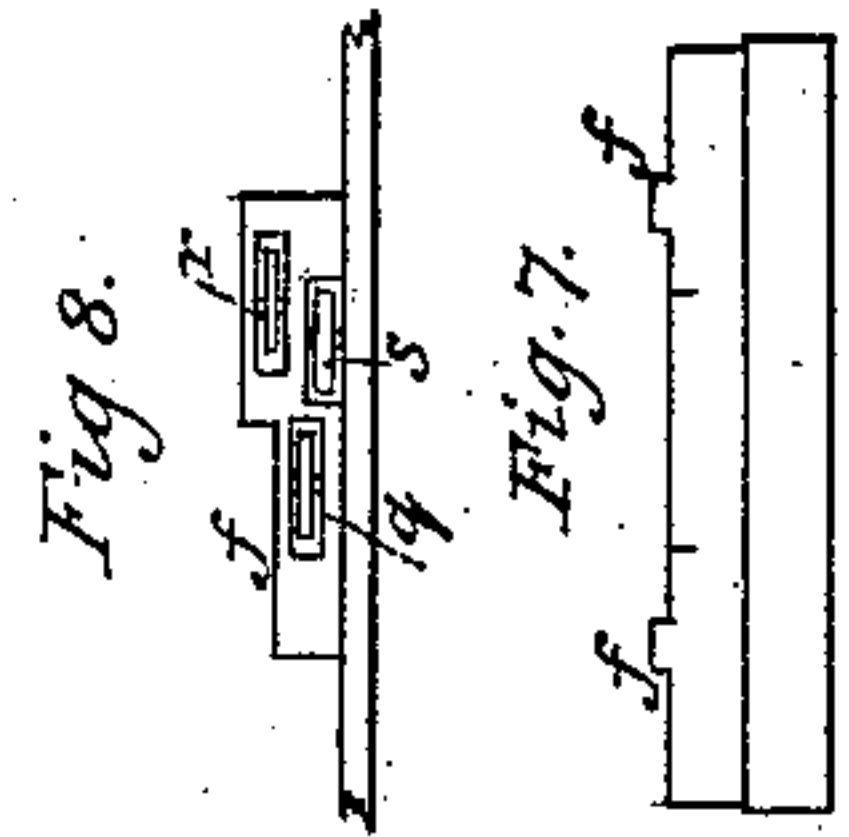
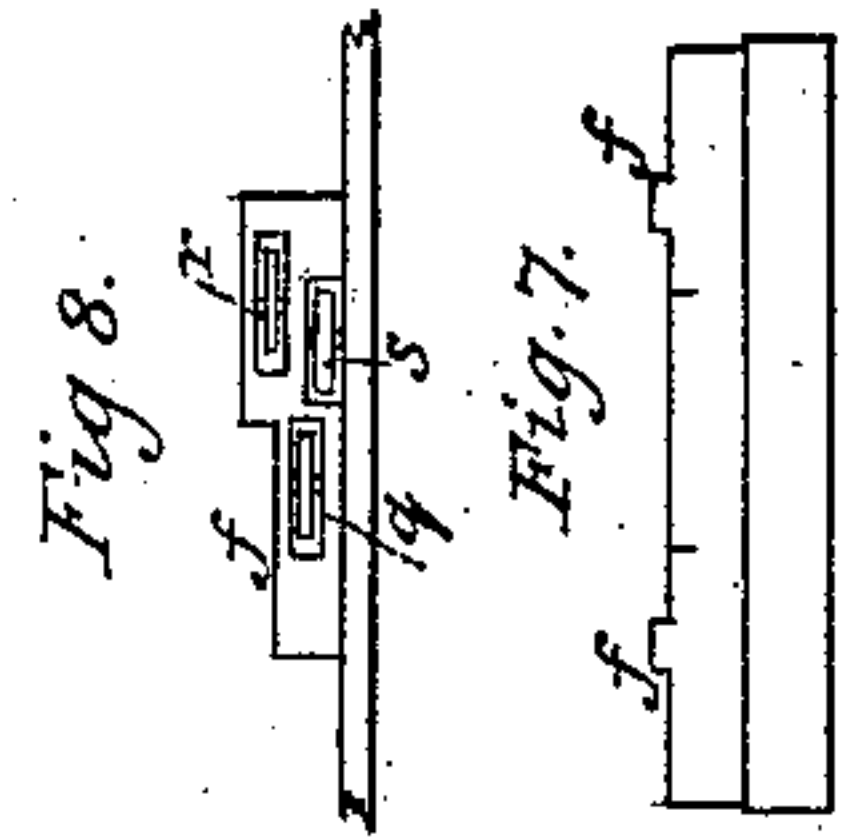
