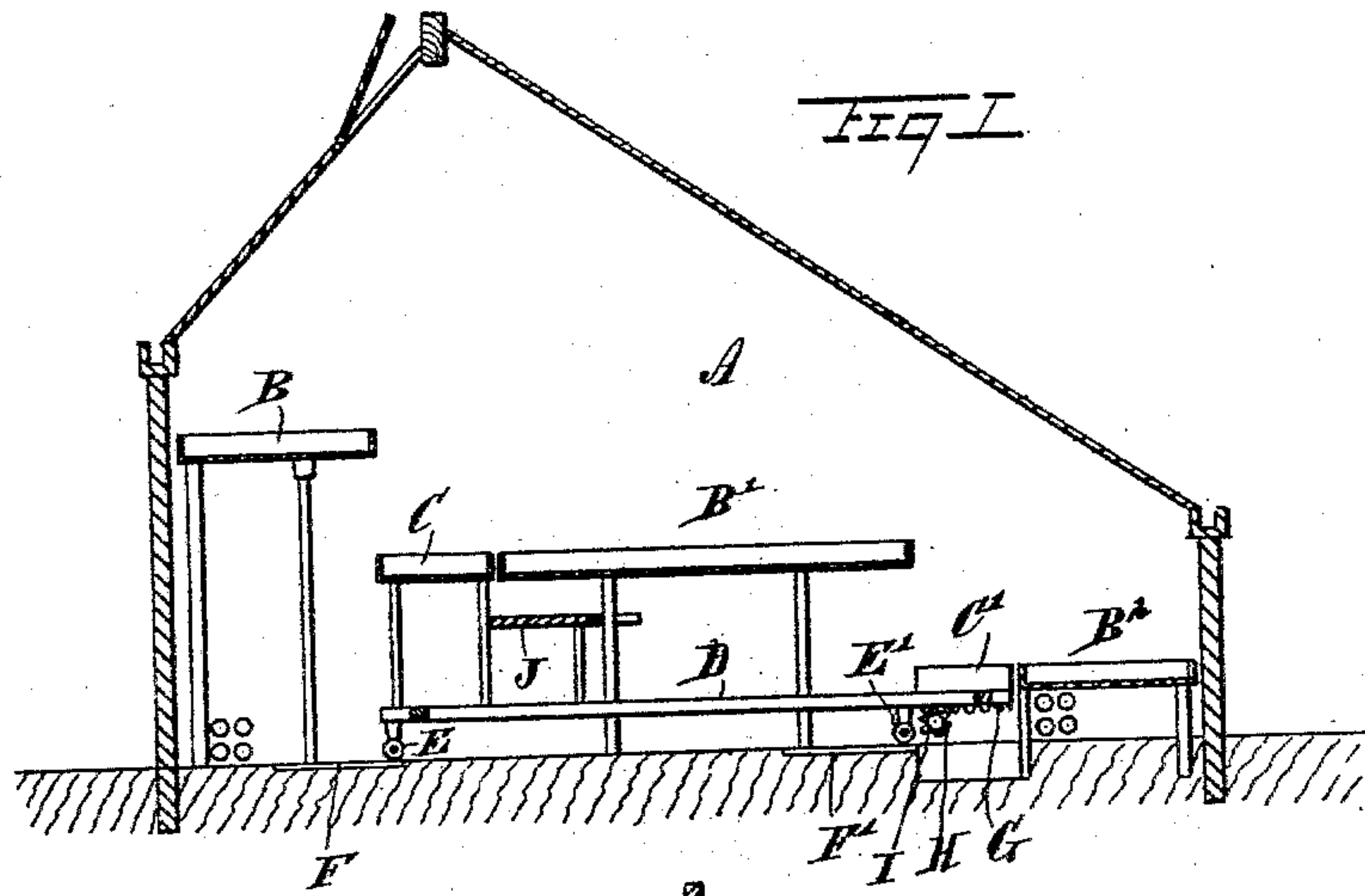
(No Model.)

