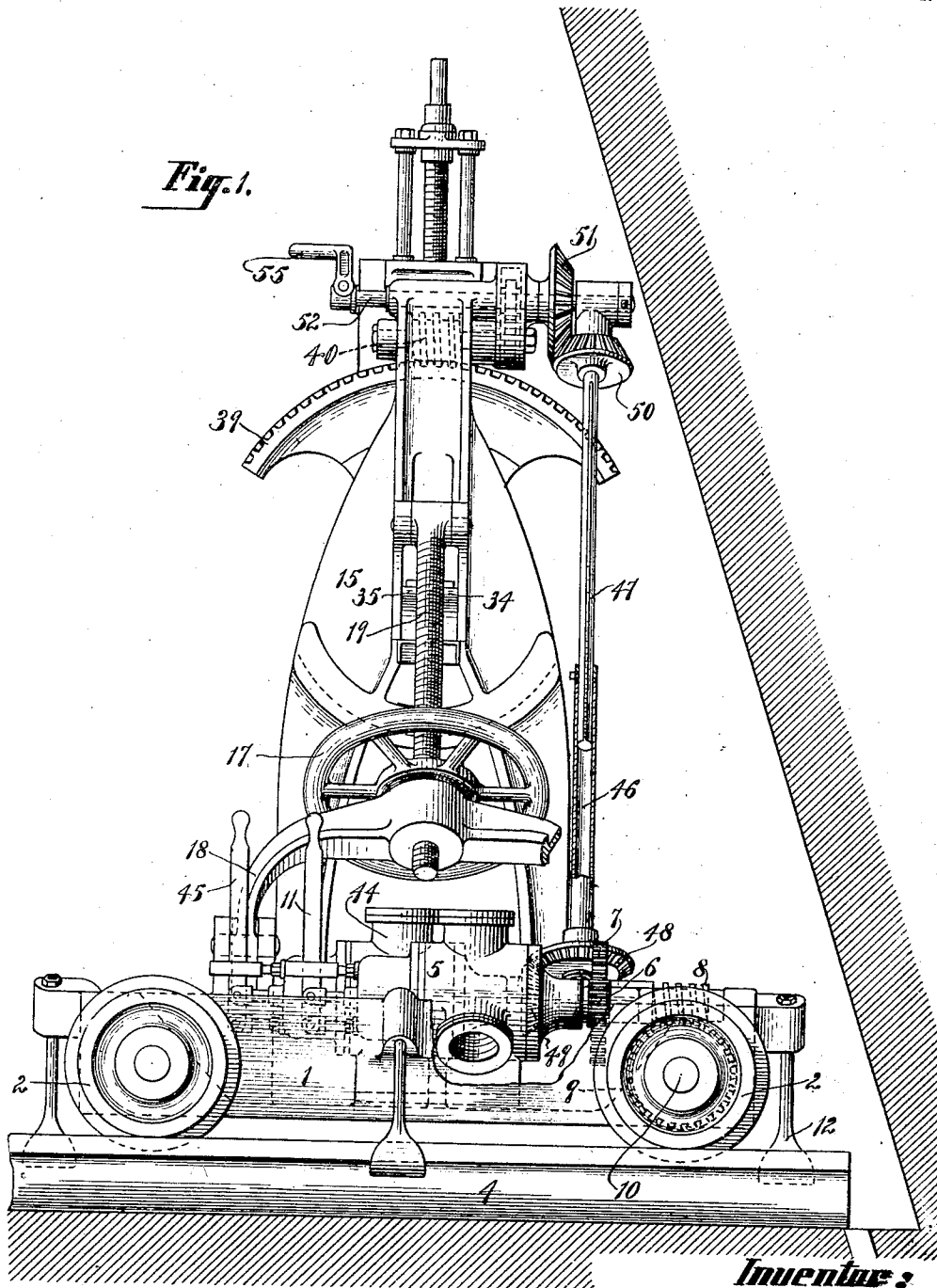


No. 849,019.

PATENTED APR. 2, 1907.

W. PRELLWITZ.
CHANNELING MACHINE.
APPLICATION FILED OCT. 23, 1905.

4 SHEETS—SHEET 1.



Witnesses:
F. L. Hachenberg.
J. George Barry.

