

July 26, 1932.

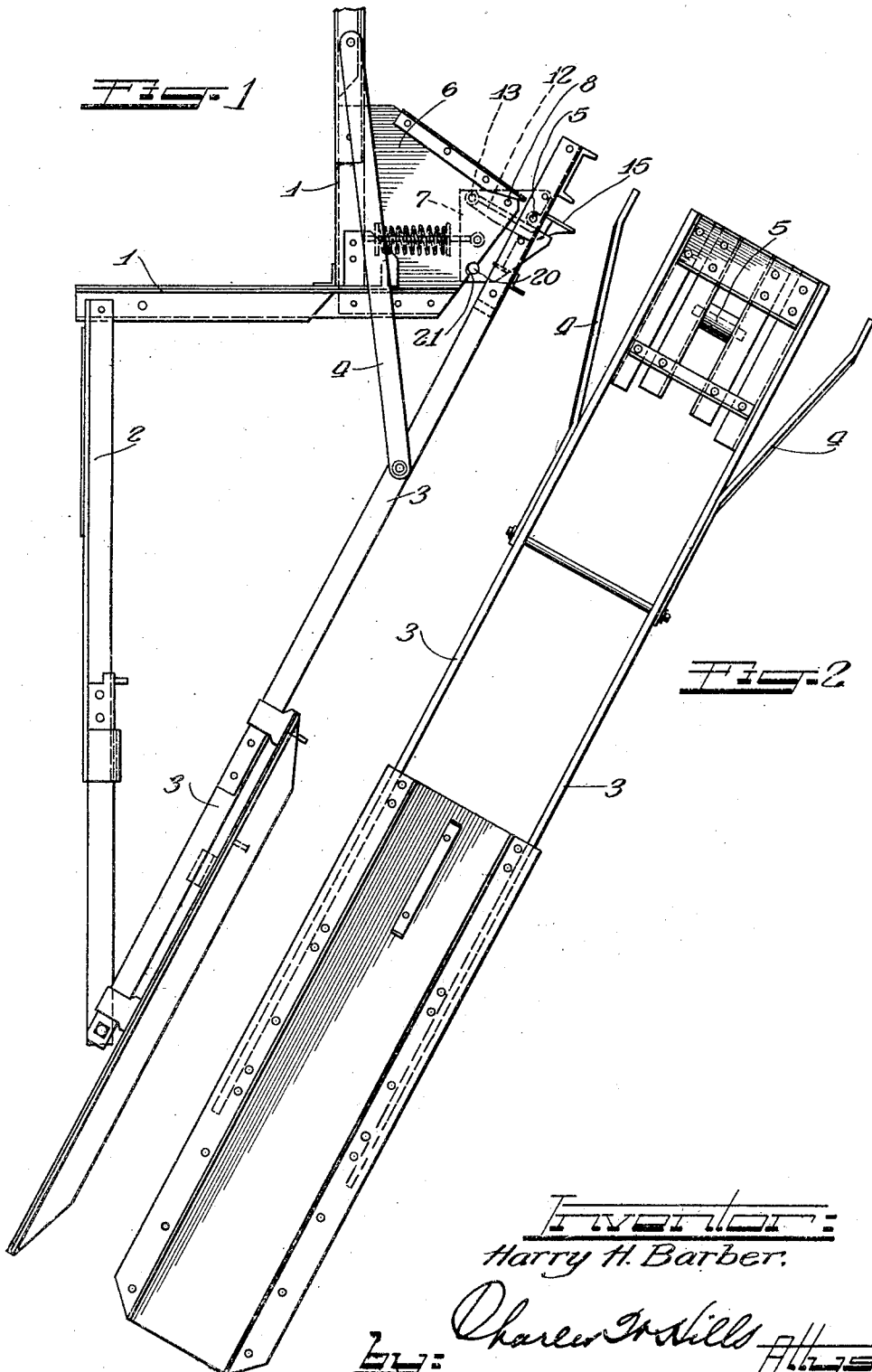
H. H. BARBER

1,868,515

SCRAPER FOR DITCHING MACHINES

Filed Dec. 9, 1929

5 Sheets-Sheet 1



Inventor:
Harry H. Barber.

