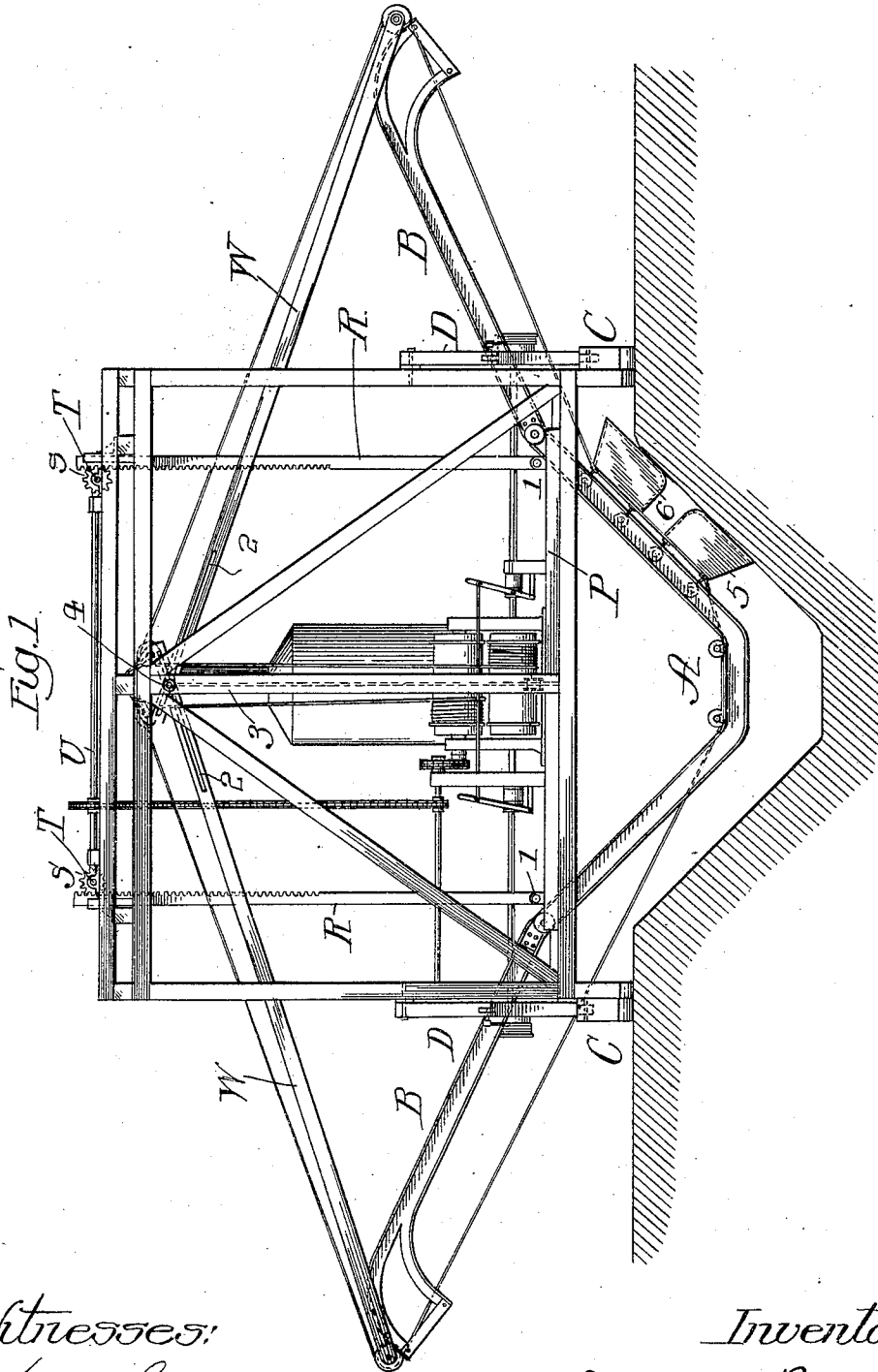


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 PROPELLING MEANS FOR TRENCHING MACHINES.
 APPLICATION FILED SEPT. 26, 1905.

