

No. 736,446.

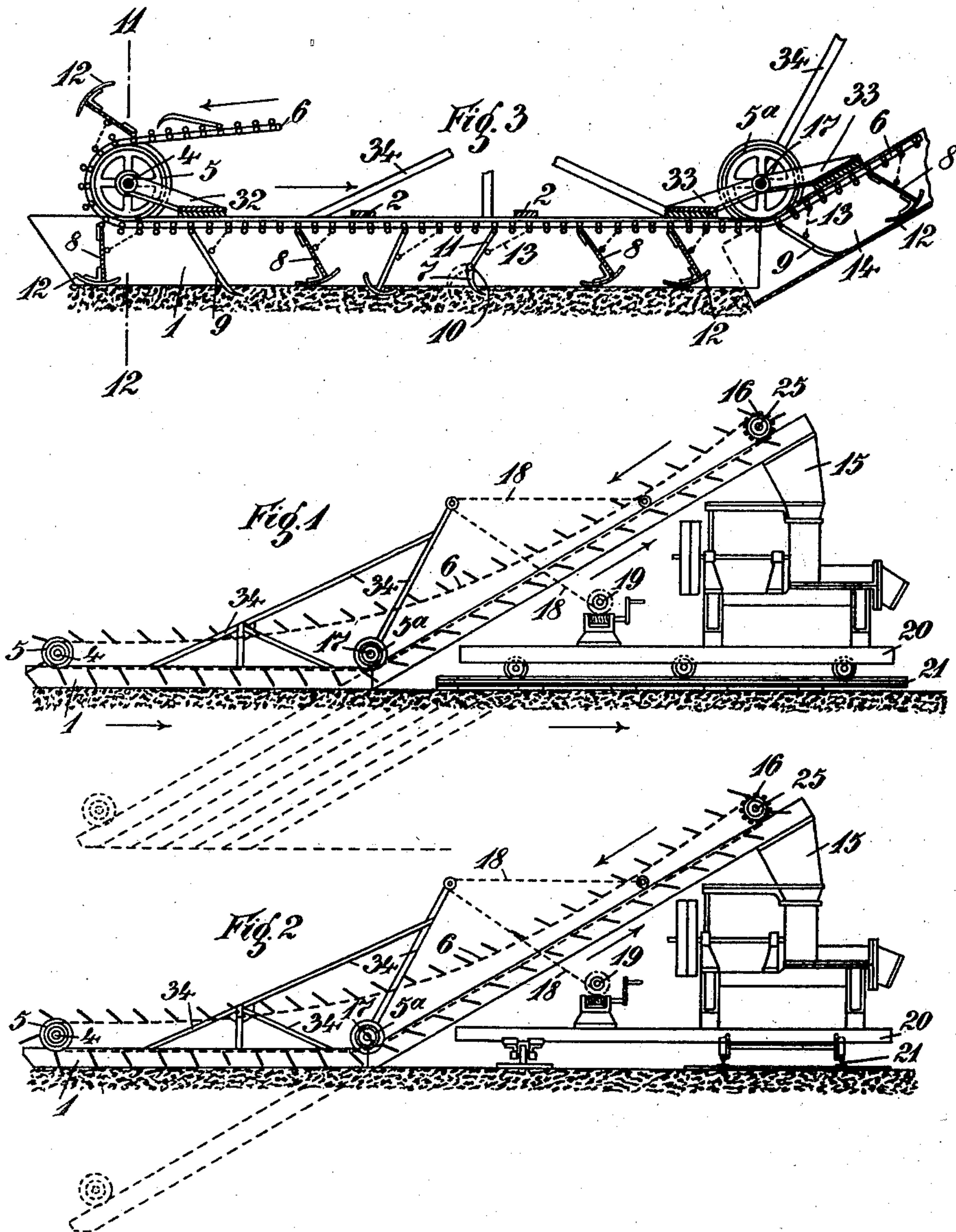
PATENTED AUG. 18, 1903.

C. F. SCHLICKEYSEN.
MACHINE FOR DIGGING AND CONVEYING PEAT.

APPLICATION FILED APR. 21, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

Autor Glatzer.
Florence M. Patrick.

Inventor:

