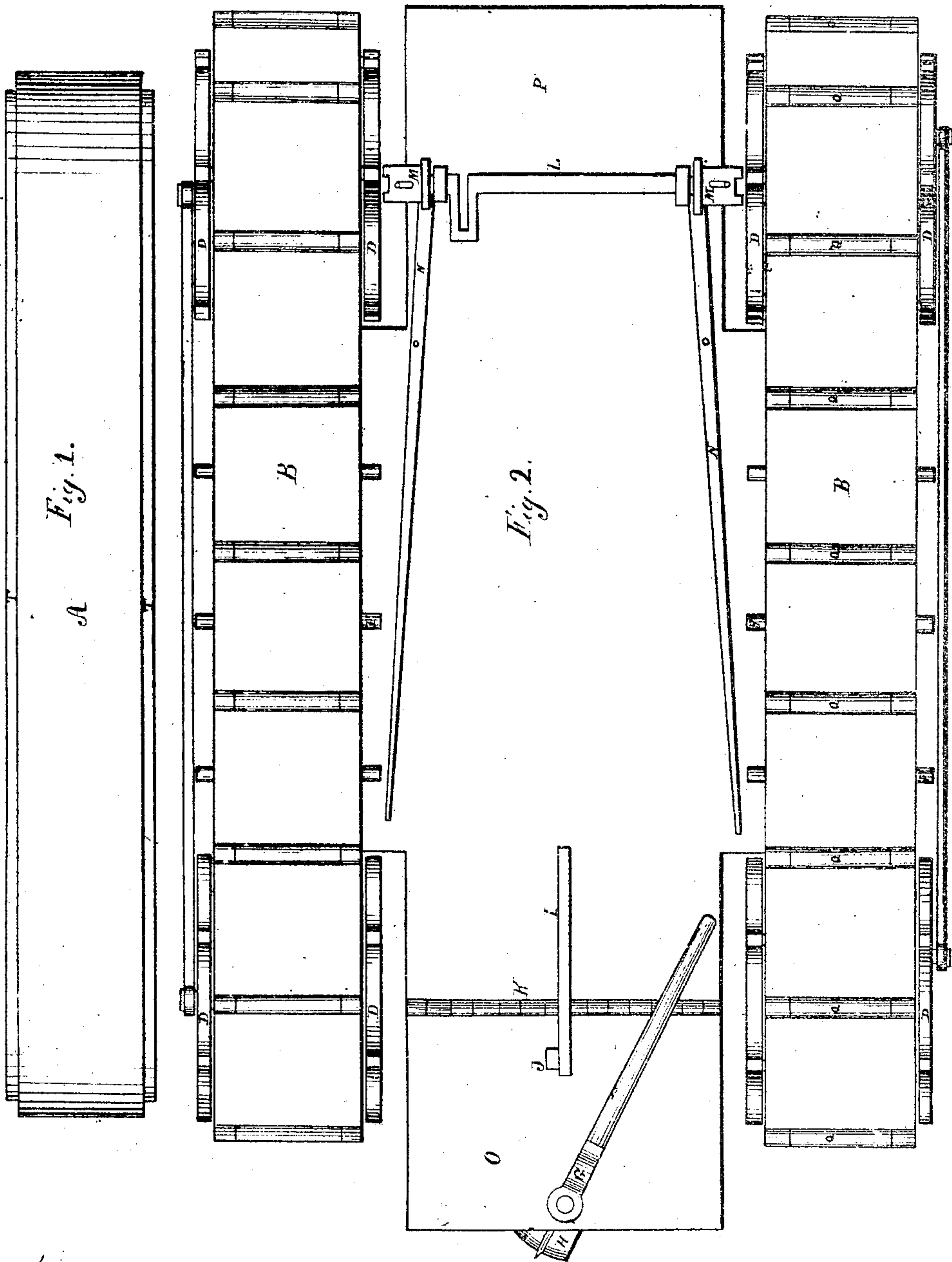


*T.S. Minniss Sheet 1. 2 Sheets.*

*Locomotive for Plowing.*

*N<sup>o</sup> 61231.*

*Patented Jan. 15. 1867.*



*Witnesses.*  