935,059.

Patented Sept. 28, 1909.
 4 SHEETS—SHEET 1.



Witnesses:
 Harold G. Barrett
 D. L. Freiberg

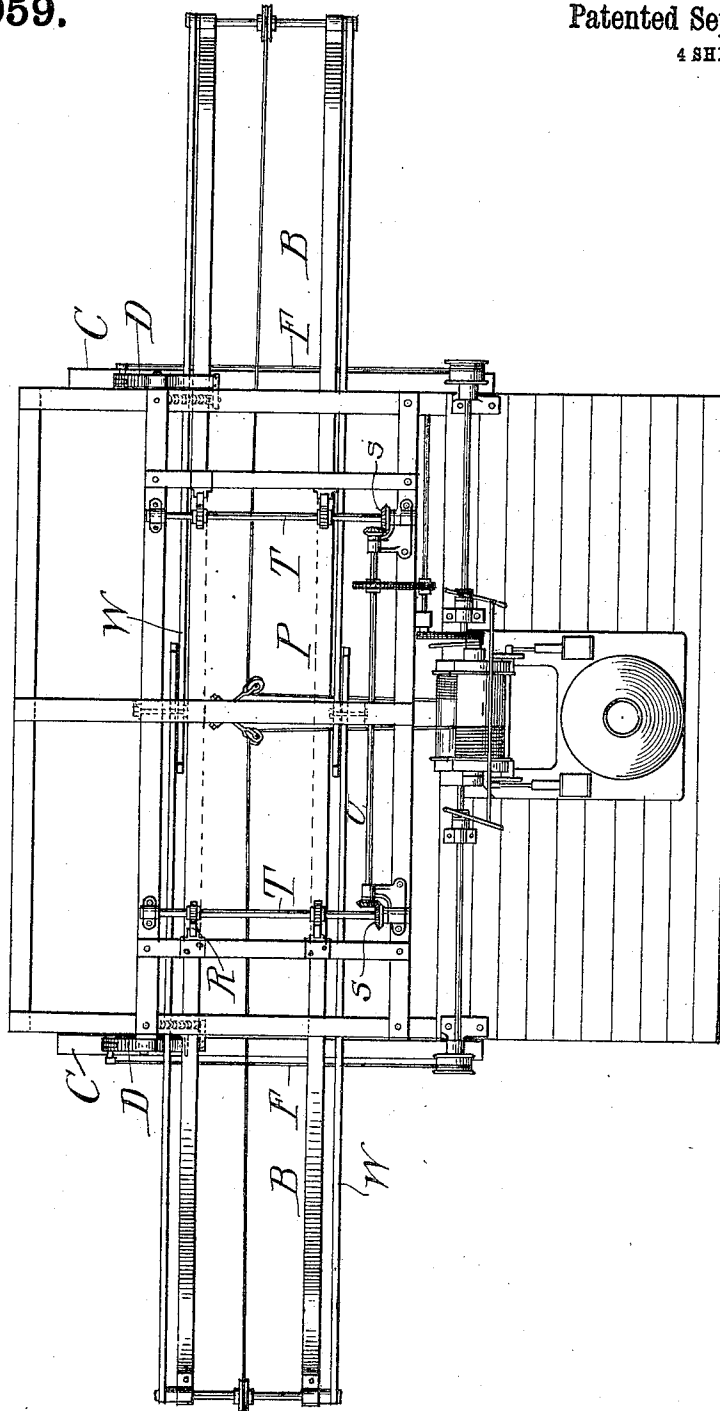
Inventor:
 Charles W. Rood
 by Chas. G. Page his Atty.

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Fig. 2



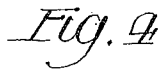
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4 SHEETS—SHEET 3.