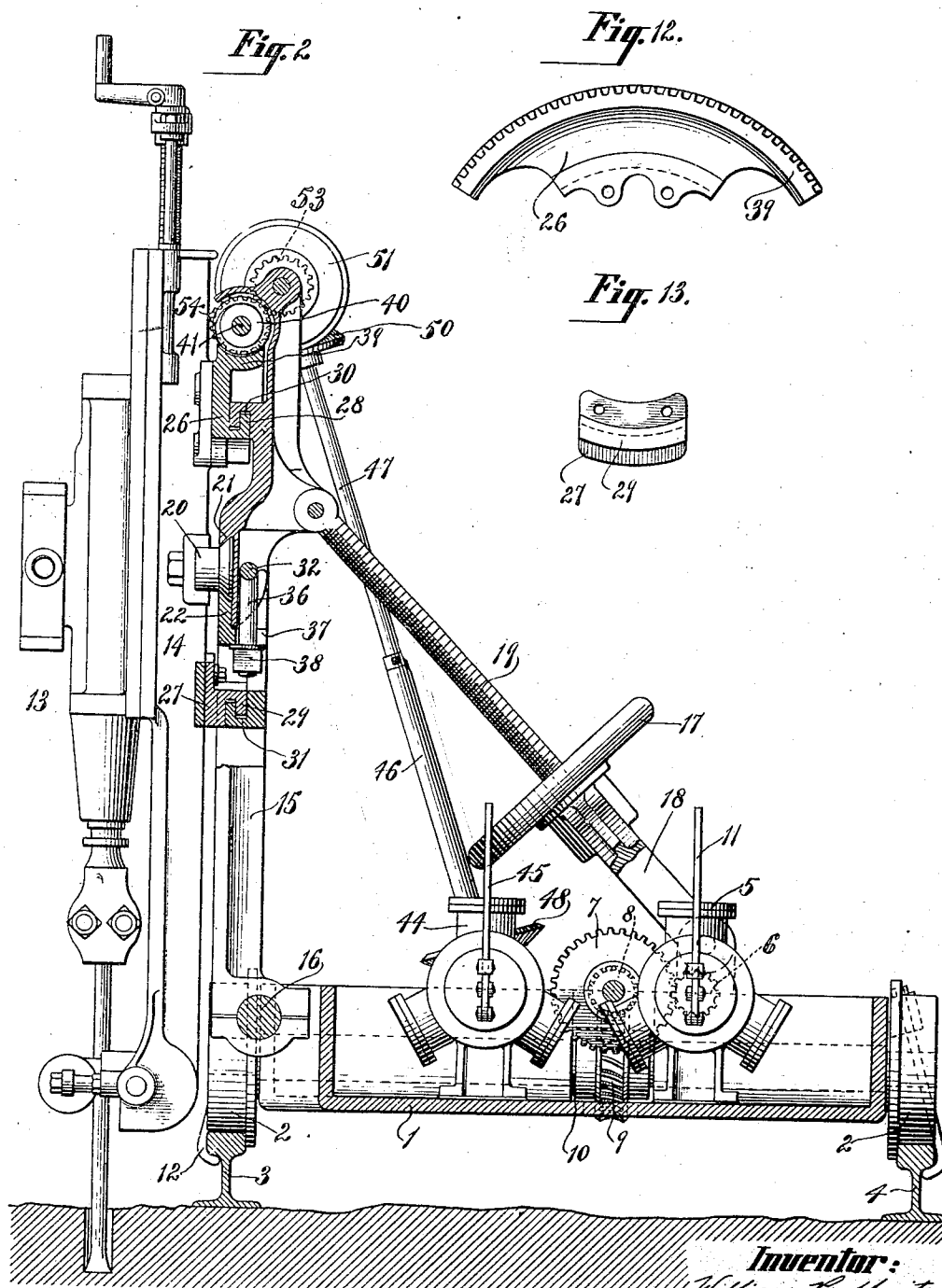
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4 SHEETS—SHEET 2.



