Feb. 28, 1939. A. W. MALL 2,148,766

TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 1

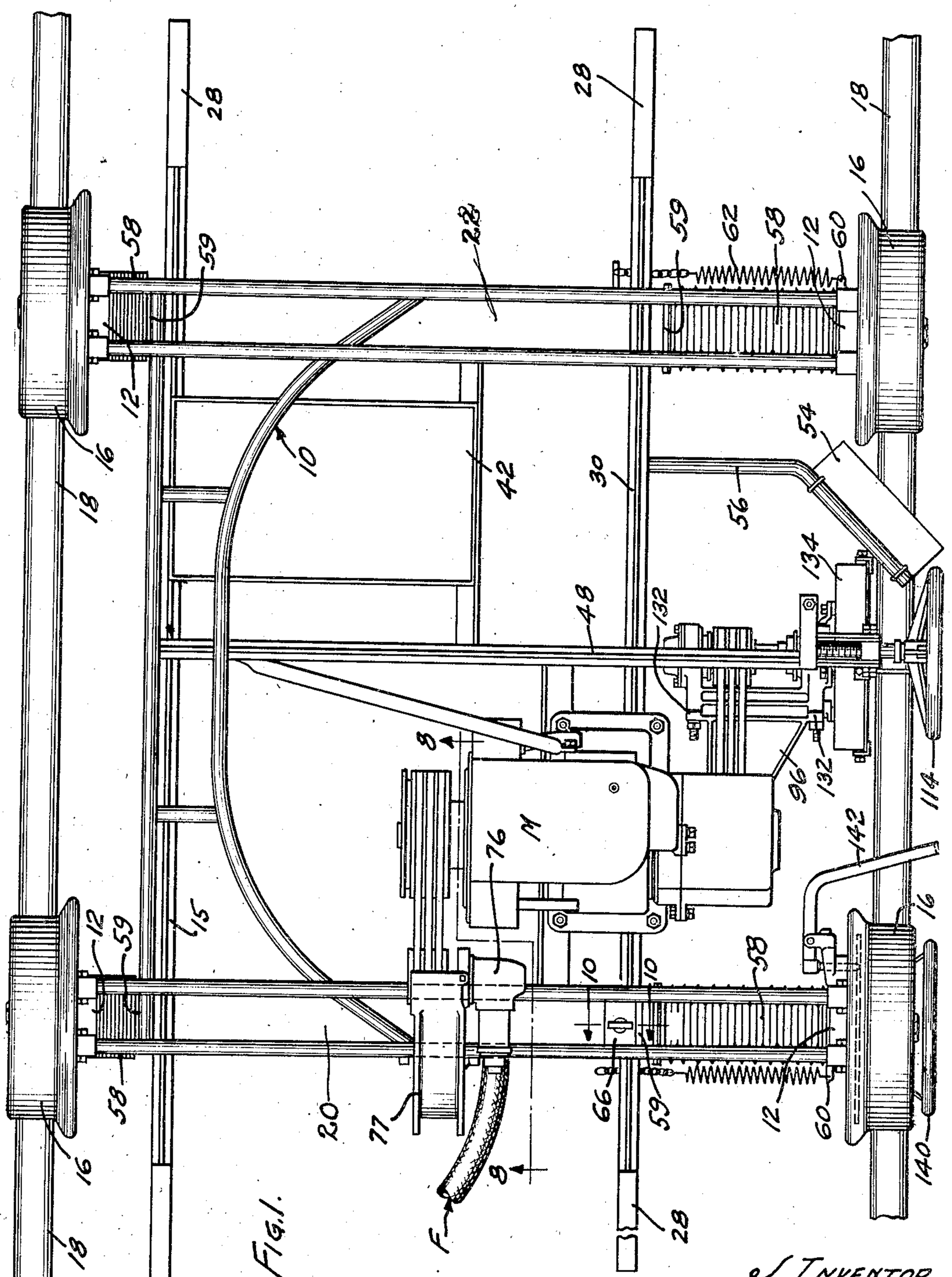

Fig. 1.