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his Attorney

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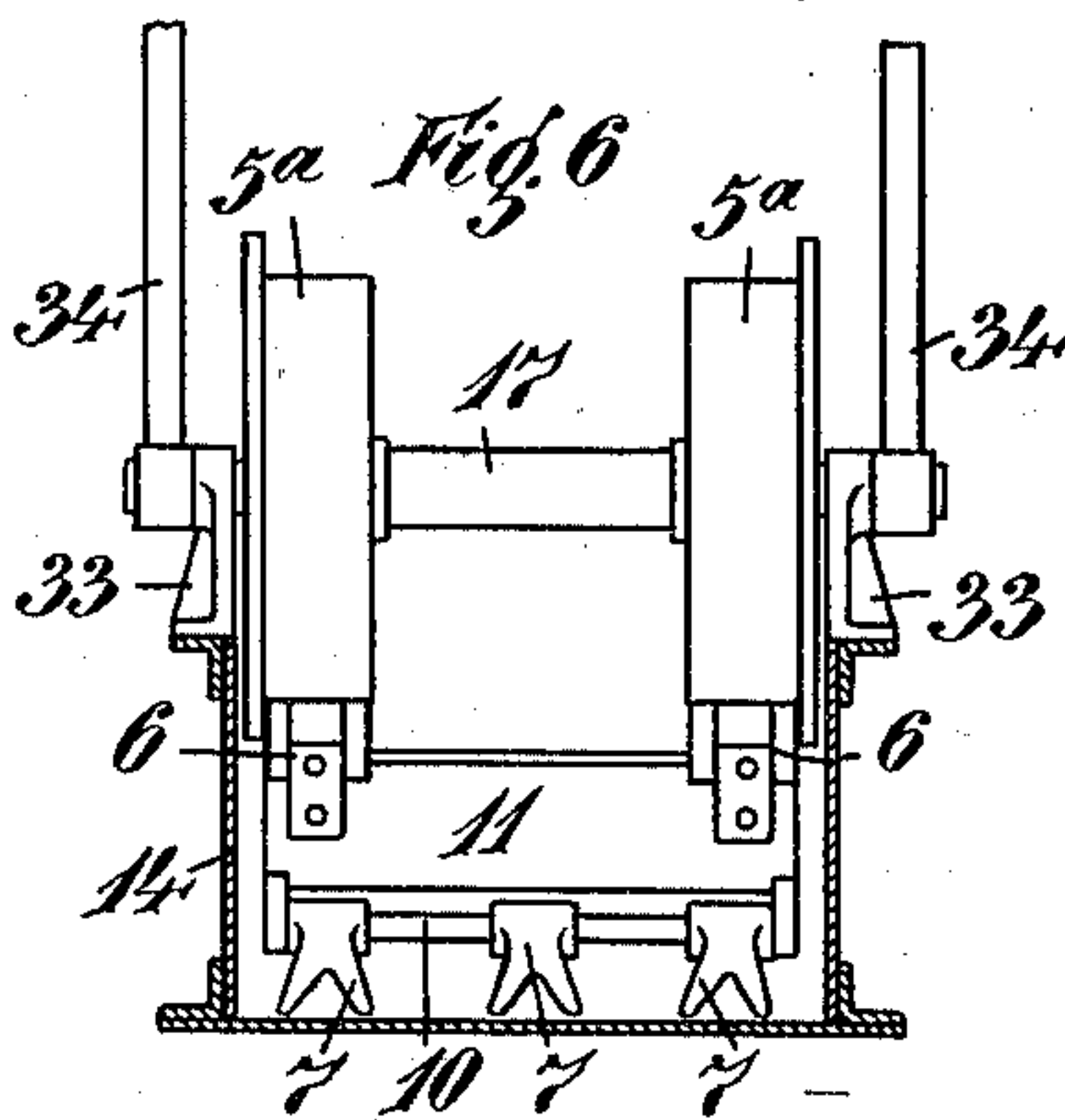
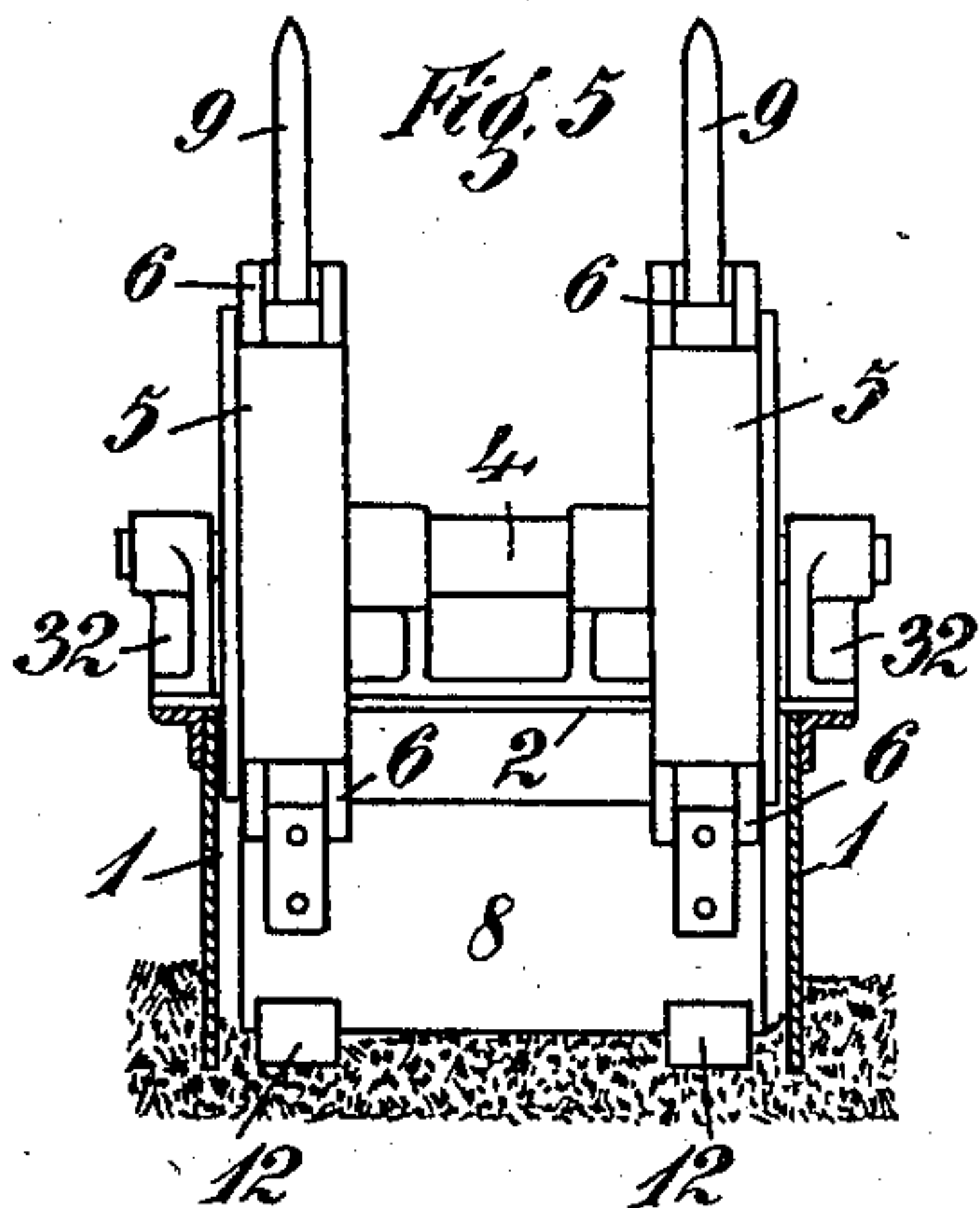
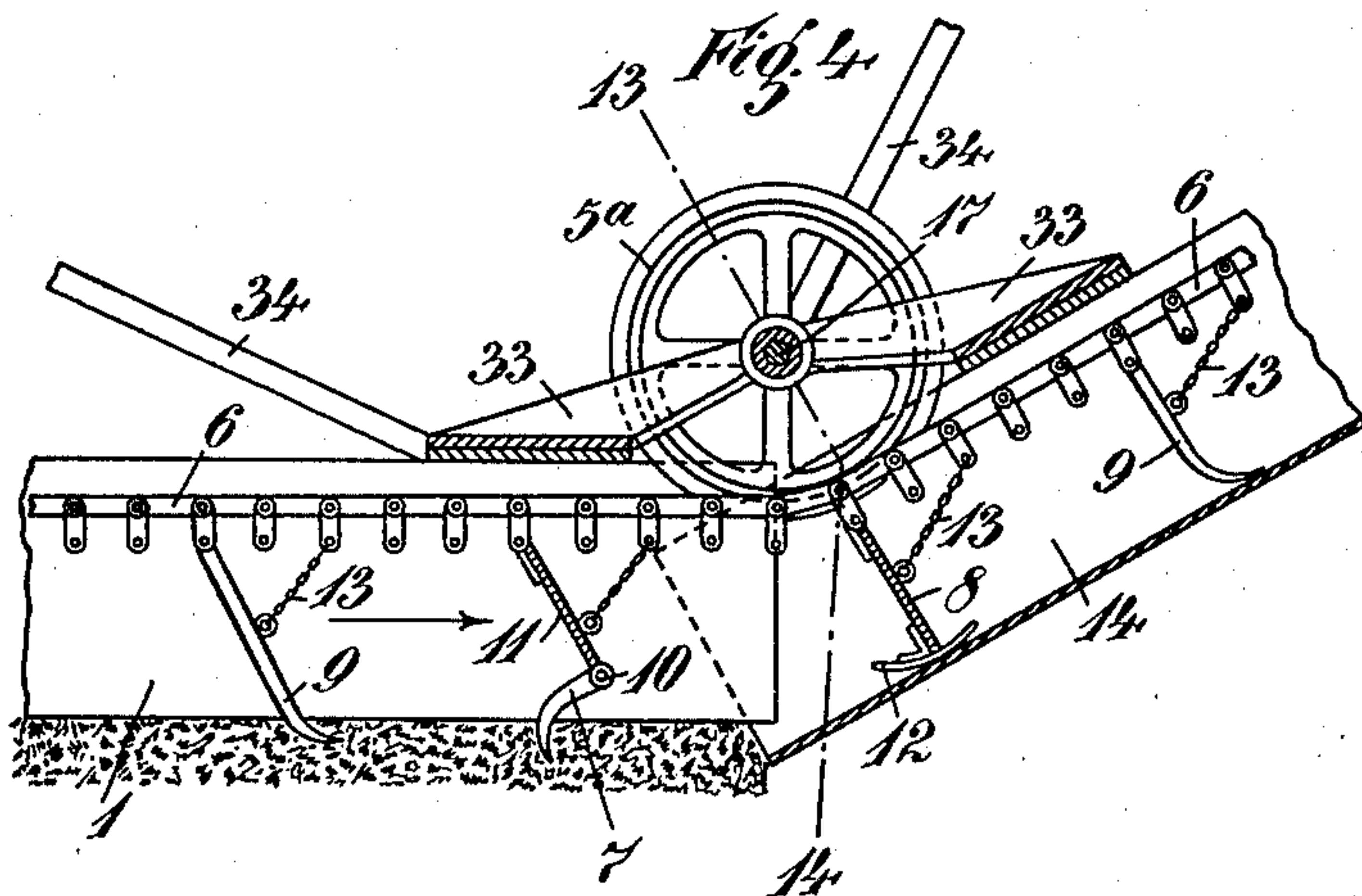


