

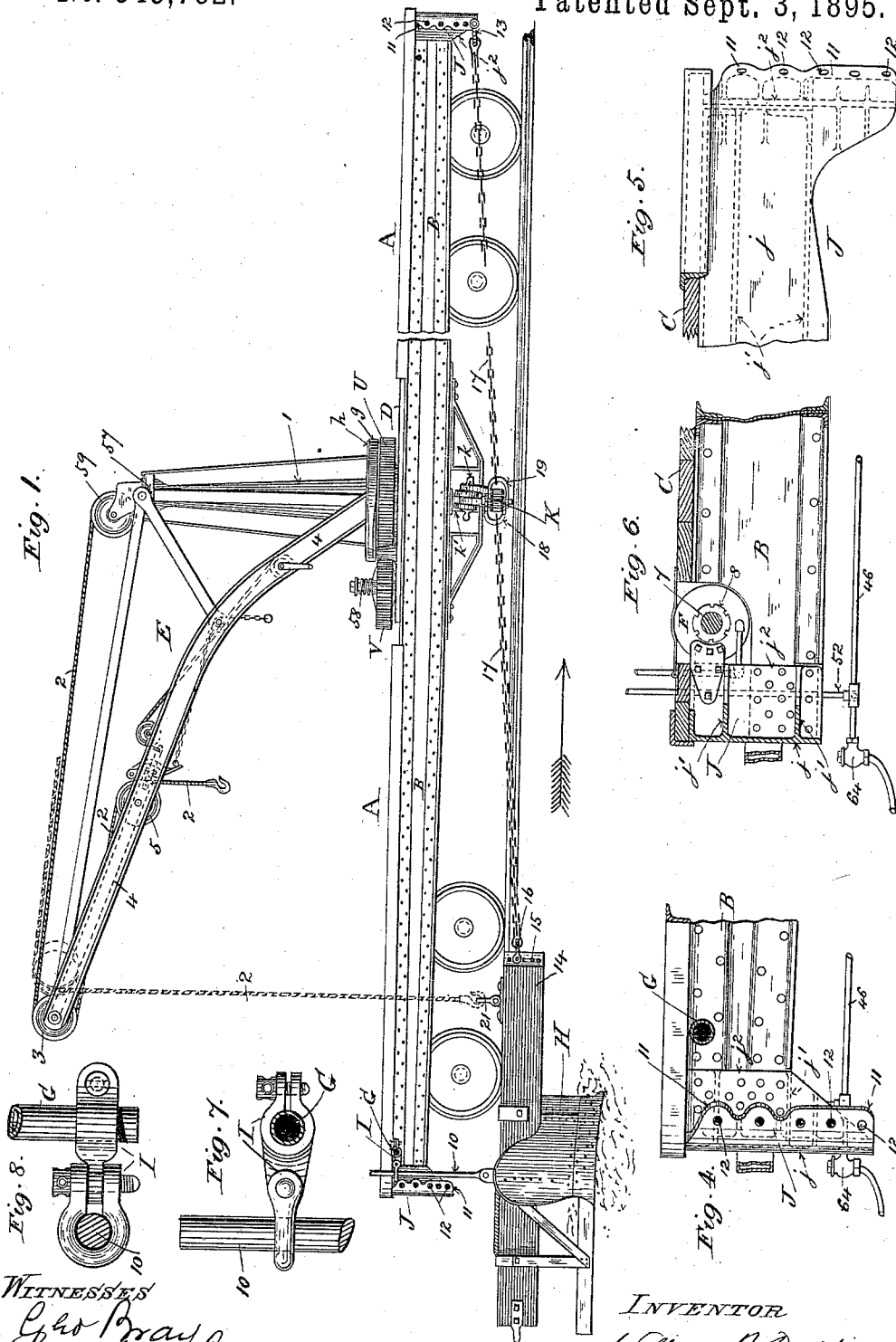
(No Model.)

W. B. DODDRIDGE.
RAILROAD PLOW CAR.

5 Sheets—Sheet 1.

No. 545,782.