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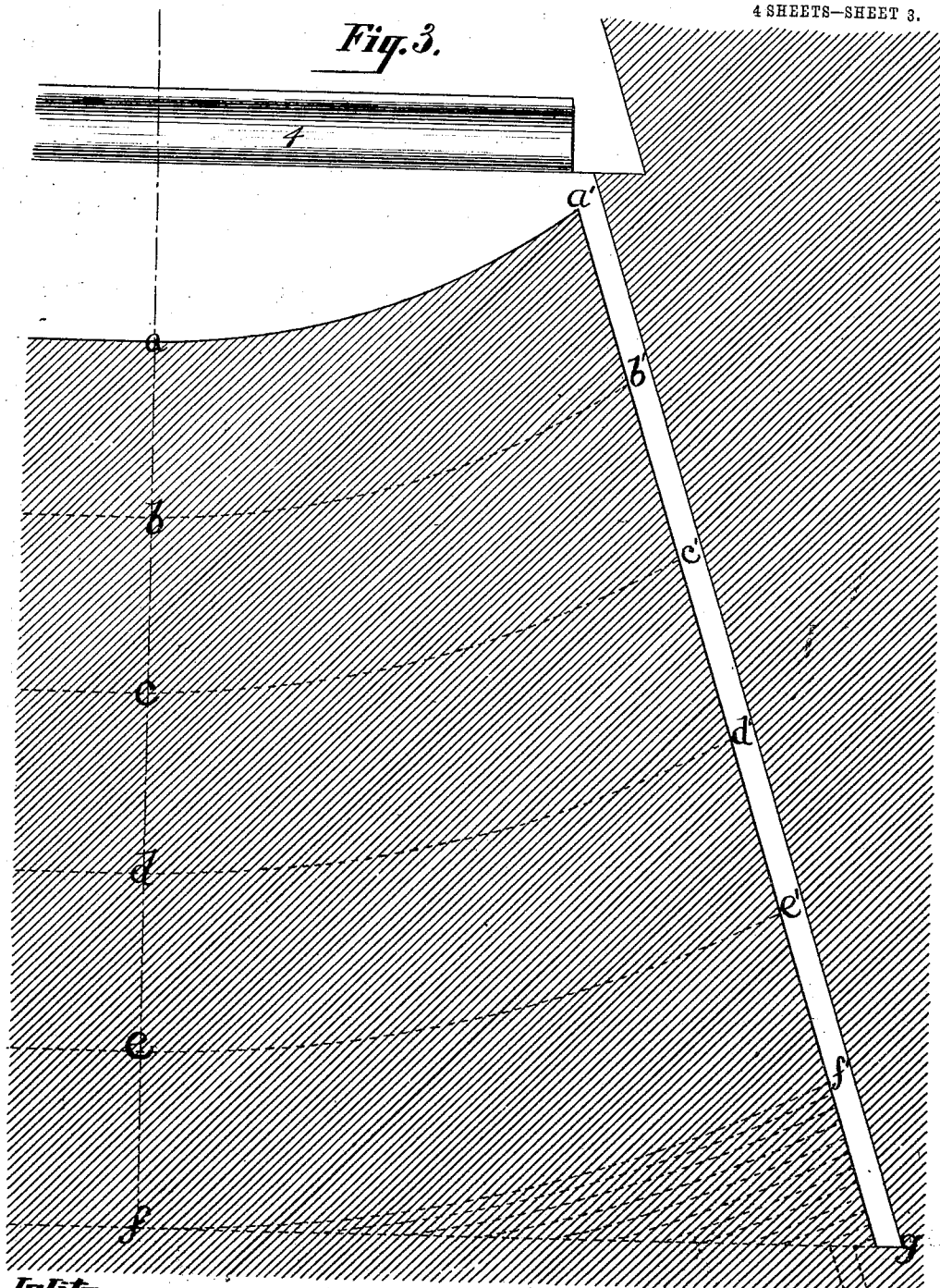
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

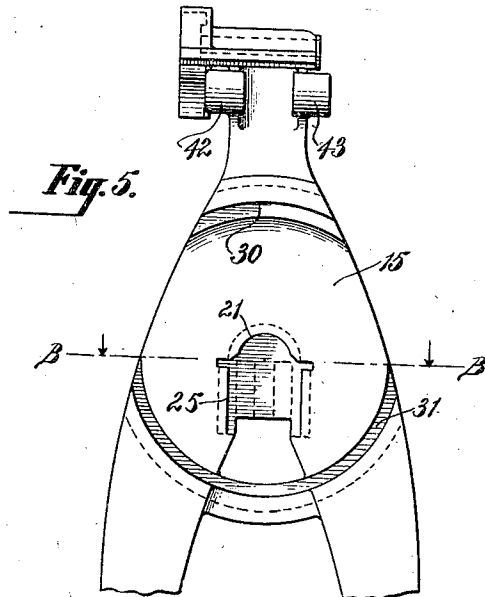
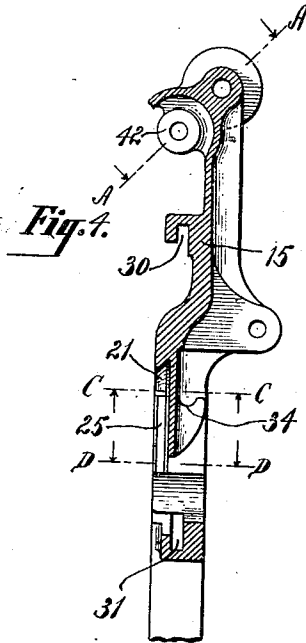


Fig. 6.

