T. I. SWAGERTY & A. L. LOWE.

ROAD GRADER AND DRAG.

APPLICATION FILED FEB. 24, 1910.

979,047.

Patented Dec. 20, 1910.

2 SHEETS—SHEET 1.

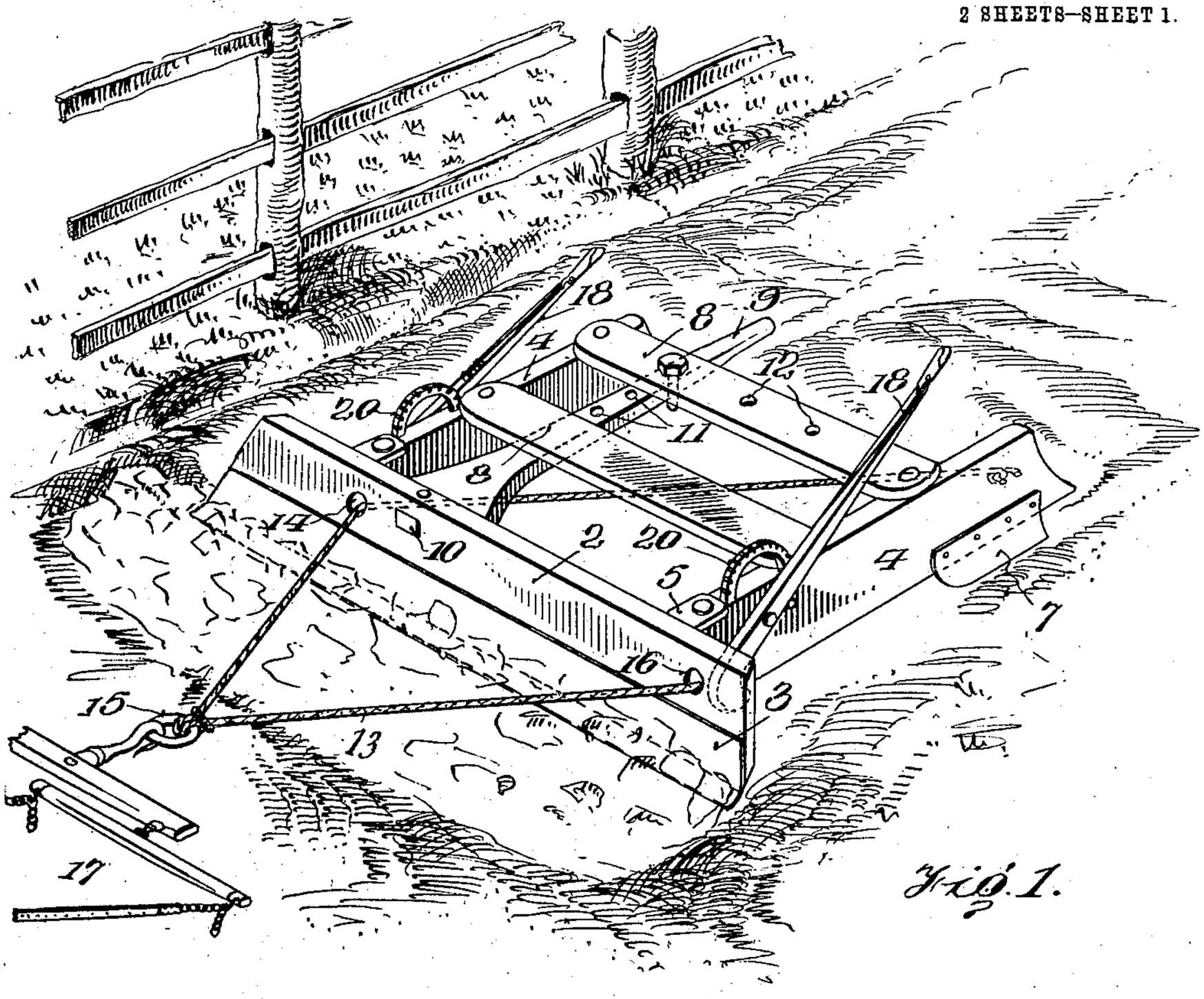

Fig. 1.

