(No Model.) 2 Sheets—Sheet 1.

A. N. CROSS.

DITCHING MACHINE.

No. 418,311. Patented Dec. 31, 1889.

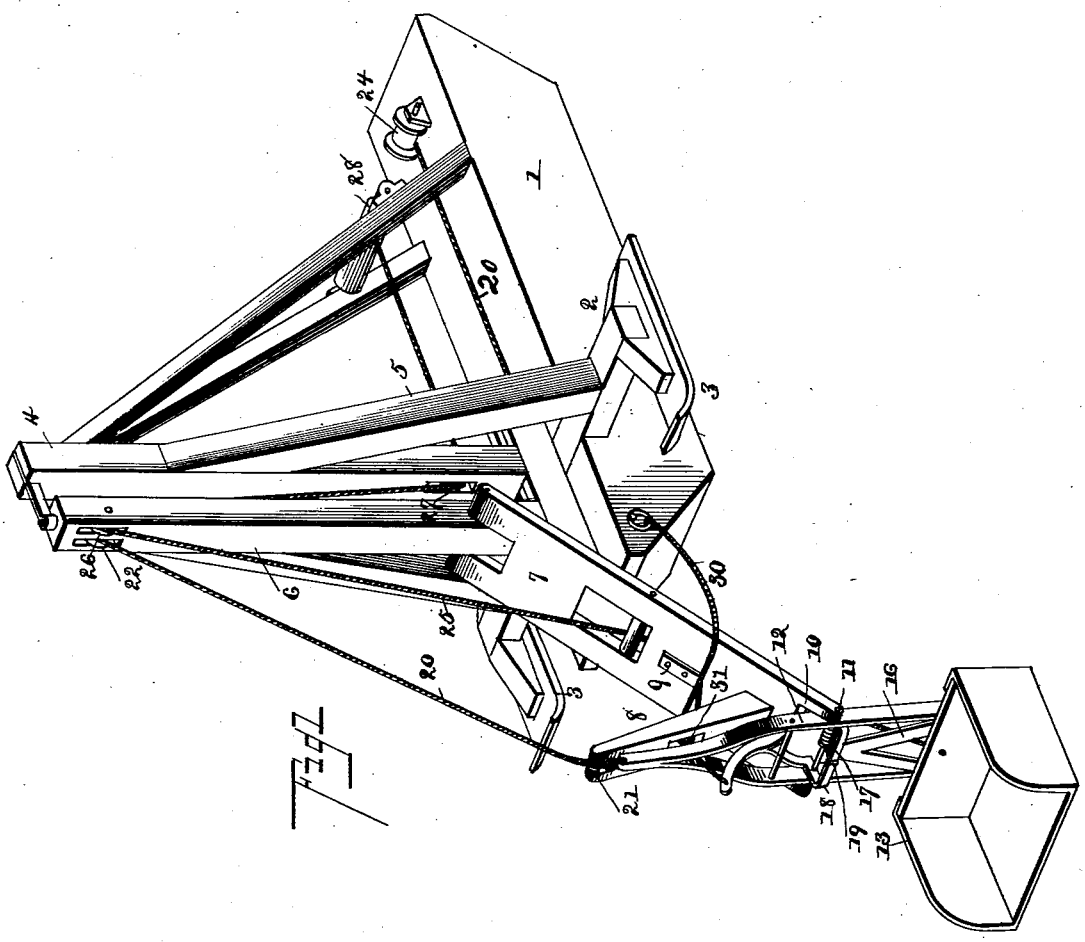


Fig. 1.

Witnesses
John Amirie
Wm. Bagger

Inventor
Albert N. Cross
By his Attorneys,
C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

A. N. CROSS.

DITCHING MACHINE.

No. 418,311. Patented Dec. 31, 1889.

