March 18, 1930. F. NEWELL 1,750,901

WATER REGULATING SLUICE GATE

Filed April 7, 1928

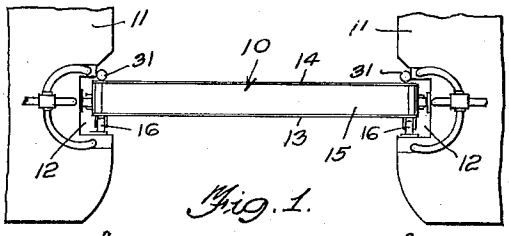


Fig. 1.

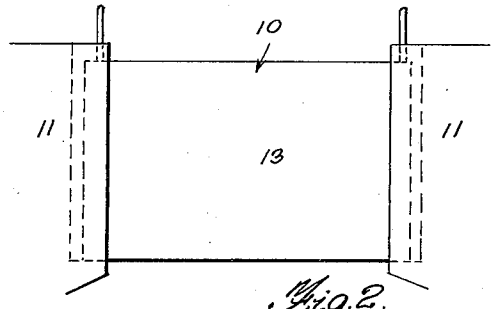


Fig. 2.

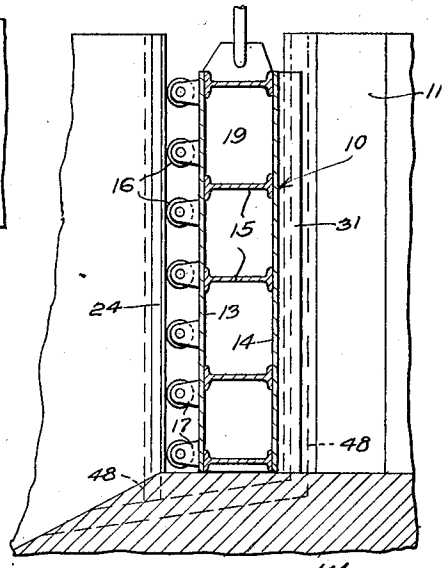


Fig. 3.

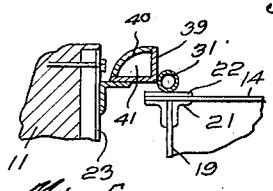


Fig. 5.

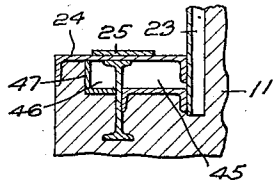


Fig. 7.

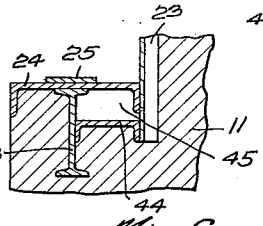


Fig. 6.

Fig. 4.

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UNITED STATES PATENT OFFICE

FRED NEWELL, OF MONTREAL, QUEBEC, CANADA

WATER-REGULATING SLUICE GATE

Application filed April 7, 1928, Serial No. 268,290, and in Canada May 30, 1927.

My invention relates to improvements in water regulating sluice gates.

An important object of the invention is to provide means for properly heating the embedded parts of the gate, and other parts adjacent to such parts, to prevent the formation of, or to melt, ice from around portions of the gate and the guide means for the same.

A further object of the invention is to provide heating means which is integral with or forms a part of portions of the guide means, producing a simplified construction, which not only affords heating facilities but strengthens the guide means.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a plan view of a sluice gate, and guide means therefor, the same being partly diagrammatic,

Figure 2 is a side elevation of the same,

Figure 3 is a transverse section taken on line 3—3 of Figure 4,

Figure 4 is an enlarged horizontal section through one end of the gate, and associated guide means,

Figure 5 is a detailed horizontal section, showing a modified form of guide means upon the up side of the stream,

Figure 6 is a similar view, showing a modified form of guide means, upon the down side of the stream, and,

Figure 7 is a similar view, showing a still further modified form of guide means upon the down side of the stream.

In the drawings, wherein for the purpose of illustration, is shown a preferred embodiment of my invention, the numeral 10 designates a vertically movable sluice gate, extending between piers 11. These piers have vertical recesses 12, formed therein, receiving the ends of the sluice gate 10. The sluice gate may be of any well known or preferred type, but for the purpose of illustration, I have shown the same as embodying plates 13 and 14, connected by horizontal I beams 15. The plate 14 is upon the up side of the stream and the plate 13 upon the down side.

Arranged at each side of the sluice gate 10, upon the down side thereof, are rollers 16, rotatable within brackets 17, rigidly attached to end plates 19, which are in turn rigidly attached to the I beams 15 through the medium of angle irons 20 or the like. The end plates 19 are also attached to the up stream side plate 18 through the medium of angle irons 21, and a wear plate 22 is attached to the plate 14, adjacent to the angle irons 21.