Patented Sept. 3, 1895.



WITNESSES

Geo. Gray
Ernest J. Lunnion

INVENTOR

William B. Doddridge
By Edward W. Currell
His Attorney

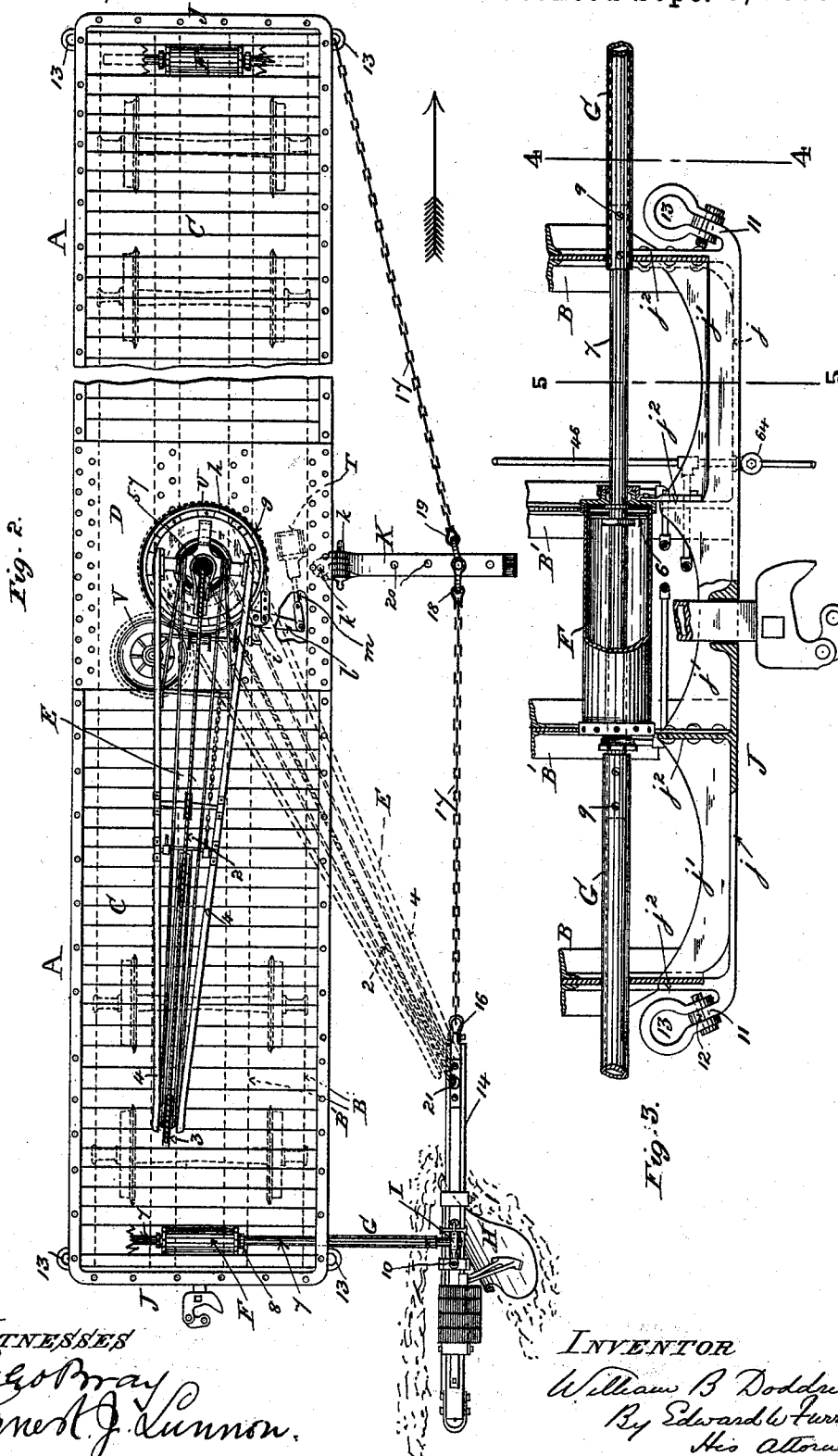
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WITNESSES
George May
Ernest J. Lannon.