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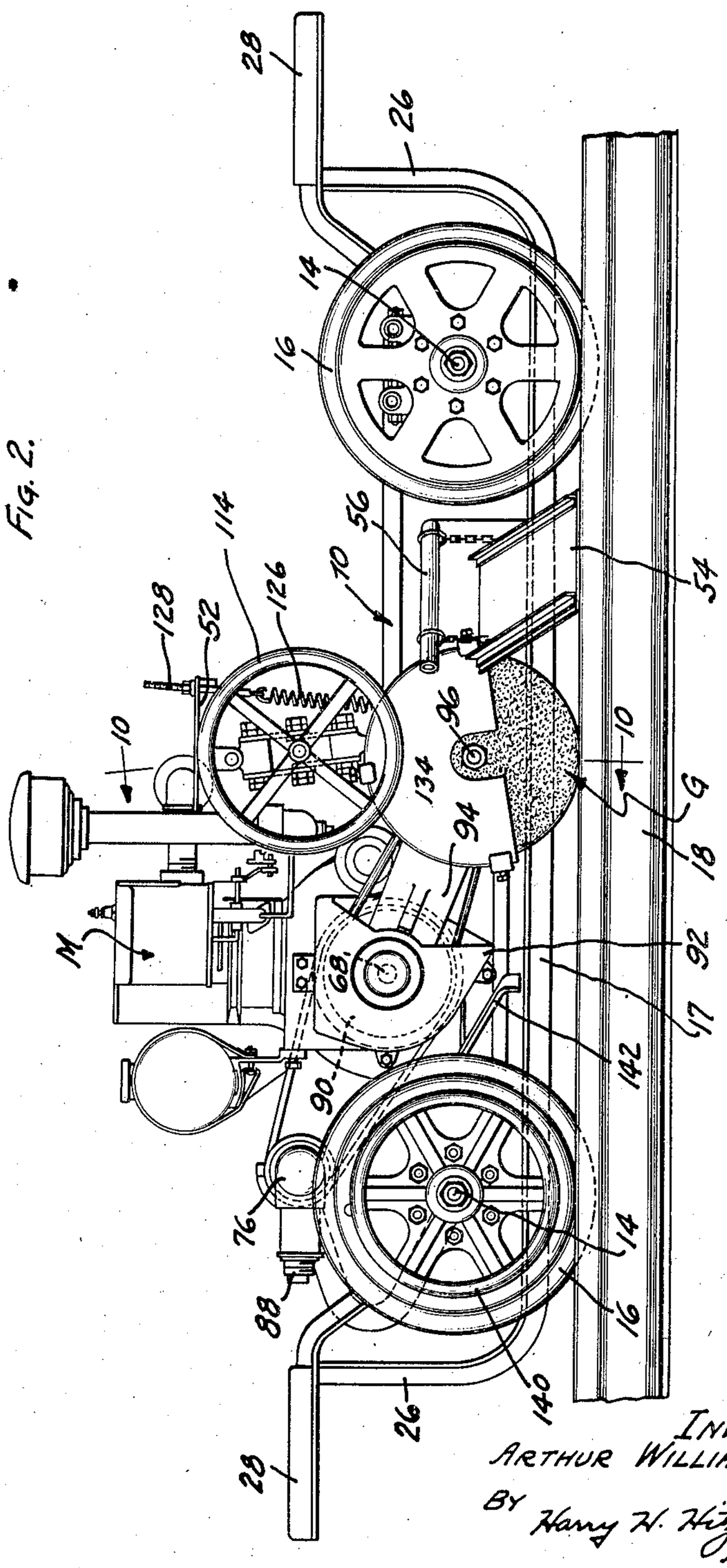
Filed Sept. 17, 1937 8 Sheets-Sheet 2

Fig. 2.



