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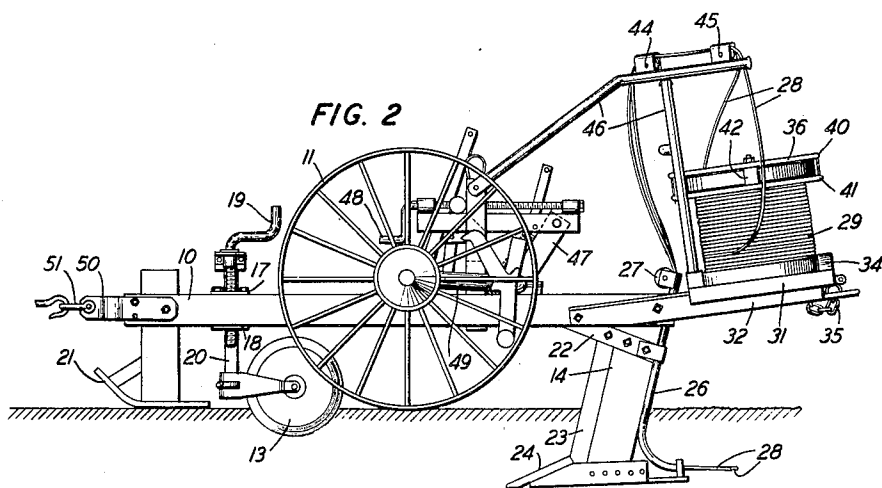
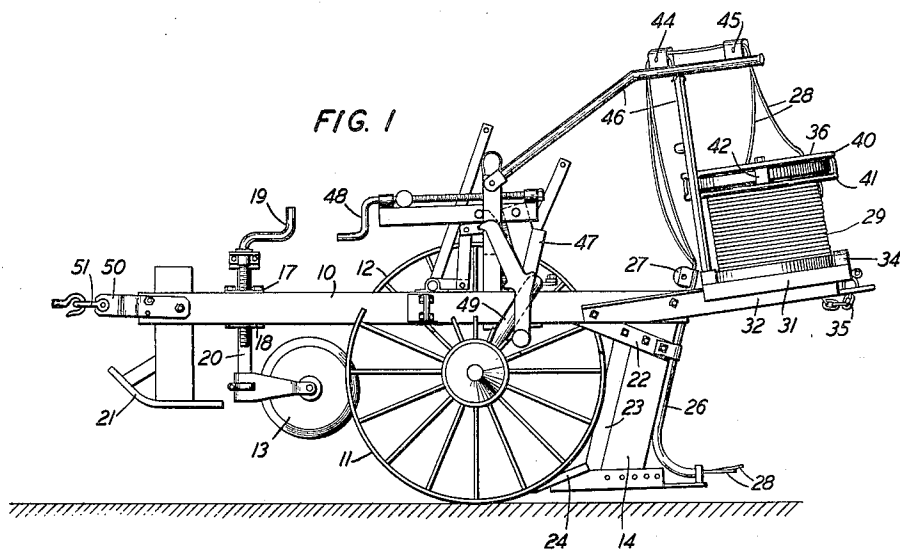
J. H. GRAY ET AL

2,155,044

WIRE LAYING MACHINE

Filed March 20, 1937

3 Sheets-Sheet 1



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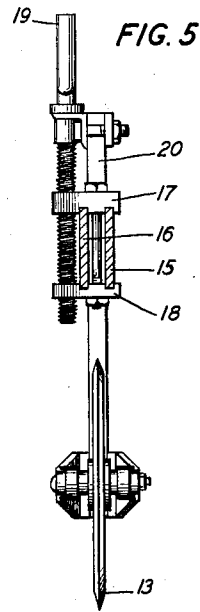
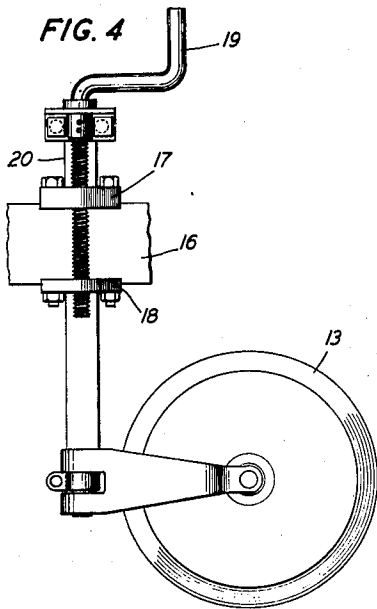
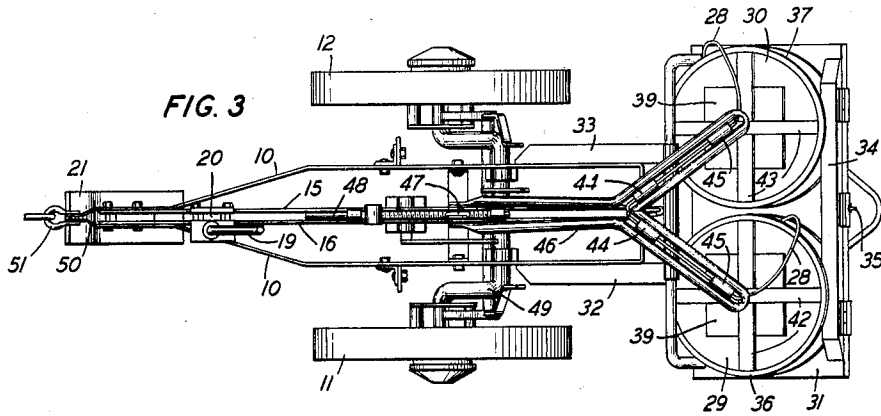
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3 Sheets--Sheet 2