*W. B. Burks*  
*J. P. Blumpton*

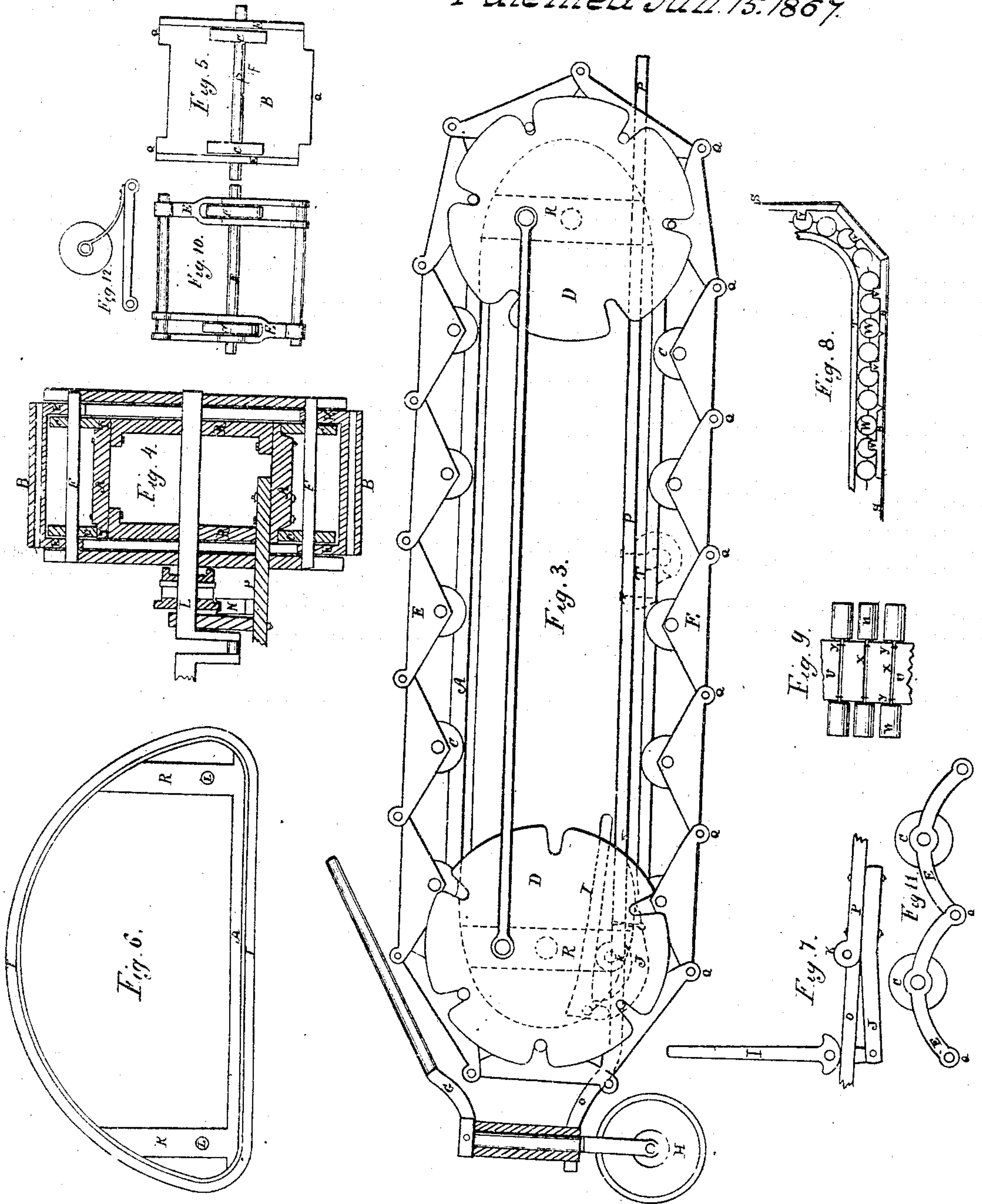
*Inventor.*  
*T. S. Minniss*

T.S. Minniss. Sheet 2. 2 Sheets

Locomotive for Plowing

Nº 61231.

