

1,113,440.

M. HUGHES.
WATER WHEEL.
APPLICATION FILED JULY 3, 1913.

Patented Oct. 13, 1914.

3 SHEETS-SHEET 1.

Fig. 1.

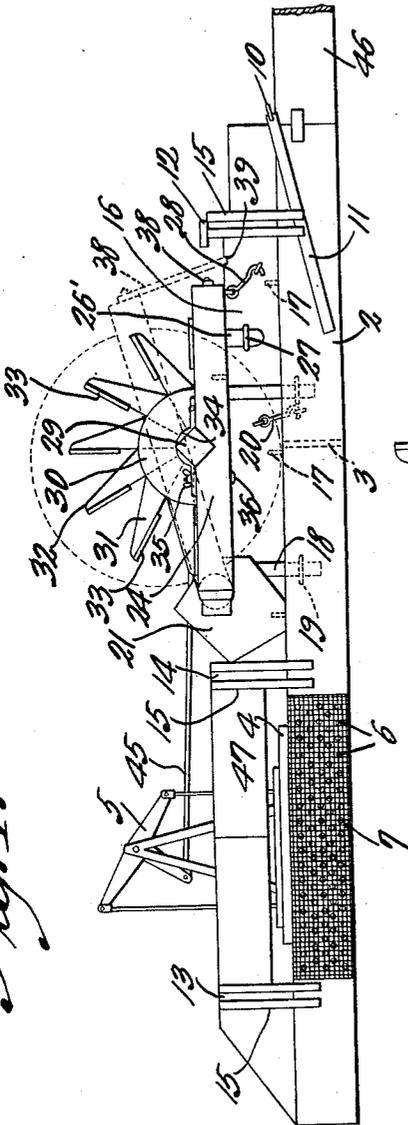
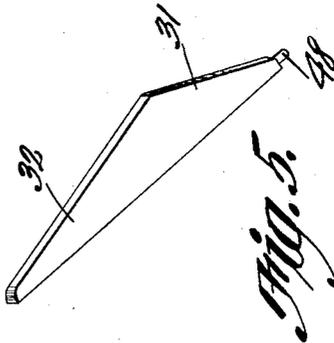
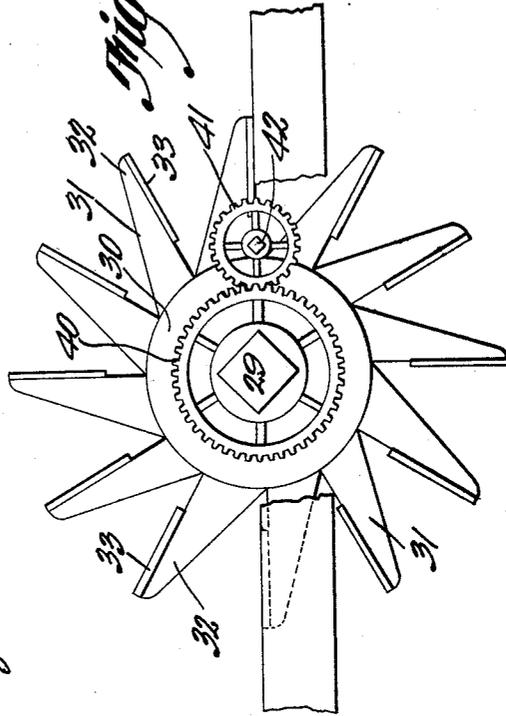


Fig. 4.