Fig. 5a

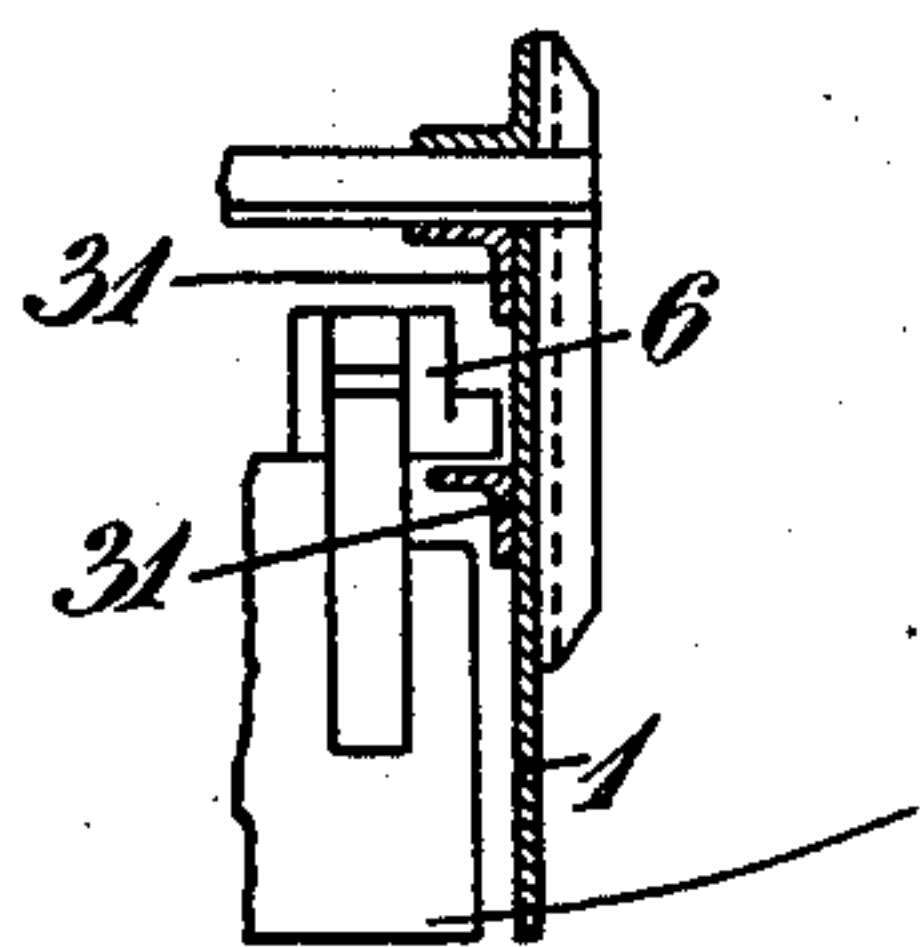
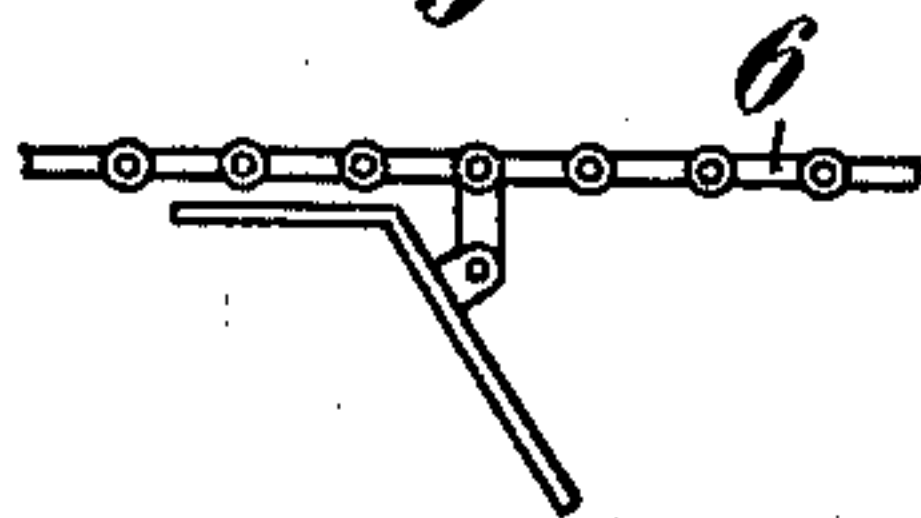