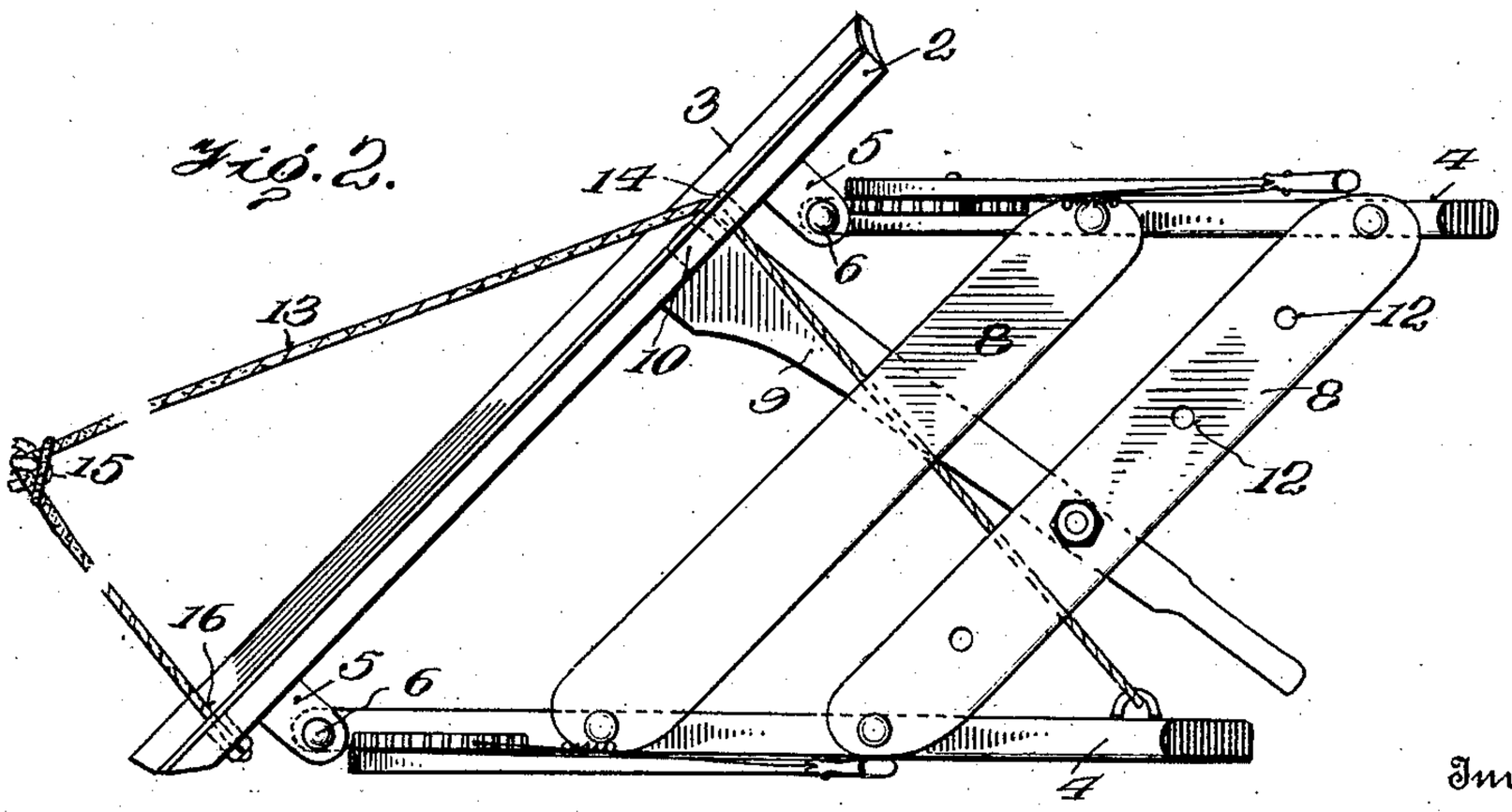

Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