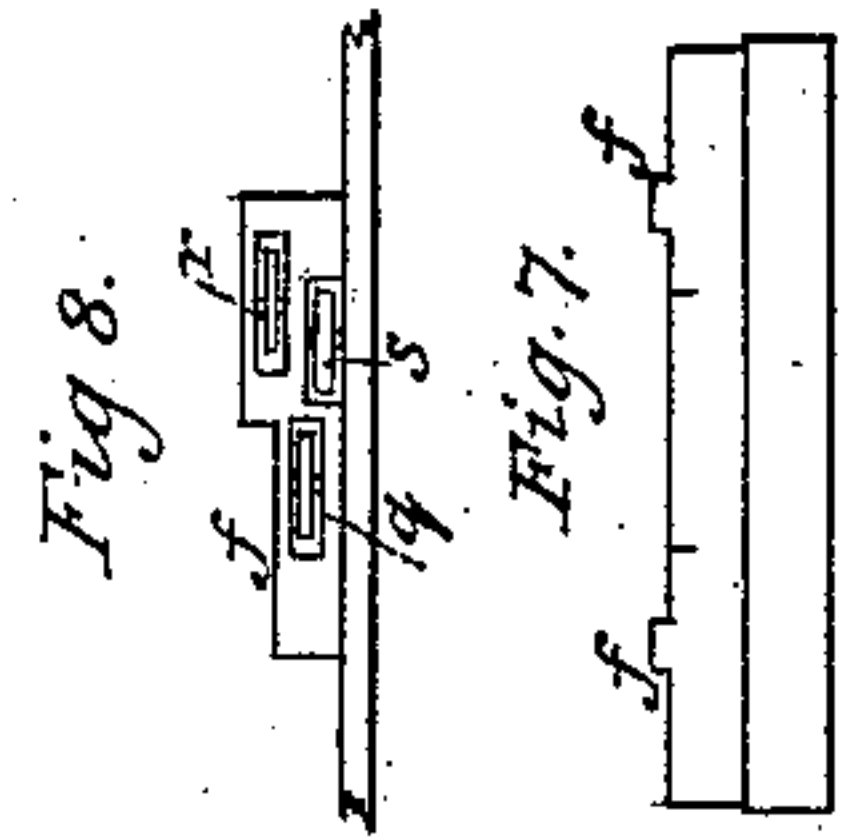