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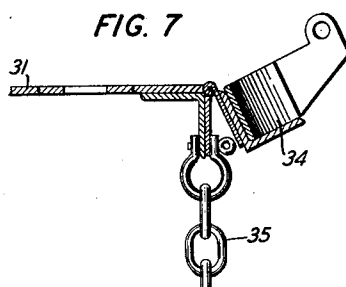
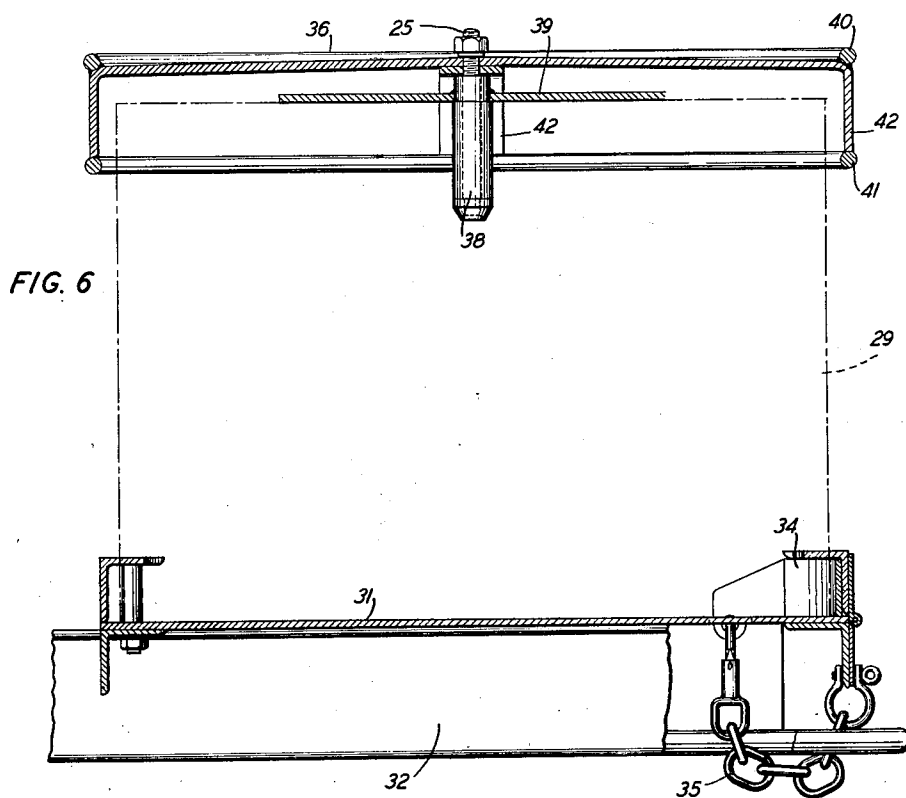
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WIRE LAYING MACHINE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,155,044

WIRE LAYING MACHINE

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Application March 20, 1937, Serial No. 131,992

6 Claims. (Cl. 111—5)

This invention relates to cable or wire laying machines, and more particularly to wire laying plows, and its object is to provide a device for laying underground a wire or cable, said device being constructed and arranged to form a trench and lay the wire therein, the walls of the trench closing in over the wire so that the latter is completely buried without the necessity of any further digging or leveling operations.

In accordance with this invention reels are set on their ends and rigidly secured to a platform on the rear of the plow, and journaled in the upper end of each of the reels and in spaced relation thereto is a readily rotatable framework or head, the diameter of which is slightly larger than the head of the reels, thereby providing an extending portion beyond the edge of the reel-head, whereby as the wire leaves the reels it frictionally engages the rotatable head thereby reducing the tension on the wire and giving a twist thereto, thereby transposing the conductors to eliminate cross talk.

