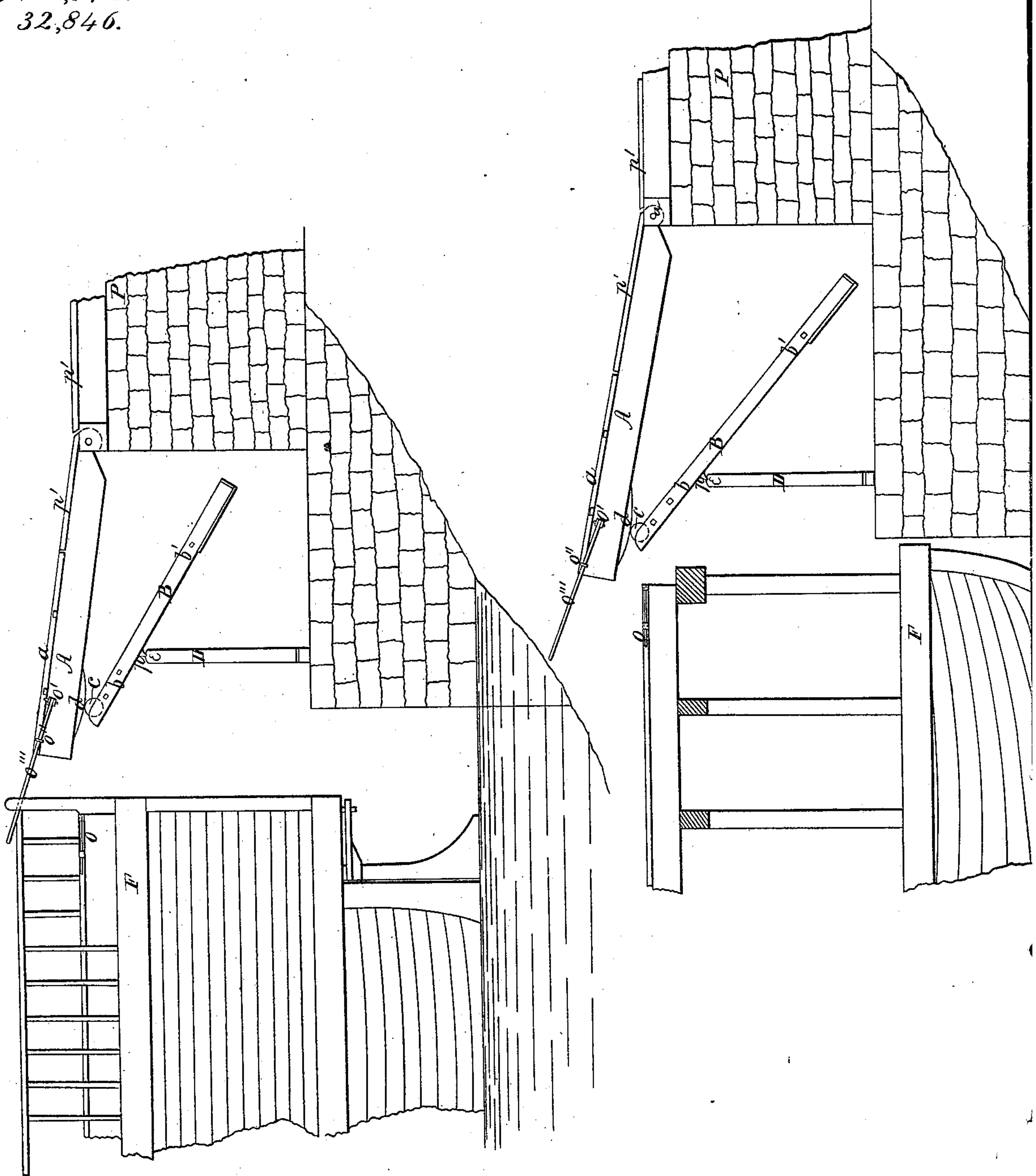


W. W. Virdin.
Ferry Guard.

N^o 1,842.
32,846.

Patented Jul. 16, 1861.