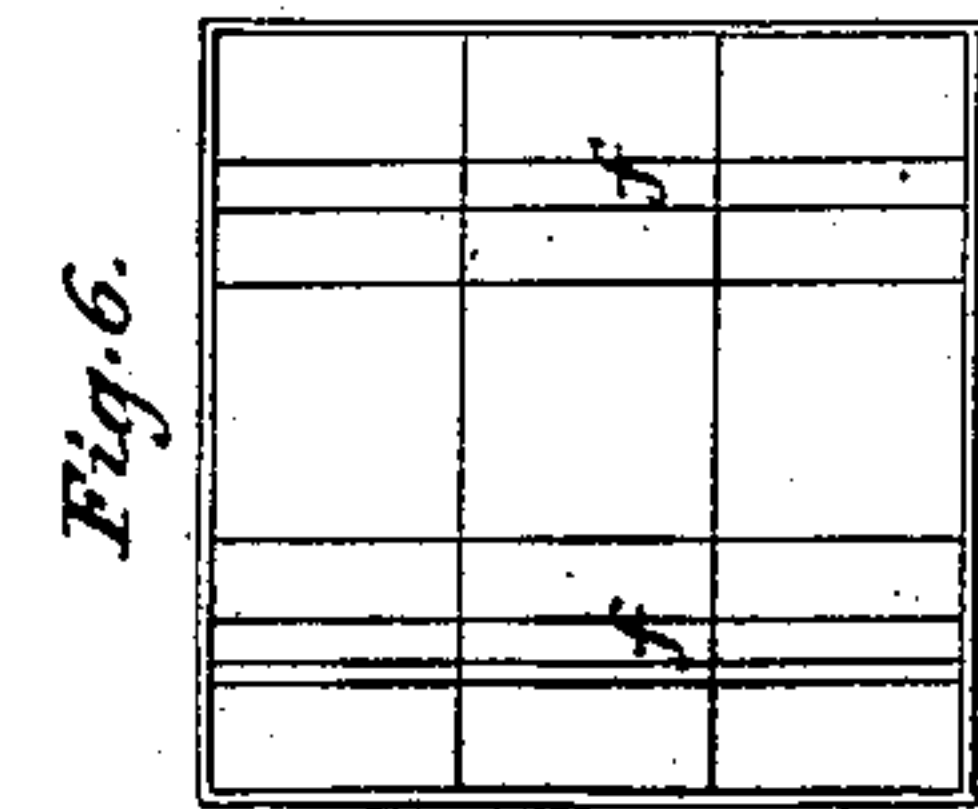
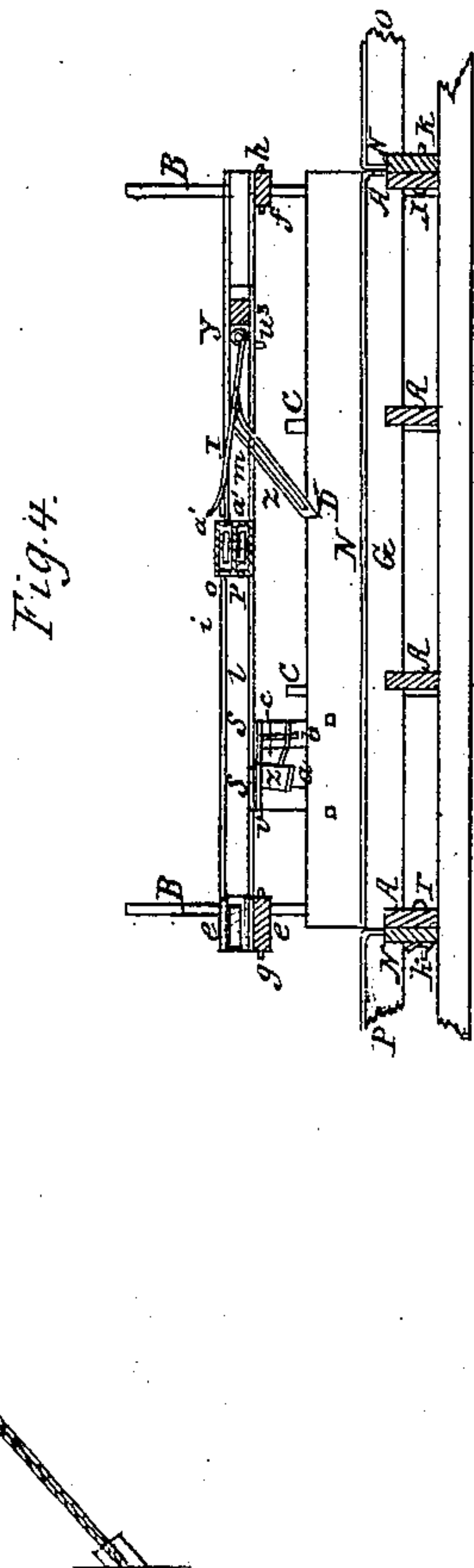