2 Sheets—Sheet 1.

W. H. WITTE.
GREENHOUSE.

No. 589,677.

Patented Sept. 7, 1897.



WITNESSES:

H. Walker
Rev. J. H. Foster

INVENTOR

W. H. Witte

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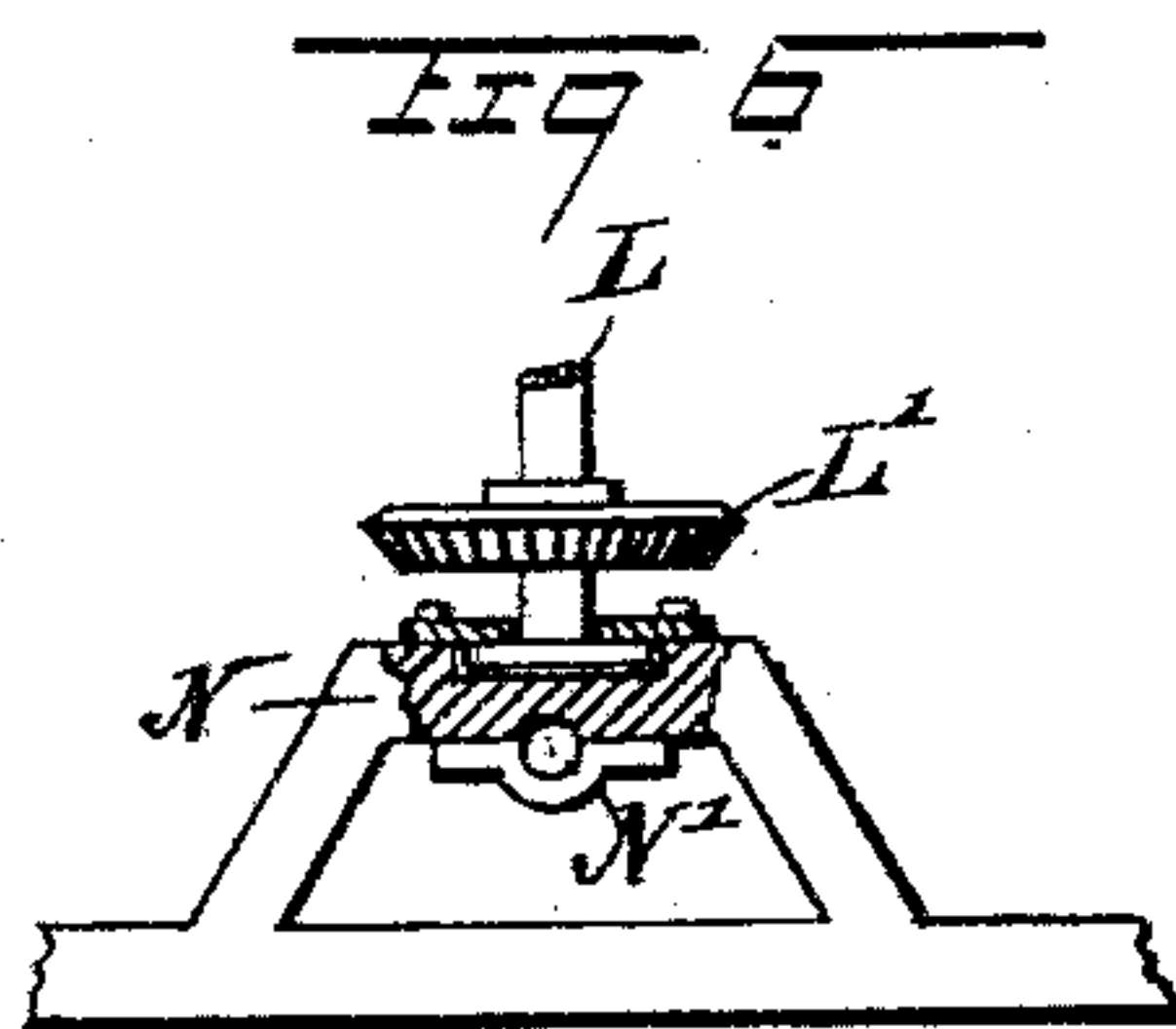
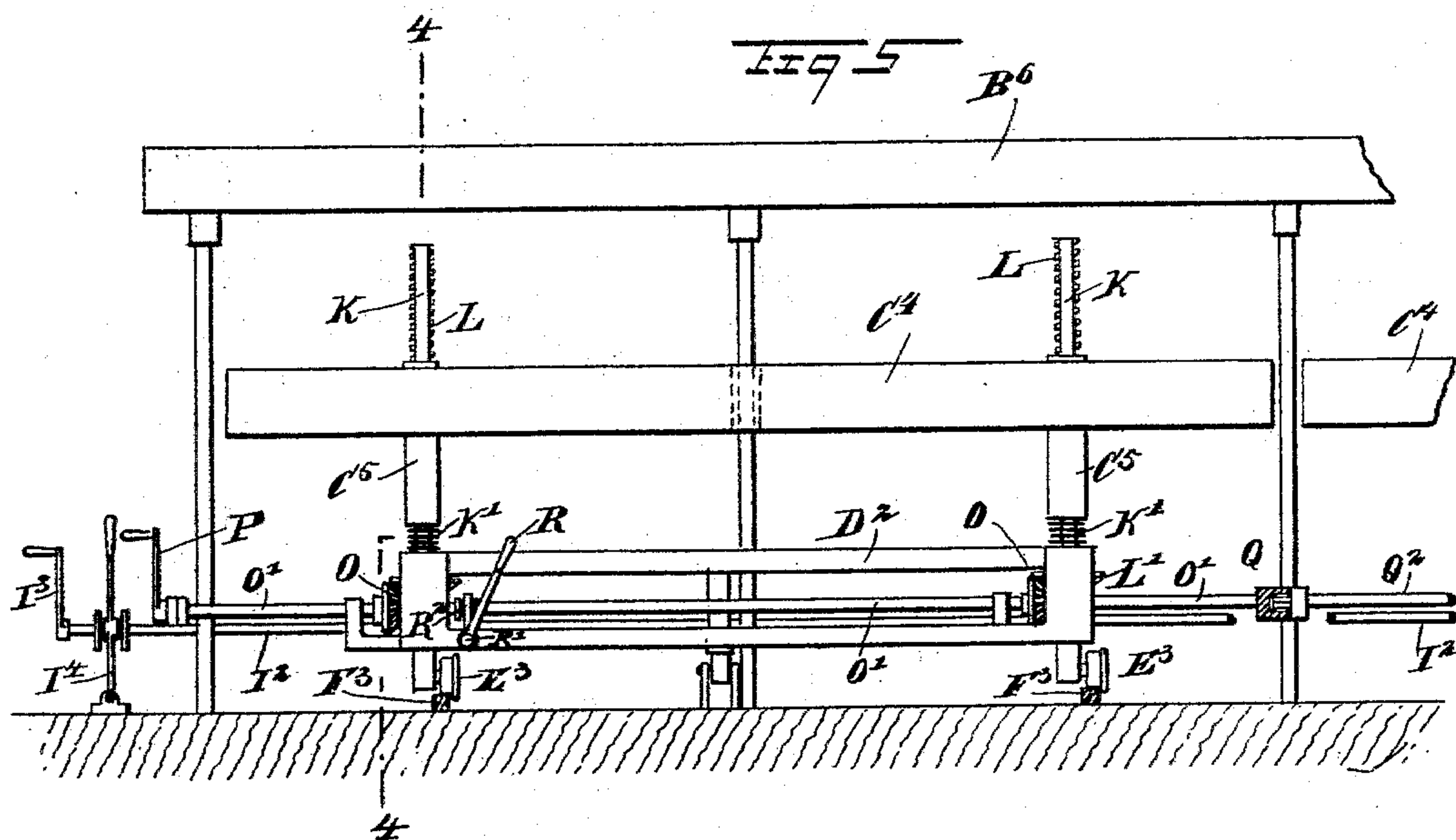