Fig. 9



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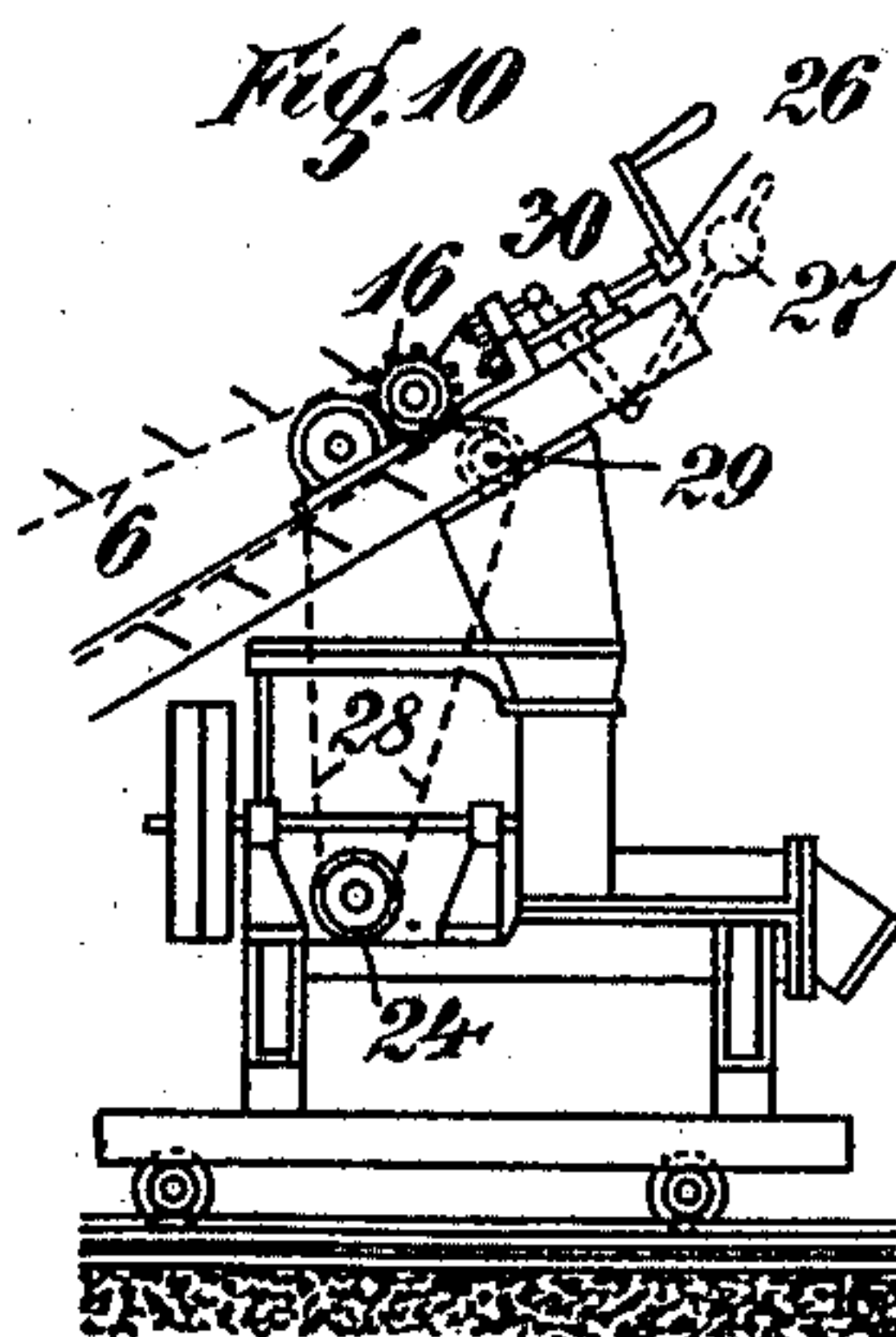
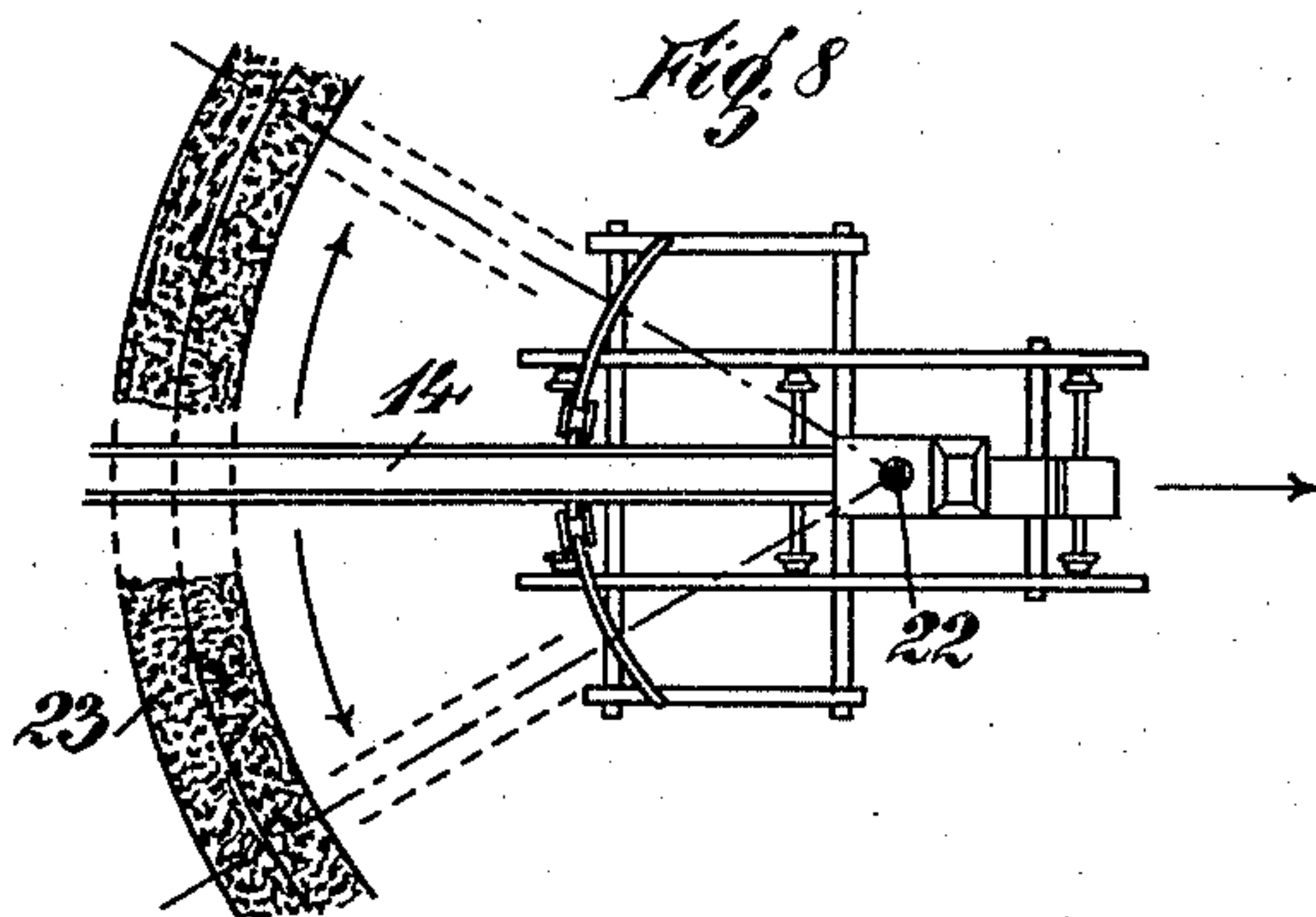