INVENTOR
William B. Doddridge
By Edward W. Furrell
His Attorney

(No Model.)

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Fig. 9

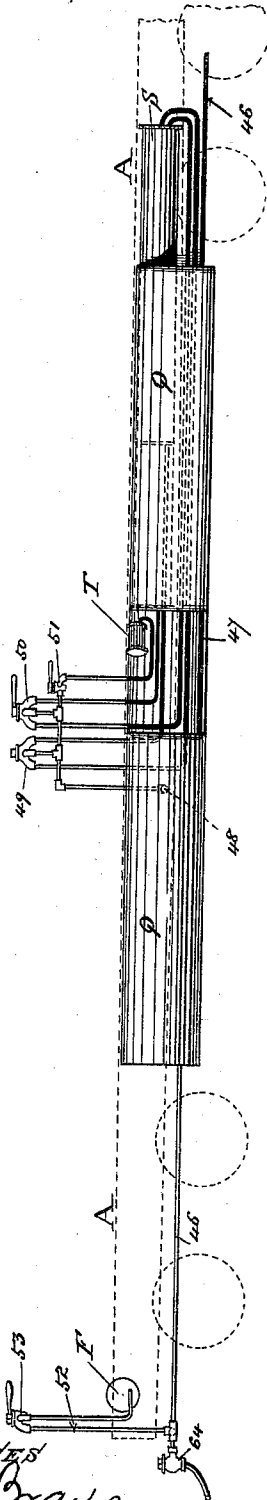
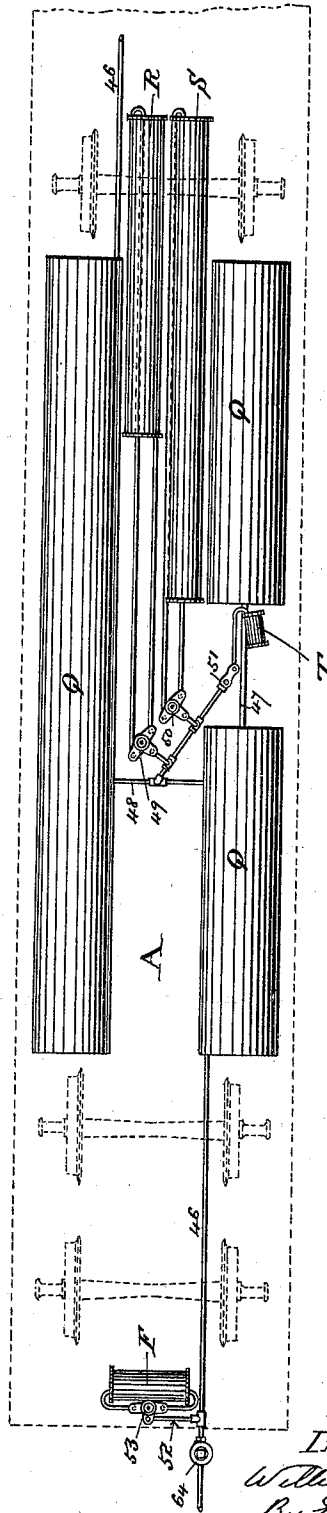


Fig. 10.



WITNESSES
Geo. Gray
Ernest J. Lunnion

INVENTOR
William B. Doddridge
By Edward W. Furrell
His Attorney

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Fig. 11.