Another feature is a novel type of plowshare which tends to draw itself down into the ground as the machine is moved along.

Fig. 1 is a side elevation of the wire laying plow of this invention with the plowshare and its associated wire guiding tube in an upraised position;

Fig. 2 is a view similar to Fig. 1, except that the plowshare is in its lowered or operating position;

Fig. 3 is a top plan view of Fig. 1;

Fig. 4 is a fragmentary side view of the adjustable coulter or scoring disc;

Fig. 5 is an end view of Fig. 4;

Fig. 6 is an enlarged fragmentary view partly in section illustrating the reel holding device and the rotatable head for the reel; and

Fig. 7 is an enlarged fragmentary view partly in section showing the reel locking and holding device in its open position.

In the drawings, the machine comprises a chassis 10 mounted upon suitable wheels 11 and 12 and having a rotary coulter 13 adjustably supported thereon in front of a plowshare 14. The coulter 13 which is arranged to cut or score the ground ahead of the plowshare 14 is adjustably mounted in the guide members 17 and 18, which in turn are secured to the lateral frame members 15 and 16. See Figs. 4 and 5. The coulter disc 13 is raised or lowered by means of the crank handle 19, the upper end of which is rotatably secured to the upper end of the coulter supporting member 20, while the lower portion of

the crank handle threadedly engages the guide members 17 and 18. Located just ahead of the coulter 13 is the skid or shoe 21, which acts as a front end support for the machine and smooths the way for the coulter 13.

The plowshare 14 is located to the rear of the wheels 11 and 12 and is secured to the chassis 10 between the frame members 15 and 16 by means of suitable bolts and is securely braced by means of the arms 22. The plowshare 14 comprises a number of component parts and is constructed to withstand the rigorous conditions which will be met in the burying of wire or cable in various types of soil and is so arranged that the wearing parts may be readily replaced when necessary, without replacing the whole plowshare. As shown in the various figures, a cutting edge 23, and a point 24, which comprise the wearing portions of the plowshare, may readily be replaced or removed whenever desired, without disassembling the whole share.

Located on the rear edge of the plowshare 14 is a tube or pipe 26 through which the cable or wire is guided into the trench formed by the plowshare 14. This tube 26 is readily removable and may be replaced by tubes of various sizes, in order to accommodate wires or cable of different diameters and structures. The upper end of the tube 26, that is, the wire receiving end, extends slightly above the chassis 10 and has mounted thereon a pulley or roller 27.

As shown in Figs. 1, 2 and 3 the wire or cable 28, which is to be buried, is stored on suitable reels 29 and 30, which are mounted on an overhanging platform 31 secured to the rear portion of the chassis 10 by means of the rearwardly extending arms 32 and 33. The reels 29 and 30 are stationary and are held in position by means of the hinged member 34, which engages the bottom end of the reel, as shown in Fig. 6 and is secured in position by means of the chain and latch arrangement 35, as shown in Figs. 6 and 7. In this manner the reels 29 and 30 are securely held in place and are prevented from being displaced as the machine is towed along over rough ground. Located on the upper ends of the reels 29 and 30 are the rotatable members 36 and 37, these members being journaled in the bearings 38 located in the heads of the reels, by means of the axles 25 and are spaced away from the head by means of the flange 39 and the bearing 38. See Fig. 6. The rotatable heads or members 36 and 37 comprise two rings 40 and 41 of metal or other suitable material and are secured together by means of the cross-members 42 and 43. The

rings 40 and 41 are larger in diameter than the reelheads and therefore extend and overhang some distance beyond the edge thereof.

The wire 28 as it leaves the reels 29 and 30 passes up and around the extending edges of the rotatable members 36 and 37, thereby causing these members to rotate thereby reducing the tension on the wire. Removing the wire in this manner causes a twist to be given to the wire which tends to eliminate transmission difficulties such as cross-talk. In order to eliminate as far as possible the friction between the wire and the various guiding means and to further reduce the tension on the wire, a series of pulleys 44 and 45 are provided between the rotatable heads 36 and 37 and the wire receiving or guiding tube 26. These pulleys are mounted on a suitable framework 46 which in turn is secured to the chassis 10.

In order that the burying depth of the wire may be varied, a suitable adjusting means 47, which is more or less standard to agricultural machinery, is provided and by the operation of the crank 48 the parts associated therewith cause the chassis 10 and the plowshare 14 associated therewith to rotate around the bell crank axle 49, thereby causing the chassis 10 to swing down below the center of the wheel axles, as shown in Fig. 2.

As pointed out previously in this specification, the depth of the plowshare and the corresponding varying depth of the wire may be adjusted and regulated by means of the crank 48 and the associated parts, and inasmuch as this mechanism is common to agricultural machinery and does not form any part of this invention, it is not believed necessary to explain in detail the operation thereof.