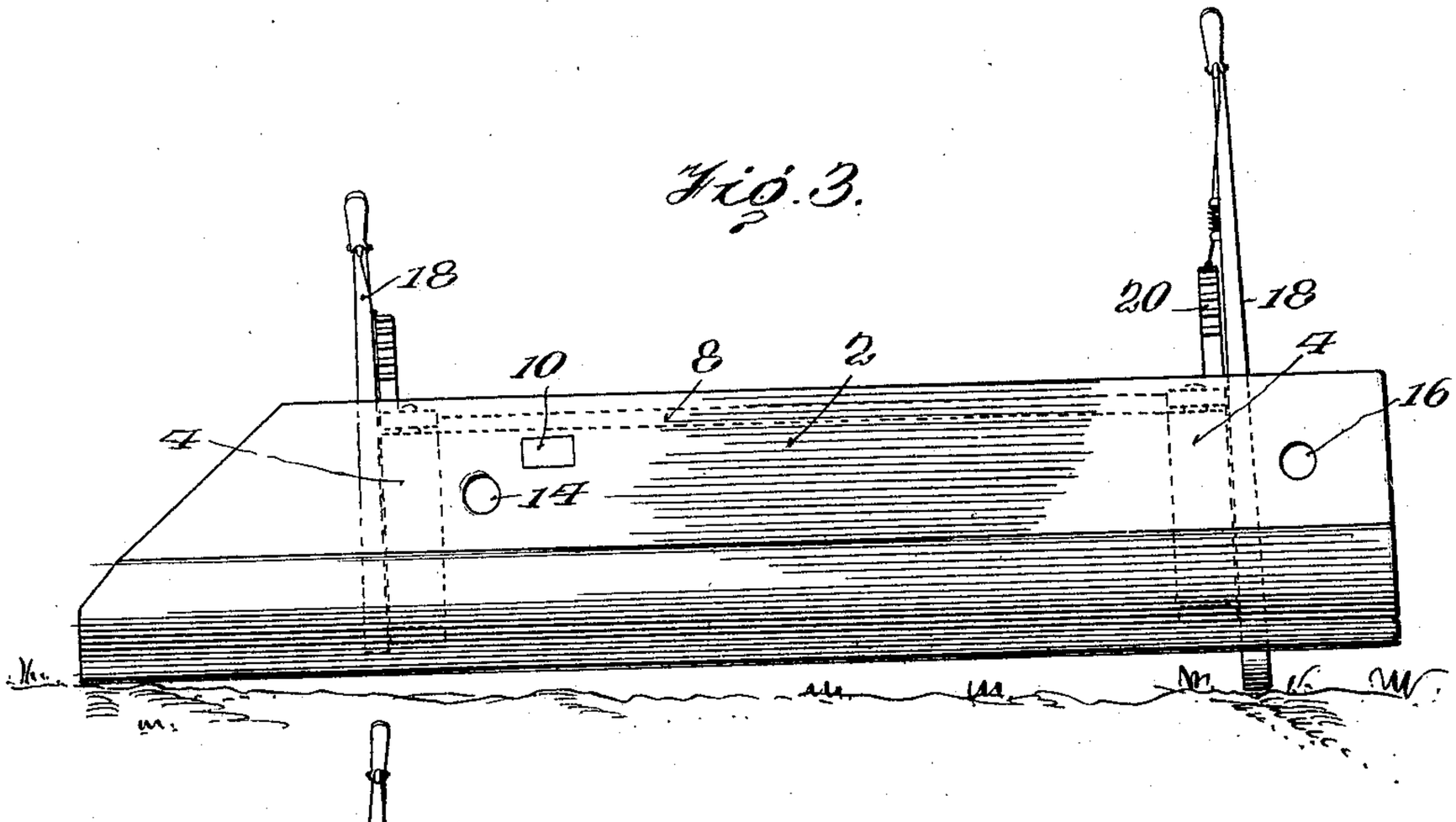


Fig. 4.