Witnesses;
C. R. Sprague
H. B. Bannard

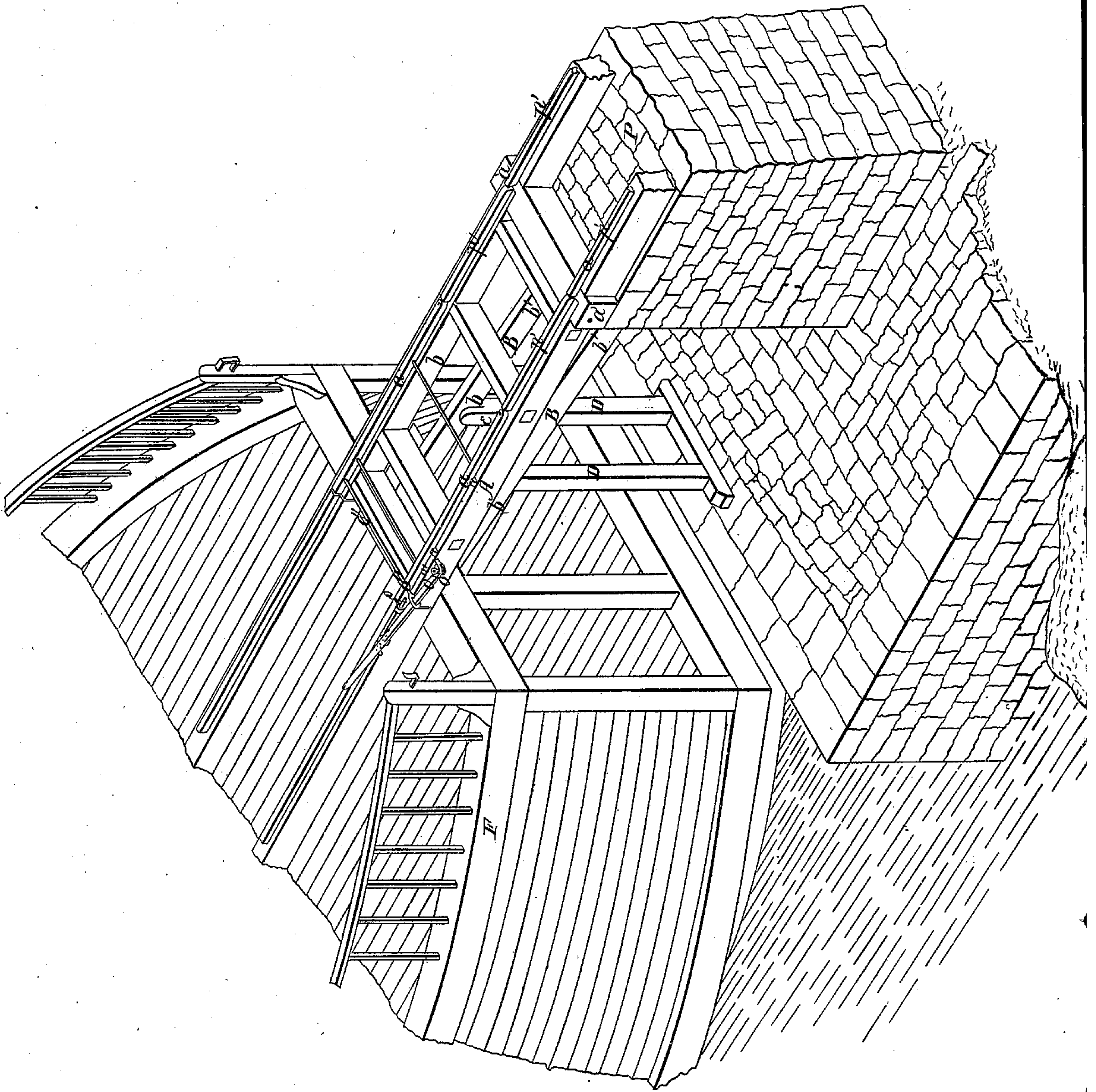
Inventor;
W. W. Virdin

Sheet 2. 2 Sheets.

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Witnesses;
E. R. Fraque
Chas. B. Bannard

Inventor;
W. W. Virdin

UNITED STATES PATENT OFFICE.

WILLIAM W. VIRDIN, OF BALTIMORE, MARYLAND.

BOAT AND FERRY-BRIDGE.

Specification of Letters Patent No. 32,846, dated July 16, 1861.

To all whom it may concern:

Be it known that I, WILLIAM W. VIRDIN, of the city of Baltimore and State of Maryland, have invented a new and improved
5 apron or span for the transfer of railroad-cars, locomotives, or any wheeled carriages or heavy freights upon and from steam-boats, sail vessels, ferry-boats, or lighters.

The nature of my invention consists in the
10 method hereinafter described of arranging a weighted lever in connection with an adjustable apron or span extending from an abutment or wharf to the boat, which when required for railway purposes, carries a rail-
15 way track, or tracks, corresponding to the track or tracks upon the wharf and similar track or tracks upon the boat, this track being dispensed with when it is only required for the purpose of light carriages, heavy
20 freights, &c. One end of the apron or span rests upon an abutment or wharf and is fitted to it by a socket or other joint. The other end is supported above and out of the reach of the boat by two weighted levers
25 framed together and each resting for its fulcrum upon a column or post. When the boat reaches its berth, the weighted levers allow the apron or span to drop, and rest upon the end of the boat and thus a continuous roadway or railway track is formed
30 from the main land to and upon the boat.

