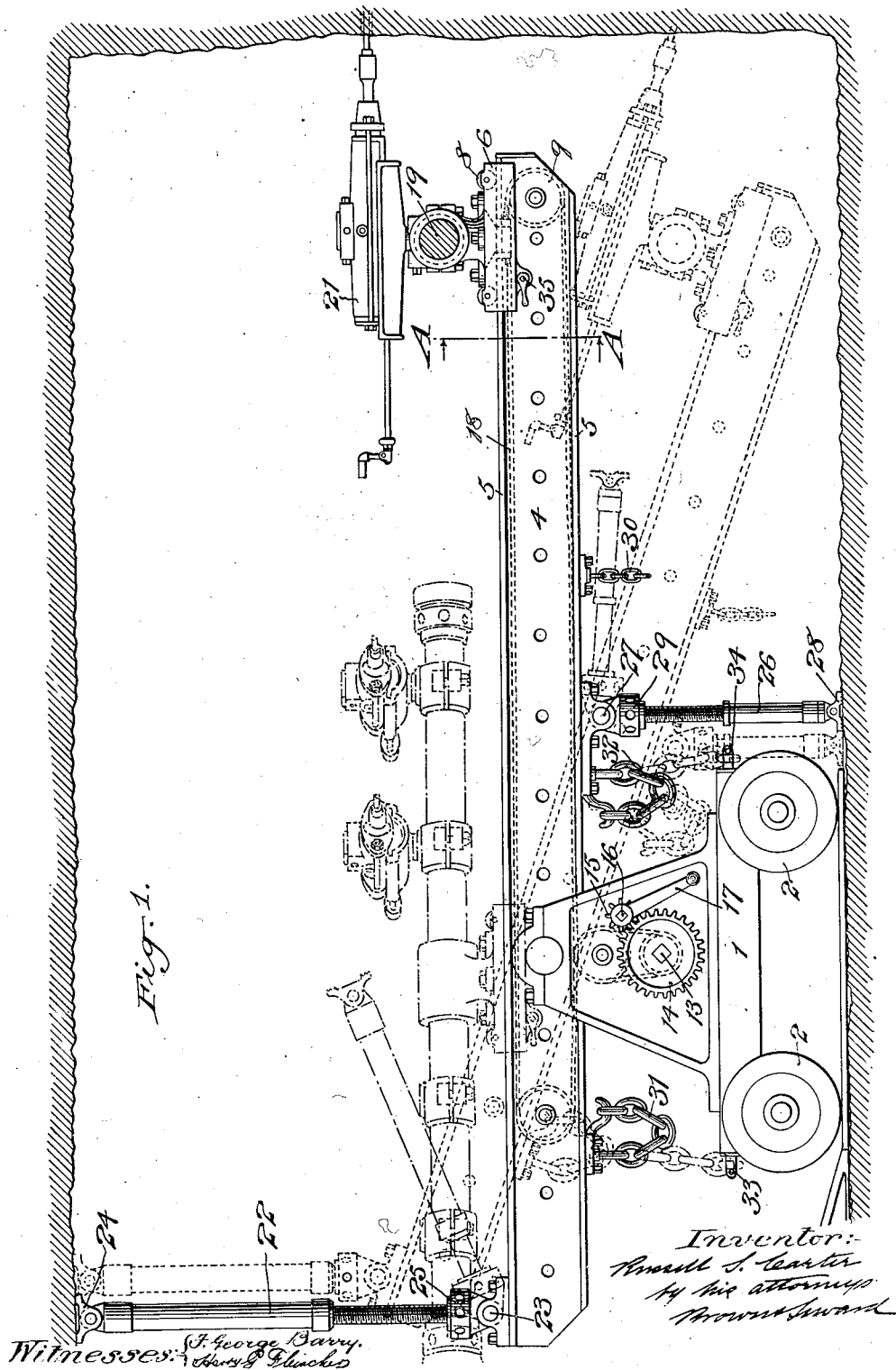


1,098,014.

Patented May 26, 1914.