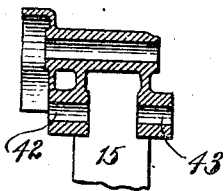


Fig. 7.

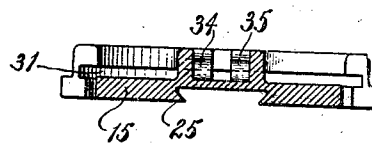


Fig. 8.

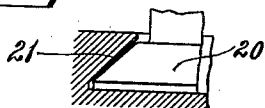


Fig. 9.

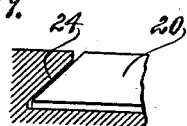


Fig. 10.

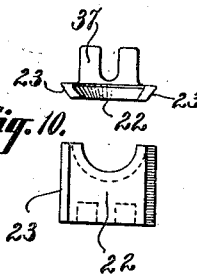
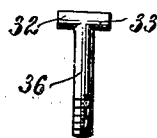


Fig. 11.



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UNITED STATES PATENT OFFICE.

WILLIAM PRELLWITZ, OF PHILLIPSBURG, NEW JERSEY, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CHANNELING-MACHINE.

No. 849,019.

Specification of Letters Patent.

Patented April 2, 1907.

Application filed October 23, 1905. Serial No. 233,987.

To all whom it may concern:

Be it known that I, WILLIAM PRELLWITZ, a citizen of the United States, and a resident of Phillipsburg, in the county of Warren and State of New Jersey, have invented a new and useful Improvement in Channeling-Machines, of which the following is a specification.

The principal object of this invention is to provide a channeling-machine which is adapted for use as a straight-line channeler and when it has reached a predetermined point is adapted for use as a radial channeler, whereby the drill-tool may be caused to strike the rock at right angles thereto instead of at an acute angle, as has heretofore been necessary when the transfer cuts have been made with a regular straight-line channeler.

A further object of my invention is to provide certain improvements in the construction, form, and arrangement of the several parts, whereby the radially-swinging shell which supports the drill carries the sector, and the transversely-swinging frame which is hinged on the truck carries the worm, the worm being driven from a motor carried on the truck independent of the motor which drives the truck along its track.

A further object is to provide a machine of the above character in which a very extended and rigid support for the shell on its frame is provided.

In the accompanying drawings, Figure 1 represents the channeling-machine in back elevation, the same being shown located in position for use. Fig. 2 is a partial vertical transverse section through the machine. Fig. 3 is a detail view showing the manner in which the machine may be used both as a straight-line and a radial channeler for completing a cut from one level to a lower level. Fig. 4 is a transverse vertical section through the upper portion of the transverse swinging frame. Fig. 5 is a front view of the same. Fig. 6 is a detail section taken in the plane of the line A A of Fig. 4. Fig. 7 is a transverse section taken in the plane of the line B B of Fig. 5. Fig. 8 is an enlarged detail transverse section through the cone-recess taken in the plane of the line C C of Fig. 4, with a part of the cone shown in position therein. Fig. 9 is an enlarged detail section through the jaw-recess, said section being taken in the plane of the line D D of Fig. 4, and a portion

of the jaw being shown therein. Fig. 10 shows the cone-clamping jaw in end elevation and top plan. Fig. 11 is a detail view of the jaw-engaging bolt, and Figs. 12 and 13 are detail views of the upper and lower segments which connect the shell to the frame.