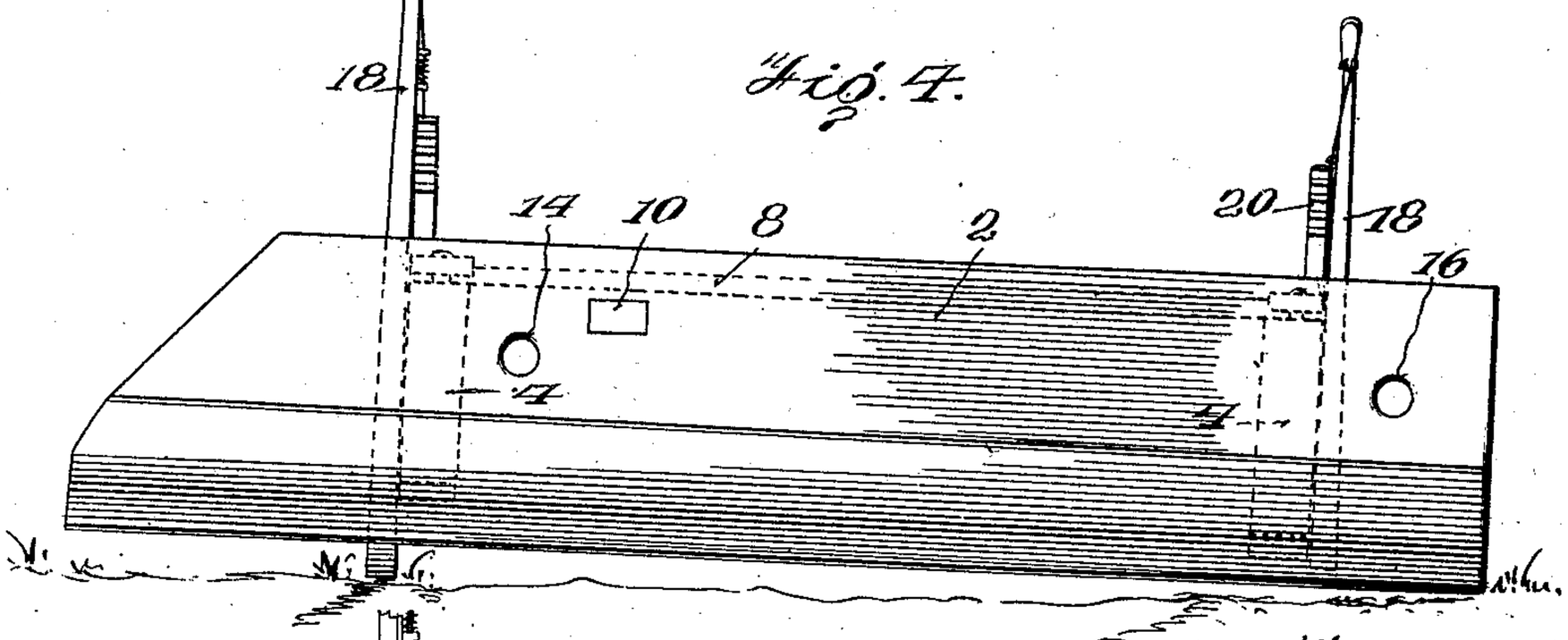
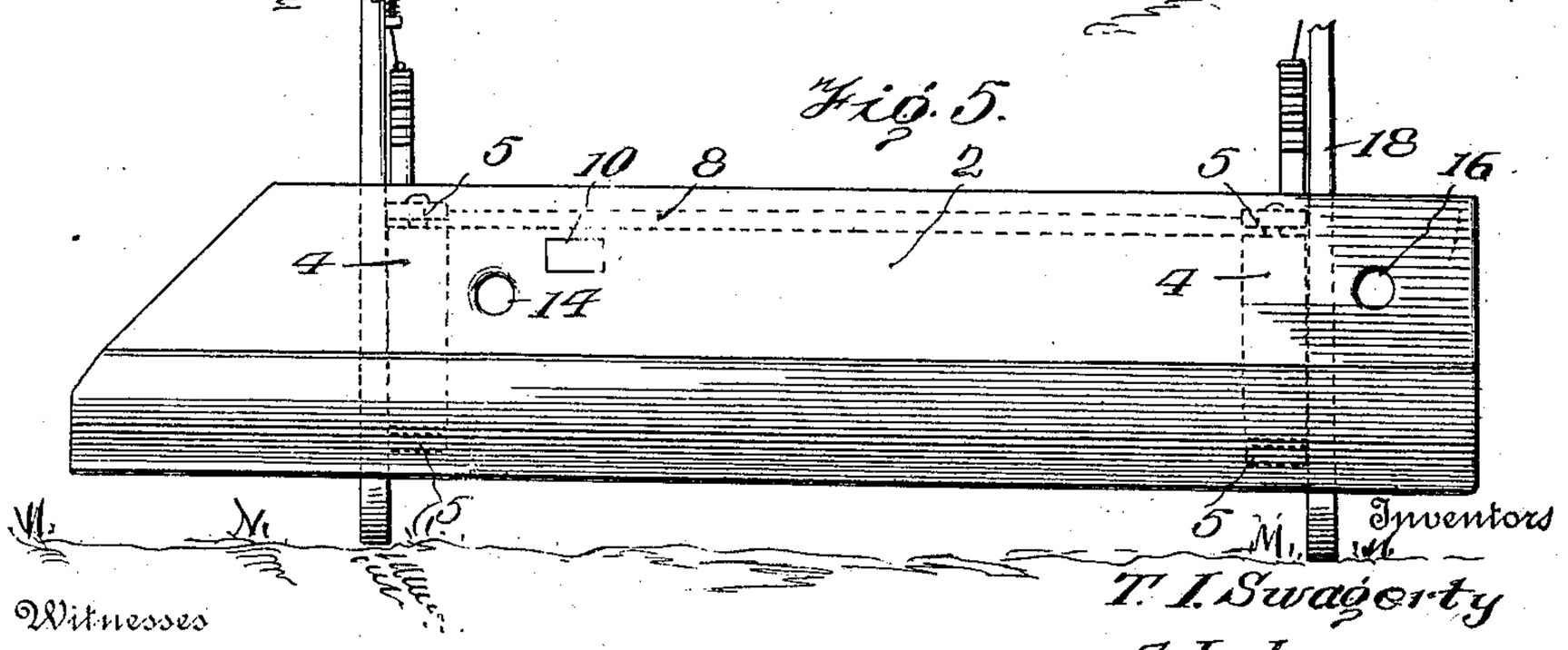