3 SHEETS—SHEET 1.

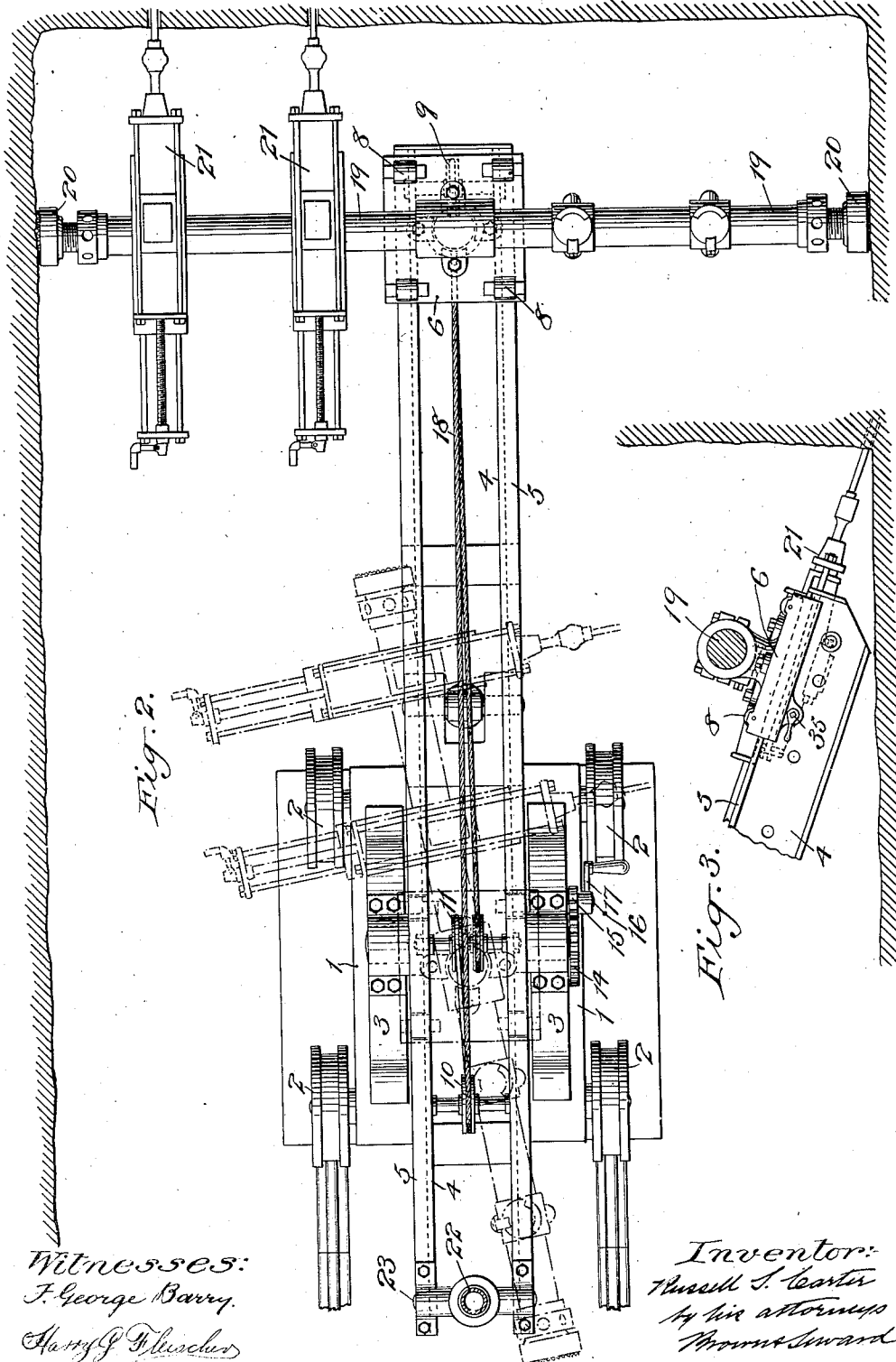


R. S. CARTER.
TUNNELING CARRIAGE.
APPLICATION FILED AUG. 18, 1910.

Patented May 26, 1914.

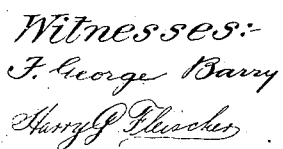
3 SHEETS—SHEET 2.

1,098,014.



1,098,014.

3 SHEETS—SHEET 3.



Inventor:-
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UNITED STATES PATENT OFFICE.

RUSSELL S. CARTER, OF HEWLETT, NEW YORK, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TUNNELING-CARRIAGE.

1,098,014.

Specification of Letters Patent.

Patented May 26, 1914.

Application filed August 18, 1910. Serial No. 577,854.

To all whom it may concern:

Be it known that I, RUSSELL S. CARTER, a citizen of the United States, and resident of Hewlett, in the county of Nassau and State of New York, have invented new and useful Improvements in Tunneling-Carriages, of which the following is a specification.

The object of this invention is to provide certain improvements in the construction, form and arrangement of the several parts of a tunneling carriage whereby the results obtained by the use of the improved carriage would be materially improved.