The truck of the channeler is denoted by 1 and its traction-wheels by 2. The track-rails, which are shown as laid along one level, are denoted by 3 and 4. A motor 5 of any well-known or approved form, in the present instance a three-cylinder rotary engine, is shown mounted on the truck 1, and it is arranged to drive the truck along the track when the machine is to be used as a straight-line channeler. The connection of the motor with one pair of traction-wheels is in the usual manner through a gear-and-worm connection 6, 7, 8, and 9 with the axle 10, which is fixed to the said pair of wheels. The motor 5 is herein shown as being provided with a hand-operated reversing and controlling lever 11 for controlling the engine, and thereby the movement of the truck along the track. The truck may be provided with the usual clamping-irons 12, which are arranged to engage the heads of the track-rails for locking the channeler to the rails when it has been moved to a predetermined point.

The drill is denoted as a whole by 13, and it may be of any well-known or approved form and is herein shown as of the fluid-pressure-controlled type. This drill is carried by a shell 14, which is arranged to be moved forwardly and rearwardly in a radial direction on the frame 15, which is hinged to the truck 1 at 16 to swing transversely thereof into different adjustments. This frame 15 may be adjusted to different angular positions with respect to the truck by means of the usual hand-nut 17, carried by a swinging arm 18, hinged to the truck, which hand-nut engages a screw-bolt 19, hinged to the back of the frame 15 at its upper portion.

The shell 14 of the drill is pivoted to the truck-frame 15 as follows: The shell 14 is provided with a reverse cone 20, which is seated in a half-recess 21 in the frame 15. The other half of the cone-recess is formed in the end of a movable jaw 22, which is fitted to slide toward and away from the pivot-cone 20 by having its sides 23 engaging undercut side walls 24 of a vertical groove 25, opening into the half-recess 21.

The shell 14 is guided and supported by the frame 15 upon opposite sides of the pivot-cone 20 by providing the shell with oppositely-arranged upper and lower segments 26 27, which are provided with lips 28 29, which are located in concentric recesses 30 31 in the frame 15. These upper and lower segments 26 27 are bolted rigidly to the shell 14.

The shell 14 is locked against movement when desired by providing a bolt, the laterally-projecting arms 32 33 of which rest in sockets 34 35 in the frame 15 and the vertical portion 36 of which bolt projects through a rearwardly-extended arm 37 of the movable jaw 22. Below this arm 37 of the jaw the T-bolt is provided with a nut 38. When this nut 38 is set up, the jaw 22 will be brought into snug engagement with the cone 20 and clamp it securely and rigidly to the frame.

The means which I have shown for swinging the drill when it is desired to use the machine as a radial channeler is constructed, arranged, and operated as follows: The upper segment 26, hereinbefore referred to, is provided with a segmental rack 39, the teeth of which are at all times in mesh with a worm 40, the shaft 41 of which is mounted in suitable bearings 42 43 on the frame 15. A motor 44 is mounted on the truck 1, which motor in the present instance is shown as a three-cylinder rotary engine. This engine is provided with a hand-lever 45, arranged to control the movement of the engine in both directions. An extensible and contractible shaft 46 47 has a geared connection 48 49 with the engine 44 and a geared connection 50 51 with a cross-shaft 52, mounted in suitable bearings in the frame 15 adjacent to the shaft 41. This shaft 52 has a geared connection 53 54 with the worm-shaft 41, so that the operation of the engine 44 will rotate the worm 40, and thereby swing the drill-shell. This shaft 52 may be provided with a handle 55 for use in manually swinging the drill when so desired.

The means for feeding motive power to the drill and to the motors hereinbefore described has not been illustrated herein, as it is not thought that it is necessary for the clear understanding of the invention, and it forms no part of the present invention.

One method of operation is as follows: The drill-tools for cutting the first stage toward the lower level are secured in position for use. The motor 5 is then started for the purpose of moving the machine along its tracks, and the drill is also put into operation. When the machine reaches the point indicated in broken lines at *a* in Fig. 3, the motor 44 is put in operation, and the swinging movement of the drill is controlled by the handle of the motor for channeling from the point *a* to

the point *a'*. The truck may then be moved back to its original position. After the cutting of the first stage has been completed the next set of drill-tools may be inserted ready for cutting the next stage toward the lower level. The operations may then be repeated at the different stages *b b' c c' d d' e e'* until the machine has cut to the predetermined lower level *f g*. After this level has been reached the machine when being used as a radial cutter may cut out the rock by a series of operations, as shown in dotted lines in Fig. 3, beginning with *f f'*, to extend the level *f* through to the limit of the cut at *g*.

If so desired, the drill-shell may be locked to the truck-frame when the machine is being used as a straight-line channeler and released when used as a radial cutter. Also the truck may be clamped to the track-rails when the machine is used as a radial cutter.

