

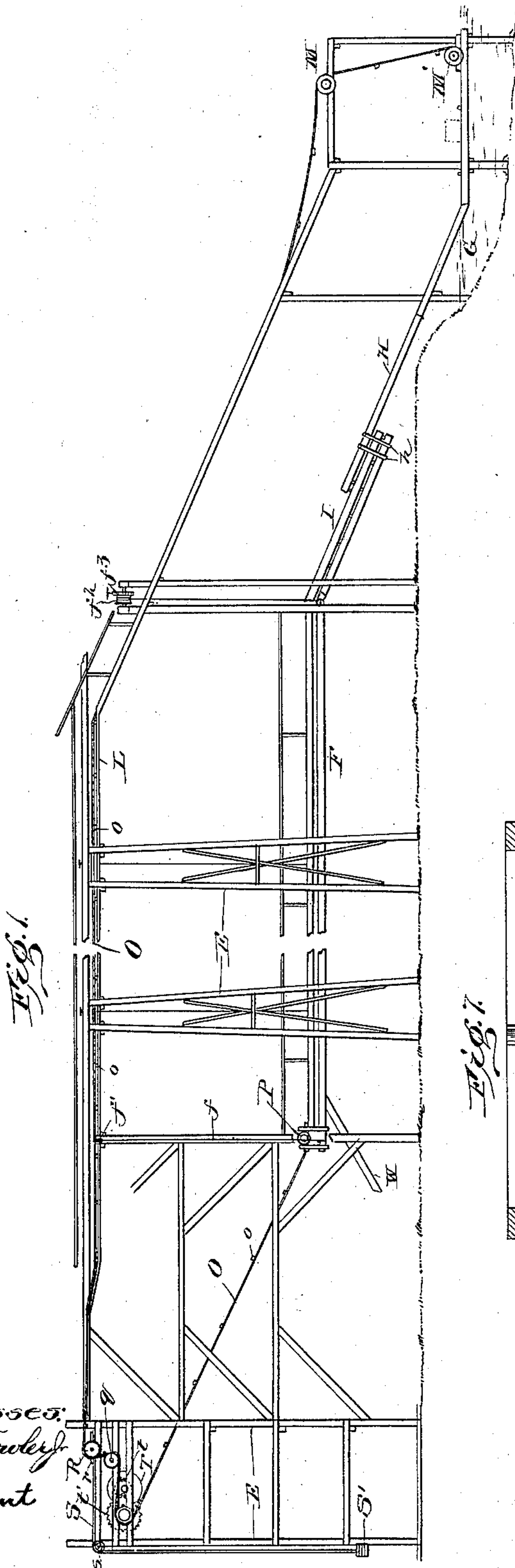
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