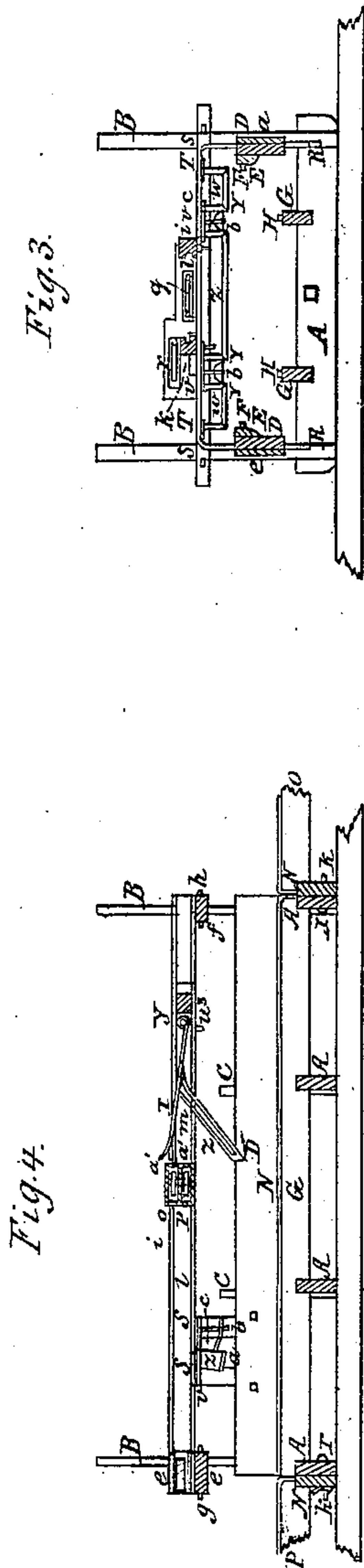