It will be seen that the concentric guides in the frame for the upper and lower segments on the shell serve to materially brace the shell and produce a much stronger and more rigid construction than has heretofore been possible at this point. It will also be seen that the extensible and contractible connection between the shell-swinging motor and the worm-wheel permits the frame 15 to be adjusted into any angular position with respect to the truck without interfering with the operation of the engine or drill.

What I claim is—

1. A channeler comprising a wheeled truck, a drill pivoted thereon, means for moving the truck to cause the drill to cut a channel to a predetermined point and a motor connected to the drill for swinging it in the arc of a circle to cause the drill to complete the channel from said predetermined point.

2. A channeler comprising a wheeled truck, a drill pivoted thereon, a motor for driving the truck to cause the drill to cut a channel to a predetermined point and another motor connected to the drill for swinging it in the arc of a circle to cause the drill to complete the channel from said predetermined point.

3. A channeler comprising a wheeled truck, a drill pivoted thereon, a motor for driving the truck to cause the drill to cut a channel to a predetermined point and another motor mounted on the truck and connected to the drill for swinging it in the arc of a circle to cause the drill to complete the channel from said predetermined point.

4. A channeler comprising a wheeled truck, a drill pivoted thereon, means for locking the drill to and releasing it from the truck, a motor for driving the truck to cause the drill to cut a channel to a predetermined point while the drill is locked to the truck and another motor connected to the drill for swinging it in the arc of a circle to cause the drill to

complete the channel from said predetermined point when the drill is released from the truck.

5 5. A channeler comprising a wheeled truck, a drill pivoted thereon, means for locking the drill to and releasing it from the truck, a motor for driving the truck to cause the drill to cut a channel to a predetermined point when locked to the truck and another motor
10 mounted on the truck and connected to the drill for swinging it in the arc of a circle to cause the drill to complete the channel from said predetermined point when the drill is released from the truck.

15 6. A channeler comprising a wheeled truck, a drill pivoted thereon, means for locking the drill to and releasing it from the truck, means for moving the truck to cause the drill to cut a channel to a predetermined point while
20 locked to the truck and a motor connected to the drill for swinging it in the arc of a circle to cause the drill to complete the channel from said predetermined point when the drill is released from the truck.

25 7. A channeler comprising a wheeled truck, a drill pivoted thereon, means for locking the drill to and releasing it from the truck, means for moving the truck to cause the drill to cut a channel to a predetermined point when
30 locked to the truck and a motor mounted on the truck and connected to the drill for swinging it in the arc of a circle to cause the drill to complete the channel from said predetermined point when the drill is released
35 from the truck.

8. A channeler comprising a wheeled truck, a frame hinged thereto, a drill, its shell pivoted on the frame, means for adjusting the frame into different angular positions with
40 respect to the truck, a motor for driving the truck to cause the drill to cut a channel to a predetermined point, another motor mounted on the truck and connected to the drill for

swinging it in the arc of a circle to cause the drill to complete the channel from said pre- 45 determined point.

9. A channeler comprising a wheeled truck, a truck-frame, a drill, its shell pivoted on the frame, curved guides on the frame for the shell concentric with and upon opposite sides 50 of the pivotal connection of the shell with the frame, a motor mounted on the truck and connections between the motor and shell for permitting the motor to swing the shell.

10. A channeler comprising a wheeled 55 truck, a frame hinged thereto, a drill, its shell pivoted on the frame, means for adjusting the frame into different angular positions with respect to the truck, a worm carried by the frame, a segment carried by the shell 60 meshing therewith, a motor mounted on the truck and an extensible and contractible shaft geared to the motor and worm.

11. A channeler comprising a truck-frame, a drill, its shell pivoted to the frame, guides 65 on the frame concentric with and upon opposite sides of the pivotal connection, upper and lower segments carried by the shell, engaged with the guides and means for swinging the drill-shell. 70

12. A channeler comprising a truck-frame, a worm mounted thereon, a motor for operating the worm, a drill, its shell pivoted to the frame, a guide on the frame concentric with the pivotal connection and a segment 75 carried by the shell engaged with the guide, the said segment having a toothed rack meshing with the worm.

In testimony that I claim the foregoing as my invention I have signed my name, in 80 presence of two witnesses, this 20th day of October, 1905.

WILLIAM PRELLWITZ

Witnesses:

GEO. J. HARTMANN,
WARD RAYMOND.