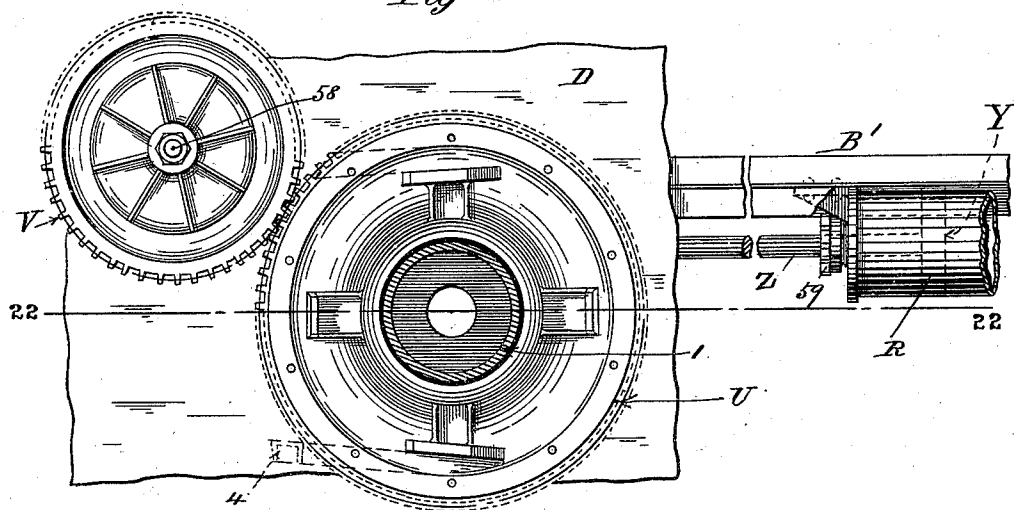


Fig. 12.

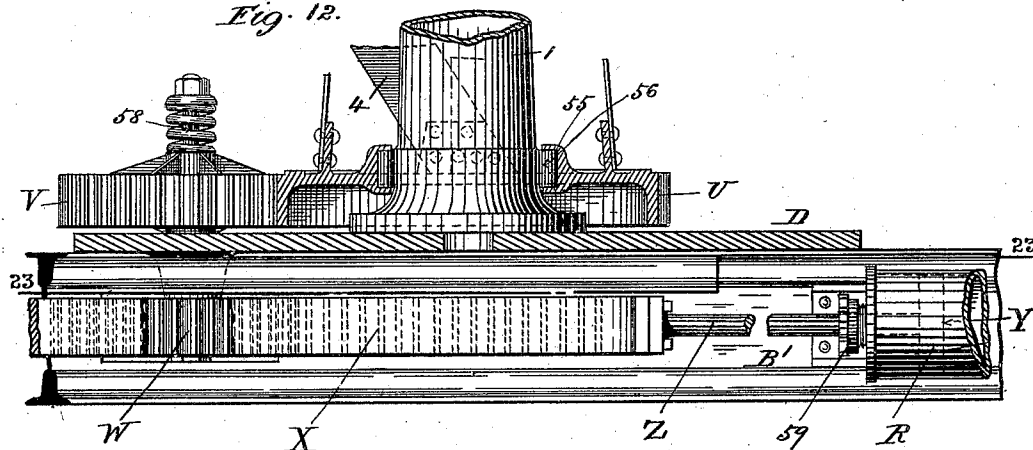
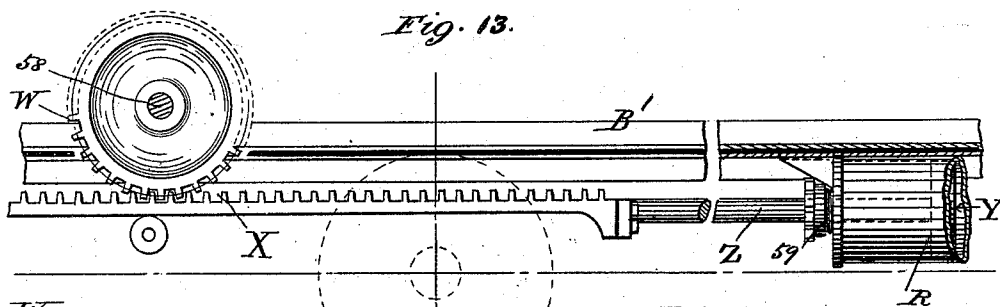


Fig. 13.