Feb. 28, 1939. A. W. MALL 2,148,766

TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 3

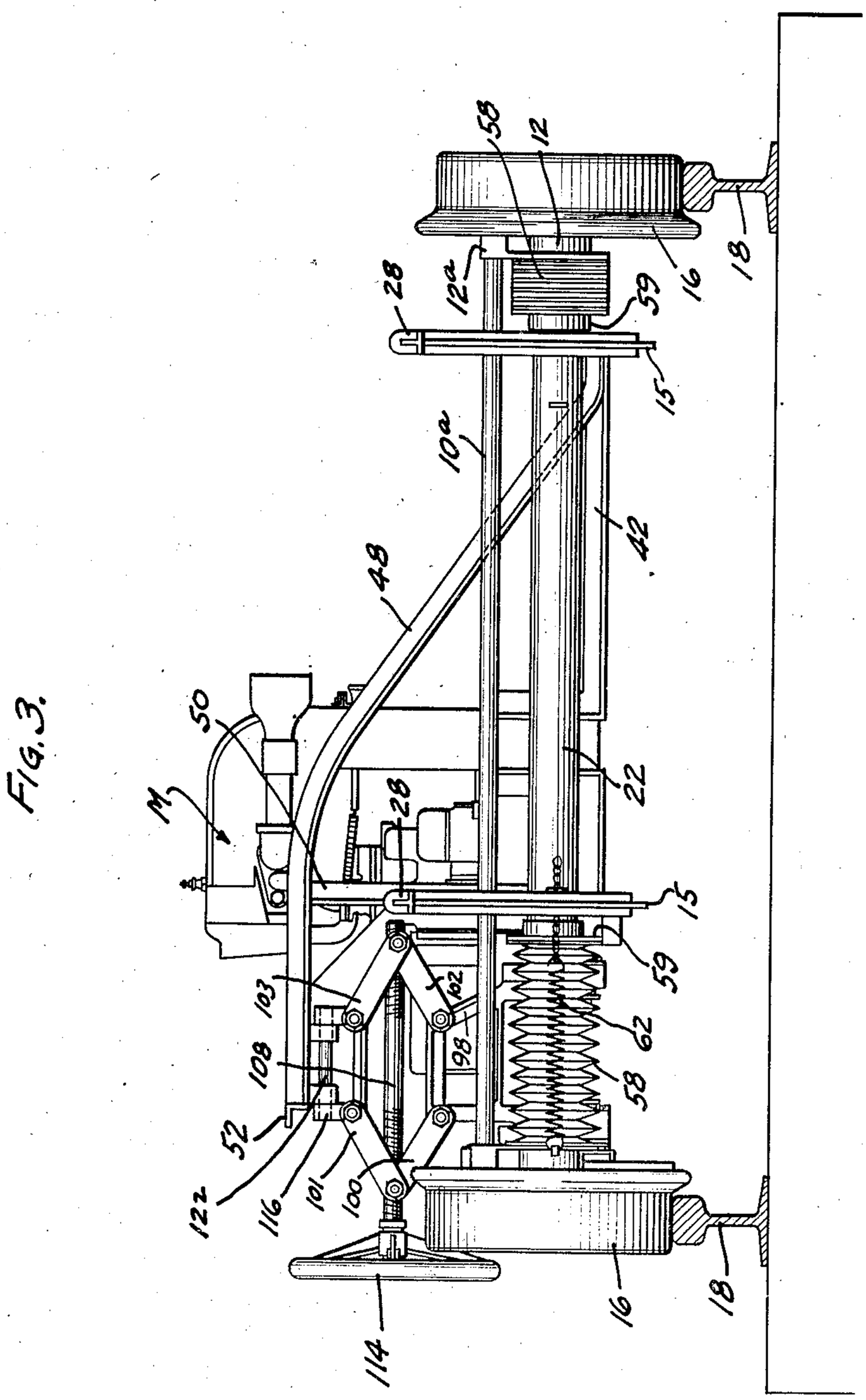


FIG. 3.

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TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 4

FIG. 4.

