R. R. SANDERSON.

DRILLING DEVICE.

APPLICATION FILED APR. 22, 1911.

1,001,560.

Patented Aug. 22, 1911.

2 SHEETS—SHEET 1.

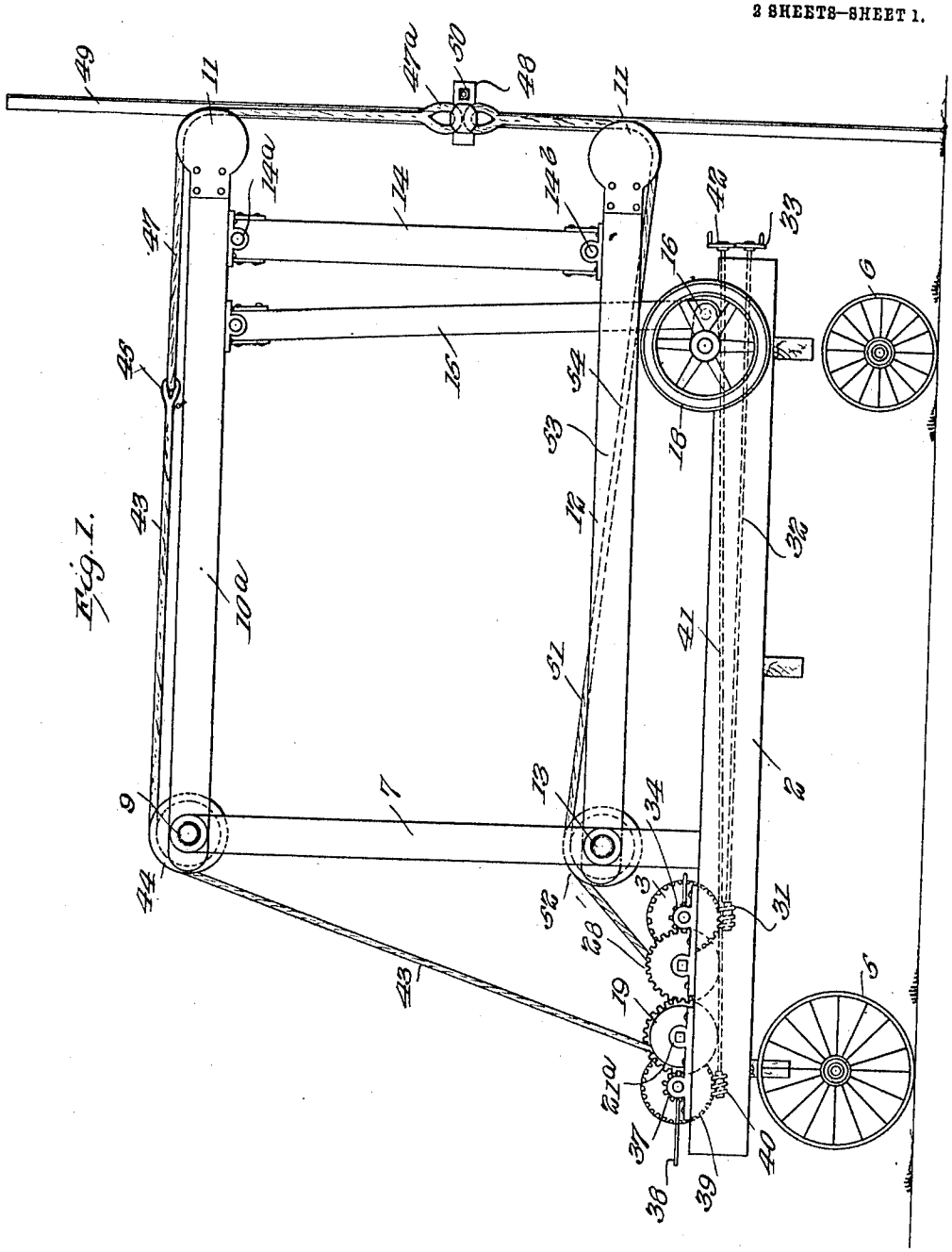

Fig. 1.

