Jan. 31, 1956 J. E. MELIN 2,732,686

PORTABLE AUTOMATICALLY RELEASED DAM

Filed Sept. 7, 1954

3 Sheets-Sheet 1

Fig. 1.

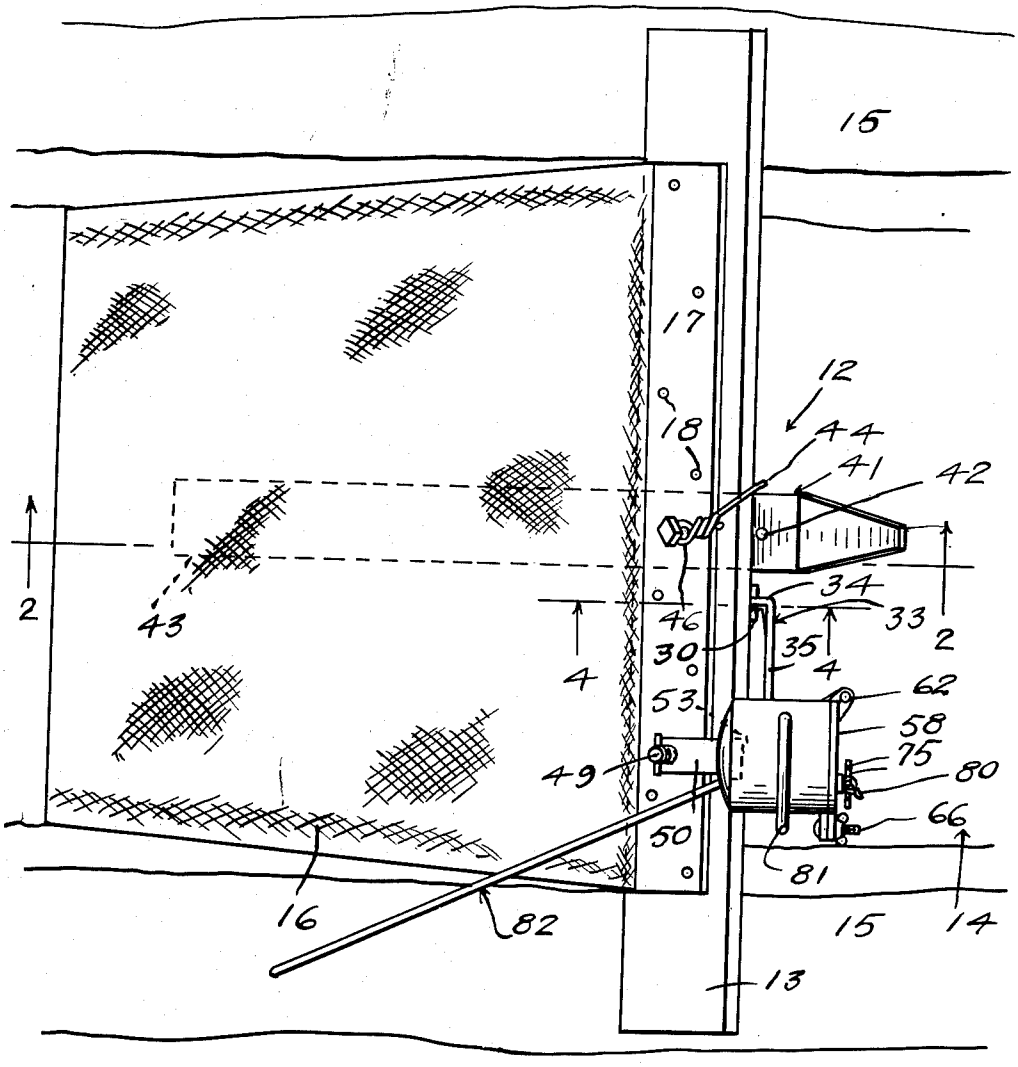
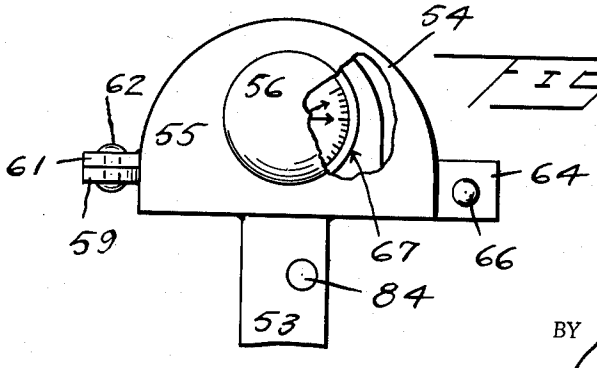



Fig. 11.