By: Charles W. Mills Att.:

July 26, 1932.

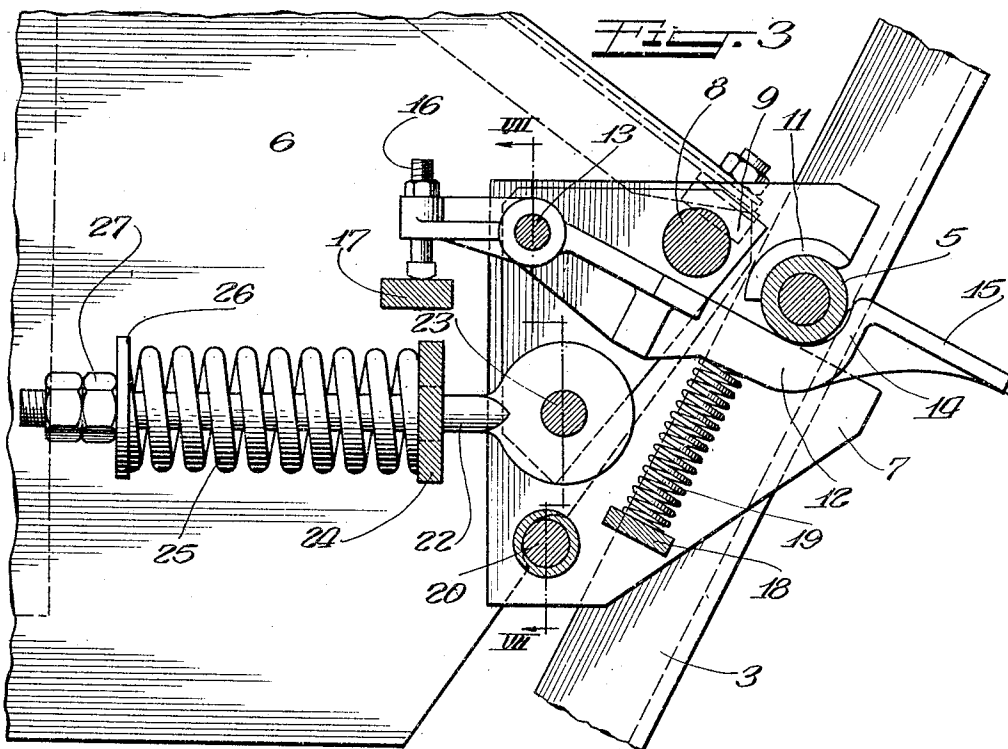
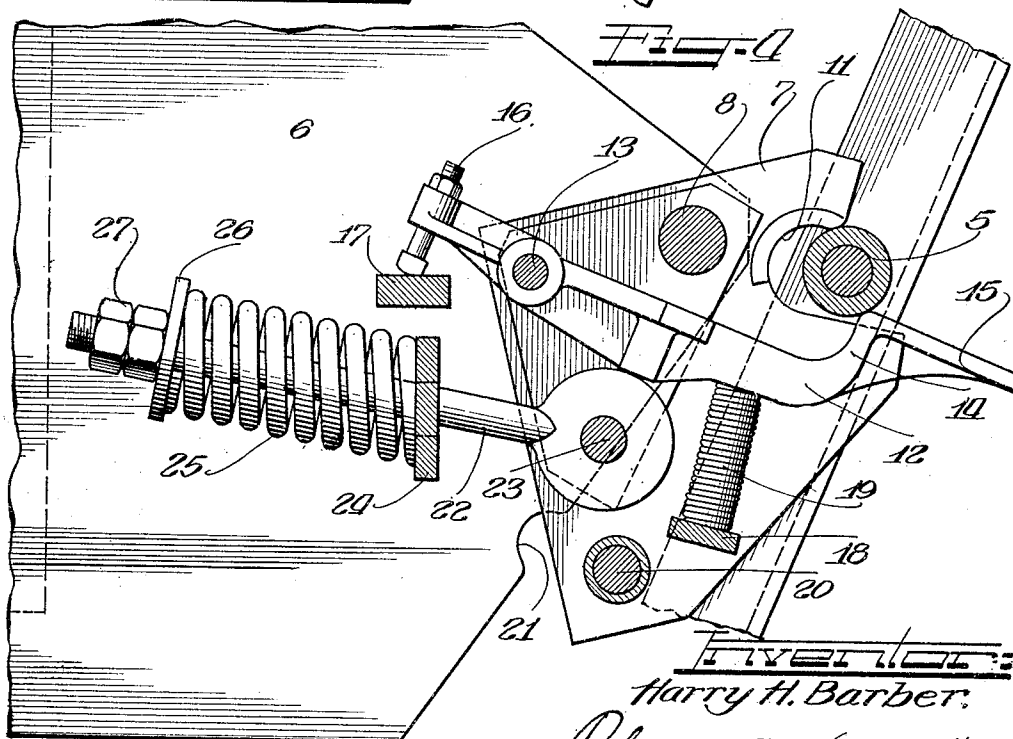
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SCRAPER FOR DITCHING MACHINES