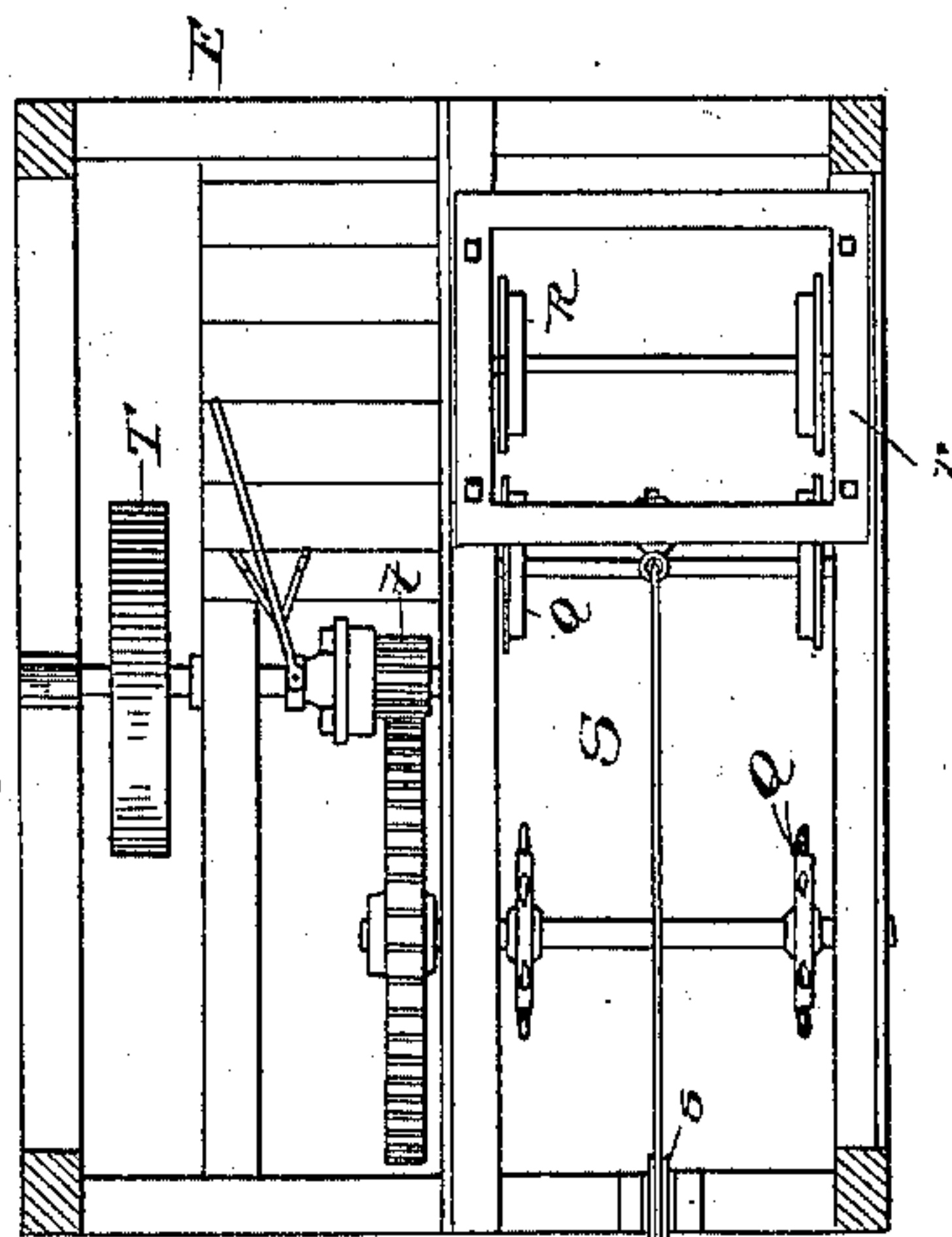
A. GIFFORD.
ICE HANDLING MACHINERY.