This invention consists in a tunneling carriage comprising one or more of the following features: a truck, a beam pivoted to swing vertically thereon, a support movable along the beam and means for rigidly supporting the beam without the use of counterbalanced weights, said means comprising one or more braces arranged either to the front or to the rear of the pivotal connection of the beam on the truck or at both places, the brace or braces being arranged to be folded along the beam for convenience in transportation and the said braces being also adjustable to suit different places, the rear brace being arranged to be engaged with the roof of the tunnel and the front brace being arranged to be engaged with the floor of the tunnel.

A further object is to provide a tunneling carriage in which the support which travels along the tilting beam is arranged to carry a laterally swinging drill bar so that the drill bar may be swung into substantial alinement with the beam for convenience in transportation, the support also being movable to a point over the truck for convenience in transportation.

A practical embodiment of the invention is represented in the accompanying drawings, in which—

Figure 1 represents the carriage in side elevation with the parts shown in full lines in one of the operative positions of the carriage and in dotted lines in another of its operative positions, the drills, drill bar and the drill bar support being shown in broken lines in their inoperative folded position over the truck, Fig. 2 is a top plan view of the carriage showing in full lines the parts in the position which they assume

when the carriage is in operation, the drills, drill bar and the drill bar support being shown in broken lines in their folded position over the truck for purposes of transportation, Fig. 3 is a detail view showing the drill bar support and the parts carried thereby in position for undercutting, Fig. 4 is a rear end view of the carriage the support not being shown, Fig. 5 is a detail longitudinal vertical section through the carriage showing more clearly the means for moving the support outwardly and inwardly along its beam, and Fig. 6 is a detail transverse section taken in the plane of the line A—A of Fig. 1, looking in the direction of the arrows.

The tunneling carriage includes a truck having traction wheels, whereby the carriage may be moved into and out of position for use. This truck is provided with a pair of uprising side frames, between which the drill supporting beam is pivotally mounted intermediate its ends, to swing vertically. This beam comprises two members spaced apart, each of which is provided with outwardly extended flanges along its top and bottom edges.

A suitable support, such as a drill bar support, is fitted to move inwardly and outwardly along the front extension of the beam, said support being provided with inwardly turned flanges for engaging the inner walls of the top flanges of the beam. This support is further provided with traction wheels arranged to engage the outer faces of the flanges along the top of the beam.

Means on the carriage truck are connected to the support for moving it inwardly and outwardly as follows: Between the members of the beam at the forward end of the beam, a pulley is mounted and between these beam members adjacent to the rear end of the beam, a pulley is mounted. Between the side frames of the truck, below the beam, a pulley and a winding drum are mounted. This winding drum, in the present instance, is rotated by hand as follows: The shaft of the winding drum is provided with a spur gear, which spur gear meshes with a pinion on a handle shaft. A hand crank for the shaft is provided. A cable or other flexible connection leads from the support

around the pulley 9 and from thence rearwardly around the pulley 11, one or more times around the drum 12, around the pulley 11, from thence rearwardly to and around the pulley 10 and from thence forwardly into engagement with the said support. In the present instance, a drill bar 19 is shown as pivoted on the support 6 to swing laterally with respect thereto. This drill bar is provided at its opposite ends with extension feet 20 arranged to be extended into engagement with the side walls of the tunnel when the drills bar is in position for use and are arranged to be contracted when it is intended to move the drill bar inwardly to a point over the carriage truck and fold the same into substantial alinement with the beam for purposes of transportation. A series of rock drills 21 are shown mounted on the drill bar 19 in the usual manner. An adjustable folding brace 22 is hinged at 23, at the end of the rear extension of the beam 4, which brace is provided at its outer end with a foot 24 arranged to engage the roof of the tunnel when the brace is swung upwardly into its operative position. This brace is further provided with an adjusting nut 25 for extending and contracting the brace for bringing it into and out of engagement with the roof and for holding the beam in its proper vertical adjustment. This brace may be folded down into substantial alinement with the beam 4, for purposes of transportation. A similar adjustable folding brace 26 is hinged at 27, to the front extension of the beam 4, which brace is provided with a foot 28 arranged to be brought into and out of engagement with the floor of the tunnel by means of a nut 29. This nut 29 also serves to adjust the length of the brace 26 to coact with the brace 22 to rigidly hold the beam 4 in its desired adjustment. The adjustable brace 26 may be held in its folded position along the under side of the beam 4, as, for instance, by a chain 30. Chains 31 and 32 depending from the rear and front extensions of the beam 4, are arranged to be engaged with brackets 33, 34, on the truck 1, when the parts are in their folded position ready for transportation, for the purpose of holding the beam against tilting on the truck. A clamp screw 35 is carried by the support 6 in position to clamp the support to and release it from the beam.