WITNESSES

Geo. Bray
Ernest J. Lannon.

INVENTOR

William B. Doddridge
By Edward W. Farnell
His Attorney

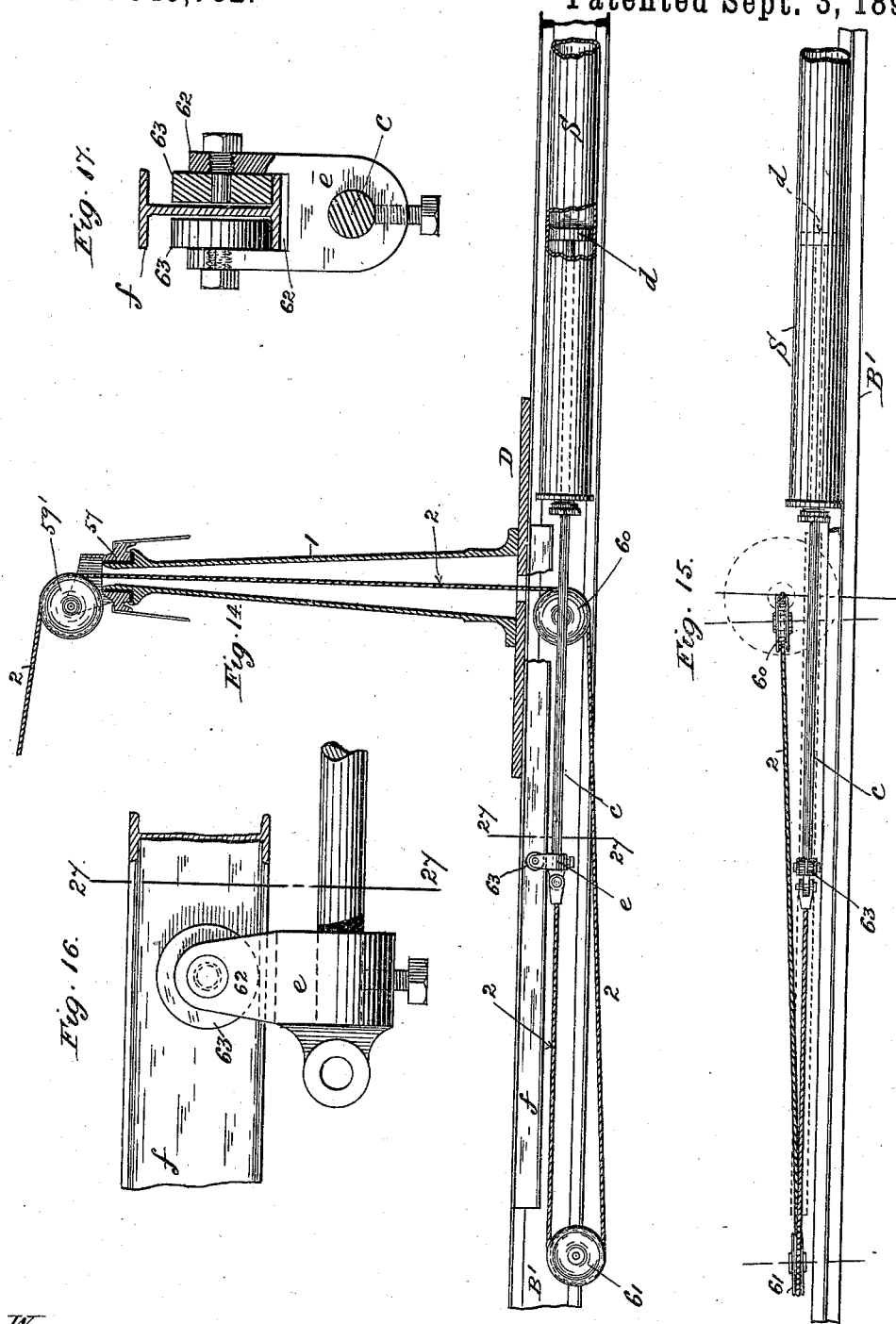
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W. B. DODDRIDGE.
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WITNESSES

Geo. May
Ernest J. Lannon.