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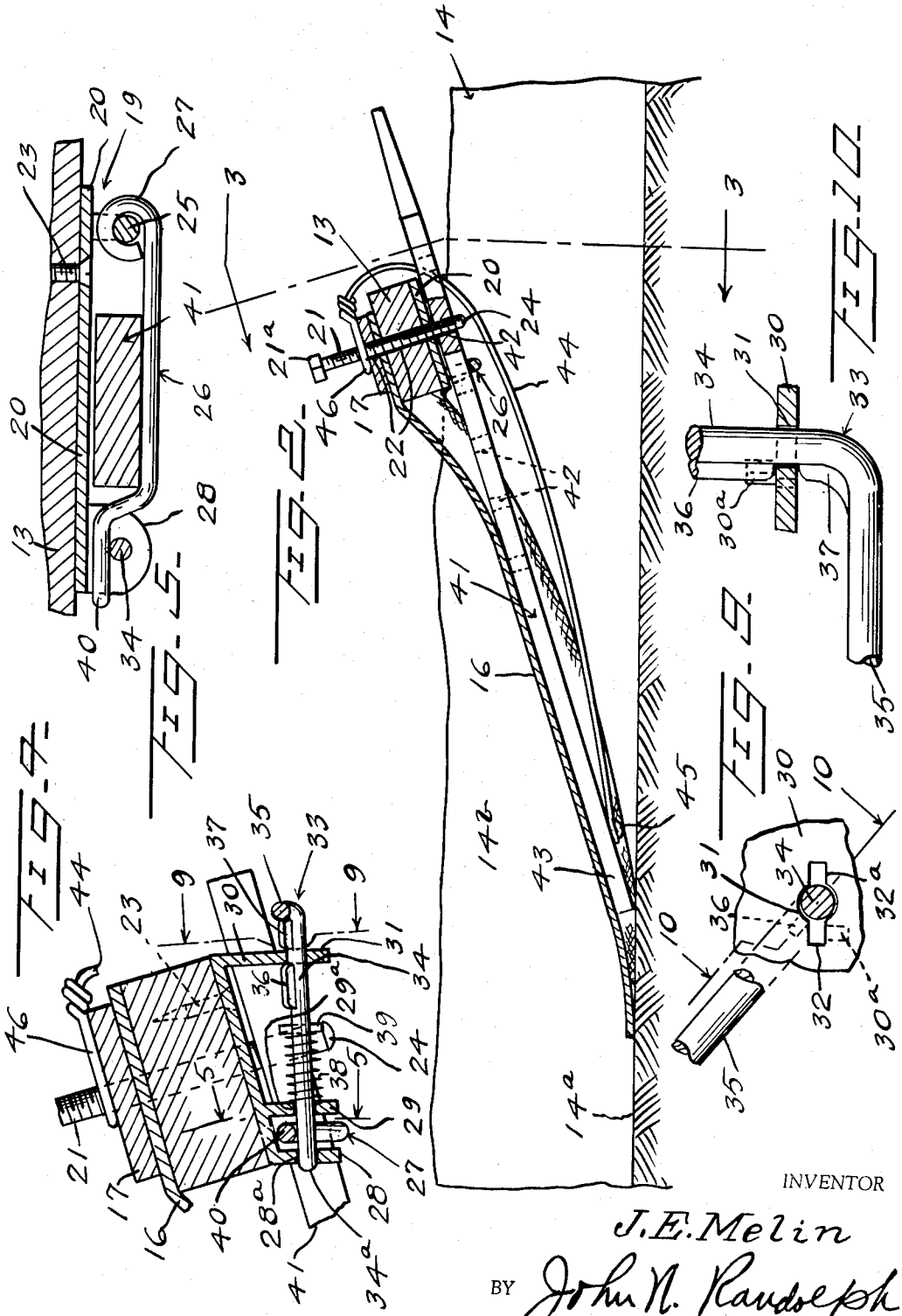
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PORTABLE AUTOMATICALLY RELEASED DAM

Filed Sept. 7, 1954 3 Sheets-Sheet 2



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PORTABLE AUTOMATICALLY RELEASED DAM

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FIG. 3.