When the tunneling carriage is used in connection with a gang of rock drills, the operation is as follows: Presupposing the parts to be in their folded position, the carriage is moved into the proper position with respect to the work to be operated upon. The chains 31 and 32 are released from their engagement with the brackets 33, 34. The brace 22 is swung upwardly into a substantially vertical position and the brace 26 is released and swung downwardly into a sub-

stantially vertical position. These two braces are then adjusted one with respect to the other until the beam 4 has been brought into the desired position. The drill bar is then swung around on its support until it assumes a position substantially at right angles to the beam 4. The screw clamp 35 is then released. The support is then moved outwardly along the front extension of the beam by the operation of the crank handle 17. When the support reaches its desired position, it is locked there by the clamp screw 35. The extension feet 20 of the drill bar are then brought into engagement with the side walls of the tunnel. When it is desired to transport the carriage to some other point, the clamp screw 35 is released and the extension feet 20 of the drill bar 19 are released from their engagement with the side walls of the tunnel. The support 6 is moved inwardly into a position over the truck 1 and the support is secured in position by the clamp 35. The drill bar is then swung around into substantial alinement with the beam 4. The braces 22 and 26 are then released from their engagement with the roof and floor of the tunnel and folded along the beam 4. The chains 31 and 32 are engaged with the brackets 33, 34, on the truck.

While I have shown the tunneling carriage in connection with a gang of rock drills, it is to be understood that the support on the beam may be used for other purposes than for carrying rock drills. It is also evident that various changes might be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the structure herein set forth, but

What I claim is:—

1. A tunneling carriage comprising a truck, a horizontally arranged beam carried thereby and extended to the front and rear thereof and a drill bar pivoted on the beam to swing laterally with respect thereto.

2. A tunneling carriage comprising a truck, a horizontally arranged beam carried thereby and extended to the front and rear thereof and a drill bar pivoted to swing laterally with respect to the beam and movable outwardly and inwardly along the same.

3. A tunneling carriage comprising a truck, a horizontally arranged beam carried thereby and extended to the front and rear thereof, a drill bar pivoted to swing laterally with respect to the beam and means for moving the drill bar outwardly and inwardly along the beam.

4. A tunneling carriage comprising a truck, a horizontally arranged beam carried thereby and extended to the front and rear thereof, a drill bar pivoted to swing laterally with respect to the beam and

means on the truck connected to the drill bar for moving it outwardly and inwardly along the beam.

5 5. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front and rear thereof, a support on the beam and means on the truck connected to the support for moving it outwardly and inwardly
10 along the beam.

6. A tunneling carriage comprising a truck, a horizontally arranged beam carried thereby, a support on the beam, a drill bar
15 pivoted to swing laterally on said support and means for moving the support outwardly and inwardly along the beam.

7. A tunneling carriage comprising a truck, a horizontally arranged beam carried
20 thereby, a support on the beam, a drill bar pivoted to swing laterally on the support and means on the truck connected to the support for moving it outwardly and inwardly along the beam.

25 8. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front and rear thereof, and an uprising brace carried by the rear extension of the beam
30 arranged to engage an overhead support.

9. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front
35 and rear thereof, and an uprising folding brace hinged to the rear extension of the beam arranged to engage an overhead support and arranged to be folded along the
40 beam.

10. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front
45 and rear thereof, and a depending brace carried by the front extension of the beam arranged to engage an underneath support.

11. A tunneling machine comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing verti-

cally on the truck and extended to the front and rear thereof, and a depending folding brace hinged to the front extension of the beam arranged to engage an underneath support and arranged to be folded along
55 the beam.

12. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front
60 and rear thereof, an uprising brace carried by the rear extension of the beam and a depending brace carried by the front extension of the beam.

13. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front
65 and rear thereof, an uprising folding brace carried by the rear extension of the beam
70 and a depending folding brace carried by the front extension of the beam, said braces being arranged to be folded along the beam.

14. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck and extended to the front
75 and rear thereof, an uprising brace carried by the rear extension of the beam, a depending brace carried by the front extension of the beam and a support movable along the
80 beam.

15. A tunneling carriage comprising a truck, a horizontally arranged beam pivoted intermediate its ends to swing vertically on the truck, an uprising brace for the
85 rear extension of the beam, a depending brace for the front extension of the beam, a support movable along the beam and a drill bar pivoted to swing laterally on said support into different angular positions with respect to the beam.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two witnesses this sixteenth day
95 of August, 1910.

RUSSELL S. CARTER.

Witnesses:

F. GEORGE BARRY,
C. S. SUNDGREN.