To enable others skilled in the art to make and use my invention, I describe it as follows:

35 The following letters refer to corresponding parts upon the accompanying drawing:

A the apron or span of iron, or timber and iron. *a* two or more rails, carried upon the apron. *a'* the movable joint connection,
40 at the wharf or land end. B B the levers beneath the apron. *b b* the short arms of levers. *b' b'* the long arms which are weighted. *c c* the friction wheels or rollers. *d d* the shoe and iron shield. D D two
45 posts, or columns, upon which rest the levers. E E the ends of columns to form the fulcrum. F the boat with corresponding rails. O the movable bolt or bar. *o'* the crotched bolt and nut. *o''* the outer tie of the switch,
50 with slot opening. *o'''* the switch lever. P pier or wharf. *p'* rail road track on pier or wharf and a portion of apron or span. *p p* irons for fulcrum of levers.

I build the apron or span of iron or heavy
55 timber and iron, stayed and supported with due regard to the tonnage to be carried.

When used or required for railway purposes this apron or span carries two or more rails corresponding in all respects to the track or tracks upon the main land or wharf and
60 that also upon the boat. These rails are firm, part of the distance and movable at the extreme end for the purpose of adjusting the water or outer end of the rail with that on the boat and thus adapting it to any
65 lateral variations of the boat or vessel.

The connection with the main track at the wharf or land end, may be made with any movable joint. I prefer the joints shown in the drawing; a socket joint for the reason
70 that it carries its own weight. The levers I frame together, that they may not be thrown out of place by the listing of the boat or vessel when in use. The levers are placed beneath the apron the short arm of each
75 lever pressing against the under side of the outer or water end of the apron or span and the long arm of the lever is weighted to balance the weight of the outer end of the apron or span. To modify the friction be-
80 tween the arm of the lever and the apron I place upon the short arm of the lever and upon its upper edge a friction wheel or roller and a shoe with an iron shield upon the underside of the outer or water end of the
85 apron for the friction wheel or rollers to work against. To secure the required fulcrum I use two posts or columns of proper strength and of sufficient thickness to allow the lever to rest upon the outer part of each;
90 the inner part of each post or column extending above and retaining the lever in its proper place as to any lateral movement. I cap the outer part of the column or post with iron with a groove or depression in the
95 center which receives a tongue or projection upon an iron plate fastened to the under side of the lever and retains the lever in its proper place. A single lever working in the middle of the outer end of apron on a
100 post or column as above described will accomplish the same purpose; but the two levers framed and working together will be found to carry the apron steadier and easier.

Where from any circumstances I cannot
105 secure the required space for the play of the levers under the apron or span, I make a side attachment I pass across the under side of outer or water end of the apron or span two beams parallel to each other and at right
110 angles to the apron extending the required length each side of the apron or span. Upon

the under side at each end of these beams and across them I fasten the shoe with iron shield before described. The post or column to form the fulcrum I place at each side of the apron at such a distance from it and so
 5 elevated as to carry the weighted levers without interfering with that which is to pass on or over the apron. Upon each of these posts or columns rests the levers for their fulcrum. The short arm of each takes
 10 hold of two parallel rods reaching from each side of the end of the short arm of the lever to, and passing below and each side of the shoe. These two parallel rods are connected
 15 by an iron bolt upon which there plays a friction wheel or roller; this friction wheel works against the under side of the shoe. Upon the end of the boat I attach a movable bolt or bar to slide over the end of the apron
 20 and retain a constant bearing of the apron upon the boat when in use. When the rails are laid I affix the movable bolts or bars to the outerside of the end of the rail on the boat when the apron rests upon the boat the
 25 bars or bolts sliding over the upper part of the apron or span not only hold the apron down upon the boat but act as a guide in adjusting the switch and thus secures at all times when needed a continuous track
 30 from the main land to and upon the boat. To work the switch, I use a crotched bolt with a round hole in each jaw and a shoulder to set up against one of the main cords. This bolt is let into and passes through one
 35 of the main cords of the apron at the proper distance from the end of the apron or span

and is set up to the cord by means of a nut. I have a slot opening in one end of the outer tie of the switch, projecting from the side of the rail some inches according to the
 40 size of the cord and upon the same side of the apron with the crotch bolt I make the lever of flat iron with a round hole in one end which fits into the crotch of the first
 45 named bolt. This lever I pass through a slot opening in the end of the switch tie and connect it to the crotch bolt by means of a small bolt and nut. The long arm of the lever projects some four feet over the boat and by
 50 this the switch is worked in adjusting the rails on the apron or span with those on the boat.

What I claim as my invention and desire to secure by Letters Patent is—

1. A connection from the main land, pier
 55 or wharf with steamboats or any other vessel by means of an adjustable apron or span, with or without railroad track or tracks and adjusting switch upon the same in combination with fixed weighted lever or levers
 60 as counterpoise substantially as described in the specification.

2. The fixed weighted lever or levers constructed and arranged as herein set forth
 65 when used with any movable connection from the main land pier or wharf to and upon steamboats or any other vessel.

W. W. VIRDIN.

Witnesses:

L. V. PREVOST,
 E. R. SPRAGUE.