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5 Sheets-Sheet 2



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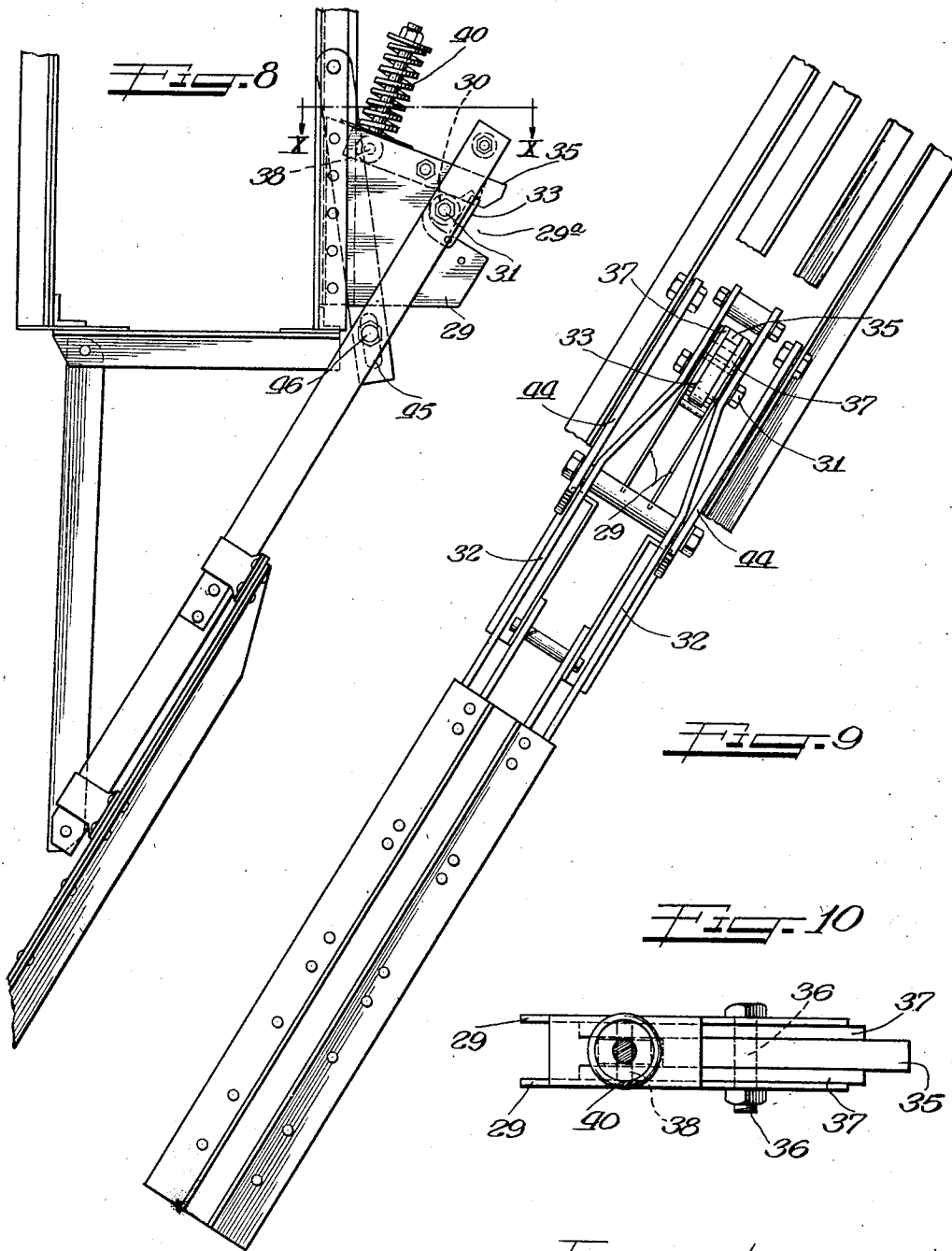
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SCRAPER FOR DITCHING MACHINES