No. 604,007.

Patented May 10, 1898.



Witnesses:
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Chas. Stuart



Inventor:
Arthur Gifford.
By
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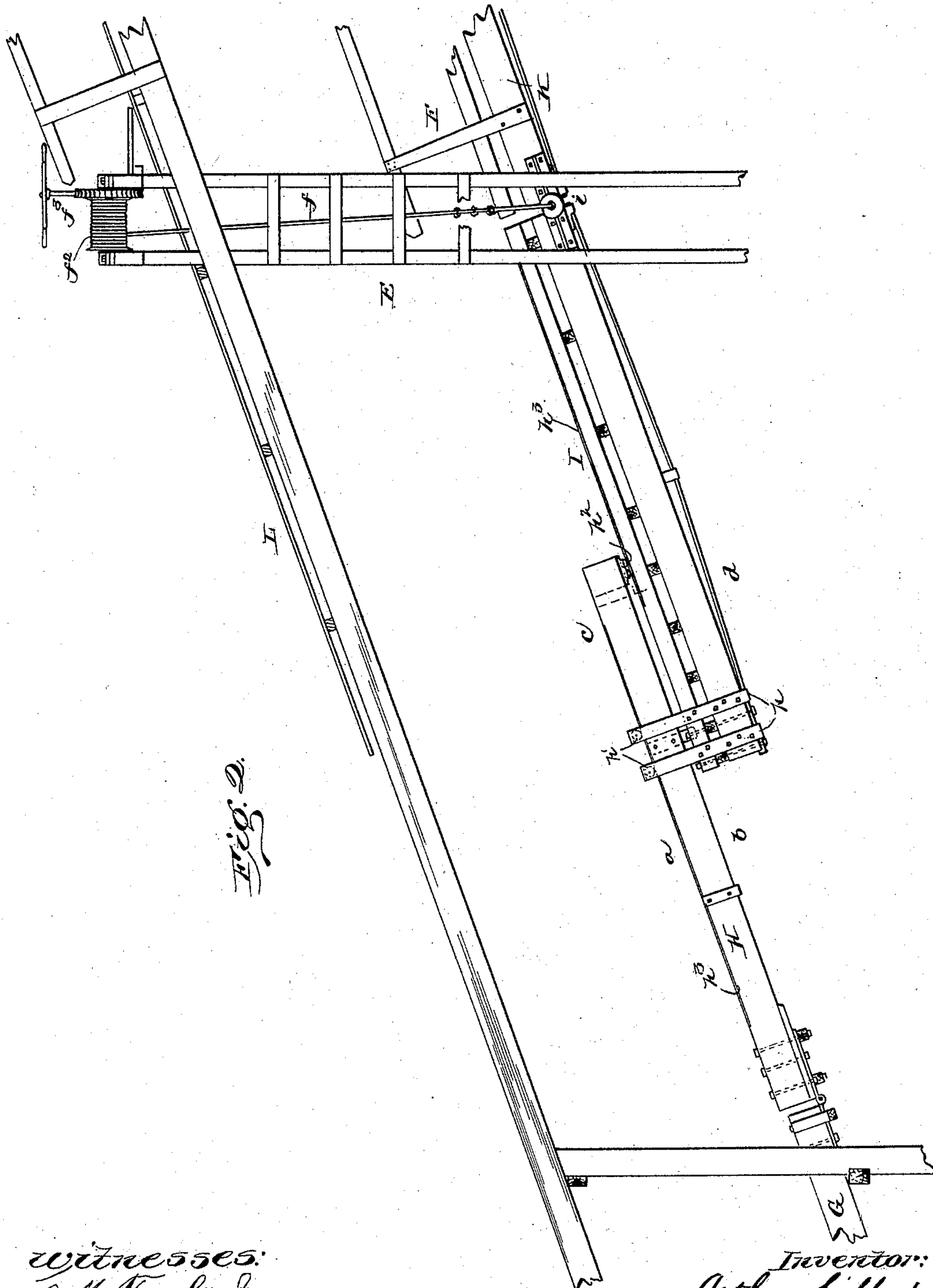
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