March 29, 1932. H. KARLSEN 1,851,254

DITCHING MACHINE

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Fig. 1.

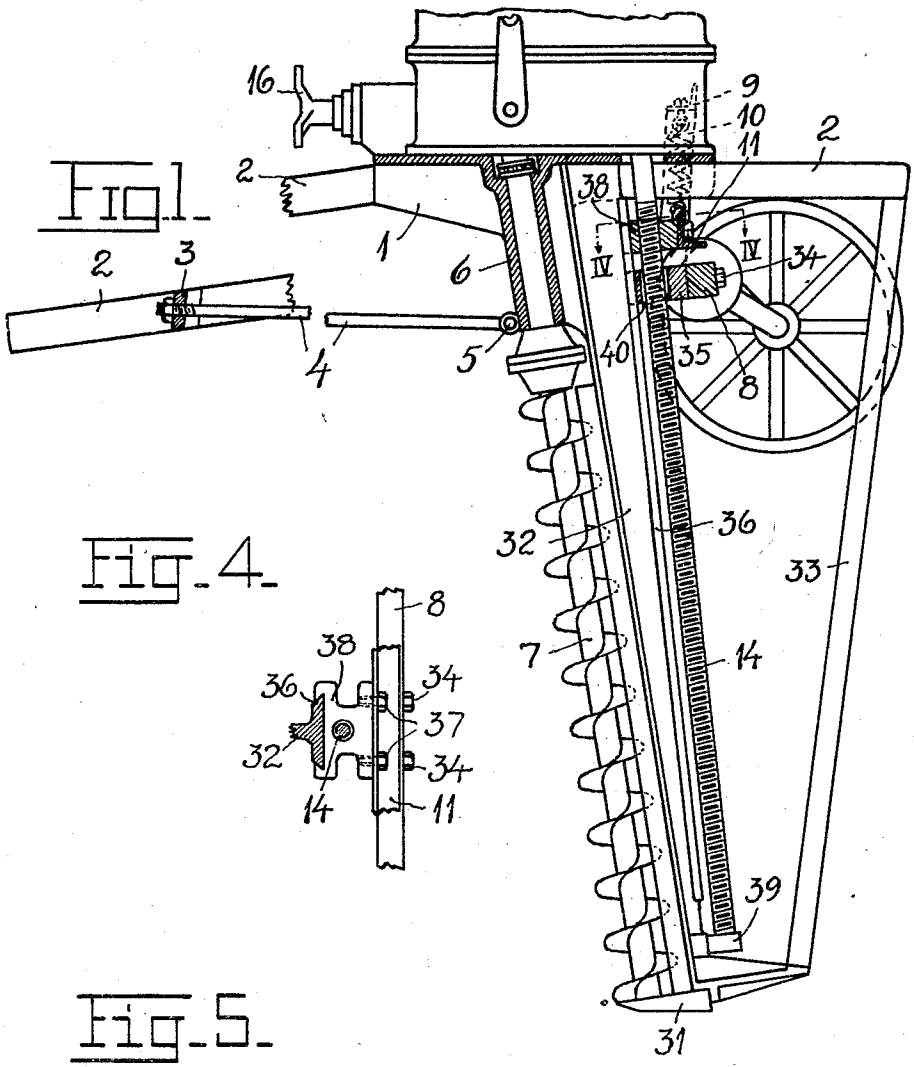

Fig. 4.

Fig. 5.

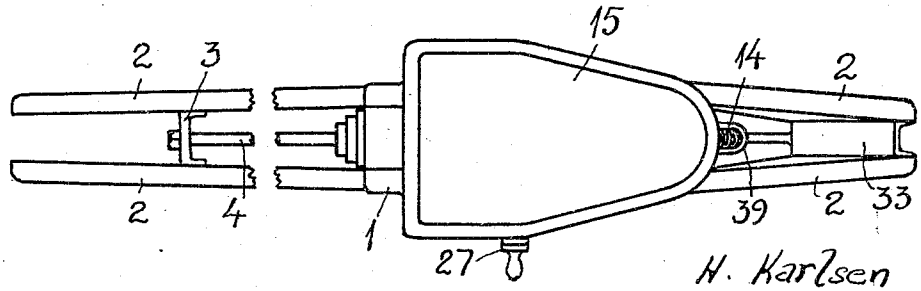

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Fig. 2.