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

THOMAS I. SWAGERTY AND ARTHUR L. LOWE, OF FONTANA, KANSAS.

ROAD GRADER AND DRAG.

979,047. Specification of Letters Patent. **Patented Dec. 20, 1910.**

Application filed February 24, 1910. Serial No. 545,683.

To all whom it may concern:

Be it known that we, THOMAS I. SWAGERTY and ARTHUR L. LOWE, citizens of the United States, residing at Fontana, in the county of Miami and State of Kansas, have invented certain new and useful Improvements in Road Graders and Drags, of which the following is a specification.

Our invention relates to road working machines and particularly to that type of road working machine which is dragged over the surface of the road and which acts to level and grade the same, the object of my invention being to provide a grader and drag of this character in which the scraping beam may be set to any desired inclination with the line of draft, and wherein the line of draft shall always come opposite to the longitudinal axis of the scraper so that the same will drag evenly.

A further object is to provide means whereby the scraper as a whole, including the scraping beam may be raised at one or both ends, as desired, so as to give an inclination to the scraping beam or lift it entirely from the surface of the road.

A further object is to provide a very simple scraper of this type, easily constructed, cheaply made, not liable to get out of order, and which has been found to be thoroughly effective in practice.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which:—

Figure 1 is a perspective view of our improved drag and scraper in operation. Fig. 2 is a plan view thereof showing the scraper-beam in an angularly adjusted position. Figs. 3 and 4 are front views of our scraper showing the scraper-beam at various inclinations. Fig. 5 is an entire view showing the scraper-beam as elevated at both ends above the road.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawing by the same reference characters.

Referring to these drawings the numeral 2 designates the scraper-beam which extends transversely of the apparatus and is provided on the lower portion of its front face with an outwardly and downwardly turned scraping blade 3. The scraper-beam is pivoted to opposed rearwardly extending parallel side-beams 4. While we do not wish to limit ourselves to any specific manner of connecting the scraper-beam with the side-beams, a very simple and effective construction is that shown in the drawing wherein the inside face of the scraper-beam is provided with the two rearwardly extending U-shaped clips 5 which receive the forward ends of the side-beams 4, and through which pass the pintles 6.