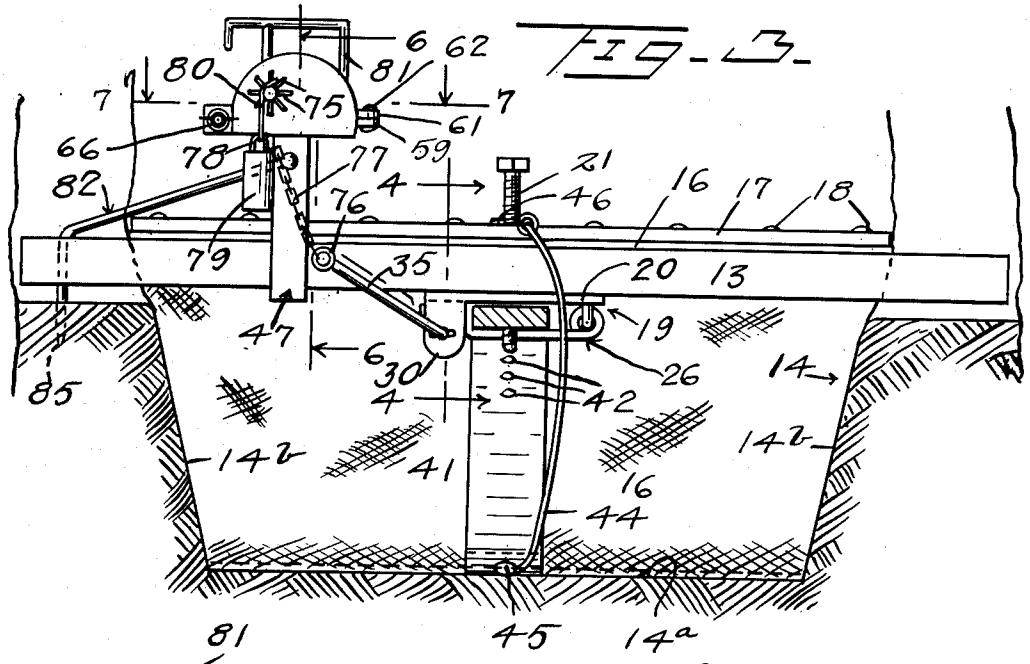



FIG. 7.

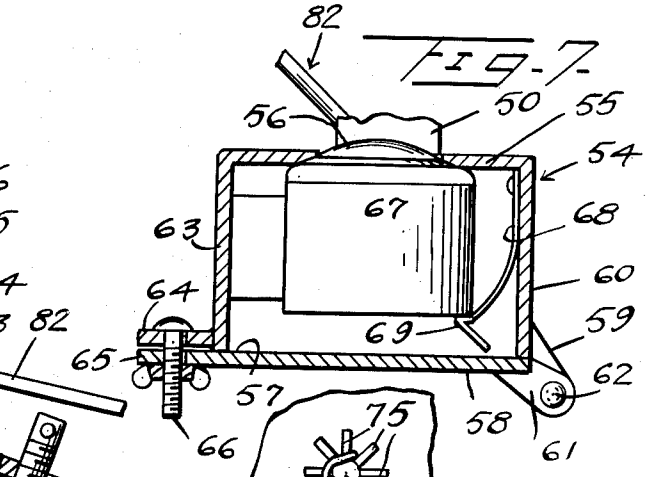



FIG. 6.

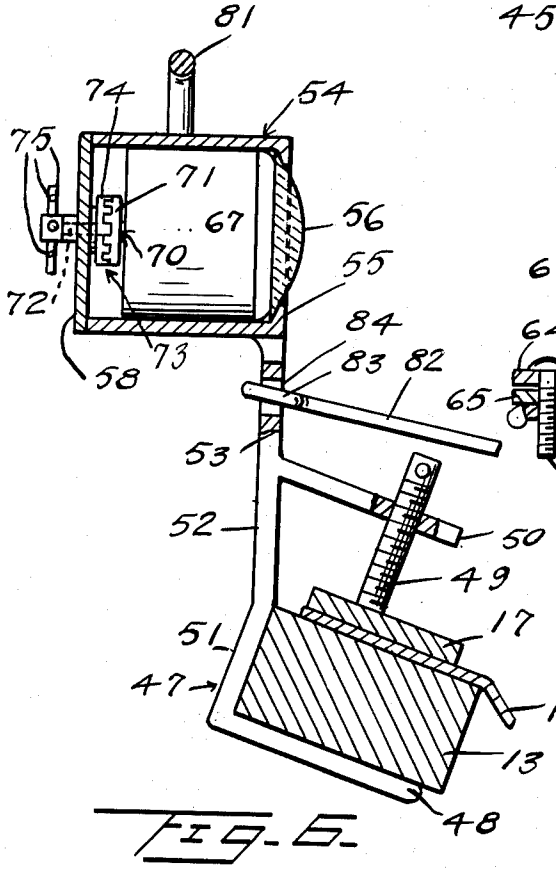
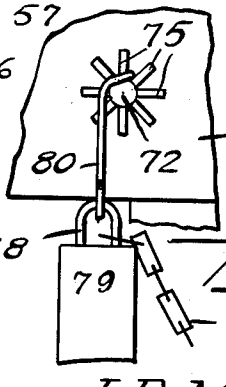