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5 Sheets-Sheet 4



Inventor:
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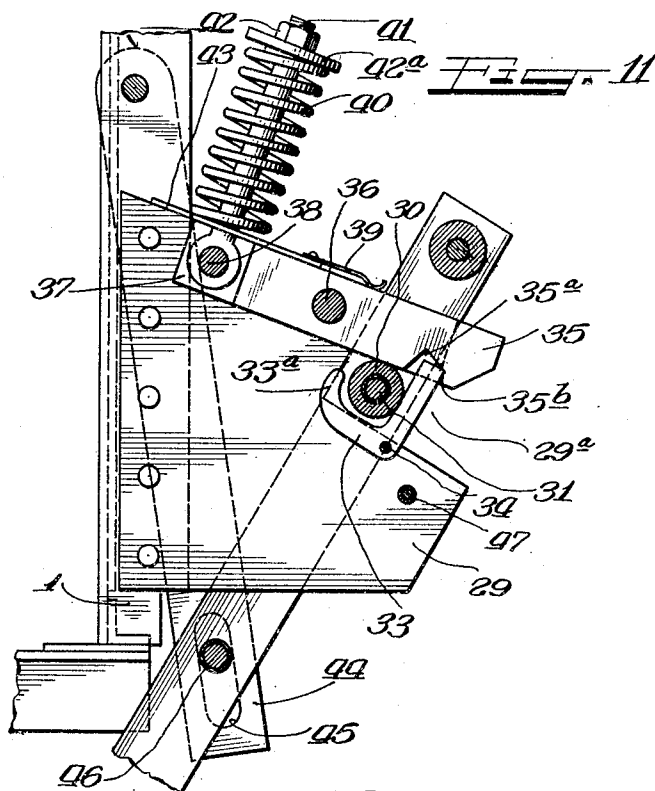
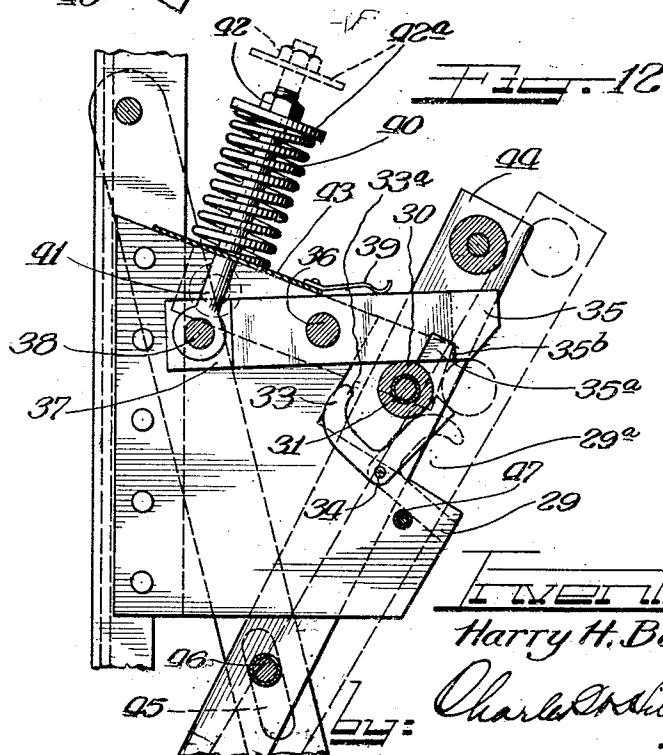
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1,868,515