The rear ends of the side-beams 4 are provided with sharp edged runners 7, which preferably may be made of metal and attached to the outer faces of the side-beams 4. The side-beams are slightly less in depth than the scraper-beam 2, and hence the under faces of the side-beams will not contact with the earth, but the side-beams will be normally supported upon the runners 7. Connecting the beams 4, are the parallel links 8 which are pivoted at their extremities to the beams 4. It will thus be seen that the beams may be turned from a position at right angles with the scraper-beam 2 to an acute angle therewith.

In order to hold the scraper-beam in any desired angular relation to the beams 4, and therefore to the line of draft we provide the scraper-beam 2 with the rearwardly projecting arm 9. This arm 9 may be formed in any manner, and is rigidly attached to the inside face of the scraper-beam as by means of a dowel 10 which projects into a mortise in the scraper-beam. The forward end of the arm 9 is widened so as to give it a good bearing upon the scraper-beam. The rearward end of the arm 9 is reduced to form a handle whereby the angular direction of the scraper-beam may be changed if desired.

In order to hold the scraper-beam in any desired angular relation with the side-beams we form the arm 9 with a plurality of longitudinally extending holes 11 and provide a series of holes 12 in the rearmost link 8, the holes in the arm 9 and the link 8 being so relatively arranged that when the scraper-beam is turned to any desired angle with the side-beams 4, one of the holes 12 will come into register with one of the holes 11 in the arm 9. A pin, bolt, or other suitable fastening device is passed down through the holes 11 and 12, and when so fastened, the side-beams are held in rigid relation to the scraper-beam.

A flexible draft connection 13 is attached at one end to the rear end of that one of the

side-beams 4 which is opposite to the arm 9. The connection then passes diagonally across the scraper and through a hole 14 in the scraper-beam adjacent to the end of the arm 9. The flexible connection passes through an opening 16 at its other extremity and is then attached to the scraper-beam or formed so that it cannot pull through the opening.

A shackle 15 is provided upon the flexible connection at such position that when the side-beams 4 are at right angles to the scraper-beam 2, the shackle will be exactly opposite the center of the scraper. Whiffletrees 17 may be of course attached to the shackle, whereby the scraper may be dragged over the ground.

In order to raise either one or both ends of the scraper from the ground, we provide the lifting levers 18 which are pivoted to the side-pieces or beams 4 at their forward ends. The rounded ends of these levers when turned into a vertical position project below the side-pieces 4, so that the scraper is then supported upon the runners 7, and upon the curved, or rounded ends of the levers 18, the scraper being of course elevated somewhat above the ground, depending upon the elevation of the levers 18. It will be observed that when one of these levers is turned to an angular relation to its side-beam 4, and the other is parallel to the side beam, the scraper will be raised on one side and the scraper blade will therefore be inclined, as shown in Figs. 3 to 5.

Any suitable means may be provided for holding the levers 18 in their adjusted position, but we have shown arcuate toothed racks 20, the levers 18 being each provided with hand operating devices for engaging said racks. It is therefore noted that by reason of the fact that the flexible connection 13 passes freely through the opening 14 and is attached at its end to the rear end of one of the side-beams 4, and the shackle 15 will always be exactly opposite to the middle line of the scraper, or in line with the line of the draft. When the scraper is brought to the position shown in Fig. 2 with the scraper-beam inclined to the line of draft, the draft animals will have precisely the same relative position in regard to the scraper as they have when the scraper was so adjusted that the scraper-beam is transverse, or at right angles to the line of draft.

The operation of our invention is obvious from what has gone before. A scraper of this character may be used either as a drag for leveling roads and cutting down hummocks and ruts, or a scraper for grading the surface of the road, and for forcing the dirt to one side of the road. By reason of the levers 18 and their ability to adjust the level of the scraper, the scraping device may be used for giving the proper inclination to the crown of a road.

It will be seen that our invention comprehends only very simple elements, easily manufactured, easily repaired, and of such relatively simple and heavy construction that it will not be easily broken or damaged.