Fig 2

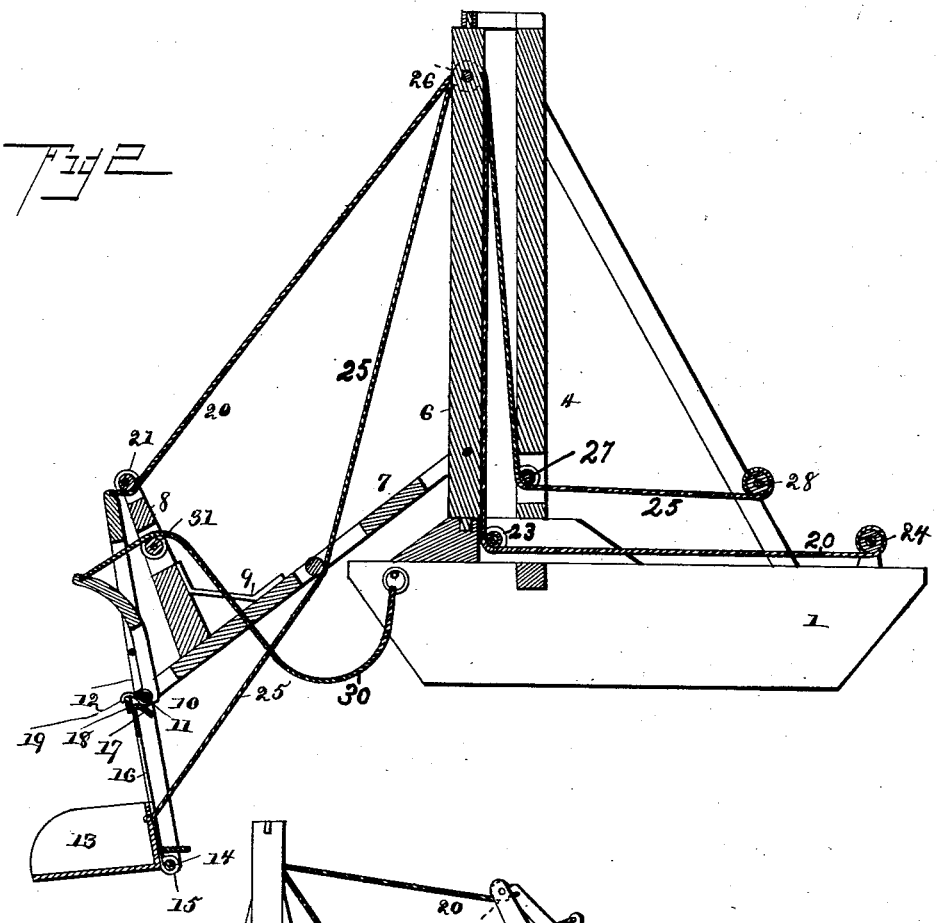
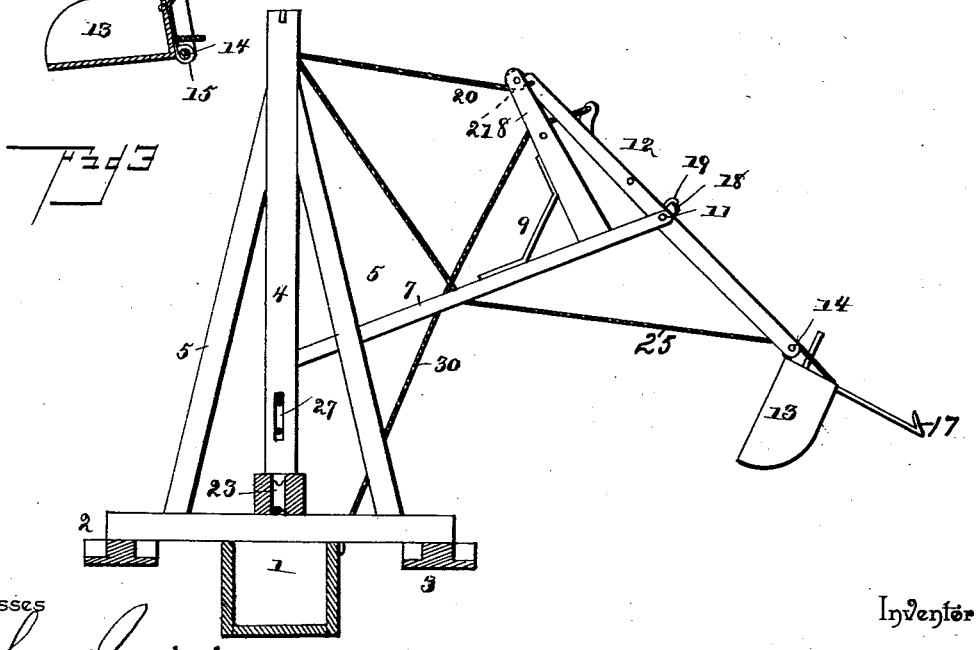