WITNESSES

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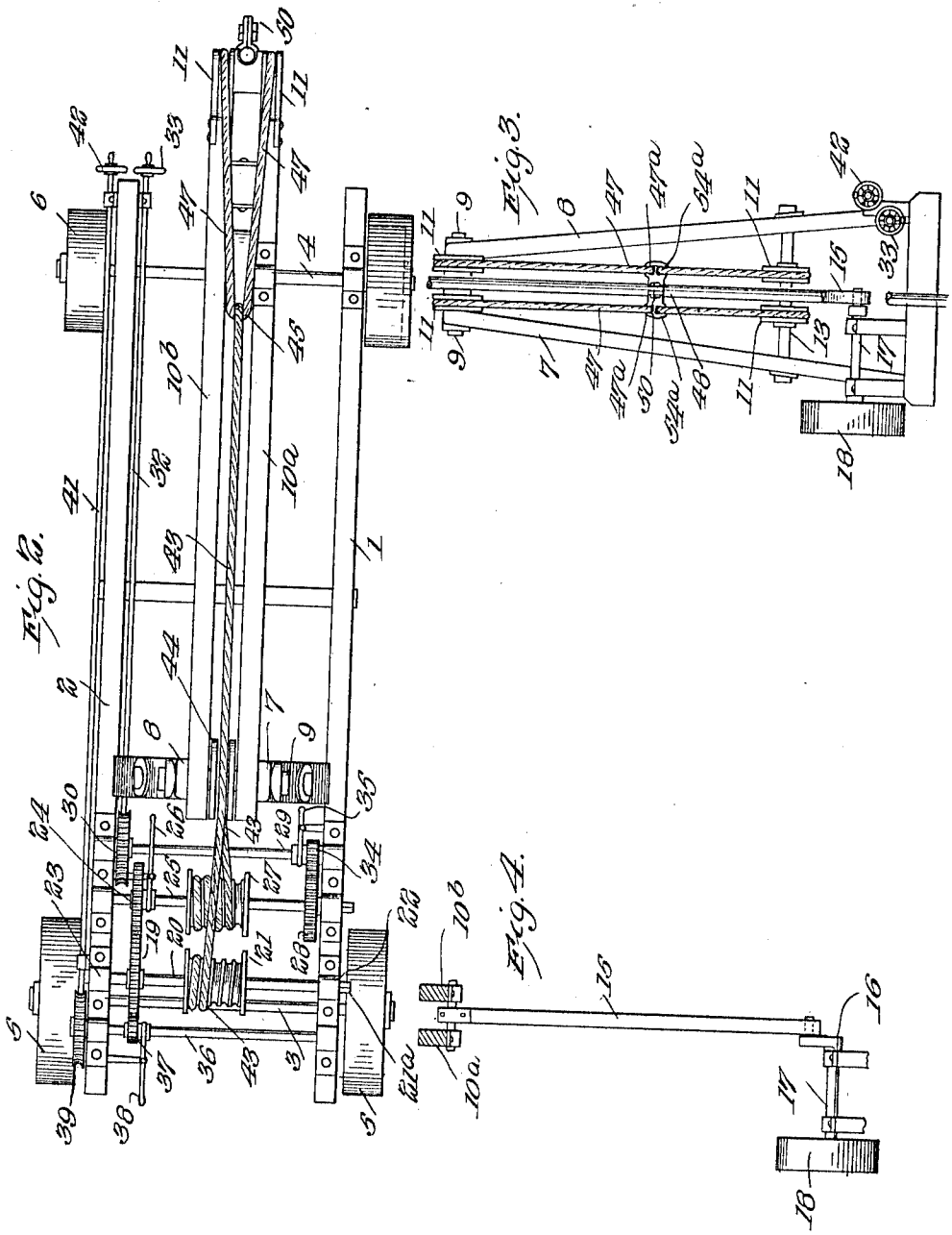

Fig. 2.

Fig. 3.

Fig. 4.

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RAY R. SANDERSON, OF ORRVILLE, OHIO.

DRILLING DEVICE.

1,001,560. Specification of Letters Patent. **Patented Aug. 22, 1911.**

Application filed April 22, 1911. Serial No. 622,675.