FIG. 8.




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United States Patent Office 2,732,686 Patented Jan. 31, 1956



2,732,686

# PORTABLE AUTOMATICALLY RELEASED DAM

John E. Melin, Livingston, Mont., assignor of one-half to Allyn O'Hair, Livingston, Mont.

Application September 7, 1954, Serial No. 454,393

9 Claims. (Cl. 61—29)

This invention relates to a novel portable dam which may be readily positioned at any desired point along an irrigation ditch or canal for temporarily damming the ditch or canal to divert the water therefrom into a desired area to be irrigated, and which after a predetermined period of time will automatically release the dammed up water in the ditch or canal.

More particularly, it is an aim of the present invention to provide a portable dam which may be quickly and easily set up anywhere along an irrigation ditch or canal and set to automatically release after a predetermined interval of time, thus providing a unit capable of being used as one of a group of units placed at spaced points along a ditch or canal for effectively irrigating successive areas, and which does not require personal attention of the user other than setting up the dams and thereafter removing the released dams, any time after the release thereof.

Still a further object of the invention is to provide a portable automatically releasable dam of extremely simple construction capable of being very economically manufactured and sold yet which will be extremely efficient in accomplishing its intended result and extremely durable.

Another object of the invention is to provide a dam of the aforedescribed character capable of functioning in conjunction with a conventional spring driven alarm clock utilized as the means for controlling the release of the dam.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a top plan view showing the dam in an applied, operative position;

Figure 2 is a longitudinal sectional view thereof taken substantially along a plane as indicated by the line 2—2 of Figure 1;

Figure 3 is a cross sectional view, primarily in end elevation, taken substantially along a plane as indicated by the line 3—3 of Figure 2;

Figure 4 is an enlarged fragmentary sectional view taken substantially along a plane as indicated by the line 4—4 of Figure 3;

Figure 5 is a fragmentary vertical sectional view taken substantially along a plane as indicated by the line 5—5 of Figure 4;

Figure 6 is an enlarged fragmentary vertical sectional view taken substantially along a plane as indicated by the line 6—6 of Figure 3;

Figure 7 is an enlarged fragmentary horizontal sectional view taken substantially along a plane as indicated by the line 7—7 of Figure 3;

Figure 8 is an enlarged fragmentary elevational view of a portion of the structure as shown in Figure 3;

Figure 9 is an enlarged fragmentary vertical sectional view, taken substantially along a plane as indicated by the line 9—9 of Figure 4;



Figure 10 is a fragmentary sectional view, taken substantially along a plane as indicated by the line 10—10 of Figure 9, and

Figure 11 is a fragmentary front elevational view of the clock supporting case and the upper portion of the mounting standard thereof.

Referring more specifically to the drawings, the portable automatically released dam in its entirety and comprising the invention is desigated generally 12 and includes an elongated supporting member 13, preferably comprising a plank of wood of sufficient length to span an irrigation ditch or canal 14 so that the ends thereof will rest upon the banks 15 of the canal or ditch. A piece of canvas or similar flexible material which is substantially impervious to water, as seen at 16, constitutes the dam element and has one edge disposed against the upper side of the support or ditch spanning element 13 and secured thereto in any suitable manner, preferably by a strip 17 which overlies said edge of the dam element 16 and fastenings 18 which extend through the strip 17, the element 16 and into the support member 13, for clamping said edge portion between said support member and the strip 17.