INVENTOR

William B. Doddridge
By Edward W. Currell
His Attorney

UNITED STATES PATENT OFFICE.

WILLIAM B. DODDRIDGE, OF ST. LOUIS, MISSOURI.

RAILROAD PLOW-CAR.

SPECIFICATION forming part of Letters Patent No. 545,782, dated September 3, 1895.

Application filed April 1, 1895. Serial No. 544,031. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. DODDRIDGE, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Improvement in Railroad Plow-Cars, of which the following is a specification.

My invention relates to a railroad plow-car and ditcher, with its appurtenances, for ditching and forming the earth bed embankments at the sides of the track, and has for its object to provide improved means of holding and adjusting the plow used in connection with the car, as hereinafter particularly described and claimed, reference being had to the accompanying drawings, forming part of this specification, whereon—

Figure 1 is a side elevation of my improved railroad plow-car, having the plow and its controlling appliances; Fig. 2, a plan of the same; Fig. 3, a plan, to enlarged scale, of one of the end sills and adjacent part of the car with the plow guide-arm and cylinder, as seen to the left of Fig. 2; Fig. 4, a sectional side view thereof, taken on line 4 4 in Fig. 3, showing one end of the sill or corner of the car adapted for holding a traction-clevis; Fig. 5, an end elevation of a portion of the sill corresponding with and taken at right angles to Fig. 4; Fig. 6, a vertical section on line 6 6 in Fig. 3; Fig. 7, a side view, to enlarged scale, corresponding to that seen to the left in Fig. 1, of the clamping device used for securing the plow guide-arm to the upright stem of the plow; and Fig. 8, a plan thereof corresponding to that seen to the left in Fig. 2. Fig. 9 is a diagrammatic side view of the car, (seen in broken lines,) showing the general arrangement of the compressed-air reservoirs, motion-cylinders, valves, and connections for operating the plow guide-arm and the crane carried by the car for controlling the various tools used; and Fig. 10, a plan of the same. Fig. 11 is a plan, to enlarged scale, of the swinging-gear for the crane; Fig. 12, a vertical section thereof, taken on line 22 22 in Fig. 11; and Fig. 13, a horizontal section taken on line 23 23 in Fig. 12. Fig. 14 is a vertical section through the crane-post and base-plate on the car, showing the hoisting mechanism of the crane; and Fig. 15, a plan thereof omitting the crane-post and top sheave. Fig. 16

is a detached side view, to enlarged scale, of the piston-rod guide seen in Figs. 14 and 15; and Fig. 17, a cross-section thereof, taken on line 27 27 in Figs. 14 and 16.

Like letters and numerals of reference denote like parts in all the figures.

A represents a railroad-car which is mounted on the ordinary trucks and wheels and may be of any suitable construction, but preferably flat, as shown, and composed of longitudinally arranged I-shaped beams B B', having a covering or platform C and a central deck-plate D. On the car A is mounted a crane E, having its pillar 1 fixed at the base to the deck-plate D. The crane E may be of any suitable construction adapted to swing around its pillar 1 in either direction. The hoisting-cable 2 of the crane E may either pass over and depend directly from the sheave 3 at the outer end of the jib 4 in the usual manner, or be directed from the sheave 3 along the jib 4 toward the pillar 1 and over an auxiliary sheave 5, from which it depends, as shown by full lines in Fig. 1.

Near each end of the car A and transversely thereto is a horizontally-arranged cylinder F, containing a piston 6, from each side of which a rod 7 projects through a stuffing-box 8 in the closed head of the cylinder F. On the outer end of each piston-rod 7 is removably fixed, by countersunk screws 9 or otherwise, one end of a preferably tubular extension-arm G, which passes through a hole or bearing in the outer beam B or side of the car A to a suitable distance therefrom, where it is secured to the upright stem 10 of the plow H by means of a clamping device I, the construction of which is clearly shown in the detail views 7 and 8.