Arranged within the recesses 12 is a transverse vertical face plate 23, suitably anchored therein. Upon the down side of the gate 10, is arranged a channel iron 24, located within the recesses 12, and included in the guide means. A wear plate 25 is secured to the channel iron 24, upon the inner side thereof. An I beam 26 is arranged upon the outer side of the channel iron 24, and is rigidly attached thereto by welding or the like. The numeral 27 designates an angle iron which is arranged between the channel iron 24 and the I beam 26, and is rigidly attached thereto by means of welding. The assembled channel iron 24, I beam 26, and angle iron 27 provide a vertical tube or passage 28, which is adapted for the reception of heating means, such as steam, which may be supplied thereto by any suitable means. The upper end of this passage or tube may be opened or closed, as desired. Instead of employing steam as a heating medium, I may arrange an electrical heating unit within the tube or passage 28. Particular attention is called to the fact that the I beam 26 and angle iron 27, which are assembled with the channel iron 24, which channel iron constitutes the guide means for the rollers 16, serve to strengthen and reinforce this channel iron. The rollers 16 travel upon the wear plate 25.

Arranged upon the upstream side of the gate 10, at each end of the gate, are guide means embodying a vertical channel iron 29, rigidly attached to the plate 23, by an angle iron 30, or the like. The channel iron 29 coacts with the wear plate 22, to limit any possible movement of the gate in an upstream

direction. A packing element 31, such as a hose or the like, is attached to the wear plate 22, and is arranged to engage with the channel iron 29. The numeral 32 designates a vertical channel iron, attached to the plate 23 by an angle iron 33, or the like. The channel iron 32 is rigidly attached to the channel iron 29 by welding or the like, to provide a tube or passage 34. This tube or passage is adapted for receiving a heating medium, such as steam, although an electrical heating unit may be arranged therein. The upper end of the tube 34 may be closed, if desired. Particular attention is called to the fact that the channel iron 32, when assembled with the guide means channel iron 29, to produce the tube 34, serves to strengthen and reinforce the channel iron 29.

Attached to each end of the gate 10 are rollers 35, arranged to engage a track or guide element 36. This guide element 36 is in the form of a channel iron, is vertically arranged, and rigidly attached to the plate 23. The numeral 27 designates a co-acting channel iron, assembled with the channel iron 26 to provide a tube or passage 38, these channel irons being welded together. The channel iron 37 serves to reinforce and stiffen the channel iron 36.

It is thus seen that the construction is such that a heating medium may be applied adjacent to the tracks or guide means, and the sealing means, to prevent the formation of ice in proximity thereto or to melt the ice thus formed. Heating means may be applied to these parts throughout their entire length.

The guide means embodying the channel irons 29 and 32, Figure 4, is shown as modified in Figure 5. This guide means is shown in Figure 5, as embodying a vertical angle iron 39, the open side of which is covered by a curved iron 40, these parts being welded together providing a tube or passage 41.

The track or guide means, upon the down stream side, of the gate, Figure 4, which includes the channel iron, is modified in Figure 6. This modified track or guide means embodies the vertical channel iron 42, attached to the plate 23, and an I beam 43, welded to the channel iron 24. A channel iron 44 is welded to the I beam 43 and to the plate 23, these parts forming, when assembled, a tube or passage 45, for the reception of a heating medium.

In Figure 7, the arrangement shown in Figure 6 is duplicated, whereby the tube or passage 45 is provided. A second tube or passage 46 is provided by employing an angle iron 47, which is welded or rigidly attached to the channel iron 42, and I beam 43. The passages 45 and 46 are adapted for receiving steam or other heating means.

It is preferred that a drain be provided for the lower end of each tube or passage, and this is indicated by drain passages 48, Figure 3, which lead into the lower ends of the tubes or passages, for conducting therefrom any condensation of which may collect therein. These passages discharge upon the down stream side of the gate 10.

It is to be understood that the forms of my invention, herewith shown and described, are to be taken as preferred examples of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention, or the scope of the subjoined claim.

Having thus described my invention, I claim:

Guide means for the end of a sluice gate, comprising a channel iron, rollers carried by the gate and co-acting with the channel iron, an I beam rigidly secured to the outer side of the channel iron, an iron rigidly secured to one side of the I beam and rigidly connected with the channel iron, these parts being assembled to produce a tube for receiving a heating medium, and an angle iron arranged upon the opposite side of the I beam and rigidly connected with the I beam and channel iron to provide a tube for receiving a heating medium.

In testimony whereof I affix my signature.

FRED NEWELL.