Witnesses

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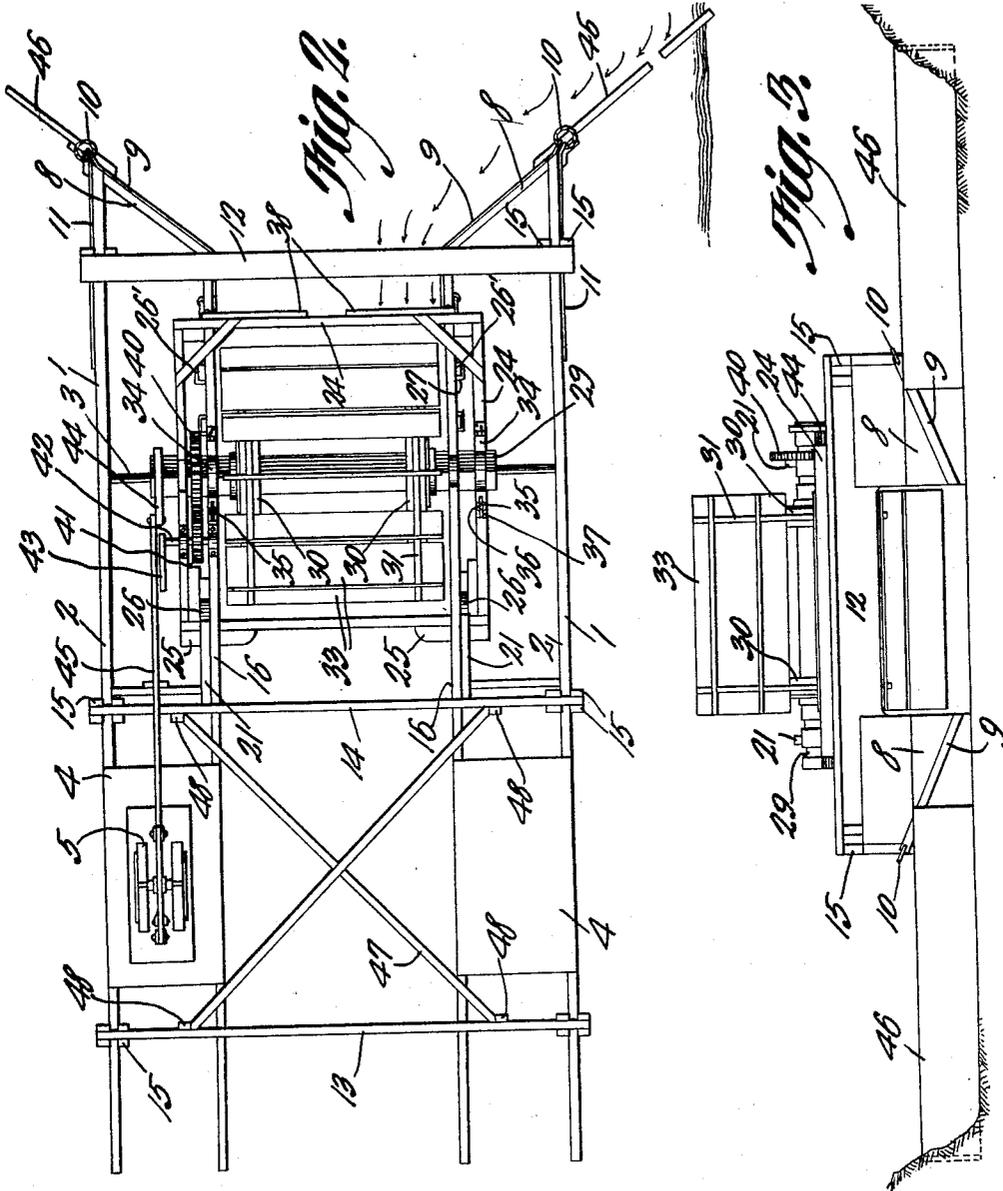
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3 SHEETS—SHEET 2.

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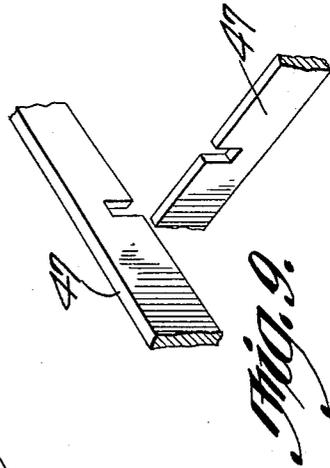
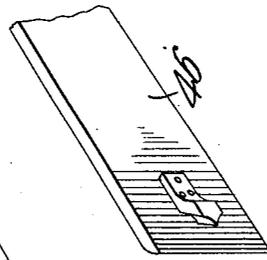
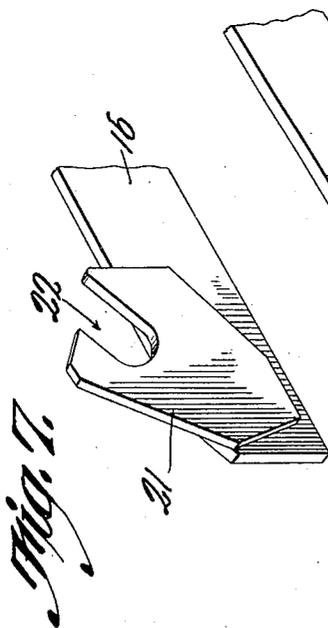
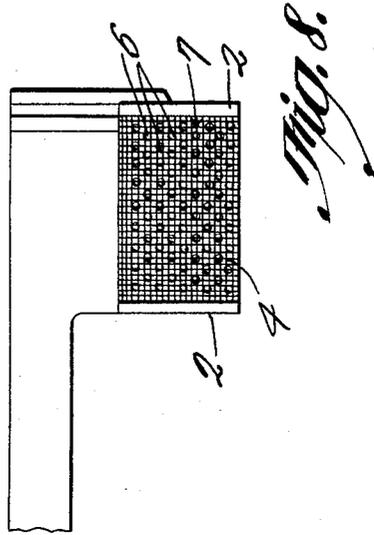
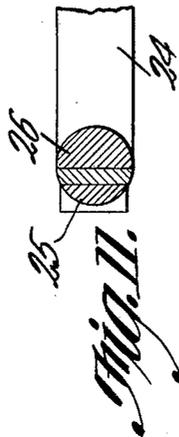
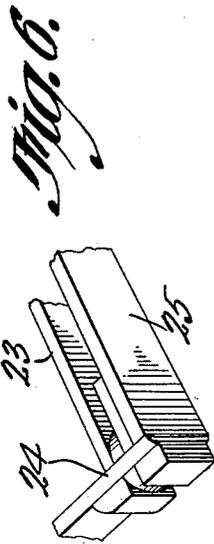
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UNITED STATES PATENT OFFICE.