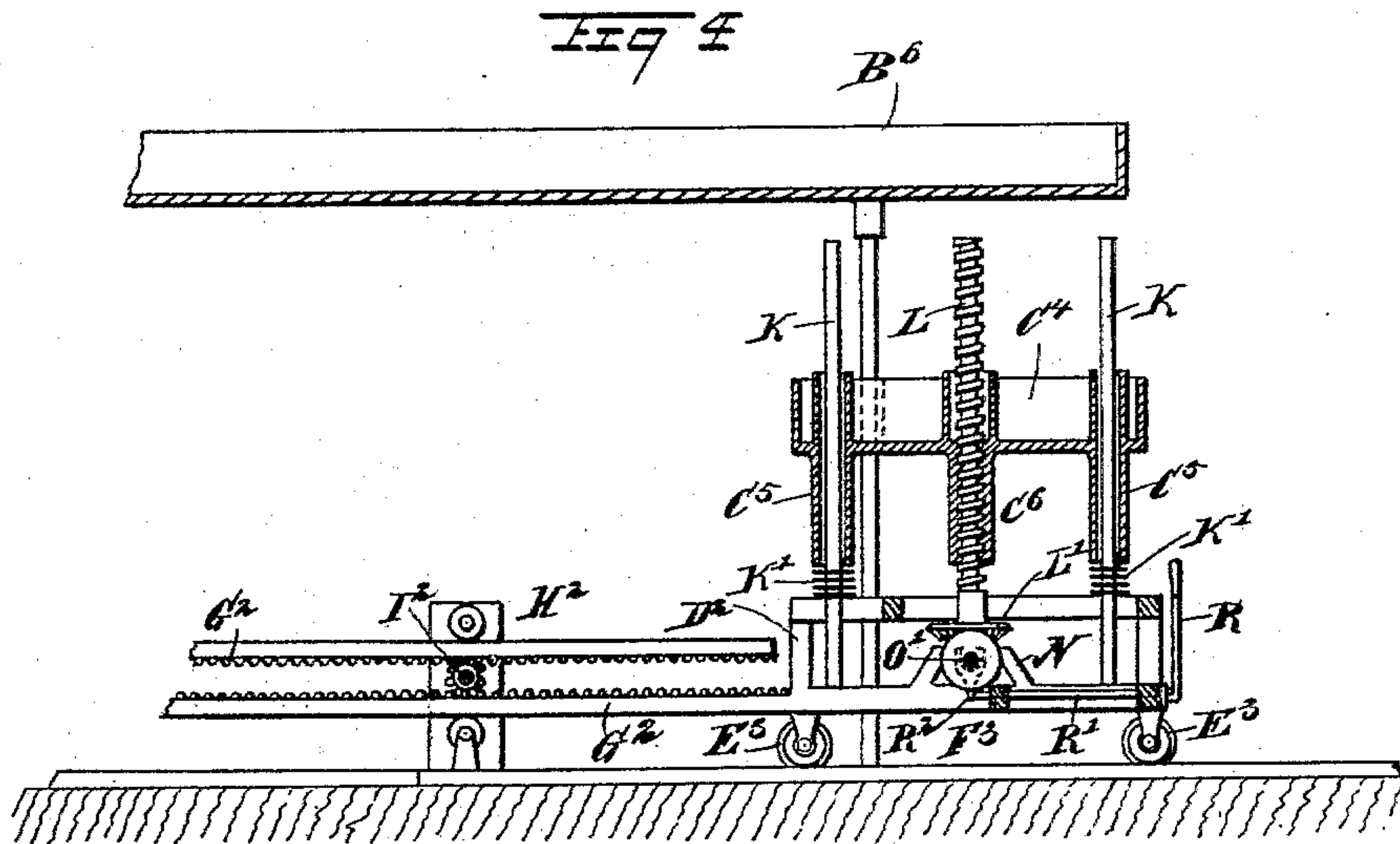
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UNITED STATES PATENT OFFICE.