A prop support and release unit, designated generally 19, as best seen in Figures 2, 3, 4 and 5 includes an elongated plate 20 which is disposed against the underside of the intermediate portion of the support or spanner 13 and longitudinally thereof. A bolt 21 is fixed to the intermediate portion of the plate 20 and extends upwardly therefrom through aligned openings 22 in the parts 13, 16 and 17 and is provided with a head 21a at the upper end of the bolt 21 and which is disposed above and spaced from the strip 17. The plate 20 is secured to the support 13 by screw fastenings 23 which extend upwardly through said plate 20 and are countersunk therein and anchored in the support 13. An unthreaded rod or shank may be substituted for the threaded rod or bolt 21 so long as it projects upwardly to substantially above the strip 17, for a purpose which will hereinafter become apparent. The rod or bolt 21 has a lower end forming a stem 24 which extends downwardly from the underside of the support or spanner 13 and plate 20.

As best seen in Figure 5, the plate 20 on its underside and adjacent one end of the forward longitudinal edge thereof is provided with a depending loop 25. A hasp 26 is provided with an eye 27 at one end thereof which turnably engages the loop 25 and is thus swingably connected to the plate 20 for swinging movement toward and away from said plate and in a direction longitudinally thereof. As best seen in Figure 4, the plate 20, adjacent its opposite end and forward edge, is provided with a pair of transversely spaced depending ears 28 and 29 having aligned openings 28a and 29a, respectively. The plate 20 at its rear edge is provided with a longer depending ear 30 which is disposed in alignment with the ears 28 and 29 and which has an opening 31 disposed in alignment with the openings 28a and 29a. The ear 30 is provided with at least one slot 32 disposed radially of the opening 31 and the inner end of which opens into said opening, as best seen in Figure 9. The ear 30 on its inner side and beneath the slot 32 is provided with a projection forming a stop 30a.

A trigger or detent, designated generally 33, includes a stem 34 which extends slidably through the openings 31, 29a and 28a and a lever 35 which projects laterally from a rear end of the stem 34 and which is disposed outwardly of and behind the ear 30. As best seen in Figures 4 and 10, the portion of the stem 34 located adjacent the lever 35 is provided with a pair of longitudinally extending aligned and longitudinally spaced ribs 36 and 37 of a width and thickness less than the length and width, respectively, of the slot 32. The stem 34 also carries an

expansion coiled spring 38 which is disposed thereon forwardly of the forward rib 36, between the ear 29 and a stop pin 39 which extends through and is anchored in the stem 34, forwardly of the rib 36. If the stop pin 39 is immovably mounted in the stem 34, then the ear 30 is provided with a second slot 32*a*, as seen in Figure 9, corresponding to and disposed opposite the slot 32. Thus, the leading end 34*a* of the stem 34 can be inserted inwardly through the opening 31 and thereafter through the spring 38 and the stem 34 can be turned to allow the stop pin 39 to pass through the slots 32 and 32*a*, after which the stem 34 can be again turned to permit the forward rib 36 to pass through either the slot 32 or 32*a* and as the forward portion of the stem is passing through the openings 29*a* and 28*a* and under the upwardly offset free end 40 of the hasp 26, which is disposed between the ears 28 and 29 and adjacent the underside of the plate 20, in a closed position of said hasp as seen in Figure 5. After the rib 36 is passed through either the slot 32 or 32*a*, the stem 34 is turned to move said rib out of alignment with said slots and the ribs 36 and 37 will then be disposed on opposite sides of the ear 30, as seen in Figures 4 and 10. The forward rib 36 will engage the inner side of the ear 30 to maintain the stem 34 in a forward position engaging both of the openings 28*a* and 29*a* and for maintaining the spring 38 compressed and to prevent said spring from projecting the stem 34 rearwardly out of engagement with the openings 28*a* and 29*a*. Thus, the stem 34 will function as a detent to support the free end 40 of the hasp 26.