MARION HUGHES, OF SHAWNEE, OKLAHOMA.

WATER-WHEEL.

1,113,440.

Specification of Letters Patent.

Patented Oct. 13, 1914.

Application filed July 3, 1913. Serial No. 777,171.

To all whom it may concern:

Be it known that I, MARION HUGHES, a citizen of the United States, residing at Shawnee, in the county of Pottawatomie and State of Oklahoma, have invented a new and useful Water-Wheel, of which the following is a specification.

This invention relates to water motors, particularly designed for use in irrigating land, one of the objects of the invention being to provide a water wheel so mounted as to operate efficiently in a slow moving current although the same can also be used as efficiently in swift moving streams.

Another object is to provide a wheel having a knock-down or collapsible sluice which can be readily set up in or removed from a current and which operates to direct the moving body of water against the supported wheel at an increased velocity.

A further object is to provide a novel form of wheel mounted in a peculiar manner and which is adjustable upwardly and downwardly so as to be moved out of or into engagement with a moving current of water in the sluice.

A further object is to provide a sluice the parts of which can be readily taken apart and removed from the current so as to prevent injury during floods and the like.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a side elevation of the apparatus constituting the present invention. Fig. 2 is a plan view. Fig. 3 is a front elevation of the apparatus. Fig. 4 is an enlarged side elevation of the water wheel and the adjacent gears. Fig. 5 is a perspective view of one of the segments of which the wheel is formed. Fig. 6 is a perspective view of one corner portion of the wheel carrying frame. Fig. 7 is a perspective view of one of the hinge members with which said frame coöperates. Fig. 8 is an enlarged rear elevation of one of the water intake compartments. Fig. 9 is a

perspective view of portions of the braces used in connection with the sluice. Fig. 10 is a perspective view of a portion of one of the deflecting wings used at the inlet end of the sluice. Fig. 11 is a vertical longitudinal section through the corner bearing shown in Fig. 6.

Referring to the figures by characters of reference 1 designates side supports each including parallel walls 2 connected in any suitable manner, as by means of cross strips 3 and a receiver 4 which, as shown in Fig. 2, may be constituted of a platform upon which a pump 5 of any suitable construction may be mounted. The receiver 4 may have pump cylinders therein and the mechanism indicated at 5 can be employed for actuating the pistons within these cylinders. The receiver 4 is provided with a plurality of inlet apertures, as shown at 6 in Fig. 8, these apertures being arranged back of a screen 7 so as to prevent the admission of objectionable foreign substances to the receiver 4. Each of the side members 1 has its front end closed and obliquely disposed, as shown at 8. The two members 1 are oppositely disposed so that these inclined front ends 8 will converge rearwardly. Reinforcing straps 9 are disposed upon the obliquely arranged faces 8 and are provided, at their forward ends, with rings 10 to which chains, wire cables or the like may be attached for the purpose of holding the sluice properly anchored in the current. Rings 10 are also preferably arranged in engagement with straps 11 secured to the outer sides of the members 1.

The two side members 1 of the sluice are detachably connected by front, rear and intermediate cross strips 12, 13 and 14 respectively, each of these cross strips or beams being formed with end cleats 15 arranged in pairs, two pairs being located at each end of each of the beams 12, 13 and 14 and the cleats of the several pairs being adapted to straddle the outer side walls of the respective members 1.

Erected on the inner side walls of the members 1 are supplemental walls 16 preferably held to the walls 2 by dowels 17 or the like and by means of cleats 18 which extend downwardly through holding brackets 19 secured to the adjacent walls 2 of the members 1. Hooks and eyes, indicated at 20, may be provided for fastening the supplemental walls 16 to the walls 2 thereun-

der. Each of the supplemental walls 16 is provided, at its rear end, with a bearing block 21 having an inclined slot 22 extending thereinto, this block 21 being adapted to project between parallel side strips 5 formed at one side of a wheel carrying frame 24. Said side strips are spaced apart at their rear ends by segmental blocks 25 and 26 so proportioned as to fit snugly within the slots 22 in the adjacent blocks 21. 10 Frame 24 rests snugly on the supplemental walls 16 and has arms 26' extending downwardly therefrom and removably mounted in holding brackets 27 on the supplemental walls. Furthermore hooks and eyes such as indicated at 28, may be employed for 15 fastening the frame 24 to the walls 16.