The clamp I consists, preferably, of a ring 64, which embraces the arm G, and is split on one side, where it is formed with opposite lugs 65, through which works a set-screw 66, whereby the ring 64 is closed and tightened on the arm G or released therefrom, as required. From the ring 64 projects an arm 67, the end portion of which passes between the opposite lugs 68 of a second split ring 69, arranged at right angles to the ring 64 and embracing the upright stem or shank 10 of the plow H. The ring 69 is closed on or released from the plow-stem 10 by a set-screw

70, which works through the lugs 68 and arm 67 in a similar manner to the set-screw 66 of the ring 64. By this means the plow H may be set vertically or laterally with relation to the car A without moving the arm G, which on the admission of pressure behind the piston 6 within the cylinder F operates to hold and guide the plow H in the desired position.

Each end sill J or corner of the car A is formed or provided with a downwardly-extended flange or series of projections 11, having corresponding holes or eyes 12, which are respectively adapted for holding a clevis 13, from which the traction-chain extends to the plow H or other tool in use. By means of the multiple holes 12 the clevis 13 can be changed from one hole to another for adjusting the alignment of the traction-chains between the clevis 13 and the tool.

Through the front end of the draw-bar 14 of the plow H is a series of holes or eyes 15, which is suitably spaced vertically and severally adapted to hold a clevis 16, from which the traction-chain 17 passes to a clevis 18, coupled to a boom K, (broken away,) which projects horizontally from the side of the car A and is secured at one end thereto, preferably by double-hinge joints *k k'*, whereby the boom K can be swung in a horizontal or vertical plane, as required, or the boom K may be rigidly connected horizontally to the car A by any suitable bracing.

Coupled to the boom K, conjointly with the clevis 18, is a clevis 19, from which the traction-chain 17 passes to the clevis 13, held by one of the ears or projections 11 at the forward end or corner of the car A, whereby on the traveling of the car A in the direction indicated by the arrow the plow H is operated.

Through the boom K is a series of vertical holes 20, suitably spaced along the boom K for receiving, respectively, the coupling pin of the clevises 18 19, according to the distance from the car A at which the plow H is held by the guide-arm G, or, in other words, the clevises 18 19 are coupled to the hole 20, which corresponds in distance from the car A to that of the plow H, so that the line of draft through the intervening portion of the chain 17 is aligned to the plow H and in parallelism with the car A; or, if desired, the boom K may be dispensed with and the traction-chain 17 passed directly from the plow H to the forward end of the car A.

For regulating the height of the nose of the plow H, the hooked end of the hoisting-cable 2 of the crane E is hitched to a clevis 21, (see dotted lines in Figs. 1 and 2,) held by the draw-bar 14 of the plow H, near its forward end; or the clevis 21 may be dispensed with and the cable 2 hitched directly to the traction-chain 17 in advance of the plow H. It is to be here understood that the plow H may be arranged at either end, and on either side of the car A, as required.

For operating the crane E and the plow guide-arm G, I preferably use compressed air,

which may be supplied by the locomotive-engine hauling the car A or otherwise, through the inlet-valve 64 and feed-pipes 46, Figs. 9 and 10, to auxiliary air-reservoirs Q, which are carried by the car A beneath the platform C, or in any other convenient position, and communicate with each other by means of pipes 47 48. The pipe 48 communicates with the supply and exhaust cocks or valves 49 50 51 which are of well-known construction, and control the admission and exhaustion of the compressed air to and from the swing-motion cylinder R, the lift-motion cylinder S, and the brake-cylinder T, of the crane E, respectively. From the feed pipes 46 pipes 52 communicate with the valves 53, which admit and exhaust the air to and from the cylinders F, respectively, of the plow-guide G.