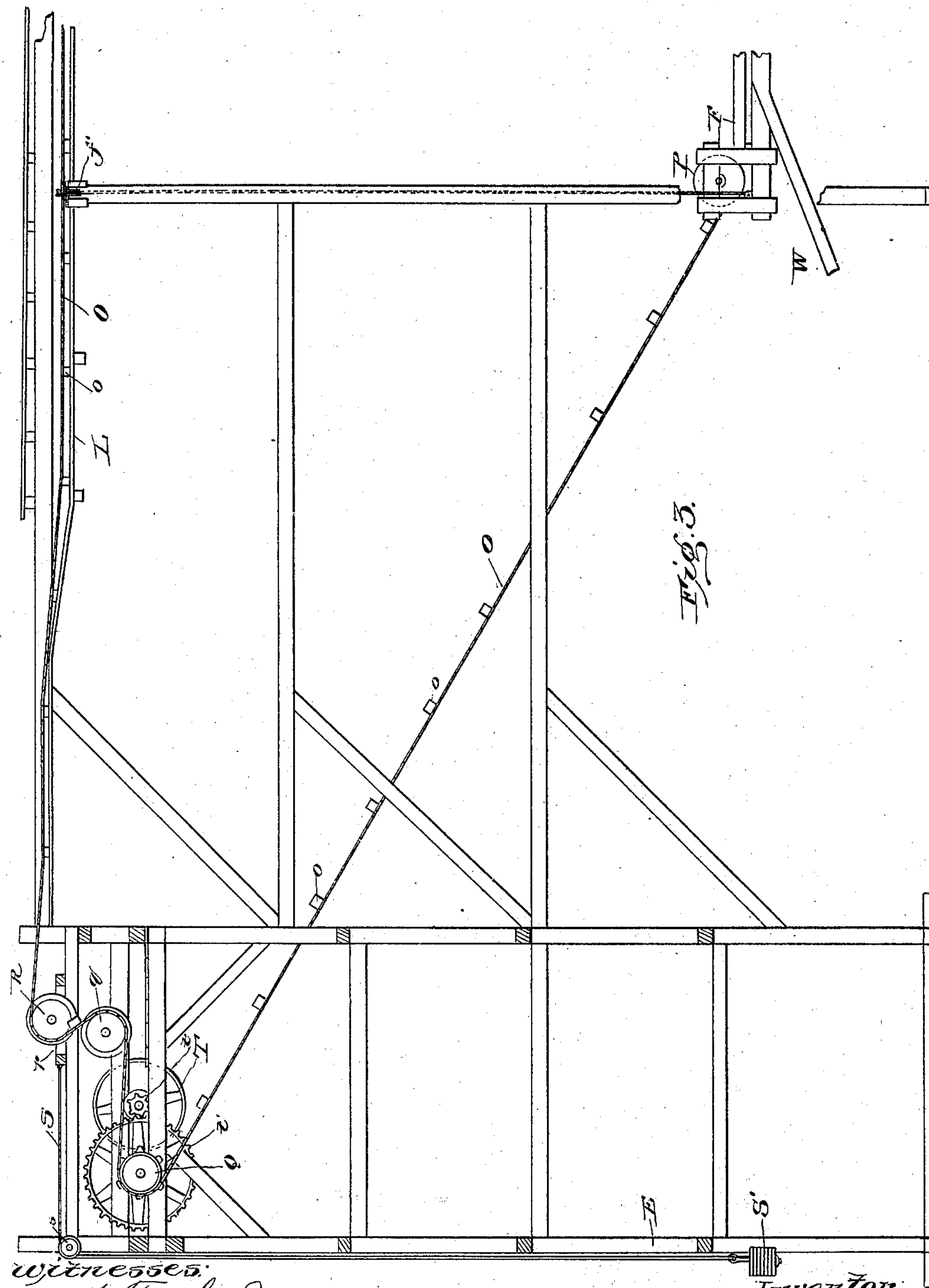
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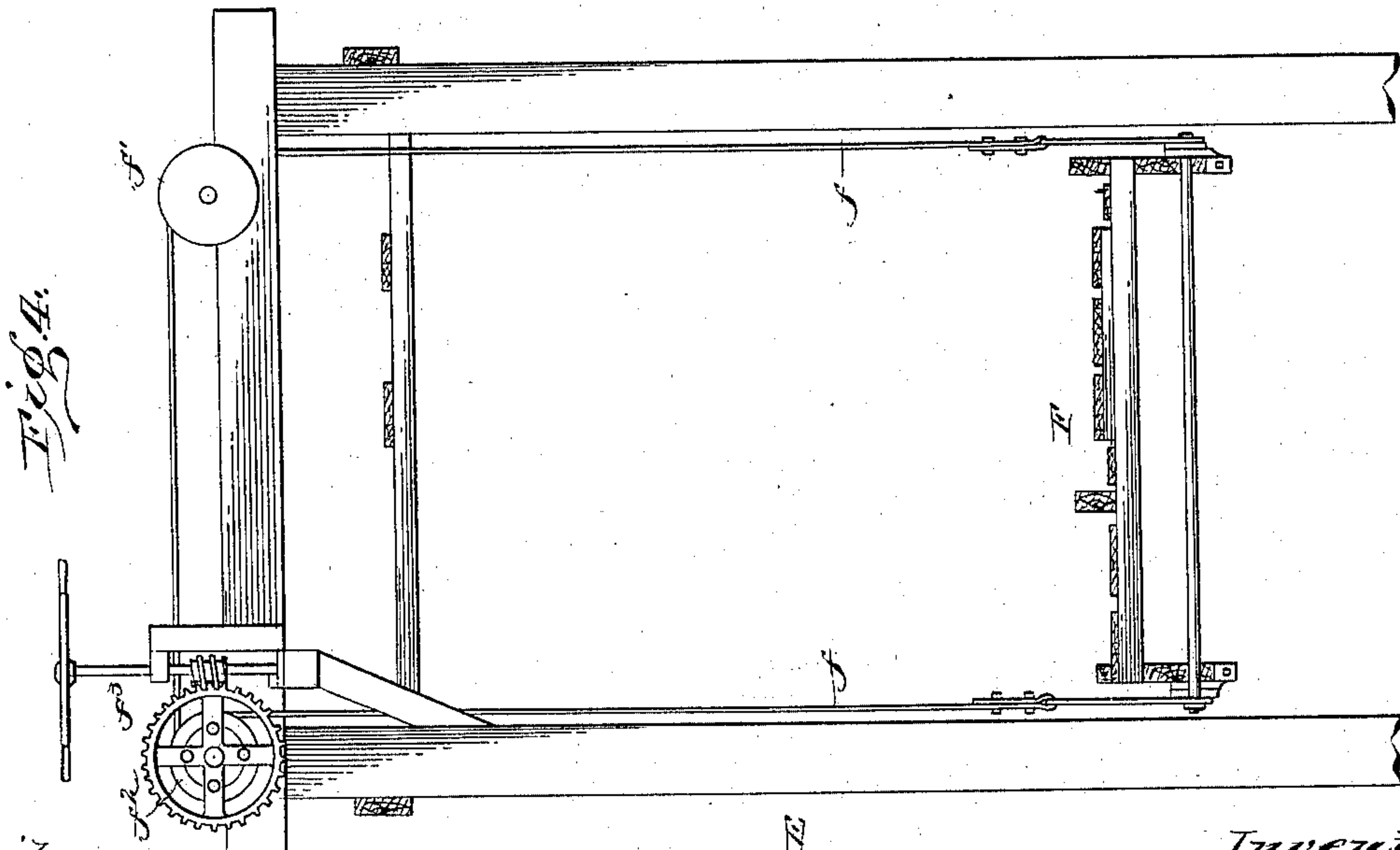