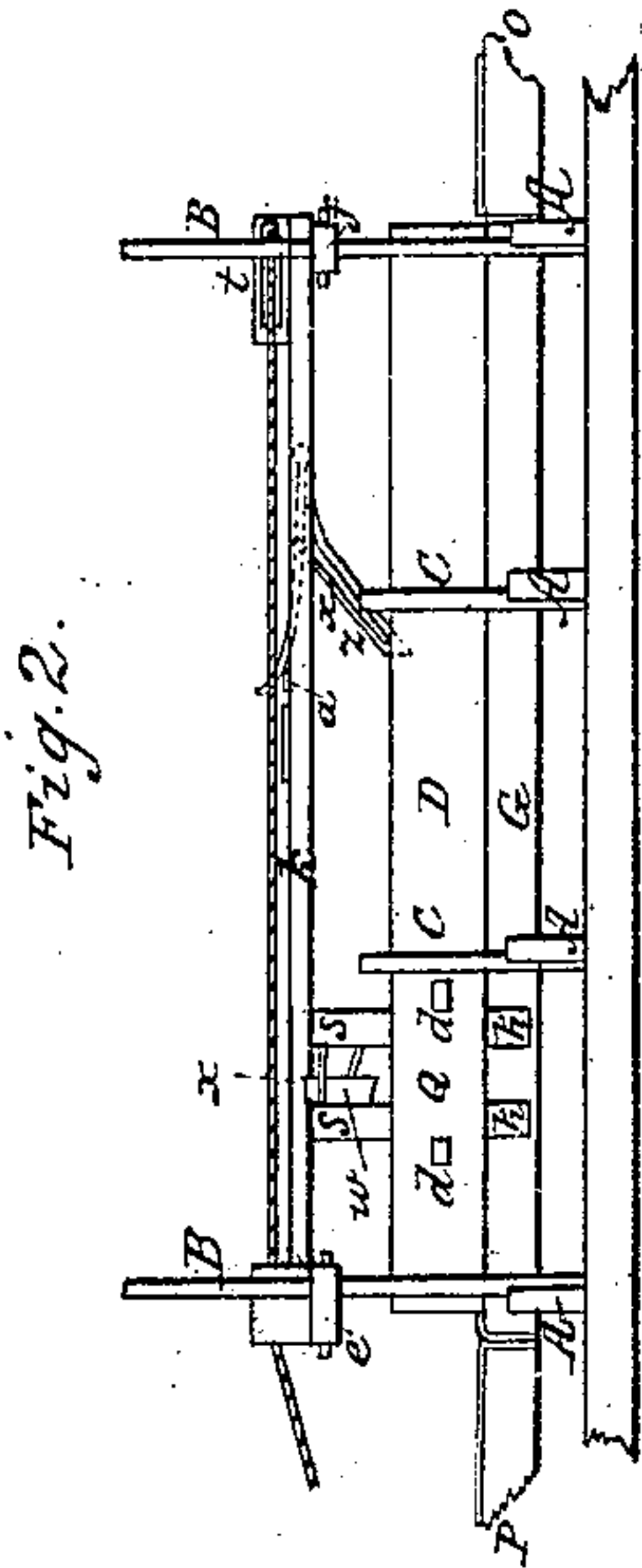
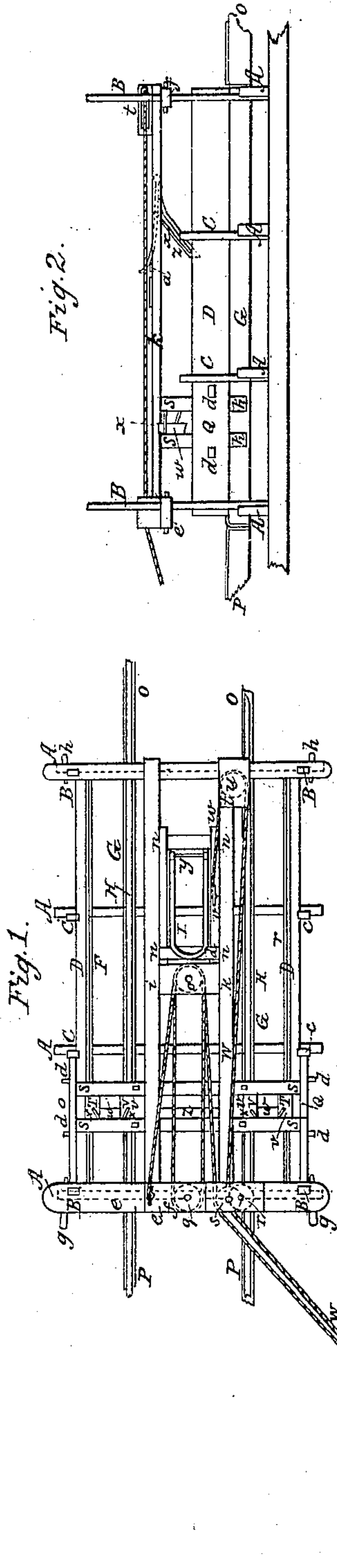