The dam 12 also includes an elongated relatively rigid member 41 forming a prop which is provided adjacent one end thereof with a series of longitudinally spaced openings 42. Before the hasp 26 is swung to its closed position as illustrated in the drawings and before the stem 34 is advanced forwardly through the openings 29*a* and 28*a*, the forward end 43 of the prop 41 is placed in engagement with the bed 14*a* of the ditch or canal 14, upstream with respect to the spanner or support 13 and is swung upwardly to position a part of the rear portion of the prop 41 against the underside of the plate 20 and transversely thereof and with a selected one of the openings 42 disposed so that the rod portion 24 extends downwardly therethrough, as seen in Figure 2. The extent that the forward end 43 will extend from the support 13 will vary depending upon the depth of the ditch 14. The flexible dam element 16 extends forwardly from the support 13 and rests upon the upper side of the prop 41, which is disposed substantially intermediate of the banks 14*b* of the ditch 14. The free end of the dam element 16 rests on the bed 14*a* upstream with respect to the forward prop end 43, as seen in Figure 2, and the dam element 16 is of sufficient width so that the side edge portions thereof rest against both banks 14*b*, as seen in Figure 1. Thus, the dam element will effectively function when disposed as seen in Figures 1 and 2 for damming the ditch or canal 14. A flexible tethering element 44 is anchored at one end, as at 45, to the underside of the forward prop portion 43 and has its other end secured preferably to the rod or bolt 21 above the strip 17, as for example between said strip and the head 21*a*, as seen at 46. It will be readily apparent that the hasp 26 will support the prop 41 in its position of Figures 1 and 2, in engagement with the prop release unit 19, when said hasp extends beneath a portion of the prop 41 and has its free end 40 supported by the stem 34.

As best seen in Figure 6, a clamp, designated generally 47, is secured to the support 13 and engages around the back edge thereof and includes a stationary bottom jaw 48 which engages the underside of the support 13 and a setscrew 49 which is advanced downwardly and clamped against the upper side of a portion of the strip 17 for detachably securing the clamp 47 to said support. The clamp 47 is disposed between the prop release unit 19 and one bank 14*b* of the ditch or canal. The clamping screw



49 extends threadedly through an upper frame part 50 of the clamp 47 and downwardly toward the bottom frame part or jaw 48. The clamp 47 includes a bottom rear portion 51 which bears against the back edge of the support 13 and an upper rear portion 52, which is disposed at an angle to the portion 51 and which extends upwardly and away from the support 13. Said support 13 is disposed at a slight incline transversely, corresponding to the incline of the prop 41 and the clamp portion 52 accordingly is disposed in substantially an upright position. The frame part 50 extends forwardly from the clamp portion 52 and said clamp portion has an extension forming a standard 53 which extends above the frame part 50.

A housing 54 is supported on the upper end of the standard 53 and is formed integral with or suitably secured thereto so that said standard is disposed directly beneath the front wall 55 of said housing. Said front wall is provided with a transparent portion forming a window 56, as best seen in Figures 6 and 7. The housing 54 has an open rear end 57 which is normally closed by a door or closure 58. An ear 59 is fixed to and extends rearwardly from a side wall 60 of the housing 54 and diagonally outwardly from the open rear end 57. The closure 58 at one end thereof has a diagonally projecting ear 61 which overlies the ear 59 and is swingably connected thereto by a pivot element 62 which combines with said ears to form a hinge about which the closure 58 is swingable in substantially a horizontal plane toward and away from the open rear end of the housing 57 between an open and a closed position. The other side wall 63 of the housing 54 is provided with an outwardly projecting apertured ear 64, disposed substantially coplanar with the open rear end 57. The free end of the closure 58 has an apertured ear 65 which is disposed against the ear 64, when the closure is in a closed position. A bolt of a bolt and nut fastening 66 extends through the apertures of the ears 64 and 65 and said fastening 66 provides a latching means for retaining the closure 58 in a closed position.

A conventional spring wound alarm clock 67 is demountably supported in the housing 54. A leaf spring 68 is secured at one end to the side wall 60 and has a latch portion 69 adjacent its free end which engages the back of the alarm clock 67 to retain the clock against sliding movement toward the closure 58 and for maintaining the face of the clock behind and in registration with the window 56. The clock 67 is of conventional construction and accordingly only the alarm winding key 70 thereof has been shown having the conventionally shaped key head 71.

A short shaft or stem 72 is journaled in the closure 58 and has a crown disk or crown wheel 73 fixed to its inner end. The crown wheel 73 is disposed so that the ends of the handle 71 will fit between the cogs or teeth 74 thereof when the closure 58 is moved to a closed position, as seen in Figure 6 whereby the alarm stem 70 and the stem or shaft 72 will be interconnected to turn as a unit. A plurality of spokes 75 are fixed to and project radially from the outer end of the shaft 72, externally of the closure 58.