WILLIAM H. WITTE, OF BALTIMORE, MARYLAND.

GREENHOUSE.

SPECIFICATION forming part of Letters Patent No. 589,677, dated September 7, 1897.

Application filed May 29, 1896. Serial No. 593,592. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WITTE, of Carroll, in the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Greenhouses, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in greenhouses whereby the valuable space of the walks can be utilized for benches carrying plants, &c.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse section of the improvement. Fig. 2 is a similar view of a modified form of the same. Fig. 3 is a like view of another modified form of the improvement. Fig. 4 is an enlarged cross-section of one of the fixed and one of the movable benches, the section being taken on the line 4 4 of Fig. 5. Fig. 5 is a front elevation of the same, and Fig. 6 is an enlarged sectional side elevation of the step for one of the vertical screw-rods.

The greenhouse A (shown in Fig. 1) contains stationary benches B, B', and B², arranged in step form and placed at suitable distances apart to form the usual greenhouse-walks to permit the operator to attend to the flowers, &c., carried by the said benches.

The walk between the benches B and B' can be occupied by a movable bench C and a similar bench C', adapted to pass into the space occupied by the walk between the benches B' and B². The bench C is on a level with the bench B' and the other bench C' is about on a level with the bench B² and both benches C and C' are secured on a framework D, provided with wheels E and E', mounted to travel on transverse rails F and F', respectively, held on the floor of the greenhouse and extending under the benches B and B', respectively, so that a transverse motion given to the framework D causes the benches C and C' to move in and out of the path or walks, as above mentioned.

When the framework D is moved to the left, then the bench C passes under the bench B to open up the walk between the benches B and B', and at the same time the other bench C' passes under the bench B' to open up the walk between the benches B' and B².

In practice the benches C C' and the framework D are of a suitable length—say ten to fourteen feet—so that a series of such benches and frameworks are used in ordinary-sized greenhouses. Now in order to impart the desired motion to the several frameworks and benches carried thereby I provide each framework with a transversely-extending rack G, in mesh with a gear-wheel H, secured on a shaft I, journaled in suitable bearings attached to the floor of the greenhouse, the said shaft extending longitudinally in the greenhouse. One end of the shaft is provided with a suitable crank-arm or other means for turning the shaft to cause the gear-wheels H to move the racks G and consequently shift the frameworks D and benches C and C' simultaneously in the manner above described. On the framework D is also arranged a platform J, adapted to form a walk between the benches B and B' at the time the benches C and C' are under them.

In the greenhouse A' (shown in Fig. 3) two stationary benches B³ and B⁴ are employed, between which is arranged the walk to be occupied by a movable bench C², secured on a framework D', mounted on wheels E², traveling on transverse rails F², extending under the bench B³. A rack G' is secured on the framework D', that is in mesh with a gear-wheel H', secured on a shaft I', similar to the shaft I. Now when the shaft I is turned the framework D' moves to the left under the bench B³, so that the walk between the stationary benches B³ and B⁴ can be used for giving the gardener access to the said stationary benches.

In the greenhouse A² (illustrated in Fig. 2) the stationary benches B⁵, B⁶, and B⁷ form walks adapted to be occupied by movable benches C³ and C⁴ on the same level with the said stationary benches, but adapted to be lowered, so as to be moved under the central bench B⁶. The movable benches C³ and C⁴ are mounted to slide vertically on posts K, supported on the frameworks D², provided

with laterally-extending racks G^2 , both engaging a gear-wheel H^2 , fastened on a shaft I^2 , similar to the shafts I and I' previously mentioned. Each of the frameworks D^2 is provided with wheels E^3 , mounted to travel on transversely-extending rails F^3 , extending under the central stationary bench B^6 , as plainly indicated in Fig. 2.

