Aug. 9, 1938. L. E. KNERR 2,125,928

MECHANISM FOR SELECTIVELY HOOKING SEGMENTAL GATE STRUCTURES

Filed May 25, 1937

Fig. 1.

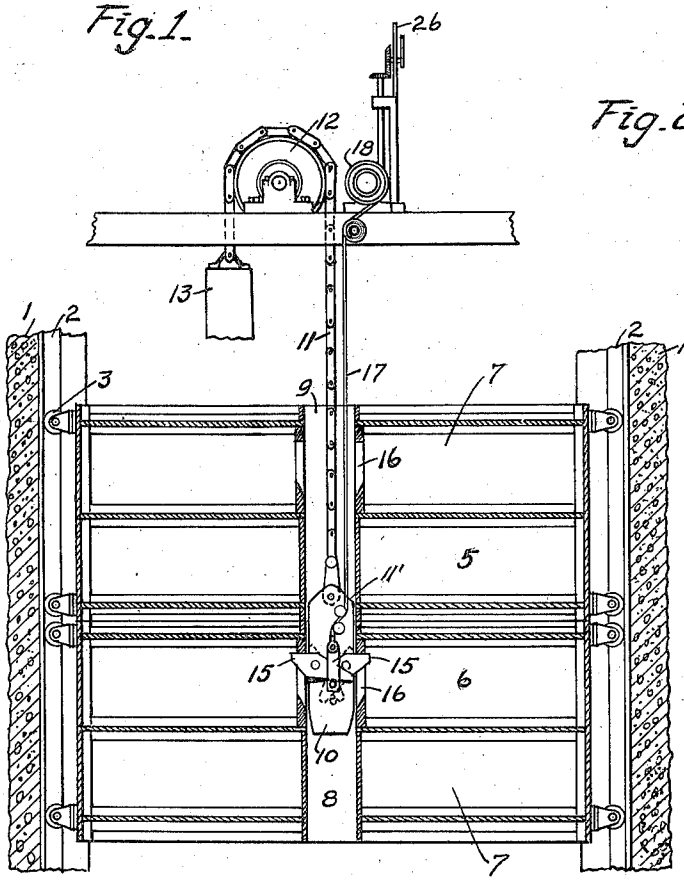
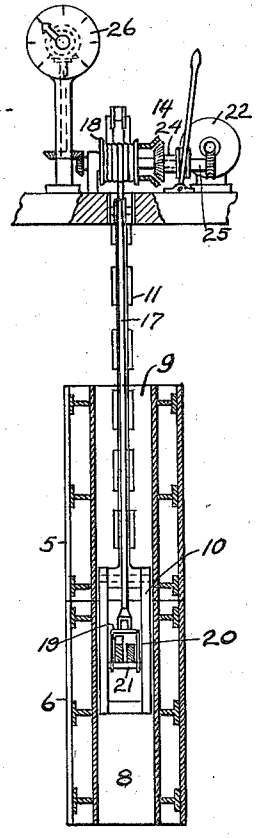


Fig. 2.



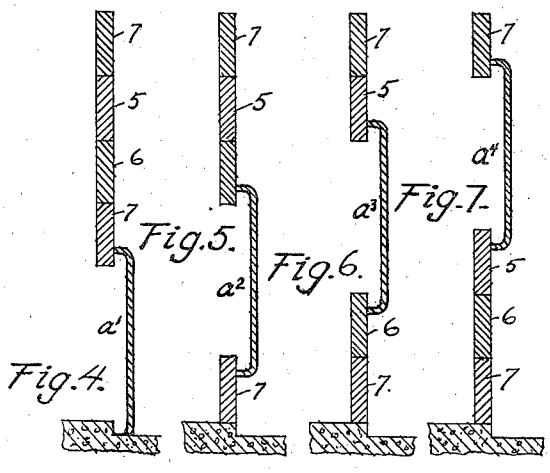


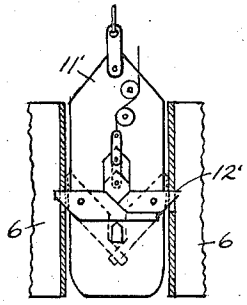
Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 3.



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MECHANISM FOR SELECTIVELY HOOKING SEGMENTAL GATE STRUCTURES

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Application May 25, 1937, Serial No. 144,614

5 Claims. (Cl. 61—28)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention generically relates to segmental barriers adapted to be used in connection with the entrance and exit portals of dam constructions of the type disclosed in the application of Harlan B. Holmes, Henry Blood and Milo C. Bell, filed June 2, 1937, Serial No. 146,016 and entitled Method and apparatus for transferring migratory fish over a dam structure. More specifically, this invention is directed to a mechanism for selectively moving the segments of a segmental barrier.

One object of this invention is to provide a mechanism for collectively moving the segments of a segmental barrier and for selectively actuating either a single segment or a group of segments, dependent upon the selected level of the opening to be formed in the barrier.

Another object of this invention is to provide a segmental barrier formed with a passage adapted to accommodate a traveling hooking device, the hooking device having means adapted to co-act with suitable means in each of the segments to enable the hooking device to elevate the barrier as a unit or to permit selective elevation of either a single segment or group of segments.

Another object of this invention is to provide a segmental barrier, the segments of the barrier being formed with a central well, which when the various segments are arranged in superimposed relation, provide a central channel adapted to accommodate the travel of a hooking device, having movable claws adapted to project in suitably arranged openings formed in each of the segments, the claws being normally in collapsed position but operable to an extended position to project in the openings when the device has been lowered to the selected segment.