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Fig 5

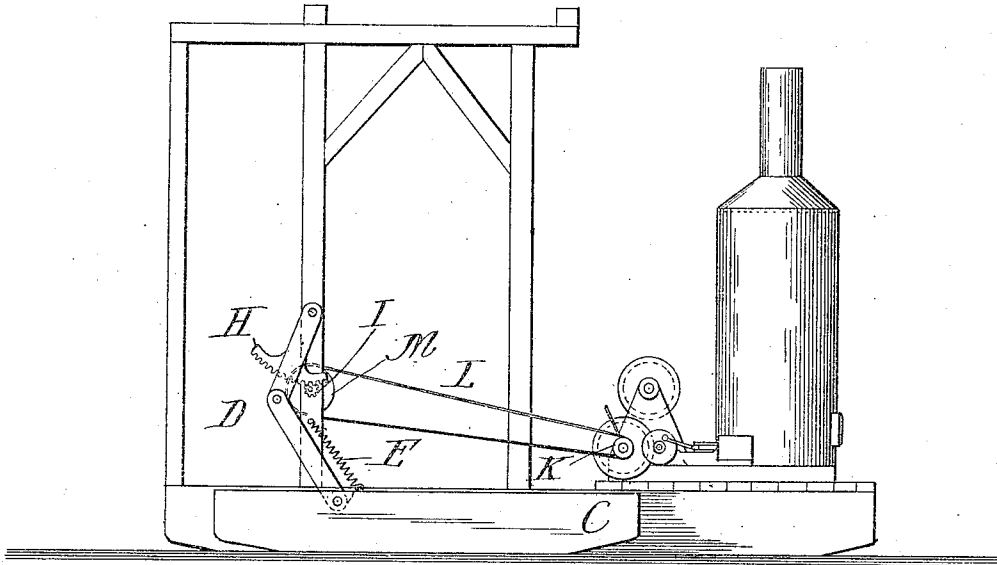


Fig. 6

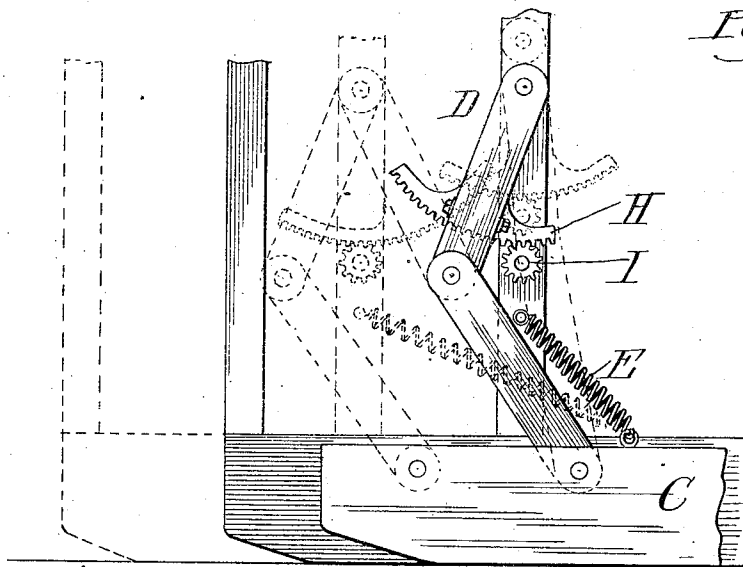
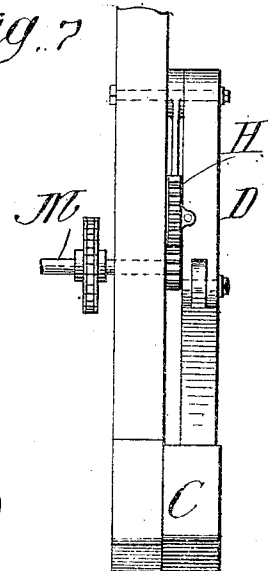


Fig. 7



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UNITED STATES PATENT OFFICE.