N. J. WYETH.
Ice Implement.

No. 1,879.

Patented Dec. 1, 1840.



UNITED STATES PATENT OFFICE.

NATHANIEL J. WYETH, OF CAMBRIDGE, MASSACHUSETTS.

MACHINERY FOR REDUCING BLOCKS OF ICE TO A UNIFORM THICKNESS AND CUTTING PARALLEL RIDGES ON THE UPPER SURFACE OF THE SAME.

Specification of Letters Patent No. 1,879, dated December 1, 1840.

To all whom it may concern:

Be it known that I, NATHANIEL J. WYETH, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented
5 new and useful Improvements in Machinery for Reducing Blocks of Ice to a Uniform Thickness and Cutting Parallel Ridges on the Upper Surface of the Same.

The said improvements the principles
10 thereof and mode in which I have contemplated the application of the same by which they may be distinguished from other mechanism of like character, together with such parts or combinations thereof as I claim to
15 be my invention and for which I solicit Letters Patent, I have set forth in the following description and exhibited in the accompanying drawings herein referred to, which taken in connection forms my specification.
20

Figure 1, represents a top view, Fig. 2 a side elevation, Fig. 3, a transverse section and Fig. 4, a longitudinal section of my improved machinery. Fig. 5 is a representation of a square block of ice as split out from
25 the surface of the pond having the upper surface subdivided by grooves in the usual manner before the same is submitted to the operation of my apparatus. Fig. 6 shows a block, with the edges raised on the upper surface of the same. Fig. 7, is a side view of the block. Fig. 8, is a detail view.

It is intended that the above mentioned machinery may be used with my improved
35 gig and inclined railway for raising blocks of ice from the water of the lake or river, from which they are cut, and depositing the same on a sled on which the same are to be removed to the store-houses or depots, but
40 it is not essentially necessary that such a disposition of the same should be made.

In order to raise the ridges the blocks of ice may be caused to pass over the railway and under the cutters by any proper power
45 or means thereto applied.

The first object of my invention is to reduce the blocks of ice to a uniform thickness, so that they may be easily and compactly stowed either in the ice houses or depots,
50 when first collected in the wagons on which it is transported to the vessels for shipment, or in houses abroad for ultimate sale, and in general to facilitate every stowage and removal required in the ice business. The
55 next purpose intended to be effected is the

raising of parallel ridges on the upper surface of the blocks, on which the succeeding layers, when packed in the ice house, where first collected, may rest, thus keeping the residue of their surfaces apart and preventing the same from freezing together,
60 which generally takes place owing to the melting of the upper layers of ice, and percolation of the water downward between the blocks, when it freezes and cements the whole in a mass, thus often rendering it difficult and expensive to remove the blocks in good and fair shapes for such purposes as may be required. Lastly the snow-ice
65 which often accumulates on the upper surface of the blocks can be easily removed when the ridges are formed.

For convenience of transporting my machinery from one situation to another on the surface of the ice as occasion may require, I
75 construct my apparatus for raising the ice from the water, that for cutting the ridges and reducing the blocks to a uniform thickness, and that for delivering them on the sled in three separate sections, which I unite
80 together by bolts with screws and nuts as will be hereafter explained or in any other convenient and simple manner.

A, A, A, A, Figs. 1, 2, 3, 4, are four beams or planks set up edgewise each having
85 its opposite ends in proximity to the surface of the ice on which they rest, and are rounded similar to the front of a common sled runner to facilitate the movements of the machinery on the ice. At each end
90 of the beams, posts B, B, B, B, C, C, C, C are bolted or otherwise properly affixed to the sides, those attached to the front and rear bearers viz. B B &c., should be about double the length of the others, viz.
95 C C &c., rising from the central beams. To the inner faces of the posts, on each side of the machine, two strong planks D, D should be firmly bolted the length of each of these planks being equal to the distance between
100 the outer faces of the exterior beams. Two guide rails E E, should be bolted to the inner faces of the planks D, D, at or near their top edges, and on the insides of each of these said guide rails, extending the
105 whole length of them and around their ends to the back side of the planks D, D, as far as the sides of the posts B, B, a bar or plate of iron F made smooth on its inner side should be screwed or otherwise suitably af-
110

fixed. The bars F, F, serve to protect the wood of the guide rails from injury and to facilitate the passage of the ice through the machine. To the beams A, A, A, A two rails G, G, should be bolted at a suitable distance apart from each other, having their ends flush or even with the front and rear sides of the first and last beams. The upper edges of these rails should have iron bars or plates H H made smooth on their upper surfaces and properly affixed to each so that when my machinery is used, in connection with the gig and other apparatus before mentioned, the rails G G, will have the same distance apart and be a continuation of the rails of the railway of said gig and other apparatus, a portion of each end of the gig and delivering railways being exhibited in the drawings, as attached by bolts I with screws and nuts K (see Fig. 4) passing through the rear beams M, N, of each of the railways O O, P P, the former O, O, being that of the gig which raises the ice from the water and the latter that by which the same is delivered or deposited on the sled.