Referring to the accompanying drawing in which corresponding parts are indicated by similar reference characters—

Fig. 1 is a transverse vertical section partly in elevation, illustrating a portion of a segmental barrier operably mounted between suitable uprights and showing the hooking device and its operating mechanism;

Fig. 2 is a transverse vertical section partly in elevation, illustrating the hooking device in the channel of the barrier and showing the indicator in connection with the operating mechanism for the hooking device.

Fig. 3 is an enlarged fragmentary sectionized detail illustrating the hooking device, the mounting of the claws and the yoke, adapted to operate said claws, and

Figs. 4, 5, 6 and 7 are diagrammatic sectionized views illustrating respectively the different adjustments of the segments to position the opening at various elevations and showing the slidable member in closing relation with respect to the opening at the different levels thereof.

In the illustrated embodiment characterizing this invention, 1 indicates a pair of uprights suitably spaced and equipped with guide rails 2, which are adapted to be traveled by rollers 3, formed on the extremities of segments 5 and 6, of a segmental barrier 7. These segments which may be formed of metal, wood or other suitable material are slidably positioned between the uprights 1, as clearly shown in Figure 1 of the drawing.

Segments 5 and 6 of barrier 7 are each formed with a central well 8, which when the segments are arranged in superimposed relation, as shown in Figure 1, are aligned to form in the barrier a centrally disposed vertically extending channel 9.

A hooking device 10 adapted to travel channel 9 is supported on one end of a hoisting chain 11, which extends over hoisting sprocket 12 and is provided at its opposite end with a suitable counterweight 13. The sprocket 12 is adapted to be operated by a suitable motor (not shown). Hooking device 10 comprises a plate 11' provided with aligned laterally spaced pivot pins 12' which are adapted to pivotally support a pair of claws 15, which are normally disposed in a collapsed position, as shown in dotted line in Figure 1.

Claws 15 of hooking device 10 are operated by means of a tag line 17, one end of which is wound upon a tag line drum 18, driven by the hoisting mechanism 14, hereinafter to be referred to. The other, or free end of tag line 17 is connected to a yoke 19, the arms 20 of which embrace claws 15, as clearly shown in Figure 2 of the drawing.

The free ends of yoke arms 20 are connected by a pin 21 which extends beneath claws 15 and frictionally engages their lower surface so that as the yoke 19 is elevated by tag line 17, claws 15 will be projected into the openings 16 formed in the opposite walls of the segment wells 8, as shown in Figure 1 of the drawing.

The hoisting mechanism for the tag line 17 may be of any desired construction, but as shown, it consists of a driving motor 22 and a tag line hoisting drum 18, which is adapted to be connected with motor 22 by means of a lever oper-

ated clutch device **24**. Shaft **25**, carrying drum **23** is geared to an indicator **26**, adapted to show the position of the hooking device in the channel **9** so that the operator may be informed when the hooking device has reached the desired segment.

Having described the structural details of this invention, its operation is as follows: When the hooking device **10** has been lowered through channel **9** to the selected barrier shown by indicator **26**, the normally collapsed claws **15** of the hooking device, actuated by tag line **17** are caused to project into openings **16** of the selected barrier whereupon sprocket **12** and hoisting drum **18** are operated to hoist the hooking device and take up the tag line, as will be readily understood without further discussion. By means of the mechanism just described, the segments of a segmental barrier may be elevated in groups to form openings at various elevations as indicated by the openings shown at the levels *a1*, *a2* and *a3*, Figure 3, or a single segment may be elevated to provide an opening at the levels indicated *a4*, Figure 3.

In conclusion, it will be seen that this invention provides a simple mechanism by means of which the segments of a segmental gate or barrier may be relatively adjusted to provide openings in the gate or barrier at various elevations depending upon the level of the water to which the opening is adjusted.

Having described my invention, what I claim as new and wish to secure by Letters Patent is:

1. In a mechanism of the character described the combination with a gate segment formed with a well; of a hooking device movable in the well, coacting means between the hooking device and the segment to effect a connection therebetween and hoisting means in connection with said hooking device.

2. In a selective mechanism of the character described the combination with a pair of gate segments, each of said segments being formed with a well, the respective wells being aligned; of a hooking device operable in the aligned wells and coacting means between the hooking device and the respective segments to effect a connection therebetween and hoisting means in connection with said hooking device.

3. In a selective mechanism of the character described, the combination with a gate segment having a well including oppositely disposed walls; of a hooking device operable in the well, normally collapsed claws carried by the hooking device and adapted to project into openings formed in the walls of the well, operating means in connection with said claws to cause their projection into said openings and hoisting means associated with the hooking device to effect its elevation.

4. In a selective mechanism of the character described the combination with a barrier composed of a plurality of superimposed segments, each of said segments being formed with a passage, the passages of the respective segments being aligned to form a channel through the barrier; of a hooking device adapted to travel said channel, coacting means in connection with the hooking device and respective segments to effect a connection therebetween and means to elevate said hooking device.

5. In a selective mechanism of the character described the combination with a barrier composed of a plurality of superimposed segments, each segment being formed with a well, the respective wells being aligned to form a channel, a hooking device adapted to travel in the channel, a pair of normally collapsed claws carried by the hooking device and adapted to project through openings formed in the respective segments, means in connection with the claws to effect their projection into said openings, and additional means to elevate said hooking device.

LEWIS E. KNERR.