CHARLES W. ROOD, OF BRITT, IOWA, ASSIGNOR TO FREDERICK C. AUSTIN, OF CHICAGO, ILLINOIS.

PROPELLING MEANS FOR TRENCHING-MACHINES.

935,059.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed September 26, 1905. Serial No. 230,141.

To all whom it may concern:

Be it known that I, CHARLES W. ROOD, a citizen of the United States, residing at Britt, in the county of Hancock and State of Iowa, have invented certain new and useful Improvements in Propelling Means for Trenching-Machines, of which the following is a specification.

My invention relates to means for propelling trenching or ditching machines, and more particularly for supporting and propelling trenching machines designed for use in ditching swampy land so as to reclaim the same.

Objects of my invention are, to facilitate the travel of ditching machines of such general character; to prevent the same from sinking in soft or swampy ground and to propel the machines along ground of such character, and particularly to propel a trenching machine adapted to straddle the ditch which it forms and to form a spoil pile at opposite sides of the trench or ditch.

In the accompanying drawings, Figure 1, represents the machine in front elevation, the contour of the ditch being shown in cross section. Fig. 2, is a top plan view. Fig. 3, illustrates the machine in side elevation. Fig. 4, is in the nature of a detail of the preceding figure, illustrating by full and dotted lines the operation of one of the walking devices. Fig. 5, shows in side elevation a portion of the machine with a modification in certain details of the walking devices. Fig. 6, is a detail showing on a larger scale one of the walking devices of Fig. 5, in full and in dotted lines. Fig. 7, is an end view of Fig. 6.

A considerable portion of the machine shown in said drawings is the same as the machine shown in my Patent No. 767,765, dated Aug. 16, 1904, and hence, the structure which in my present application corresponds with that shown in my said patent, need not be described in detail. The means shown for advancing the machine comprises shoes C which bear upon the ground and which are connected with the body frame of the machine by toggle or elbow levers D. When these toggles are straightened, the machine is slightly raised from the ground, the weight being thrown upon the shoes C. The toggles are also arranged so that when they are thus straightened out, the machine will move bodily forward, such movement being in the

nature of a forward pitch. The shoes and toggles may be arranged so that the shoes can bear upon the bottom of the ditch or as shown in the drawings, these devices can be arranged so that the shoes will bear upon the ground at opposite sides of the ditch. The shoes C are also connected with the main or body-frame of the machine by springs E, which are extended when the body-frame has moved forward relatively to the shoes, the springs at such juncture operating to draw the shoes forward and thereby cause the toggles to again assume bent positions.

In Fig. 3, the toggle D is in a bent position and the spring E is in its normal condition.

In Fig. 4, the body frame is shown in full lines farther ahead of the shoe than in the preceding figure, this being due to the fact that the toggle has been straightened as per dotted lines *d* in Fig. 4, thereby raising the body frame and permitting the latter to pitch forward so as to assume the position shown in full lines. In Fig. 4, the spring E is under tension, having been drawn out by the forward movement of the body-frame. It is understood, however, that at this juncture the retractile force of the spring will draw the shoe C forward, thereby causing the toggle to again assume the bent position indicated by dotted lines *d'* in said figure.

In Figs. 3 and 4, the toggle shown is brought to a straightened or approximately straightened condition by means of a cable F and winding and unwinding drum G, the reversible winding drum G being turned in one direction by means of a suitable engine so as to wind up the cable and thereby bring the toggle toward or into a straightened condition, and by any suitable means, such as a pawl or ratchet device used in well drilling machines or the like, the winding drum can at a proper instant be unlocked from the driving power, whereby it will permit the cable F to unwind. All of the toggle employed can be thus operated by cables and winding drums, it being observed that as illustrated the machine has at each side a shoe and toggle device, and that these shoe and toggle devices can be multiplied in accordance with the length and weight of the machine.