SCRAPER FOR DITCHING MACHINES

Filed Dec. 9, 1929

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

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SCRAPER FOR DITCHING MACHINES

Application filed December 9, 1929. Serial No. 412,679.

This invention relates to a scraper for ditching machines, and concerns itself with a yielding mounting therefor, whereby the scraper becomes released when encountering an unusual obstruction.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is an elevational view of the scraper and its supporting frame.

Figure 2 is a front elevational view of the scraper in detached form.

Figure 3 is an enlarged part elevational and part sectional view of the supporting means for the scraper.

Figure 4 is a view similar to Figure 3, illustrating the scraper in its released position.

Figure 5 is a fragmentary elevational view of a modified form of release mechanism for supporting the scraper.

Figure 6 is a sectional view taken upon the line VI—VI of Figure 5.

Figure 7 is a sectional view taken upon the line VII—VII of Figure 3.

Figure 8 is a fragmentary side elevational view of a modified form of the invention.

Figure 9 is a fragmentary front elevational view of the scraper.

Figure 10 is a fragmentary top plan view of a part of Figure 11.

Figure 11 is an enlarged part sectional and part elevational view, showing the release mechanism of the form shown in Figure 8.

Figure 12 is a view similar to Figure 11, showing the parts in released position.

In connection with this invention, only certain parts of the ditching machine have been illustrated that cooperate with the scraper.

These parts consist of a frame 1 comprising a pair of horizontal angle bars and a pair of vertical angle bars, only one of each set of angle bars being shown. A pair of depending strips 2 extend from the horizontal angle bars to which they are pivoted and these

strips 2 are pivoted at their lower ends to the two parallel supporting bars 3 of the scraper.

The scraper is also pivotally connected by a pair of vertical links 4 with the upright frame members 1, whereby the scraper is pivotally supported or suspended from the frame. The upper end of the scraper frame carries a roller 5 which may be secured to the frame in any convenient manner. This invention concerns itself more directly with releasable mechanism for retaining the upper end of the scraper through the instrumentality of the roller 5 as will presently appear.

According to this invention, a pair of parallel gusset plates 6 are attached to the frame 1. It will be noted that the gusset plates 6 are respectively attached to the horizontal and vertical angle members respectively and project therebeyond. A pair of spaced swingable plates 7 are pivoted to the gusset plates 6 by means of a pivot pin 8 which is locked against removal by means of a detent 9, as shown in Figure 3. Reinforcing plates 10 are welded to the sides of the swingable plates 7 for reinforcing the same. Each plate 7 has a recess terminating in an arcuate portion 11. The roller 5 which is carried by the upper end of the scraper is adapted to freely enter this recess and normally contact the arcuate portion 11, as shown in Figure 3. A yielding latch member 12 is provided for yieldingly securing the roller 5 in said recess and in contact with said arcuate portion 11. The lever 12 is pivoted intermediate its ends upon a pivot pin 13 which extends between the two swingable plates 7. This lever 12 is provided with an offset portion 14 adjacent one end for engaging the roller 5 and securing the same in said recess. The lever 14 projects beyond the offset portion to provide a handle 15 whereby it may be manually adjusted in the event the scraper has been released.