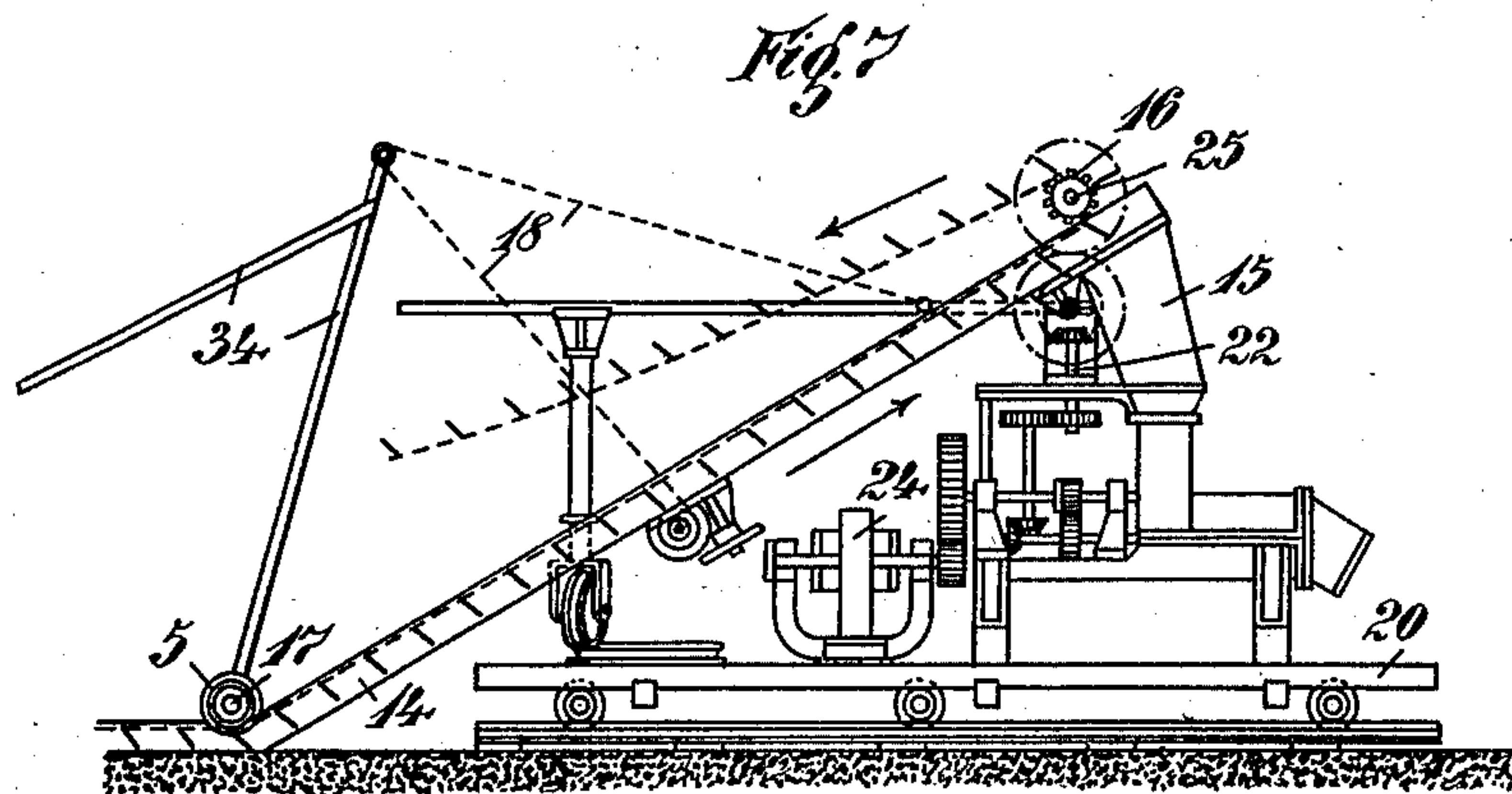
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3 SHEETS—SHEET 3.