Patented Jan. 15. 1867.



Witnesses.  
H. B. Brooks  
J. Blumenthal

Inventor.  
Thos. S. Minniss



# United States Patent Office.

THOMAS S. MINNISS, OF MEADVILLE, PENNSYLVANIA.

*Letters Patent No. 61,231, dated January 15, 1867.*

## IMPROVEMENT IN LOCOMOTIVES FOR PLOUGHING, &c.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS S. MINNISS, of the city of Meadville, in the county of Crawford, and State of Pennsylvania, have invented a new and improved Locomotive for use on common roads, towing boats, ploughing, mowing, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in placing upon the ground, in straight lines, and parallel with each other, a series of wheels, pulleys, or rollers, to be laid down and taken up in successive links, so that a platform of rails, with corresponding ways or grooves, shall fit to and pass freely on their upper surfaces, by means of an endless belt or chain passing over cogged or other suitable wheels, operated by steam or any other motor that will apply.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 is a top view of the open frame A A, with its sunken track, T T, a side view of which is seen in fig. 3.

Figure 2 is a top view of the locomotive, ready for the boiler and engines. B B B B are chain floors, D D D D are the driving-wheels, L is the crank-shaft, M M are slip-couplings, and N N are levers to throw them in and out of gear; H is the guide-wheel, and G is the guiding-lever; O is a platform, hinged at K to the main platform, so that, when necessary, an increased weight may be thrown upon the guide-wheel by the lever I, articulated to the stem J, operating by an eccentric, and depressing O. (See dotted lines in fig. 3, and the sectional view, Figure 7.)

Figure 3 is a side view, the same letters referring to like parts in the other figures.

Figure 4 is a transverse end view of one side of a double machine.

Figure 5 is a detached link, with knuckles Q Q Q, wheels C C, axle F, ears or bearings E E, and floor B. I construct my chain with the knuckles of the hinges projecting outwards, so as to prevent slipping, and each knuckle bevelled at its ends, so that they will slide more freely in turning the machine round.

For towing boats, travelling on common roads, and the like, I intend to use but one frame and chain, but will arch the frame up so high that a man can pass freely under; and on the floor I would place the boiler, with an engine placed on each side, geared directly to the driving-wheels. (See skeleton frame, Figure 6.) Instead of having the flexible apron or platform O hinged to the connecting floor or platform of a double machine, I will hinge it to a projecting floor on each side of the single track, and raise or depress it, either with an eccentric and lever, or with a screw. The guide-wheel H, I make very broad, so as not to sink in soft ground, having a sharp ring round its centre, so as to direct it with greater certainty. I fix a hollow post to the front of the apron, through which the stem of the guide-wheel H passes, and is operated by the lever G, or any equivalent appliance. The main object in making the machine double is the greater facility it gives in turning round. In ploughing, for instance, I would, at the end of a furrow, disconnect one side, by means of the slip-coupling; then, by holding the guide-wheel at right angles with the direction of the chain, and depressing the lever I, will relieve the front of the frame, and transfer the weight to the guide-wheel; then, by both engines operating on the connected chain, will cause it to perform a half circle round the disconnected hind driver, and then start back just the width of the machine on the unploughed ground; and, with ploughs having reversible mould-boards, land can be ploughed continuously, without dead furrows, (the throw of the furrows being all in one direction;) and a single machine, by having right-hand ploughs at one end, and left-hand at the other, and with a flexible apron and guide-wheel at each end, can do the same thing without turning at all, except that it will take some running back and forth at the ends to shift it to a new line of furrows. I claim nothing for ploughs or their attachments in this, as I intend to make them the subject of another patent; for with this machine ploughing and harrowing, planting, sowing, or drilling, and rolling can, when required, all be done with one operation.