The rear end of the lever 12 carries an adjustable screw 16 which is adapted for contacting a stationary fulcrum block 17 upon the gusset plates 6. An abutment 18 is secured to the swingable plates 7 for sup-

porting one end of a coil spring 19 which bears against the lever 12 and yieldingly maintains it in its operative latching position with respect to the roller 5. The lower portions of the swingable plates 7 carry a stop stud 20 which extends beyond the sides thereof, as shown in Figure 7, for engaging arcuate recesses 21 in the gusset plates 6. The swingable plates 7 are normally held in such position by means of an anchor rod 22 which is pivoted to a pivot pin 23 that connects the two swingable plates 7. This anchor rod 22 passes through an abutment 24 on the gusset plates and a coil spring 25 surrounds the rod 22 and abuts the abutment 24 at one end thereof. The other end of the coil spring 25 is confined by a suitable abutment 26 secured upon the end of the bolt 22. The abutment 26 is preferably adjustable through the instrumentality of suitable nuts 27 screwed upon the end of the anchor rod.

With reference to Figure 3, it will be noted that the tendency of the coil spring 25 is to retain the swingable plates 7 with the stop stud 20 engageable in the recess 21. Likewise, the coil spring 19 normally maintains the locking latch member 12 in the position shown in Figure 3 in which the roller 5 is yieldingly retained within the recesses of the swingable plates 7. Should the scraper encounter an abnormal obstruction that tends to elevate the same, the swingable plates 7 will be partially rotated upon their pivot pin 8, as shown in Figure 4. As the swingable plates 7 are caused to rotate in such manner, the pivot pin 13 of the locking latch lever 12 will be carried therewith, but, as the outer end of said locking latch lever is held from downward movement by the abutment 17, the pivot 13 must move downwardly, with the result that there will be a separation of the latch lever and the arcuate portion 11 of the movable plates 7, as shown in Figure 4, whereby the roller 5 may escape from said recess. This will prevent any damage or injury to the parts if the scraper should encounter abnormal resistance.

In Figures 5 and 6, a slight modification of the invention has been shown, and, in referring to these figures, it will be noted that all the different parts are exactly the same as are shown in Figures 1 and 2 and 3 and 4, with the exception that the anchor rod 22 and the spring 25 are arranged in a vertical position instead of in a horizontal position. Due to the vertical arrangement of the anchor rod 22, the gusset plates that support the swingable plates are slightly different in form, but, as they constitute no part of this invention except as to form supports for the movable plates 7, they might be of any contour.

In Figures 8 to 11, a further modification of the invention has been illustrated as em-

bodying the preferred form. In this form, a pair of supports or gusset plates 29 are secured to the frame 1 in spaced relation, as shown in Figure 9. These supports have a re-entrant portion 29a for receiving a roller 30 which is journaled or secured upon a bolt or the like 31 secured to the bars 32 of the scraper. The re-entrant portion 29a is adapted to be closed by a retaining lever 33 which is substantially in the form of a bell-crank lever with its lower arm curved upwardly as indicated at 33a and pivoted between the two supports at its apex, as indicated at 34.

The retaining lever 33 is adapted to be latched behind the roller 30 to releasably retain the scraper in operative position. To this end, a latch lever 35 is pivoted intermediate its ends upon a pivot 36 extending through said supports 29. This latch lever has a cut-out portion 35a which forms a shoulder 35b for engaging the retaining lever 33, as shown in Figure 10. Upon each side of the latch lever 35 there is a lever 37. The levers 37 are pivoted at their rear ends upon a bolt 38 extending between but not through the plates 29, and they are also pivoted at an intermediate point upon the pivot 36. It will be noted that the rear end of the latch lever 35 is free and that a spring 39 secured upon the top of the supports bears thereon forward of the pivot 36.

The lower edges of the levers 37 normally rest upon the roller 30 and they are yieldingly pressed against said roller by a coil spring 40 which is anchored by means of a rod 41 extending therethrough and having a nut 42 engaging the top thereof. The lower end of the rod 41 is swiveled upon the bolt 38 and the spring 40 bears against a plate 43 secured to the upper edges of the plates 29.