Springs K' are coiled on the posts K to support the movable benches C^3 and C^4 , (see Figs. 4 and 5,) and each of the said benches C^3 and C^4 is provided with vertically-disposed nuts C^6 , in which screw the screw-rods L , set at their lower ends in suitable steps N , carried by the framework D^2 . On each screw-rod L is fastened a beveled gear-wheel L' , in mesh with a beveled gear-wheel O , secured on a longitudinally-extending shaft O' , journaled in suitable bearings N' , carried by the step N , as indicated in Fig. 6.

On one end of the shaft O' is secured a crank-arm P , adapted to be turned by the operator, so as to impart a rotary motion to the shaft O' to cause the gear-wheels O to rotate the gear-wheels L' , so as to turn the screw-rods L to move the bench C^3 or C^4 upward or downward on the posts K , according to the direction in which the crank-arm P is turned. Thus by the arrangement described the operator by turning the shaft I^2 can simultaneously move the two benches C^3 and C^4 outward from under the stationary bench B^6 , and then by turning the crank-arm P the operator is enabled to raise either of the benches C^3 or C^4 to bring the same to the level of the stationary benches B^5 , B^6 , and B^7 . Thus it is evident that the operator can at any time clear the walks or path between the stationary benches to have the desired access to the same, and he can also utilize the steps of the said walks by moving the benches C^3 and C^4 into the same, as above described.

The shaft O' of one of the end benches C^4 is adapted to be connected with the shaft O^2 of the next following bench by a clutch Q , held on the shaft O' , so that the entire series of benches C^3 or C^4 extending throughout the length of the greenhouse can be simultaneously raised or lowered.

A lever R , held on a shaft R' , journaled on the framework D^2 , is adapted to be taken hold of by the operator to shift the shaft O' longitudinally to move the clutch Q in or out of contact with the shaft O^2 . For this purpose the shaft R' is provided with a shifting-fork R^2 , engaging collars on the shaft O' , so that on swinging the lever R the shaft O' is shifted longitudinally.

The shaft I^2 , besides having a crank-arm I^3 for turning it, can be shifted longitudinally by a lever I^4 to move the gear-wheels H^2 in or out of mesh with the racks G^2 .

Now it will be seen that by the arrangement described the operator can at any time move any or all of the movable benches in or out of the walk or path existing between adjacent

stationary benches to obtain the necessary access to the latter.

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

1. A greenhouse, provided with rails extending transversely of the greenhouse-walk, a wheeled framework adapted to travel on the said rails, a bench carried by the said framework, and means substantially as described, for raising and lowering the said bench on the said framework, as set forth.

2. A greenhouse, provided with a wheeled framework adapted to travel on transverse rails, a bench carried by the said framework, and a platform supported on the said framework and forming a walk, substantially as shown and described.

3. A greenhouse, provided with a wheeled framework, posts supported on the said framework, a bench fitted to slide vertically on the said posts, and springs coiled on the said posts and carrying the said bench, substantially as shown and described.

4. A greenhouse, provided with a wheeled framework, posts supported on the said framework, a bench fitted to slide vertically on the said posts, springs coiled on the said posts and carrying the said bench, and means, substantially as described, for raising and lowering the said bench, as set forth.

5. A greenhouse having two stationary benches held at different elevations and having a walk between them, a frame capable of moving transversely out from beneath the higher stationary bench and of occupying the walk, and a bench carried by the said framework and approximately level with the lower stationary bench, substantially as described.

6. A greenhouse having two stationary benches with a walk between them, a transversely-movable framework capable of extending into the walk or being withdrawn beneath one of the stationary benches, and a bench carried by the framework and moving with the same, substantially as described.

7. A greenhouse, having a bench forming a bed, a walk at one side thereof, and a second bench also forming a bed and having transverse guided movement to occupy a position in which the second bench extends over the walk or to extend within the vertical lines of the stationary bench, substantially as described.

8. A greenhouse having a stationary bench forming a bed, a walk at one side thereof, a track running transversely beneath the bench, and a wheeled bench also forming a bed and movable on the track to a position above the walk or beneath the stationary bench, substantially as described.

WILLIAM H. WITTE.

Witnesses:

CHAS. O. HOPKINS,
GEO. E. TAYLOR.