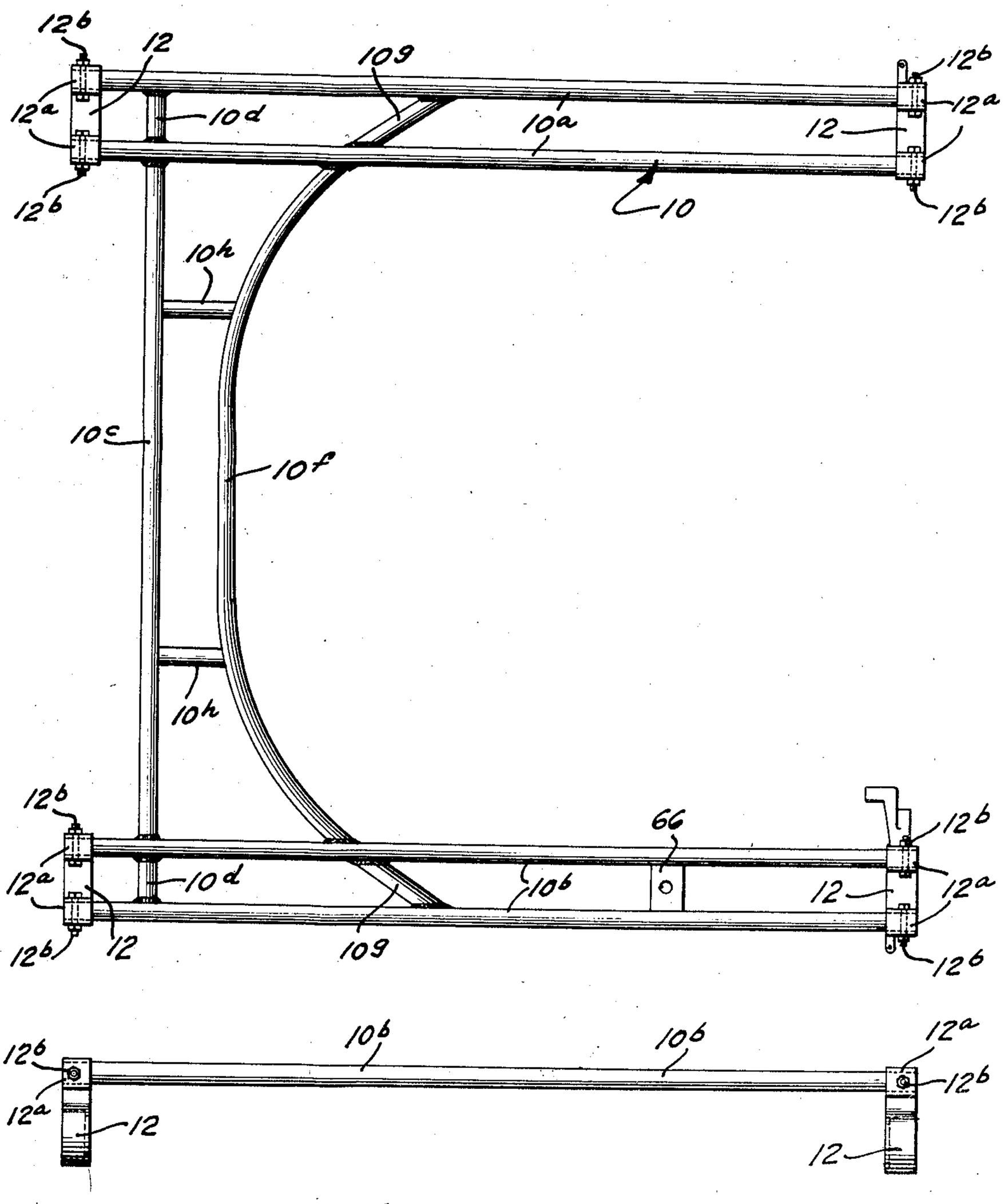

FIG. 5.