Mounted for rotation on frame 24 is a transverse shaft 29 to which are secured 20 pairs of disks 30. Segmental members 31 are mounted between the disks of each pair and have tapered extensions or arms 32 forming spokes, these spokes being connected by blades or paddles 33. Shaft 29 is 25 preferably removably mounted on the frame 24, the same being held in place by hinged bearing caps 34 which are detachably held in place by means of wing nuts 35 or the like mounted on bolts 36 extending through 30 slots 37 in the ends of the caps. Pivotaly connected to the front of the frame 24 are legs 38 and notches 39 are formed in the upper edges of the supplemental walls 16 for the reception of these legs when the 35 frame 24 is swung upwardly out of normal position.

A gear 40 rotates with shaft 29 and meshes with a smaller gear 41 journaled on one side portion of frame 24, the shaft 42 of this gear being provided with a crank arm 43. Shaft 29 is likewise provided with a crank arm 44. A pitman 45 may be attached to either of these crank arms 43 and 44 and to the pump 5 so that said pump can 45 be actuated at either of two speeds.

Deflecting wings 46 are detachably connected to the front extremities of the side members 1 and diverge forwardly, it being 50 designed, when the apparatus herein described is anchored in a stream, to extend these wings 46 from the members 1 to the banks of the stream.

Braces 47 are interposed between the cross strips 13 and 14 and these braces interfit 55 at their points of intersection, as shown in Fig. 9, the terminals of the braces abutting against blocks 48 secured to the cross strips or beams 13 and 14.

In using the apparatus the same is set up 60 in a stream of water and the wings 46 are extended therefrom to the banks of the stream so that the entire body of water will be directed into the sluice formed between members 1. If frame 24 is in its lowermost 65 position, the current will act upon the lowest

blades of the wheel and thus cause the wheel to rotate and motion to be transmitted therefrom to the pumping mechanism 5.

Should it be desired temporarily to remove the wheel from the water, it is merely 70 necessary to swing frame 24 upwardly so that the blocks 25 and 26 will rotate in the slots 22, and to then swing legs 38 downwardly so that they will rest in the notches 39. Thus frame 24 will be supported in an 75 inclined position with the blades out of contact with the water. Should the velocity of the current become excessive and thus endanger the apparatus, the frame 24 can be removed bodily from the sluice by lifting it 80 to an inclined position and then withdrawing the segmental blocks 25 and 26 from slots 22. Said frame, together with the wheel, can then be conveyed from the sluice. Furthermore, if desired, the cross beams 12, 13 85 and 14 can be lifted out of engagement with the members 1 after which said members can be floated to the sides of the stream so that injury to the apparatus as a result of floods, and the like, is thus prevented. 90

The entire apparatus can be set up quickly by bringing the members 1 to the proper distance from each other and then holding them together by means of the cross beams 12, 13 and 14. Braces 47 can then be placed in 95 position so as to prevent lateral distortion of the sluice after which the frame 24 is to be placed on the walls 16 and with its segmental blocks 25 and 26 in the slots 22.

Importance is attached to the fact that the 100 structure herein described can be collapsed readily and to the further fact that by means of the peculiar construction of the apparatus, to make it entirely or practically 105 entirely of wood so that the parts can be easily floated to or from position while assembling or collapsing the same.

While the apparatus is particularly designed for operating a pump, it is to be understood that any other suitable mechanism 110 might be driven thereby.

By referring to Fig. 5 it will be seen that the segments of the wheel are to be provided, at their inner ends, with studs 48 115 adapted to project into the shaft 29, thus to prevent rotation of the shaft within the wheel.

What is claimed is:—

1. The combination with opposed members forming a sluice and supplemental walls 120 upstanding therefrom and detachably connected thereto, of a frame mounted on said walls and bridging the sluice, said frame being mounted for angular adjustment about a transverse axis, a water wheel carried by 125 the frame, and means for supporting the frame in raised position, said frame being detachably mounted on the walls, and means for securing the frame in lowered position.

2. A structure of the class described in- 130

cluding separate floats, separate means detachably connected to the floats for holding them spaced apart, separate means interposed between and detachable from said
5 spacing means for bracing the structure against lateral distortion, a frame bridging the space between the floats and detachably mounted thereon, said frame being adjustable angularly about a transverse axis, a
10 water wheel revoluble within the frame,

means for supporting the frame in raised position, means for securing the frame in lowered position.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MARION HUGHES.

Witnesses:

SELINA WILLSON,
I. E. SIMPSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."