Two planks Q Q should be bolted to the outside of the planks D, D, between two of the posts B, C, as seen in the elevation Fig. 2. These planks being of the same width as the planks D D serve to give room and strength for the main bars and keys as hereinafter described.

Two main bars of iron R S, S R, R S, S R having their ends R S, R S bent downward at right angles to the central part S S, are inserted into mortises about one foot apart and extending perpendicularly downward on each side of the machine through the planks D D, and between the same and the outer planks Q Q.

The two main bars R S, S R should be connected together by four cross bars of iron T T, U U bolted flatwise to the underside of the main bars and extending from one to the other of them at right angles. The central bars U, U, are about double the width of the side bars T T. Through each of the cross bars T T, U U mortises V, V, should be cut diverging, or at an angle with the sides of the cross bars as seen in the figure; that is to say the center of the front ends, should be at a greater distance from the inner edges of the cross bars, than the center of the rear ends, which gives the mortise a diagonal position.

Into the two outer mortises V V, on each side of the machine, two bent knives or shaves W W should be introduced. These knives are formed of bars or plates of steel, having their ends bent upward at right angles, with tenons formed on the ends, to pass into the mortises V V until the shoulders at the foot of the tenons meet the under side of the cross bars when on passing keys

or wedges X X X through suitable holes or spaces in the tenons above the upper surface of the cross bars, the shoulders are driven up close and the knives are thus effectually secured to the same. The bent end of the shaves W should not make a sharp angle at their junction with the center part, but should turn up with a curve of a quarter of a circle whose radius is about one inch, as seen at Y Y Y, &c., in the transverse section. The front or cutting edges of these shaves are somewhat longer than the rear edges, the sides or perpendicular ends being also bent to correspond with the diagonal position before mentioned of the mortises. The inner edges of the front of the bent ends of the shave, as well as the front edge on the upper surface of the center part, should be ground or beveled off sharp to a good cutting edge. Into the two center mortises a third shave Z, (constructed in every respect like the shaves W with the exception of being longer,) is inserted and confined by wedges or keys in a similar manner to those above described. The lower cutting edges of all these shaves should be in a line with each other and the bottoms of the same should be somewhat inclined as represented in the longitudinal section at A.

Directly in front of the spaces between the shaves or knives W and Z are two chisels *h h*, Figs. 3 and 4, formed of plates of steel attached to a bolt C which passes through one of the main bars R S S R and is secured by a shoulder, screw and nut in its upper end. These chisels are somewhat inclined or make any angle of about twelve degrees to the horizon and their cutting edges are elevated above the lower cutting edges of the shaves W and Z a distance equal to the height of the ridges we wish to form on the block of ice. The cutting edges of the chisels should be somewhat wider than the top of the ridge on the ice. The main bars may be adjusted to any desired height, according to the thickness of the ice, by raising or lowering them in their mortises formed in the planks D D and there retained by wedge keys *d d*, Figs. 1 and 2, driven into mortises in the planks by the edges of the bent ends of the main bars.

Two bars or planks *e f* extend across the machine from one corner post B to the other as seen in Figs. 1 and 2, the corner posts passing through mortises formed in the same. The planks *e f* may be set at any desirable height on the posts and those affixed by wedge keys *g g*, *h h*. Two guide bars *i k* extending from the top of one of the slide bars *e* to the other *f* should be bolted thereto. These guide bars should be situated equally distant from the center of the side bars *e f* and parallel to each other and at a distance of about twenty inches apart. They extend also over the main bars R S S R and