The swing-gear of the crane E, Figs. 11, 12, and 13, consists preferably of a horizontal spur-wheel U, which surrounds the crane-pillar 1, contiguous to the deck-plate D of the car A. Between the circumference of the pillar 1 and the concentric wall of the recessed opening 55 therefor in the wheel U are vertically-arranged friction-rollers 56. To the upper side of the wheel U is secured the base of the jib 4 and other framework of the crane E, the said framework being fixed at the top to a cap 57, which is journaled on and supported by the top of the pillar 1, around which the entire structure is adapted to swing in either direction. The spur-wheel U is engaged by a spur-wheel V, which is frictionally held on an upright shaft 58, having its bearing in the deck-plate D and projecting below the latter. On the lower end of the shaft 58 is fixed a spur-pinion W, which is engaged by a toothed rack X, arranged and adapted to reciprocate longitudinally beneath the platform of the car A. Within the swing-motion cylinder R is a piston Y, having the rod Z, which passes through a stuffing-box 59 in the head of the cylinder R and is attached at its outer end to one end of the toothed rack X, whereby on admitting compressed air to either side of the piston Y the rack X will swing the crane E in either direction as required.

For hoisting and lowering by the crane E, the cable 2 passes from the outer sheave 3 over a sheave 59', Figs. 14 and 15, which is axially mounted immediately over the top of the pillar 1, through the interior of which the cable 2 descends and passes under a sheave 60, axially mounted below the deck-plate D. From the sheave 60 the cable 2 passes under and over a sheave 61, arranged at a suitable distance from the sheave 60, and thence returning the end of the cable 2 is connected to the outer end of the piston rod *c*, which is attached to the piston *d* within the lift-motion cylinder S, so that on admitting compressed air to either side of the piston *d* the hooked end of the cable 2 is raised or lowered by the rod *c* at pleasure.

The piston-rod *c* is guided by a block *e*, which is fixed to the rod *c* adjacent to the

coupled end of the cable 2, and formed with a projecting jaw 62, carrying on each inside face a roller 63, the two rollers 63 riding upon the lower flanges, respectively, of an I-beam *f*, which is fixed longitudinally, in the path of the rod *c*, to the under side of the platform C or adjacent framing of the car A.

The brake motion of the crane E, Fig. 2, consists preferably of a brake-band *g*, which encircles a pulley-wheel *h*, fixed on the upper side of the spur-wheel U of the swing motion. The band *g* is closed upon or loosened from the periphery of the wheel *h* by levers *i l*, the lever *l* being jointed at its outer end to the piston-rod *m* of the brake-cylinder T, the piston of which is operated by compressed air controlled by the valve 51, Figs. 10 and 11, in a similar manner to the swing and lift motions; or the brake-band *g* may be applied by foot or hand, in lieu of compressed air.

I do not limit myself to the use of compressed air for operating the crane and plow guide-arm, as steam, water, or other motive power may be used.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a railroad plow car, the combination of the plow, having an upright stem or shank, an arm projecting from the car, and means for adjustably securing the arm to the said stem substantially as described.

2. In a railroad plow car, the combination of the plow having an upright stem or shank, an arm projecting from the car, means for adjustably securing the arm to the said stem, a chain connecting the plow to the car, a crane or derrick, and means for operating the crane, substantially as described.

3. In a railroad plow car, the combination of the plow, an arm for guiding the plow, the said arm being fixed to a piston contained in a cylinder, and means for moving the piston within the cylinder, substantially as described.

4. In a railroad plow car, the combination of an auxiliary compressed air reservoir carried by the car and provided with an inlet valve and pipe, a valve or valves communicating with the reservoir and with a cylinder containing a piston, a rod fixed to the piston and passing through the closed head of the cylinder, and an arm fixed to the said rod, substantially as described.

5. In a railroad car frame, an end sill integral throughout and formed, or provided at the end with a downwardly extended flange having one or more holes for holding a traction clevis, substantially as described.

WILLIAM B. DODDRIDGE.

Witnesses:

C. R. KELLEY,
EDWARD W. FURRELL.