The scraper is supported for swinging movements at its upper end through the hangers 44 which are slotted, as indicated at 45, for receiving a bolt 46 on the scraper. When the scraper is released, it will swing the retaining lever 33 into dotted line position (Fig. 12) against a stop 47 upon the plates 29. The tension of the spring 40 may be regulated as desired by the nut 42 and coacting washer 42a on the rod 41.

The scraper is normally retained in the position shown in Figure 8, according to this preferred form, and, if an obstruction should be encountered, it would elevate the levers 37 and compress the spring 40. At about the same time the latch lever 35 would be elevated for releasing the retaining lever 33 which would be swung downwardly, as shown in dotted lines in Figure 2, due to the outward force exerted thereon by the scraper, which would become released. In connection therewith, it will be noted that the spring 40 yieldingly supports the scraper at its work.

After the scraper has been released, it may

be replaced in the yielding latching mechanism. As it swings over into operative position, the roller 30 will engage the curved end of the retaining lever and swing the same
5 back into its full line position.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted otherwise
10 than necessitated by the prior art.

I claim as my invention:

1. In a ditching machine embodying a scraper, a support having a re-entrant portion, a scraper having a roller for entering
15 said re-entrant portion, a retaining lever pivoted to said support and swingable for engaging said roller, a latch lever for latching said retaining lever, and yielding means acting in a downward direction on said scraper.

2. In a ditching machine, a scraper, means for supporting said scraper for upward movement, yielding means tending to resist
20 such upward movement, and latching means for normally retaining said scraper at its work and adapted to be released upon an upward movement of said scraper.

3. In a ditching machine, a scraper, yielding means acting in a downward direction
30 upon said scraper, and coacting latching members for supporting the upper part of said scraper adapted to be released upon an upward movement of said scraper.

4. In a ditching machine embodying a scraper, means for releasably supporting the
35 upper end of said scraper comprising a support, a pair of coacting members on said support for receiving a part of said scraper therebetween, and a yielding lever acting upon said scraper in a downward direction.

5. In a ditching machine, a scraper, means for releasably supporting the upper end of
40 said scraper comprising a pair of coacting latching members adapted to be released upon an upward movement of said scraper, and yielding means tending to resist such upward movement of said scraper.

6. In a ditching machine embodying a frame, a plate upon said frame, a scraper
50 having an upwardly extending portion, a holding lever pivoted to said plate, said upwardly extending portion having means engaged by said lever for normally maintaining said scraper at its work, a latch lever engaging
55 said holding lever, and yielding means for normally maintaining said latch lever in cooperative relation with said holding lever, but adapted to yield upon upward movement of said scraper to release said holding lever.

7. In a ditching machine embodying a frame, a plate member upon said frame, said
60 plate member having a re-entrant portion, a bell crank lever pivoted to said plate and having one arm extending into said re-entrant portion, a spring pressed latch lever pivoted
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to said plate and having a shoulder for engaging said arm, and a scraper having means confined by said bell crank lever and adapted for elevating said latch lever upon upward
70 movement of said scraper.

8. In a ditching machine embodying a frame, a pair of relatively movable coacting
75 members upon said frame, a scraper having an upwardly extending member provided with transversely extending means normally confined between said co-acting members, yielding means for normally maintaining
80 said members in engagement with said means, said members being adapted to be forced apart to release said transverse means upon upward movement of said scraper.

9. In a ditching machine embodying a frame, a plate having a re-entrant portion, a
85 scraper having an upwardly extending portion provided with means normally located in said re-entrant portion, lever mechanism for engaging said means and normally maintaining the same in said re-entrant portion, and yielding means for controlling said lever
90 mechanism adapted to yield upon upward movement of said scraper for releasing said means

In testimony whereof I have hereunto subscribed my name at Aurora, Kane County,
Illinois.

HARRY H. BARBER.

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