Having thus described the invention what is claimed as new is:—

1. A drag and scraper including a scraper-beam, a rearwardly extending side-piece pivoted to the scraper-beam, means for adjusting the angular relation of the scraper-beam and the side-beam, and a flexible connection attached at one end to the rear end of the side-beam then passing freely through the scraper-beam and attached at its other end to the end of the scraper-beam.

2. A drag and road scraper of the character described, including a scraper beam, parallel rearwardly extending runner supporting beams pivotally connected to the scraper beam, links connecting the runner supporting beams and pivoted thereto, said links being disposed entirely above the bottom edges of the runner supporting beams, and means for adjusting the angle of the runner supporting beams relative to the scraper beam.

3. A drag and a road scraper of the character described including a scraper-beam, parallel rearwardly extending side-beams, links pivoted to the side-beams and connecting the same, a fixed member extending rearwardly from the scraper-beam, and means for engaging the fixed member with one of said links in any desired adjusted position.

4. A drag and scraper of the character described comprising a transversely extending scraper-beam, parallel rearwardly extending side-beams pivotally connected to the scraper-beam, and links pivoted to the side-beams and connected to a rearwardly extending fixed member attached to the scraper-beam, and means for detachably engaging the fixed member with one of said links to hold the scraper beam in any desired angular relation to the side-beams.

5. A drag and scraper of the character described comprising a transversely extending scraper-beam, parallel rearwardly extending side-beams pivoted at their forward ends to the scraper-beam, links pivotally connecting said side-beams, the rearmost of said links being formed with a plurality of perforations, an arm attached to the scraper-beam and extending rearwardly therefrom and formed with a line of perforations, locking means passed through the perforations of the link and arm respectively, to hold the two in locked engagement with each other, and a flexible draft connection attached at its rear end to the rear end of the side-beam which is opposite to the arm, thence passing through the scraper-beam at a point approximately co-incident with the forward end of the arm, and then attached at its

other end to the extremity of the scraper-beam opposite to said last named side-beam.

6. A drag and scraper of the character described comprising a transversely extending scraper-beam, laterally disposed rearwardly extending side-beams having downwardly projecting runners at their rear ends, and levers pivoted to the forward ends of said side-beams adapted when turned to be projected beneath the lower edges of the side-beams to elevate the scraper.

7. A drag and scraper of the character described comprising a transversely extending scraper-beam, parallel and rearwardly extending side-beams pivoted to the scraper-beam, means for holding the side-beams in any desired angular relation to the scraper beam, and independent levers pivoted to each of the side beams at their forward ends and adapted when turned to project beneath the side-beams and elevate the scraper.

8. A drag and scraper of the character described comprising a transversely extending scraper-beam having a blade attached to the lower edge thereof, U-shaped clips on the rear face of the scraper-beam, parallel rearwardly extending side-beams pivoted to said clips, the rear ends of the side beams being provided with runners, parallel links pivoted to the side-beams to connect the same, an arm rigidly attached to the scraper-beam and extending rearwardly therefrom, means for engaging said arm with the rearmost link to hold the side-beams in any desired angular relation to the scraper beam, levers pivoted to the sides of the side-beams and adapted to be turned into various angular positions and to project, when so turned, beneath the side-beams and elevate the scraper-beam, means for holding said levers in any adjusted position, and a flexible draft connection attached at its rear end to one of the side-beams at the rear end thereof then extending diagonally across and beneath said links and passing through an opening in the scraper-beam, and then attached to the opposite end of the scraper-beam, said flexible connection being provided with means for the attachment of draft animals.

9. A drag and scraper, a transversely extending scraper-beam, rearwardly extending side-beams pivoted to the scraper-beam, transversely extending links pivotally connecting the side-beams with each other and disposed in parallel relation to the scraper-beam, means for adjustably holding the side-beams set in any desired angular relation to the scraper-beam, and a flexible connection attached at its rear end to the rear end of one of said side-beams, and thence extending diagonally across the links and passing through the scraper-beam, and then attached to the opposite end of the scraper beam.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS I. SWAGERTY. [L. S.]
ARTHUR L. LOWE. [L. S.]

Witnesses:
C. A. FISHER,
R. B. BROCAW.