Witnesses:
Anton Gloetzer.
Florence M. Patrick.

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UNITED STATES PATENT OFFICE.

CARL FRIEDRICH SCHLICKEÿSEN, OF STEGLITZ, GERMANY.

MACHINE FOR DIGGING AND CONVEYING PEAT.

SPECIFICATION forming part of Letters Patent No. 736,446, dated August 18, 1903.

Application filed April 21, 1902. Serial No. 103,990. (No model.)

To all whom it may concern:

Be it known that I, CARL FRIEDRICH SCHLICKEÿSEN, manufacturer, a subject of the King of Prussia, German Emperor, residing at Friedrichstrasse No. 6, Steglitz, near Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Machines for Digging and Conveying Peat, of which the following is a specification.

In the method of digging peat as practiced up to the present time the native peat is dug by means of shovels, the latter being pushed by the workmen into the soil, so as to separate a certain quantity of peat, after which the peat is thrown into a conveying-trough, in which it is transported upward in an oblique direction by means of a drag-chain and plates or the like fixed to the chain. The upper end of the conveying-trough empties into the hopper of a peat-compressing or peat-molding machine, in and by which the peat is converted into sods or briquets. If the peat compressing or molding machine be one in which two cubic meters of practically dry peat may be produced from twelve cubic meters of native peat in an hour, then six workmen are requisite to feed that machine to its normal capacity.

Now the object of my invention is to avoid the employment of these workmen, and I attain that object by effecting the digging of the peat automatically by aid of a constantly-moving endless chain properly guided in and by a suitable frame and having attached to it hooks and shovels adapted to loosen the peat and to transport it either into a pit or into the hopper of the machine. The whole, comprising the compressing or molding machine, the conveying-trough, and the digging device, is preferably so arranged that it may be displaced or moved in suitable directions proportionally to the progress of work.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar figures denote similar parts throughout the several views, and in which—

Figure 1 is a side view of one form of construction of my invention, the whole being adapted to be moved parallel to the direction of movement of the chain. Fig. 2 is a similar view, the movement being, however, lat-

erally of the chain. Fig. 3 is an enlarged view of the left-hand part of Fig. 1 or Fig. 2. Fig. 4 is an enlarged view of the middle part of Fig. 3. Fig. 5 is a vertical section on the line 11 12 of Fig. 3 drawn on a larger scale. Fig. 5^a is a detail view which will duly be described hereinafter. Fig. 6 is a section on the line 13 14 of Fig. 4. Fig. 7 is a side view of a form of construction similar to Fig. 1, in which the whole except the carriage may be turned upon this latter around a vertical axle. Fig. 8 is a plan of some parts of Fig. 7. Fig. 9 shows another manner of attaching the hooks and shovels to the chain, and Fig. 10 shows a means for stretching the chain.