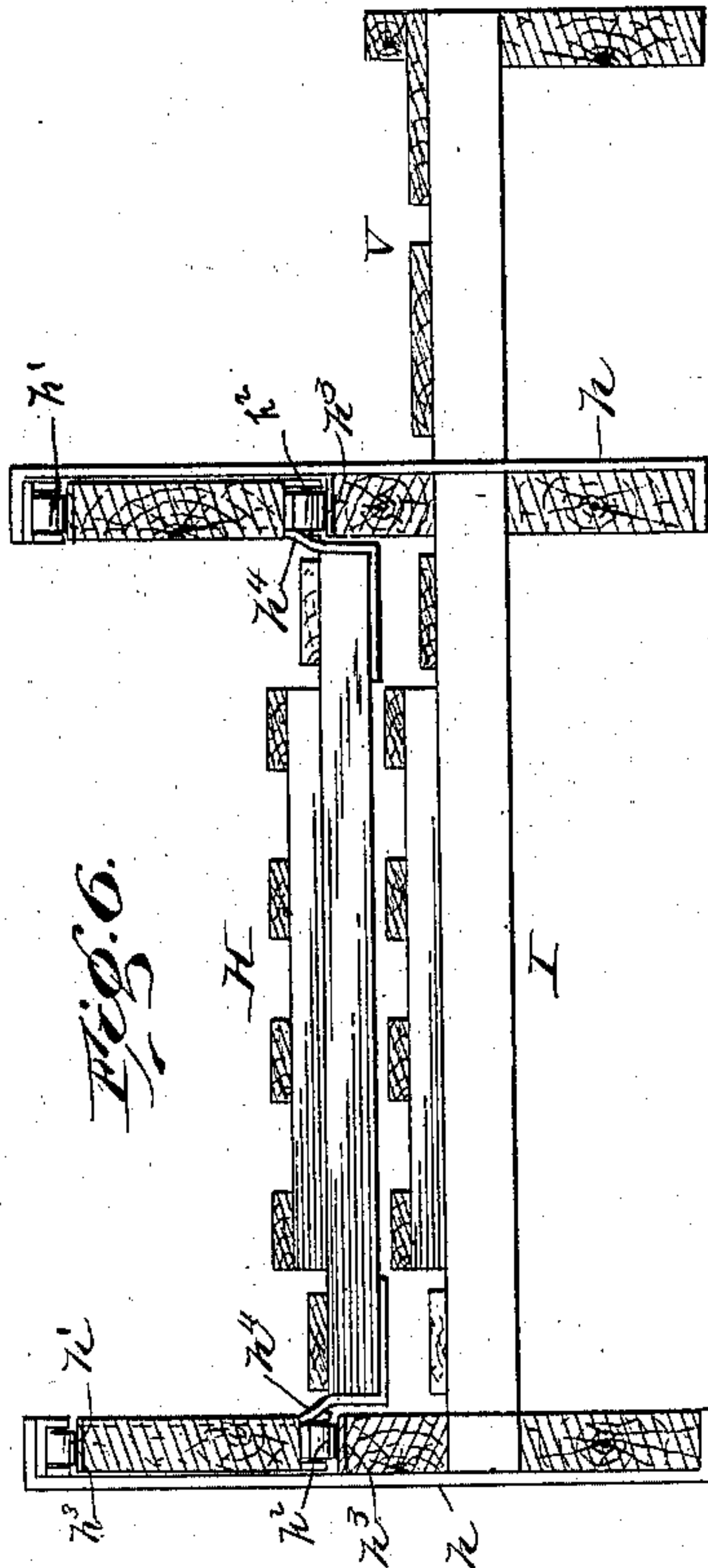
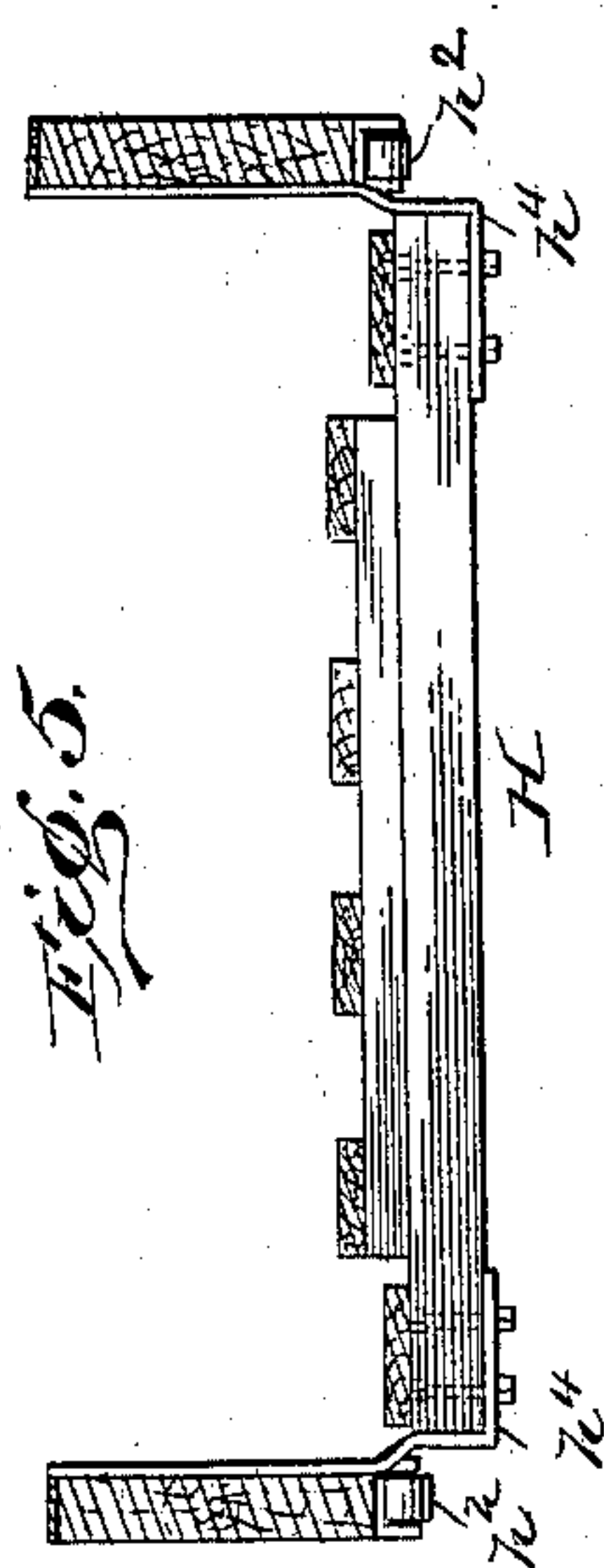
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UNITED STATES PATENT OFFICE.