To all whom it may concern:

Be it known that I, RAY R. SANDERSON, a citizen of the United States, and a resident of Orrville, in the county of Wayne and State of Ohio, have made certain new and useful Improvements in Drilling Devices, of which the following is a specification.

My invention relates to improvements in drilling machinery, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device of the walking beam type in which the rapidity of the oscillations of the drill rod may be considerably increased without sacrificing its effectiveness in any particular, thereby rendering the machine capable of doing more work in a given time than the ordinary drilling device.

A further object of my invention is to provide novel means for operating the drill rod.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is designed to be an improvement over that disclosed in my prior Patent #993,882 of May 30, 1911.

My invention is illustrated in the accompanying drawings forming part of this application in which—

Figure 1 is a side elevation showing one embodiment of my invention, Fig. 2 is a plan view of the device, Fig. 3 is an end view of a portion of the device, and Fig. 4 is a detail view showing the connection of the crank with the upper walking beam.

In carrying out my invention I provide a frame portion consisting of the side members 1 and 2 which are supported upon the axles 3 and 4 respectively of the wheels 5 and the front wheels 6.

In the present application I have omitted certain parts such as the guide masts for the drill rod, which are ordinarily carried upon the truck, and I have therefore shown only the parts which are novel.

Carried upon the frame near the rear end thereof are the uprights 7 and 8. Pivotally connected to a rod 9 carried by the uprights 7 and 8 is the upper walking beam, which consists of two portions 10^a and 10^b. These two parts are secured together toward their front ends, and are provided with rounded flange castings 11. A similar lower walking beam 12 composed of two parts precisely similar to the parts 10^a and 10^b is pivotally carried at 13 upon the standards 7 and 8, and its opposite end is also provided with the rounded castings 11. The two walking beams are pivotally connected together by means of a link 14, which is journaled at its upper end at 14^a and at its lower end at 14^b. The upper walking beam members 10^a and 10^b are pivotally connected by means of a pitman 15 with a crank 16 on a shaft 17, which bears a driving pulley 18.

Referring now to Fig. 2, I have shown therein a gear 19 which is secured to a shaft 20 bearing a grooved drum 21, the shaft being carried in suitable bearings 22 and 23. A gear 24 is slidably mounted on the shaft 25 and may be shifted into and out of mesh with the gear 19 by means of the lever 26 or by any other suitable means. The shaft 25 bears the grooved drum 27, and also a gear 28. Upon a shaft 29 is a worm gear 30 which meshes with a worm 31 (see Fig. 1) on a rod 32 and controlled by a hand wheel 33. The shaft 29 also bears a gear 34 slidable on the shaft by means of a lever 35 or by any other suitable means. The shaft 36 bears a gear 37 which may be thrown into and out of mesh with the gear 19 by means of the lever 38, or by any other suitable means. This shaft 36 also bears a worm gear 39 which meshes with a worm 40 on a rod 41 controlled by the hand wheel 42 (see Fig. 1).

As will be seen from the drawings a rope 43 is wound around the drum 21, passes upwardly over the pulley 44 carried between members 10^a and 10^b of the upper walking beam, and thence forwardly where it terminates in an eye 45. A rope 47 (see Fig. 2) passes through the eye 45, one portion of the rope passing over one end of the member 10^a, and the other portion passing over one end of the member 10^b. The ends of the rope 47 terminate in eyes 47^a which pass through an opening in the clamp member 48. The latter is designed to hold the drill rod 49 about which it is clamped by means of the bolt 50. A rope 51 is wound around the drum 27, passes upwardly over the pulley 52, thence forwardly terminating in an eye 53. A rope 54 is hooked to the eye 53 in the same manner as that described in connection with the rope 47, passes underneath the round castings 11 and thence upwardly terminating in eyes 54^a secured in the openings of the clamp member 48.

From the foregoing description of the various parts of the device the operation thereof may be readily understood.