Referring to Figs. 1 to 5, the side plates 1 of the frame (preferably consisting of sheet-steel) for the endless chain are firmly connected with each other by cross-plates 2. At one end of the plates 1 are bearings 32 for a shaft 4, carrying sprocket-wheels 5, and at the other end of the plates 1 are bearings 33 for a shaft 17 with sprocket-wheels 5^a. Around the sprocket-wheels 5 and below the sprocket-wheels 5^a pass chains 6, driven from any suitable motor or engine by any suitable intermediate means. The chains 6 carry the means for digging and transporting the peat, those means consisting, for instance, of hooks 7, adapted to loosen the soil, of shovels 8, adapted to transport the loosened peat, and of other sharpened steel hooks 9, adapted to disintegrate pieces or particles of greater resistance. The hooks 7 consist also of steel and are arranged in groups of two, three, or more on a common axle 10, Fig. 6, secured to plates 11, the upper parts of which are hinged to the chain 6. The hooks 7 are hinged to the lower parts of said plates, and they are bent in such a manner, Fig. 4, that they are adapted to tear the upper layer of the peat off the underlying soil. The peat thus separated is then engaged by the shovels 8, each of which preferably has near the outer extremities of its lower edge 2 curved guides or runners 12, the purpose of which is to prevent the shovels from being driven too deeply, thus passing below the loosened upper layer and engaging the layer between, thus offering undue resistance to the movement of the chain. These guides may, if desired, be dispensed with. The hooks 9 may be located between

the hooks 7 and the plates 8; but I wish it to be understood that the succession of the parts 7, 8, and 9 may vary according to any requirement and also the number of one or the other of the parts in question may thus vary—that is to say, there may be one, two, or more plates, such as 8, in front of or behind one, two, or more hooks, such as 7 or 9. (See, for instance, Fig. 3.) All these parts 7, 8, and 9 are held in an oblique position with regard to the main chain 6 by short auxiliary chains 13. One of the links of each of these latter chains consists, preferably, of comparatively thin wire, the tensile strength of which corresponds to the greatest resistance which the hook or plate shall be able to overcome. If the resistance is greater, the wire link gets broken and the respective hook or plate is prevented from being injured. Another advantage of this means is that the broken chain may at once be repaired by simply connecting the two chain parts by a piece of like wire. Another means for preventing the hooks of plates from being injured by too great a resistance is shown in Fig. 9, in which the tool is freely suspended from the chain, which will yield in case of need. Furthermore, there may be more than two chains, such as 6, and in either case the consecutive hooks 7 or 9 may have different positions—that is to say, the hooks of one series may be arranged alternately with respect to those of the next.

One end of the side plates 1 is connected with the conveying-trough 14, upon the smooth bottom surface of which the peat is transported upward in an oblique direction by the plates 8. The upper end of the trough 14 supports a shaft 25, having chain-wheels 16, and the sprocket 6, with the parts 7, 8, and 9, passes over and around said wheels, from whence it returns to the wheels 5 of the shaft 4. It will thus be seen that the wheel 5^a may be an idler or it may be driven directly, as in the case of sprockets 5 and 16. The lower end of the conveying-trough extends in vertical direction somewhat below the adjacent end of the digging device—i. e., the plates 1 with the respective part of the chain and its tools—the purpose being to allow of an unimpeded movement of the peat into the conveying-trough.

The connection of the digging device with the conveying-trough is effected by the shaft 17 and the bearings 33, which consist each of two parts hinged together by said shaft, one part being fixed to the respective side plate 1, the other to the respective wall of the trough. The object of this arrangement is to allow of lowering the digging device as the work proceeds. (See the dotted lines below Fig. 2.) For the same purpose and cooperating with the aforescribed arrangement the digging device is provided with a structure 34, composed of iron rods or bars and extending upward as well as in the directions of the trough. The upper end of said structure carries a chain

18, one end of which is fastened to the trough, whereas the other end is connected with a windlass 19, by which the chain may be loosened, so as to lower the whole device in question and cause it to assume a more or less oblique position, as indicated by dotted lines below Fig. 1. When one layer of soil or peat has been removed by the tools of the digging device, the whole apparatus is displaced or adjusted in the direction of the arrows shown in front of and behind said dotted lines, the extent of the displacement being of course such that the next layer may be worked. The degree of inclination of the worked layer need not only be less than shown, but, if desired, it may be greater, when the upper part of the chain will rest upon the upper parts of the wheels 5^a.

Instead of arranging the whole apparatus in such a manner that it may be moved longitudinally parallel to the direction of the chain, as in Fig. 1, the modified arrangement shown in Fig. 2 may be made use of, in which the movement occurs laterally of said direction.

In the form of construction shown in Figs. 7 and 8 the conveying-trough, and with it the digging device and all the parts belonging thereto, may be turned upon a vertical axis 22. In all other respects the arrangement is substantially the same as described with respect to Figs. 1 to 6, except the fact that an electromotor 24 is shown as employed for driving the machine, whereas in the other forms of construction the shaft 25 of the chain-wheels 16 may be rotated from any motor or engine by a belt, rope, or the like.

Means may be provided for keeping the chain 6 under tension. In the example shown in Fig. 10 the chain-wheels 16 (which in this case are rotated from a motor 24 through the mediation of an endless chain 28) or, more precisely, the bearings of the same are located upon a slide 30, adapted to be displaced either by means of a screw-threaded spindle and crank 26 or automatically by means of a weighted lever, as indicated by dotted lines. A tension-roll 29 is provided to keep the chain 28 in proper tension irrespective of the position of the slide 30. To prevent the chain 6 from slackening too much, the lateral plates 1 are furnished with guide-pieces 31, Fig. 5^a.

Having now described my invention, what I desire to secure by a patent of the United States is—

1. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending from said trough along the surface of the soil, tools hinged to said chain and adapted to loosen the uppermost layer of the soil and convey it into the said trough, means for keeping the said chain with its tools in proper working position, and means for driving it in the proper direction.