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TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 5

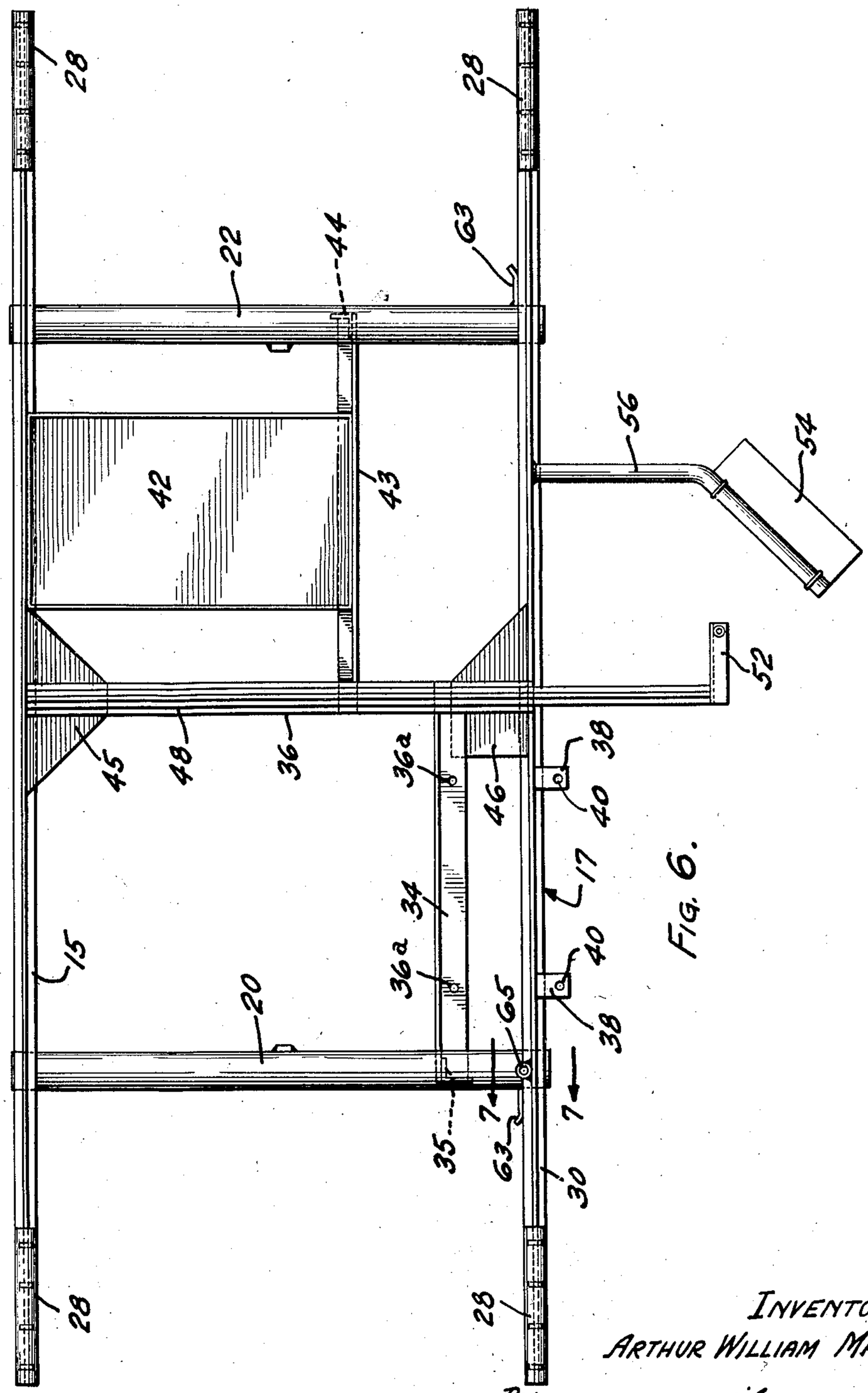

FIG. 6.