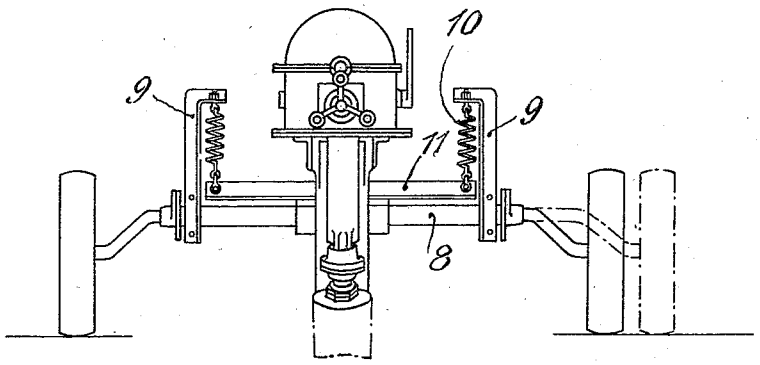
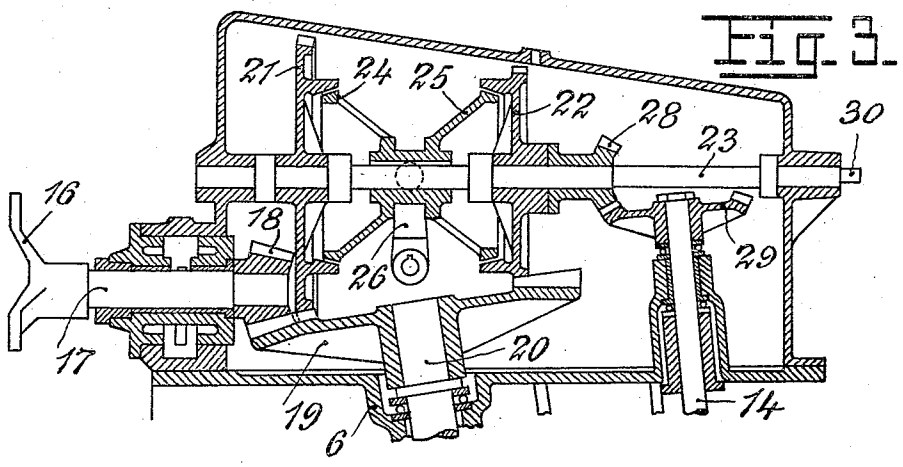


Fig. 3.



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UNITED STATES PATENT OFFICE

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DITCHING MACHINE

Application filed September 27, 1929, Serial No. 395,649, and in Norway October 8, 1928.

The present invention relates to a ditching machine of the type in which the ditching member consists of a screw and the object of the invention is to provide a convenient driving and manœuvring device for the screw, so that the screw may be raised and lowered by machine power and also be swung sideways in relation to the shaft of the carriage if the formation of the ground should make it desirable to tilt the screw in relation to the machine frame. In order to increase the elasticity of the machine in relation to obstructions which may occur the ditching mechanism with its driving and gearing mechanism is also resiliently suspended from arms on the carriage shaft. In order that the frame-work shall not prevent lateral swinging of the ditching mechanism, the machine frame is provided with a narrow and long frame connecting the same with the tractor, in which connection frame is secured a reinforcing stay for the frame of the ditching machine.

It is supposed that the machine is moved forwardly by means of a tractor, the driving motor of which also moves the ditching screw through a suitable gearing.