are also bolted thereto where they cross them. Each of the guide bars *i k* should have a groove *l*, Figs. 3 and 4, plowed in its inner face throughout its length in which
 5 grooves, the tongues of the forcing carriage run. The forcing carriage consists of a rectangular frame *m* of wood having tenons or projections *n n* or a tongue on each side which enter into the grooves *l* and when the
 10 carriage is moved to and fro travel in the same and support it. In the front of the carriage *m* are two sheaves or pulleys *o p*, as seen in Fig. 4, and on the top of the cross bar *e* a block of wood *f'* is firmly secured
 15 having square mortises through from side to side in which pulleys or sheaves *q r s*, Figs. 1, 4 and 8, are fitted in the same. Another block *t* placed on the cross bar *f* at the junction of the guide bar *k* has a pulley *u*
 20 in a mortise in the same. A pin or stop *u³*, Fig. 4, projecting from one or both of the under faces of the sides of the carriage coming in contact with the side of the rail *f* prevents the carriage from further retrograde
 25 movement. In the top of the carriage frame a staple *v*, Fig. 1, should be inserted to which one end of the rope *w* which operates the carriage is connected.

A catch *x* formed of a bar of iron of suitable thickness, bent in the shape represented in Fig. 1, is hinged to a bar or round rod *y* extending across between the sides of the forcing carriage *m*. This bar *x* has two diagonal curved bars *Z* projecting under-
 30 neath the same, as seen in Fig. 4, one of these bars being under each of the sides of the catch. This catch will play upward and thus allow a block of ice, as it advances on the rails, to throw it up by striking against
 40 the underside of the projections *z z*. When the ice has passed the catch it (the catch) falls down behind the ice and as the forcing carriage advances the ends of the projections *z z* coming in contact with the side of the block drives it forward under the cutters.
 45 The catch is prevented from falling too low by its upper part *x* resting upon the front bar *a'*, Figs. 1 and 4, of the forcing carriage.

A block *h'* having a pulley or sheave *c'* is
 50 to be fastened down to the surface of the ice at a distance of about forty feet in a straight line at right angles or thereabout to the side of the machinery by means of a screw bolt *d'* passing through the same or in any
 55 other convenient manner. One end of the rope *w* being attached to the staple *v* of the

forcing carriage the rope is then passed around the sheave or pulley and thence to and around the pulley *r*, thence through the block *b'* or over the sheave *c'*, thence around
 60 the pulley *s*, thence around the pulley *p*, thence around the pulley *q*, thence around the pulley *o* and is secured at the end to a staple *e'* driven into the top of the block *f'*, the same being represented in Fig. 1. At a
 65 point on the above described rope at about ten feet from the machine when the forcing carriage is drawn entirely back, a horse should be attached in any convenient man-
 70 ner. When the animal is driven out toward the block *b'* he draws the forcing carriage forward with the block of ice which is caught under it by the catch, forcing or sliding the same on the railway under the
 75 same, while at the same time the shaves and chisels perform their operation of forming the ridges on its upper surface. When the animal returns toward the machine the rope draws back the forcing carriage to its first
 80 position.

It will be perceived by inspection of Figs. 6 and 7 that *f f* are ridges raised or left by the cutters after they have performed their operations of removing to a certain degree
 85 the surface between and on the sides of the ridges. Blocks of ice may be reduced to any uniform and required thickness by raising or lowering the cutters, thereby increasing or decreasing their distance from
 90 the railway in the manner heretofore mentioned.

Having thus described my machinery I shall claim in the same,

Forming ridges on the surface of blocks of ice and reducing the remainder of the
 95 blocks to a uniform thickness by means of the shaves and chisels, and a forcing carriage in combination with a railway under the same; the whole being arranged and operating together substantially in the man-
 100 ner and for the purposes herein above mentioned and described.

In testimony that the above is a true description of my said invention and improvement I have hereto set my signature this
 105 fourteenth day of October, in the year eighteen hundred and forty.

NATH. J. WYETH.

Witnesses:

R. H. EDDY,
 JAMES W. FENNO.