Means are provided for securing the plow to a source of draft power, which means comprises a member 50 secured to the chassis 10 and a clevis 51 secured to the front end of the member 50.

In the operation of burying wire or cable with the machine of this invention as heretofore described, the skid or shoe 21 will slide over the ground and the coulter disc 13 will cut or score the sod or hard upper surface of the ground so that the following plowshare 14 may readily cut the trench to the required depth. As the machine moves along, the wire 28 or other conductor will be fed off the reels 29 and 30 over the pulleys 44, 45 and 27 down through the tube 26 and into the trench behind the plowshare 14.

Having fully described the preferred embodiment of our invention, it is to be understood that we do not wish to be limited to the exact construction herein disclosed which may obviously be varied without departing from the spirit of the invention, as set forth in the appended claims.

What is claimed is:

1. A wire laying plow comprising a movable frame mounted on a wheeled carriage and having a connection thereon whereby it may be connected to a draft device, a skid-shoe adjacent said draft connection and secured to the front of said frame, a vertically adjustable and pivoted cutting disc mounted on said frame to the rear of said shoe, means on said frame for raising and lowering said cutting disc, a plowshare secured to and depending from said frame and having a wire guide tube secured to the rear edge thereof, said plowshare, guide tube and cutting disc being vertically adjustable, a wire storing reel having a head thereon mounted on the rear of said frame, means for guiding said wire into said tube, wire engaging means mounted on said reelhead for

reducing the tension in said wire as it leaves the reelhead and enters the guide tube, and means on said frame for securely holding said reel against movement.

2. A wire laying plow comprising a movable frame having a connection thereon whereby it may be connected to a draft device, a skid-shoe adjacent said draft connection and secured to the front end of said frame, a vertically adjustable and pivoted cutting disc mounted on said frame to the rear of said shoe, a plowshare depending from said frame and having a wire guide tube attached to the rear edge thereof, a wheeled truck supporting said frame and pivotally connected thereto for vertical swinging movement relative thereto, means for swinging said truck about the axis of its wheels to raise and lower said frame, a wire storing reel having a head thereon mounted on the rear of said frame, means for guiding said wire into said tube, wire engaging means on said reelhead for reducing the tension in said wire as it leaves the reel and enters the guide tube, and means on said frame for securely holding said reel against movement.

3. An apparatus for laying and burying wires under the ground comprising a frame, a plowshare adapted for forming a self-closing furrow secured to said frame, wheels supporting said frame, means for swinging said frame about the axis of said wheels to raise and lower said frame and said plowshare, means comprising a tube on the rear of said plowshare for guiding the wire into the furrow, a wire storing reel mounted on said frame, said reel having friction reducing means mounted thereon comprising a rotatable wire engaging reelhead, and means associated with said reel for guiding the wire into said tube.

4. An apparatus for laying and burying wires under the ground comprising a frame, a plowshare adapted for forming a self-closing furrow secured to said frame, wheels supporting said frame, means for swinging said frame about the axis of said wheels to raise and lower said frame and said plowshare, means comprising a tube on the rear end of said plowshare for guiding the wire into the furrow, a wire storing reel mounted on said frame to the rear of said plowshare, said reel having friction reducing means mounted thereon comprising a rotatable wire engaging reelhead, means associated with said reel for guiding the wire into said tube, and means mounted on said frame for securely locking said reel in position.

5. An apparatus for laying and burying wires under the ground comprising a frame, a scoring disc mounted on the front end of said frame, a plowshare adapted for forming a self-closing furrow secured to said frame at the rear of said disc, wheels supporting said frame, means for swinging said frame about the axis of said wheels to raise and lower said frame and said plowshare, means comprising a tube on the rear of said plowshare for guiding the wire into the furrow, a wire storing reel mounted on said frame to the rear of said plowshare, said reel having friction reducing means mounted thereon comprising a rotatable wire engaging reelhead, and means associated with said reel for guiding the wire into said tube.

6. An apparatus for laying and burying wires under the ground comprising a frame, a skid-shoe secured to the front end of said frame, a vertically adjustable scoring disc mounted to the rear of said skid-shoe, a plowshare adapted for forming a self-closing furrow secured to said

5 frame at the rear of said disc, wheels supporting said frame, means for swinging said frame about the axis of said wheels to raise and lower said frame and said plowshare, means comprising a tube on the rear end of said plowshare for guiding the wire into the furrow, a wire storing reel stationarily mounted on said frame, means mounted on said frame for securely locking said reel in position, said reel having friction reduc-

ing means mounted thereon comprising a rotatable wire engaging reelhead, said reelhead, upon rotation, being adapted to cause twisting in said wire as it leaves the reel, and means associated with said reel for guiding the wire into said tube. 5

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