Fig 3



Witnesses

John Amirie

Wm. Bagger

Inventor

Albert N. Cross

By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

ALBERT N. CROSS, OF DALY, WISCONSIN.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,311, dated December 31, 1889.

Application filed August 23, 1889. Serial No. 321,731. (No model.)

To all whom it may concern:

Be it known that I, ALBERT N. CROSS, a citizen of the United States, residing at Daly, in the county of Wood and State of Wisconsin, have invented a new and useful Ditching-Machine, of which the following is a specification.

This invention relates to ditching-machines; and it has for its object to provide a machine of this class which shall be especially adapted to work in swampy land, where an ordinary ditching-machine operated in the usual manner by horse-power would not be available.

With this end in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of my improved ditching-machine, showing the same in position for operation. Fig. 2 is a longitudinal section of the same. Fig. 3 is a vertical transverse sectional view showing the machine in position for dumping the load.

Like numerals of reference indicate like parts in all the figures.

1 designates a boat or scow, which is made of a suitable width to occupy the ditch which is being excavated by the machine. The said boat or scow is provided with laterally-extending brackets 2 2, at the outer ends of which are secured the runners 3 3, which are adapted to rest upon the ground on each side of the ditch and to support the machine in position for operation.

4 designates an upright mounted vertically in the scow 1 and connected by inclined braces 5 with the brackets 2 2. The said upright is provided with bearings or brackets in which is mounted the upright 6 of the crane, near the lower end of which is pivoted the arm or lever 7. The latter is provided near its outer end with a bracket 8, connected with the said lever by means of a brace 9. The vertical crane 6 is in practice to be operated by means of suitable gearing, for the purpose of adjusting it to any desired position; but said gearing forms no part of my present invention, and I have deemed it unnecessary to show it in the drawings hereto annexed.

The outer end of the arm or lever 7 is bifurcated, as shown at 10, and provided with a transverse bolt 11, upon which is pivotally mounted a frame 12, to the lower end of which the shovel 13 is connected pivotally by means of the transverse bolt 14, which passes through the lower ends of the sides of the frame 12 and through lugs or ears 15, formed at the lower ends of a pair of converging bars 16, secured upon the rear side of said shovel. The upper converging end of the bars 16 is bent rearwardly to form a tongue 17, which is beveled to engage a latch 18, which is mounted pivotally upon the bolt. A suitably-arranged spring 19 serves to hold the latch 18 in engagement with the tongue 17.

An operating-rope 20, attached to the upper end of the pivoted frame 12, passes under a pulley 21, journaled at the upper end of the bracket 8, thence over a pulley 22 at the upper end of the frame, thence under a suitable guide-pulley 23, and to a winding-drum 24, which may be operated by horse-power, steam, or any other suitable manner. When the said winding-drum is operated by horse-power, it may be by a treadle-power of any suitable description, which may be conveniently mounted upon the scow.

To the upper rear edge of the shovel is attached a rope 25, passing over a guide-pulley 26 at the top of the frame, thence under a guide-pulley 27 at the lower end of the upright 4, and to a windlass 28, mounted between a pair of braces which connect the upper end of the upright 4 with the rear end of the scow.