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TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 6

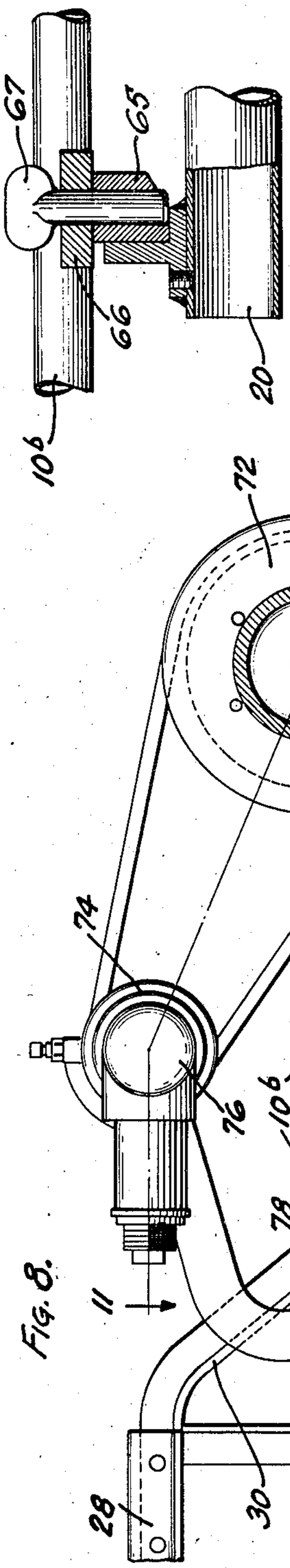

FIG. 10.

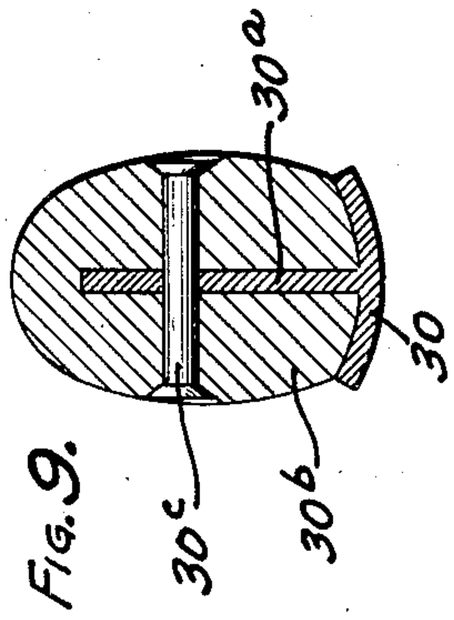

FIG. 9.

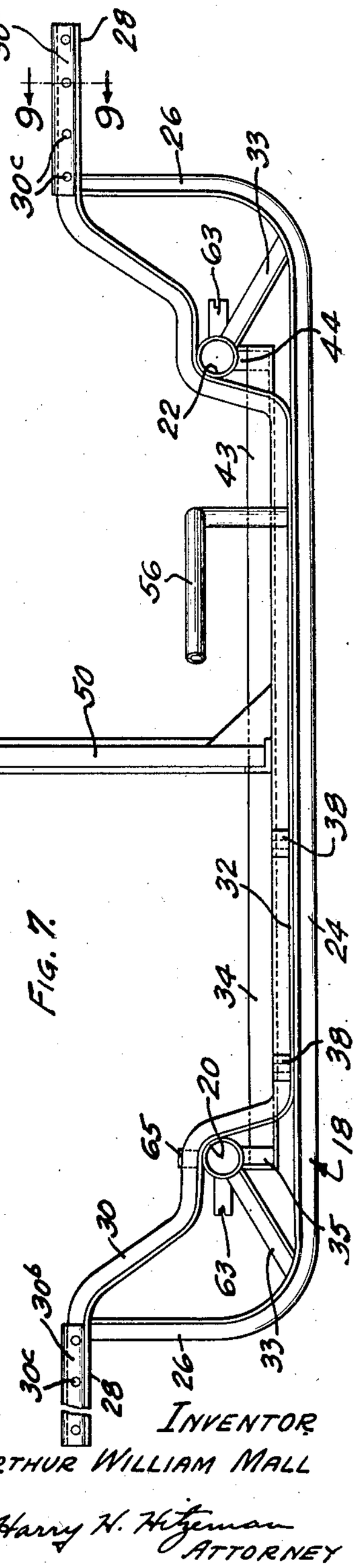

FIG. 7.