ARTHUR GIFFORD, OF HUDSON, NEW YORK, ASSIGNOR TO GIFFORD BROTHERS, OF SAME PLACE.

ICE-HANDLING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 604,007, dated May 10, 1898.

Application filed January 17, 1898. Serial No. 666,936. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR GIFFORD, a citizen of the United States, residing at Hudson, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Ice-Handling Machinery; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in machinery for handling and elevating ice in the filling of ice-houses, such as are usually located on the banks of streams or ponds, although the ice may be received and delivered to the apparatus by transportation from any suitable point.

The object of the invention is to provide for the economical and convenient elevation and delivery of the ice to any one or more of a series of houses or openings to the same house, arranged side by side at any suitable distance apart, and whereby the ice may be delivered at any desired height; or, in other words, as the houses are filled, raising the ice-level therein, the handling mechanism may be correspondingly raised to deliver the ice at the proper point.

Referring to the accompanying drawings, Figure 1 is a side elevation of an elevating and handling plant embodying the present invention. Fig. 2 is a detail of the telescoping section in the incline. Fig. 3 is a detail of the arrangement of the mechanism at the opposite end of the gallery from the incline. Fig. 4 is a cross-sectional view taken through the gallery and the supporting-frame and illustrating the raising and lowering mechanism. Fig. 5 is a section taken transversely on the line *a b*, Fig. 2. Fig. 6 is a section taken on the line *c d*, Fig. 2, both showing details of the construction of the telescoping section. Fig. 7 is a top plan view of the driving and take-up mechanism shown in Fig. 3.

Like letters of reference in the several figures indicate the same parts.

In carrying this invention into practice there is arranged in front of the series of ice-houses, or in front of the series of openings

in the ice-houses, a framework preferably consisting of a series of skeleton towers, (lettered E in the accompanying drawings, Fig. 1,) which skeleton towers are adapted to support within them a relatively long adjustable gallery F, which gallery is provided with slideways upon which the blocks of ice may be moved along to a point in front of any one of the openings to the ice-houses and discharged into the same by the ordinary well-known appliances. The mechanism for adjusting the gallery is shown clearly in Fig. 4, and from an inspection of this figure it will be seen that the gallery is suspended at suitable points, preferably each tower, upon flexible connectors or wire ropes *f*, passing over and around pulleys and drums *f'* *f*² at the upper ends of the towers. The drums *f*², around which the connections pass, are preferably rotated by means of a hand-wheel and worm *f*³, as shown. The workmen may thus pass along from tower to tower and raise or lower the gallery to the desired point or so as to discharge the ice into the houses above the ice-level therein.

At one end of the gallery it is provided with an incline extending down to the source of ice-supply—the pond or river, for instance—which incline is provided with ways corresponding to the ways on the gallery, up which the ice may be moved by a conveyer-chain which travels up the incline and along the gallery and returns overhead, as will be presently explained. The incline, in order that the gallery may be adjusted in the manner before mentioned, is made with a telescoping section which will telescope when the gallery is in its lower positions of adjustment and will extend itself to permit of the upward adjustment of the gallery to any desired point within the capacity of the mechanism. This telescoping section is shown most clearly in Fig. 2 of the accompanying drawings, wherein it will be seen that to the bottom or permanent portion of the incline (lettered G) there is hinged a section H, which corresponds in cross-sectional shape to that of the permanent portion of the incline, and this hinged section H at its upper end is movably connected with a cooperating section I, the sec-

tion I being in turn hinged at *i* to a section K of the gallery, adapted to be adjusted vertically by means of the flexible connections *f*, before referred to. The telescoping sections H and I are preferably connected together by hangers *h*, mounted on the lower ends of the under section and having antifriction-rollers *h'* bearing on the tops of the side timbers of the upper section at a point some distance removed from the end of the latter. The overlying section H has at its extremity antifriction-rollers *h''* on the under surfaces of its side timbers, which rest upon the upper surfaces of the under section I, and in the preferred construction the surfaces upon which all of these antifriction-rollers rest are protected by suitable iron straps or trackways *h'''*. Lateral displacement between the two sections is prevented by supporting the slideways or flooring of the overlying section upon hanger-irons *h''''*, Figs. 5 and 6, which extend below the upper edges of and between the side timbers I of the underlying section. Such lateral displacement is also prevented by the hangers *h*, before referred to.

Extending preferably throughout the whole length of the gallery and down at the incline end thereof is a return-trackway L for the conveyer-chain, and this return-trackway may be mounted in a permanent position upon the towers. At its lower end the conveyer-chain passes over suitable pulleys, such as M M', Fig. 1, down to the level of the lower end of the incline, and from thence it travels along said incline and gallery to carry the ice blocks to their destination.