2. In a peat digging and conveying machine,

the combination with a conveying-trough for the peat, of an endless chain extending along the surface of the soil and into and through said trough, tools hinged to said chain and adapted to loosen the uppermost layer of the soil and convey it into the said trough, means for keeping the said chain with its tools in proper working position, and means for driving it in the proper direction.

3. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending from said trough along the surface of the soil, hooks movably attached to said chain and adapted to loosen the uppermost layer of the soil, means for conveying the loosened peat into and through the said trough, means for keeping the said chain with its hooks in proper working position, and means for driving it in the proper direction.

4. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending from said trough along the surface of the soil, hooks pivotally attached to said chain and adapted to loosen the uppermost layer of the soil, shovels also pivotally attached to said chain and adapted to convey the loosened peat into and through the said trough, means for keeping the said chain with its hooks and shovels in proper working position, and means for driving it in the proper direction.

5. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending from said trough along the surface of the soil, hooks pivotally attached to said chain and having each its lower ends hinged to its main body, other hooks also movably attached to said chain but having each its lower end rigid with its body, shovels for conveying the peat loosened by said hooks into and through the said trough, means for keeping the said chain with its hooks in proper extended position, and means for driving it in the proper direction.

6. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending from said trough along the surface of the soil, tools pivotally attached to said chain and adapted to loosen the uppermost layer of peat and convey it into the said trough, short auxiliary chains adapted to hold said tools in proper position with regard to the main chain, means for keeping the latter with its tools in proper working position, and means for driving it in the proper direction.

7. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending from said trough along the surface of the soil, hooks pivotally attached to said chain and adapted to loosen the uppermost layer of peat, shovels also movably attached to said chain and adapted to convey the loosened peat into and through the said trough, curved

glide-plates fixed to the lower edges of said shovels, means for keeping the said chain with its hooks and shovels in proper working position, and means for driving it in the proper direction.

8. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending along the surface of the soil and hence into and through said trough, tools attached to said chain and adapted to loosen the uppermost layer of peat and convey it into the said trough, stationary plates hinged to the trough and extending along the sides of that part of the chain which extends from the trough along the surface of the soil, means for keeping the said chain with its tools in proper working position, and means for driving it in the proper direction.

9. In a peat digging and conveying machine, the combination with a conveying-trough for the peat, of an endless chain extending along the surface of the soil and hence into and through said trough, tools attached to said chain and adapted to loosen the uppermost layer of peat and convey it into the said trough, stationary plates extending from the trough along the sides of that part of the chain which extends along the surface of the soil, bearings consisting each of two parts, one part being fixed to the trough and the other to the stationary plate, a shaft located in said bearings and connecting the parts so as to form a hinge, wheels located upon said shaft, means for keeping the said chain with its tools in proper working position, and means for driving it in the proper direction.

10. In a peat digging and conveying machine, the combination with a conveying-trough extending upward to a suitable receptacle, of an endless chain extending along the surface of the soil and hence into and through said trough, tools attached to said chain and adapted to loosen the uppermost layer of peat and convey it into the said trough, means for keeping the said chain with its tools in proper working position, and means for driving it in the proper direction, a carriage supporting the receptacle and the trough and adapted to be adjusted in the direction of work of said chain and tools upon the soil.

11. In a peat digging and conveying machine, the combination with a conveying-trough extending upward to a suitable receptacle, of an endless chain extending along the surface of the soil and hence into and through said trough, tools attached to said chain and adapted to loosen the uppermost layer of peat and convey it into the said trough, means for keeping the said chain with its tools in proper working position, and means for driving it in the proper direction, a carriage supporting the receptacle and the trough and adapted to be adjusted in the direction of work of said chain and tools upon the soil, the trough and the digging device being adapted to be rotated around a vertical axis upon said carriage.

12. In a peat-digging machine and conveying-machine, an endless chain, means for holding said chain in an operative position extending along the surface of the soil, a series
5 of plates pivotally attached to the chain and extending transversely thereof, means for holding said plates at an angle to the chain, a portion of said plates provided on the lower
10 end with downwardly-projecting hooks for loosening the peat, the intermediate plates forming shovels or scoops for transporting the loosened peat, and means for driving the chain longitudinally.

13. In a peat digging and conveying machine,
15 the combination with a conveying-trough, of an endless chain passing there-through, means for holding said chain in an operative position extending beyond the end of said trough along the surface of the soil, a
20 series of plates pivotally attached to the chain and extending transversely thereof, means for holding said plates at an angle to the chain, a portion of said plates provided on the lower edge with downwardly-projecting
25 hooks for loosening the peat, the intermediate plates constituting shovels or scoops of substantially the same area as the interior cross-section of the trough and serving to transport the loosened peat to and through
30 said trough, and means for driving the chain.

14. In a peat digging and conveying machine, an endless chain, means for holding said chain in an operative position extending

along the surface of the soil, a series of plates pivotally attached to the chain and extending
35 transversely thereof auxiliary chains for holding said plates at an angle to the endless chain, a portion of said plates provided on the lower edge with downwardly-projecting
40 cutting hooks or blades, another portion provided with downwardly projecting loosening-hooks, another portion of said plates forming shovels or scoops for transporting the loosened
45 peat, said shovels being provided at the lower edge with guides or runners, and means for driving the endless chain longitudinally.

15. In a peat digging and conveying machine, an endless chain, means for holding
50 said chain in an operative position extending along the surface of the soil, tools pivotally attached to said chain and adapted to loosen and transport the peat, connections between the endless chain and tools adapted to hold
55 the tools in operative position at an angle to the chain, said connections having less tensile strength than the tools whereby injury to the tools from striking an obstruction is avoided, and means for driving the endless chain.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL FRIEDRICH SCHLICKEÏSEN.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.