To the upper end of the latch-frame is attached a trip-rope 30, which passes over a guide-pulley 31 near the upper end of the bracket 8, and to a point where it may be conveniently reached by the operator.

The operation of this invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed, by those skilled in the art to which it appertains. The scow or boat travels in the ditch which is being excavated, and which is being constantly filled with water, and it is supported and maintained in a vertical position by the runners on either side. To operate the shovel, power is applied to the winding-drum 24, thus winding the operating-rope 20 and forcing the shovel in

a forward and upward direction until it is loaded, or until the upper end of the frame 12 strikes against the upright 8. By continuing the draft upon the operating-rope the arm or lever 7 is now raised, thus lifting the shovel, with its contents, to its desired height, after which the crane may be turned to the position in which the contents of the shovel or bucket are to be discharged. By pulling upon the trip-rope the latch 18 is now disengaged from the catch 17 at the upper end of the converging bars. Said bars are attached to the rear side of the bucket, which latter, being hinged at its lower rear edge, now swings completely over with a quick sudden motion, effectually discharging its contents, no matter how sticky may be the nature of the dredged material. By operating the windlass 28 draft is now exerted upon the rope 25, which is attached to the upper rear edge of the bucket, which latter is thus restored to operative position. By unwinding the rope 20 on the drum 24 the arm or lever 7, carrying the bucket, may now be lowered, the crane having first been swung back to its original position, thus placing the machine in condition for a repetition of the operation.

My improved ditching-machine is, as will be seen from the foregoing description, especially adapted for the construction of ditches and levees in swampy land, and it will be found exceedingly simple and convenient for this purpose. With ditching-machines of ordinary construction difficulty is frequently experienced in discharging the contents of the bucket, especially when the soil is slimy or sticky; but by my improvement the bucket is so arranged that the contents will be effectually discharged under all circumstances.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a scow or boat having laterally-extending brackets provided with runners at their outer ends, an upright mounted vertically in the said scow, a crane journaled in brackets extending from the said upright, and its arm or lever pivoted near the lower end of the upright and provided near its outer end with an upwardly-extending bracket, a frame mounted pivotally at the outer end of said arm or lever, a shovel or bucket hinged at its lower edge to the lower end of said frame, an operating-rope attached to the upper end of said frame and passing over suitable guide-pulleys to a winding-drum, a rope attached to the upper rear edge of the bucket and passing over suitable guide-pulleys to a windlass, and a latch adapted to keep the bucket in operative position, substantially as herein set forth.

2. The combination of a boat or scow having laterally-extending brackets provided with runners or supports at their outer ends, the upright, the crane fitted to the latter, its arm or lever having a bracket near its outer end, the frame pivoted at the outer end of said lever, the bucket hinged at the lower end of said frame, an operating-rope attached to the upper end of said frame and passed over suitable guide-pulleys to a winding-drum, a rope attached to the upper rear edge of the bucket and passing over suitable guide-pulleys to a windlass, a latch pivoted upon the bolt which connects the main lever with the bucket-carrying frame, converging arms secured to the rear side of the bucket, extending upwardly and having a rearwardly-bent tongue to engage the said latch, and a trip-rope connected to the latter, substantially as and for the purpose set forth.

3. In a ditching-machine, the combination, with the crane and its pivotal lever having a bifurcated outer end, of a frame pivoted upon a transverse bolt at the outer end of said lever, a latch mounted pivotally upon the said bolt and having a trip-rope attached at its upper end, a bucket provided on its rear side with upwardly-extending converging bars provided at their upper ends with a rearwardly-bent tongue or catch and at their lower ends with lugs or ears, and a transverse bolt connecting said ears pivotally with the lower end of the pivoted frame, all combined and operating substantially as and for the purpose set forth.

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

ALBERT N. CROSS.

Witnesses:
W. H. HINES,
H. F. SCRIBNER.