The power for driving the conveyer-chain is preferably applied at the farther end of the gallery, the mechanism being preferably mounted in a tower built therefor at the end of the gallery and at a height corresponding approximately to the highest position of adjustment of the gallery, although this is not essential. By reference to Fig. 3 it will be seen that the conveyer-chain, which is lettered O, passes beneath a drum or pulleys P on the end of the last adjustable gallery and from thence around a driving-drum Q. Thus the strain on the chain is a direct pull, thereby relieving the framework from undue stress when the chain is in operation and an unusual or heavy load is placed thereon. From the driving-drum Q the chain passes around an idler *q*, and thence up and around a take-up drum or pulleys R, preferably mounted in a carriage *r* at the top of the tower and adapted to be held against the tension of the chain by a flexible connection S, passing around a pulley *s*, and thence down to a weight S', which weight shall be made sufficient to maintain the tension on the chain and to at once compensate for any inequality in the length of the chain, due to the vertical adjustment of the gallery and the movement of the telescoping sections upon each other incident to such adjustment. From the take-up mechanism the conveyer-chain passes back along

the overhead tracks to the receiving end of the incline, and this conveyer-chain, it will be understood, is of the ordinary construction—i. e., formed with two parallel chains connected by cross-bars *o*, against which the blocks of ice rest.

Power for rotating the driving-drum Q may be derived from an engine or other suitable source preferably applied to a driving-wheel T, which driving-wheel T is provided with a pinion *t*, meshing with a gear-wheel *t'* on the driving-drum before referred to.

Suitable plank walks are preferably attached to the side of the gallery and incline, as shown at V particularly in Fig. 6.

At the end or other suitable point on the gallery chutes W may be provided for discharging bad ice.

With an apparatus such as herein described it will be seen that ice may be delivered to a whole series of houses or openings with a single mechanism and from a single point of supply, and by providing a telescoping section in the incline to the adjustable gallery, together with a take-up for the conveyer-chain, the parts are made automatically self-adjusting to conform to the position of the gallery and the ice may be delivered to the conveyer-chain always at the same point. The necessity for using a series of galleries for filling the ice into the houses at different levels is entirely avoided.

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

1. In ice-handling machinery the combination with an adjustable gallery having slideways for the ice and a conveyer passing along said gallery for propelling the ice, of an incline hinged to said gallery at one end and a telescoping section in said incline, said incline also having a slideway corresponding to the slideway on the gallery; substantially as described.

2. In ice-handling machinery the combination with the supporting-towers and a vertically-adjustable gallery mounted therein, of a telescoping incline hinged to one end of said gallery and extending down to the source of supply, with a conveyer traveling up said incline and along the gallery; substantially as described.

3. In ice-handling machinery the combination with the vertically-adjustable conveyer-gallery and the permanent section of the incline at one end thereof, of a telescoping incline hinged at its upper end to said gallery and at its lower end to the permanent section of the incline, said telescoping and permanent sections of the incline having slideways corresponding to the slideways on the gallery, and a conveyer passing along said gallery and incline; substantially as described.

4. In ice-handling machinery the combination with the series of towers, the vertically-adjustable gallery suspended in said towers with means for raising and lowering the

same and the permanent section of the incline at one end of said gallery, of a telescoping section hinged at one end to said gallery and at the opposite end to the permanent section of the incline, the parts of said telescoping section being united by hangers and having antifriction-rollers interposed therebetween, and the conveyer passing along the gallery and incline; substantially as described.

5. In ice-handling machinery the combination with the vertically-adjustable gallery having the slideways for ice thereon and the incline extending from said gallery to the source of ice-supply, and a continuous conveyer-chain passing along said gallery in one direction, of a driving mechanism for moving said conveyer-chain and a weighted take-up cooperating with said conveyer-chain to

equalize the tension on the same when the gallery is adjusted; substantially as described. 20

6. In ice-handling machinery the combination with the vertically-adjustable gallery having slideways thereon and the telescoping incline at the end of said gallery extending down to the source of ice-supply, of a conveyer-chain passing along said gallery and incline, a driving mechanism for moving said chain and a weighted take-up over which said chain passes for equalizing the tension on said chain when the gallery is raised or lowered and the telescoping incline extended or contracted; substantially as described. 25 30

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Witnesses:

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