In Figs. 5, 6 and 7, the upper arm of the toggle device is provided with a sector rack H rigid with the arm and engaged by an operating pinion I, which takes the place of

the cable F. In these two figures the pinion I is operated from a reversible drum K by an endless belt L connecting said drum with a drum or belt wheel M, having the pinion I fixed upon its axle. The drum K is reversible for the same purpose as the drum G and the operation in both cases is substantially the same, it being seen that when the pinion I is turned in one direction, it will cause the toggle to straighten out, and that when the driving power is disconnected from the drum K, the pinion I will be free to turn in a reverse direction, so as to allow the toggle D to again assume a bent position. The operation of the device shown in Fig. 5 is further illustrated by dotted lines in Fig. 6.

The transversely arranged guide portion A is upheld by a platform or support P. This support P is vertically adjustable for the purpose of raising the guide. As one of various ways in which the support P can be raised and lowered, I provide vertical rack-bars R hinged at their lower ends to the support P as at 1, 1, and extending upwardly so as to engage pinions S, S. The pinions S are fixed upon rotary shafts T, and said shafts are gear-connected with and driven by a rotary counter-shaft U, which is in turn gear-connected with the engine by any suitable power transmitting connection, the form of power transmitting connection illustrated, being so simple and so common in various kinds of machinery as not to require further description.

The guide portions B are adjusted by bars W, which converge upwardly to a point where they are held by any suitable adjusting device. As shown, each bar has a slot 2 and an upright portion 3 of the body-frame carries an adjustable clamp screw 4, which passes through the slots 2 of the bars W, so that by driving clamp-screw or bolt 4, each bar W will be locked against longitudinal movement, or by loosening the screw or bolt 4, the bars W may slide longitudinally when the platform or support P is raised or lowered.

In the machine shown the middle guide-way portion A is provided with guide extensions B, and the ditch is formed by plows or scoops 5 and 6 which are drawn along the guide by suitable cables and means for operating the latter. The principle of operating the scoops and cable or cables is practically illustrated and described in my prior patent and need not therefore be herein further referred to, it being understood that the prin-

ciple of directing shovels, scoops or buckets along a boom or guide in an excavating machine is a common and well known matter.

What I claim as my invention is:

1. In a trenching machine, a toggle device for raising the machine in order to permit a forward step by step movement, and a spring device for intermittently drawing forward a support for one of the toggle arms.

2. In a ditching machine, shoes arranged to bear upon the ground; toggles having their lower ends attached to the shoes and the upper ends attached to the machine at points above the shoes; cables for operating the toggles and winding means for operating the cables.

3. The combination with a body frame of a supporting shoe arranged for progressive longitudinal movement upon and along the ground; a toggle having its lower end hinged to the shoe and its upper end hinged to the body frame above the level of the shoe; a cable for operating the toggle; means supported upon the body frame for operating the cable, and a spring connecting the shoe with the body frame and arranged for drawing forward the shoe after the body frame has moved forward in advance of the shoe.

4. The combination with a body frame normally supported upon the ground, of a movable shoe also arranged to bear upon the ground; a toggle connecting the shoe with a portion of the body frame above the shoe; means for straightening the toggle to an extent to raise the body-frame independently of the shoe and then permit it to lurch forward, and a spring for drawing forward the shoe and thereby change the toggle from its straightened to a bent condition.

5. The combination in a machine of the class set forth, of a body frame having a low down supporting base; a supporting base independent of the said frame and arranged for independent forward movement; a toggle device for raising the body frame and base thereof and transferring the weight of same onto said independent base; power operated means for actuating the toggle in direction to straighten the same; and power transmitting connection between the body frame and the said independent base for moving the latter forward to advance its position and bend the toggle.

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Witnesses:

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OTTILIE C. FREIBERG.