In operation the clamp 28 is elevated within a few inches of the upper beam and clamped tightly to the rod by means of the bolt 50. This can be quickly done by allowing the gears 24 and 19 to remain in mesh, then throwing out of mesh the gears 37 and 34 and turning the shaft 20 by means of a crank placed on the squared ends 21ª of the shafts. It will be seen that as the rope is wound on the drum 21 it is wound off from the drum 27, thereby permitting the clamp 48 to be shifted until it is within a few inches of the upper walking beam. Here the clamp is secured to the rod 49 in the manner described. The gear 37 is now thrown into mesh with the gear 19 and the gear 34 is thrown into mesh with the gear 28. The gear 24 is thrown out of mesh with the gear 19. It will be seen now that the drums 21 and 27 are controlled by the respective hand wheels 42 and 33 so that the tension on the ropes 43 and 51 may be adjusted. Power is applied through the power wheel 18, and is transmitted by means of the pitman to the walking beams which are connected, as stated before, by the link 14. The rod is reciprocated positively in an upward and downward direction, and as the drilling proceeds, the hand wheel 42 is turned to let off the rope from the drum 21 and the hand wheel 33 is turned to take up the slack of the lower rope 51 so as to keep the tension at the proper point.

If it is desired to control the tools by one hand wheel, the gear 24 is thrown into mesh with the gear 19 and the gear 34 is thrown out of mesh with the gear 28. The hand wheel 42 will therefore control the unwinding of the rope from one drum and the winding of the rope onto the other drum.

I claim:

1. In a drilling device, a pair of walking beams, one disposed above the other, means for operating said walking beams simultaneously and to the same extent, a drill rod, and flexible means between the ends of the walking beams for securing said drill rod.

2. In a drilling device, a pair of walking beams, means for operating said walking beams simultaneously and to the same extent, a drill rod, flexible means for securing said drill rod to the ends of each of said walking beams, and means for feeding off the flexible securing means from the end of one of said walking beams and for simultaneously drawing another of said flexible means on to the end of the other walking beam.

3. In a drilling device, a support, a pair of walking beams pivoted at one end to said support, a link connecting said walking beams near their other end, a drill rod, a flexible connection passing over the end of each of said walking beams, a clamp for securing the ends of said flexible connections to the drill rod, means for pulling off the flexible connection from the end of one of said walking beams, and means for drawing the other flexible connection on to the end of the other walking beam.

4. In a drilling device, a support, a pair of walking beams pivoted at one end to said support, a link connecting said walking beams near their other end, a drill rod, a flexible connection passing over the end of each of said walking beams, a clamp for securing the ends of said flexible connections to the drill rod, means for pulling off the flexible connection from the end of one of said walking beams, means for drawing the other flexible connection on to the end of the other walking beam, said means comprising a winding drum for each of said flexible connections, and means for rotating said drums.

5. In a drilling apparatus, a frame, a support carried thereby, a pair of drums mounted on said frame, a pair of walking beams pivoted at one end upon said frame, means for securing the other ends of the walking beams together, a drill rod, a flexible cord or cable having one end wound around one of said drums and passing over one of said walking beams, a second cable having one end wound on the other of said drums and passing under the end of the other of said walking beams, a clamp for securing the ends of said cable to said drill rod, and means for simultaneously operating said walking beams.

6. In a drilling apparatus, a frame, an upright carried thereby, a pair of walking beams pivotally connected at one end to said upright, the other ends of said walking beams being connected together, a pair of drums, a pair of flexible connections wound thereon, one of said flexible connections passing around the end of one of said walking beams, and the other of said flexible connections passing around the end of the other walking beam, a drill rod, means for securing the ends of said flexible connections to said drill rod, means for winding off the cable from one of said drums and for simultaneously winding the other cable up on the other drum, and means for rendering the winding mechanism for one cable independent of the winding mechanism for the other.

7. In a drilling apparatus, a frame, an upright carried thereby, an upper walking beam pivoted to said upright, a lower walking beam also pivoted to said upright, a pivoted link connecting said walking beams together, a crank carried by said frame, a pitman secured to said crank and having

a pivotal connection with one of said walking beams, a drill rod, a flexible cable arranged to pass over the end of the upper walking beam, a second cable arranged to pass underneath the end of the lower walking beam, means for securing the ends of the cable to the drill rod, and means for pulling off the cable from the end of one of said walking beams and simultaneously drawing the cable upon the end of the other walking beam.

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Witnesses:
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