As seen in Figure 3, the trigger or detent 33 is positioned with the forward rib 36 engaging the inner side of the ear 30 and disposed above the slot 32, as illustrated in dotted lines of Figure 9. When the stem 34 is thus disposed, the lever 35 will extend upwardly at an incline toward the clamp 47. The free end of the lever 35 is provided with an eye 76 to which is secured one end of a flexible member 77, such as a chain, as seen in Figure 3. The other end of the chain 77 is secured to a loop or bail 78 which is fixed to and projects from the upper end of a weight 79. A flexible loop 80 is secured to the bail 78 and extends upwardly therefrom and engages over an upwardly projecting one of the spokes 75 for supporting the weight 79 thereon, as seen in Figure 3.

The housing 54 has a handle 81 secured thereto and

disposed thereabove by means of which said housing and the clamp 47 may be manually carried as a unit. A rod 82 has an eye 83 at one end thereof which is engaged through an opening 84 of the upper standard portion 53 for swingably connecting said rod to the standard above the clamp 47. The other free end of the rod 82 is bent at an oblique angle to the remainder of said rod and terminates in a point to form an anchoring spike 85. The rod 82 is swung relatively to the standard 53 to position its free end 85 above the bank of the ditch 14, adjacent to which said standard is disposed, after which the spike portion 85 is driven downwardly into the ground, so that the rod 82 functions as an anchoring and stabilizing rod or means for maintaining the dam support 13 in a selected position spanning the dam 14.

Assuming that the dam has been assembled as previously described and set up in the ditch 14, as illustrated in Figures 1, 2 and 3, it will be readily apparent that the dam element 16 will dam up the water in the ditch so that the water will rise and overflow the banks of the ditch for irrigating the land on either side of the ditch or on both sides thereof adjacent the dam 12. It will also be understood that the alarm mechanism of the clock 67 will have been set to operate at a predetermined future time in a conventional manner and that the alarm winding key head 71 is engaged with the crown wheel 73, as illustrated in Figure 6. After said period of time has elapsed and the alarm mechanism of the clock 67 is actuated, as the alarm mechanism unwinds the alarm winding key 70 will turn thereby turning the shaft or stem 72 and the spokes 75. As the spoke 75 engaged by the loop 80 swings downwardly in either direction past a horizontal position, the weight 79 will cause the loop 80 to slide out of engagement with said spoke thus releasing the weight which will drop downwardly and through the chain 77 will exert a downward pull on the lever 35. The lever 35 and stem 34 will then be turned counterclockwise as seen in Figures 3 and 9 until the rib 36 strikes the stop 30*a*. When this occurs, the rib 36 will be supported by the stop 30*a* in alignment with the slot 32 permitting the compressed spring 38 to expand and propel the stem 34 rearwardly or from left to right as seen in Figure 4 sufficiently to clear the hasp end 40. The hasp 26 will thus be released to swing downwardly from its position of Figure 5 thus releasing the prop 41. The weight of the water on the dam element 16, supported by the prop 41, will cause the upper portion of the prop to drop downwardly out of engagement with the rod portion 24 whereupon the prop will be free to move downstream or from left to right as seen in Figures 1 and 2. When this occurs, the flexible dam element 16 will also pass downstream under the spanner or support 13 due to the pressure of the water bearing against the upstream side of said dam element, thereby releasing the water to flow freely under the dam 12. The dam element 16 will be held from being carried downstream by its connection to the spanner 13 and the tethering member 44 will similarly prevent the released prop 41 from being carried downstream by the released water to a greater extent than that permitted by the length of the tethering element 44.

It will be readily apparent that a number of the dams 12 can be erected at different points along an irrigation ditch or canal and set to release at different intervals so that successive areas from an upstream toward a downstream end of an irrigation ditch can be irrigated automatically. Release dams 12 could thereafter be removed at any desired subsequent time and placed in any other desired location and set in a damming position, as illustrated in Figures 1 and 3.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.



I claim as my invention:

1. A dam of the character described comprising a rigid support member adapted to span an irrigation ditch, a flexible dam element having an edge portion secured to said support member and extending across the ditch, an elongated prop having a forward end adapted to rest on the ditch bed upstream relatively to said support member, a hasp, means swingably supporting one end of the hasp beneath said support member for swinging movement of the hasp toward and away from the support member and longitudinally thereof, and detent means releasably supporting the other end of said hasp adjacent said support member, said hasp extending under a portion of the prop located remote from said forward prop end for supporting said last mentioned prop portion beneath and adjacent the support member, said prop supporting the flexible dam element in an upstream position relatively to the support member, said dam element having other edge portions engaging the banks and bed of the ditch for damming the ditch, and means for actuating said detent means to release the free end of the hasp for releasing the prop therefrom to permit said dam element to pass under the support member to a released position on the downstream side of the support member.