The invention is illustrated by way of example on the annexed drawings in which:

Fig. 1 is a side view of the ditching mechanism, some parts being shown in section.

Fig. 2 is a front view, seen from the tractor side.

Fig. 3 is a sectional view through the gearing house.

Fig. 4 is a sectional view on line IV—IV of Fig. 1, and

Fig. 5 is a top-plan-view of Fig. 1.

The supporting frame of the ditching apparatus consists of the support 1, to the side of which support, which is connected to the tractor, are secured two beams 2, which near their front ends are connected by a cross plate 3 serving as fastening for a stay 4 which at 5 is connected to the bearing sleeve 6 of the ditching screw 7. The lower end of the screw 7 is journalled in a shoe 31 secured to or formed integral with an arm 32 which extends downwardly from the support 1. The sleeve 6 and the arm 32 are preferably formed integral with the support 1.

The rear ends of the beams 2 extend behind the frame 1 and are secured to the upper end of a stay 33 the lower end of which is secured to the lower end of the arm 32.

The wheel frame 8 is provided with two vertical disposed arms 9, 9 which by means of springs 10 carry a cross member 11. To the frame 8 is by means of screws 34 secured a slide 35 which is slidably mounted on a guide 36 formed on the rear side edge of the arm 32.

To the cross member 11 is by means of screws 37 secured a nut 38, the front side of which is mounted slidably on the guide 36 in the same manner as the slide 35.

Through the nut 38 is screwed a screw 14 the upper end of which is journalled in a gearing casing 15 and the lower end in a bearing 39 on the arm 32. The slide 35 is provided with a bore 40 through which the screw has free passage.

By this arrangement the cross member 11 carries the supporting frame by means of the nut 38, and when the screw 14 is turned in the one or the other direction the supporting frame, and thereby the screw 7, will be raised or lowered.

15 designates the gearing casing. The driving force is applied from the tractor through the coupling member 16, the shaft 17 and the pinion 18 which meshes with the gear 19, which latter meshes with two gears 21 and 22 running freely on the shaft 23 and rotating in opposite directions. The said gears are provided with coupling crowns which mesh with corresponding coupling crowns 24, 25 on a coupling member which has splined connection with the shaft 23, but can be moved longitudinally of the same by means of a coupling arm 26 which may be operated from the outside by means of a handle 27. In the middle position none of the coupling crowns 24, 25 mesh with the gears 21, 22 and the shaft 23 will remain unmoved. If the handle 27 is moved to the one or the other side one or the other of the coupling crowns 24, 25 will come into mesh and the shaft 23 accordingly rotate one way or the other. On the shaft 23 is secured a gear 28 which meshes with the gear 29 on the screw shaft 14, and thus the rotation of the shaft 23 will cause rotation of the

screw in the one or the other direction and thereby also a raising or lowering movement of the ditching screw with its frame members. In order that the screw also may be manœuvred without the motor being in operation, the shaft is provided with a square pin 30 or the like, which may be turned by means of a detachable handle.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:

1. A ditching machine comprising a wheeled supporting frame, a supporting member yieldingly suspended from the frame, a ditching screw, a gearing for said screw, a supporting frame for said screw and gearing, and means for raising and lowering the ditching screw supporting frame with respect to said supporting member.

2. A ditching machine comprising a wheeled supporting frame, a supporting member yieldingly suspended from the frame, a ditching screw, a raising screw, a gearing for the screws, a supporting frame for the screws and gearing, and a nut on said raising screw connected to the supporting member yieldingly suspended from the wheel frame.

3. A ditching machine according to claim 1, in which beams are connected to the second-named supporting frame serving for the connection of the machine to a driving tractor, a bearing sleeve connected with the supporting frame of the ditching screw for accommodating the screw, and a stay for adjustably connecting the beams to the bearing sleeve.

In testimony whereof I affix my signature.

HENRY KARLSEN.