To make a practical single machine of, say ten-horse power, I would make a strong bottom frame of wood or iron, twelve or fifteen feet long, and about four feet wide, covered with a tight iron floor. To the outer edges or sides of the frame A, I would secure angle-iron, three-quarters of an inch thick, with flanges two inches wide, and bend it into shape over head, for a track and guide to the wheels c c, as in fig. 6, T T. I would make



the track on the outside of the guide or flange, (instead of inside,) so that any dirt that might fall on the track would be crushed off and fall outside the machine. The floor of the chain I would make of one and a quarter inch oak plank, each link say four feet by two feet the longest way across the chain, with hinge, made of thin wrought iron, the whole width of the chain; and I would also make the ears or bearings E E to hinge together on a line with the strap hinges, and all well bolted or riveted to the floor plank. The bearings E E, I would make of either cast or wrought iron, and to come up so as to give a free bearing on both sides to a wheel ten inches in diameter, one and a half inch thick at the rim, swelled to two inches at the hub, with sides corrugated like spokes, to make it light and strong, with an axle, F, one and a half inch in diameter, extending beyond the bearings on each side the machine two inches, for the drivers to take hold of; or, instead of the axle, a projection can be cast on the side bearing for the drivers to gear to. I make my chain to hinge on its outside or longest surface, so as to make it continuously unbroken; for, if hinged in any other place, it would open in going round the curves, and grasp up dirt as it closed into a straight line again. I hang my pulleys or wheels in the middle of the link, so as to leave both ends free to yield to the inequalities of the ground, while the wheels still retain their bearing against the track. But it must be remembered that when the wheels are thus hung in the middle of the links, they will not come round off a true half circle into a straight line, which they would do if hung directly over the hinges; but the curve must be elliptical, to prevent the front end of each link, as it comes into bearing on the ground, being thrust below the line of those under the straight rail. To project the curve required you must make the distance between the foci just equal to the width of the ellipse; i. e., if the greatest width of the ellipse is three feet, then your foci must be that distance apart. Off the end of such a curve the chain will come into a straight line, with all the wheels bearing. (See dotted lines in fig. 3.) It is not absolutely necessary that the wheels C C should have a bearing on the track while they are in the grasp of the drivers D D; but as the space is so short, the track may as well be endless. The drivers can operate on the chain either inside or outside of the track. The upright posts R R are firmly united at top and bottom, to furnish bearings for the shafts or axles of the drivers. (See figs. 3, 4, and 6.) The stem J is a bar of iron, one by two inches, which is firmly bolted to the front of the main platform P on the under side, and extending forward under O about one-third its width, where it is turned up at right angles through the floor of O. It must drop or bend a little after it leaves P, so as to allow O to fall below the level of P; and the stem, instead of being rigid where it is turned up, should be jointed, as in fig. 7, so that the eccentric will roll instead of rub, when operated by its lever I; or the bar J may be bolted on the top of P, and bend up instead of down, and be operated in the same way; or, with a screw through J, with long stem to it, and wheel at top, the operator could force down O with ease. Where the locomotive is of a light structure, to be used on a firm surface only, I would dispense with the plank of the floor, and use only the skeleton of bearings E E and hinges Q Q; in which case the skeleton chain may be made as in Figures 10 and 11; and if a spring is desired, each link may be made as in Figure 12.

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

1. An endless chain or track, composed of plates B, hinged as described, with vertical flanges E, and truck C, in combination with the frame-track A and wheel D, as and for the purpose set forth.
2. The clutch M, operated by lever N, in described combination with wheel D and endless chain or track, for the purpose specified.
3. The platform O, with guide-wheel H, arm J, and cam-headed lever I, as and for the purpose set forth.

THOS. S. MINNISS.

Witnesses:

H. B. BROOKS,  
J. B. COMPTON.