2. A dam of the character described comprising a rigid support member adapted to span an irrigation ditch, a flexible dam element having an edge portion secured to said support member and extending across the ditch, an elongated prop having a forward end adapted to rest on the ditch bed upstream relatively to said support member, a hasp, means swingably supporting one end of the hasp beneath said support member for swinging movement of the hasp toward and away from the support member and longitudinally thereof, and detent means releasably supporting the other end of said hasp adjacent said support member, said hasp extending under a portion of the prop located remote from said forward prop end for supporting said last mentioned prop portion beneath and adjacent the support member, said prop supporting the flexible dam element in an upstream position relatively to the support member, said dam element having other edge portions engaging the banks and bed of the ditch for damming the ditch, said detent means being releasable for releasing the free end of the hasp for releasing the prop therefrom to permit said dam element to pass under the support member to a released position on the downstream side of the support member, a timing mechanism capable of being set to operate after a predetermined lapse of time, means mounted on said support member for supporting said timing mechanism, and means connecting said detent means and timing mechanism to effect release of said detent means in response to movement of said timing mechanism.

3. A dam as in claim 1, and means secured to said support member and selectively engaging said prop adjacent the hasp for locating the forward end of the prop at different distances from the support member for accommodating the dam to ditches of different depths.

4. A dam as in claim 1, and flexible tethering means connecting the prop to said support member for limiting the extent of movement of the prop downstream relative to the support member when said hasp is released.

5. A dam of the character described comprising a rigid support member adapted to span an irrigation ditch, a flexible dam element having an edge portion secured to said support member and extending across the ditch, an elongated prop having a forward end adapted to rest on the ditch bed upstream relatively to said support member, a hasp, means swingably supporting one end of the hasp beneath said support member for swinging movement of the hasp toward and away from the support member and longitudinally thereof, and detent means releasably supporting the other end of said hasp adjacent said support member, said hasp extending under a por-

tion of the prop located remote from said forward prop end for supporting said last mentioned prop portion beneath and adjacent the support member, said prop supporting the flexible dam element in an upstream position relatively to the support member, said dam element having other edge portions engaging the banks and bed of the ditch for damming the ditch, said detent means being releasable for releasing the free end of the hasp for releasing the prop therefrom to permit said dam element to pass under the support member to a released position on the downstream side of the support member, said detent means including a stem having a rear end and a lever projecting laterally from said rear end, means support beneath said support member for slidably and turnably supporting said stem, said stem having a forward portion engaging beneath and supporting the free end of said hasp in a cocked position of said detent means, spring means urging said stem rearwardly to a released position; a latch structure associated with said stem and stem supporting means for releasably latching the stem in a cocked position, a weight connected to the free end of said lever, a weight support releasably supporting said weight, and a timing mechanism connected to said weight support capable of being set to be actuated after a lapse of time for moving said weight support to a position to release the weight, said weight when released actuating said lever for turning the stem to an unlatched position whereby the stem is moved by the spring out of engagement with the free end of the hasp and to a released position of said detent means.

6. A dam as in claim 5, a supporting unit supporting said weight support and in which said timing mechanism is mounted, said supporting unit including clamp means detachably mounting the supporting unit on said support member to one side of said prop and locating said weight support above and behind said support member.



7. A dam as in claim 6, an anchoring rod having one end swingably connected to said supporting unit and having an opposite angularly turned free end forming a spike adapted to be driven into the bank on one side of a ditch for anchoring and stabilizing said support member in a position spanning the ditch.

8. A dam as in claim 7, said supporting unit including a housing in which said timing mechanism is detachably disposed, said timing mechanism comprising a spring wound alarm clock, said weight support being rotatably supported by a part of said housing and including a crown wheel defining an inner end thereof disposed in said housing and engaging the alarm winding key of the alarm clock whereby the weight support is rotated by rotation of the alarm winding key when the alarm is actuated for releasing the weight therefrom.

9. A dam as in claim 8, said housing including a closure affording access to the interior of the housing and to the alarm clock, and said weight support being journaled in and supported by said closure.

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