FIG. 8.

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Feb. 28, 1939. A. W. MALL 2,148,766

TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 7

FIG. 11.

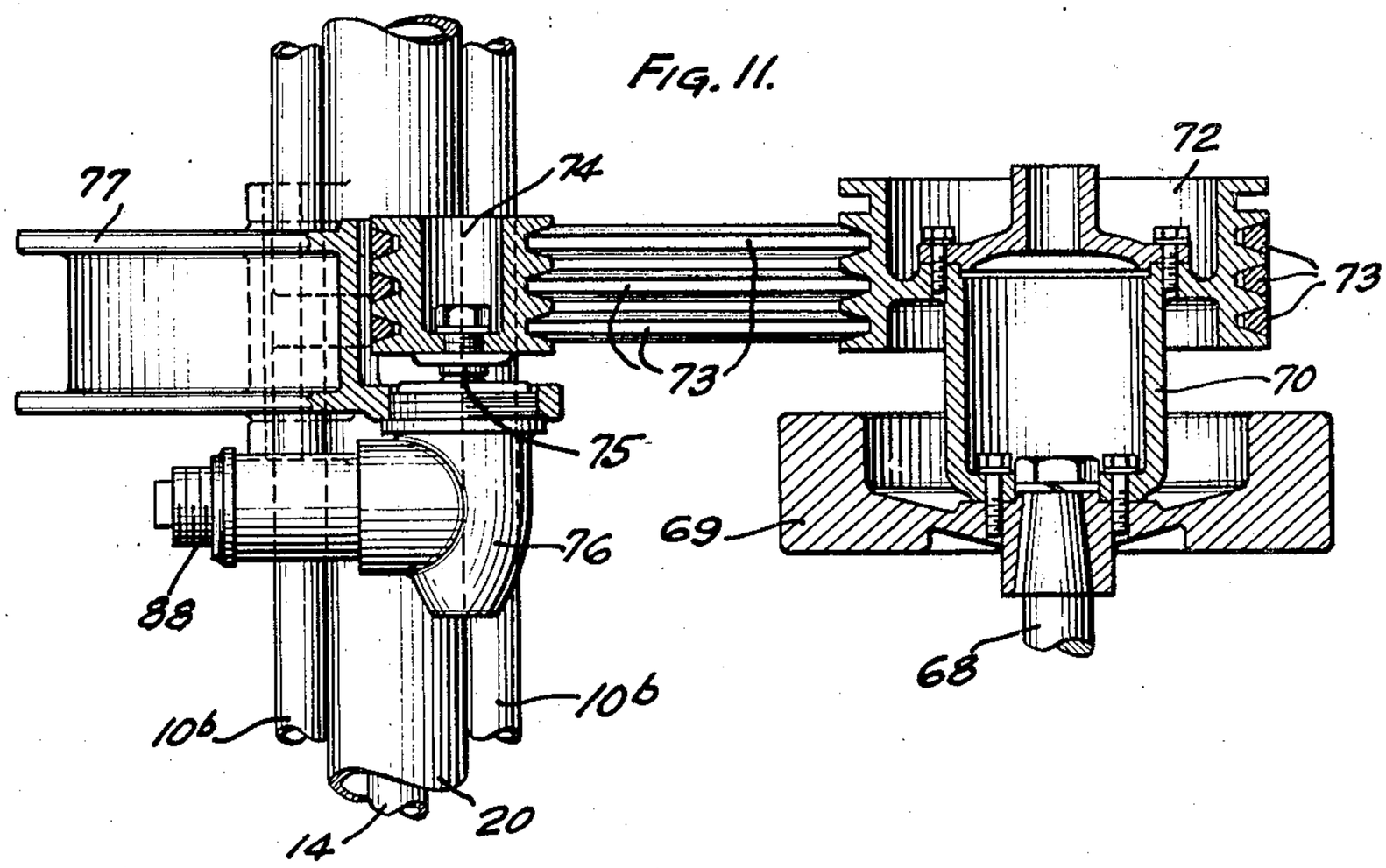
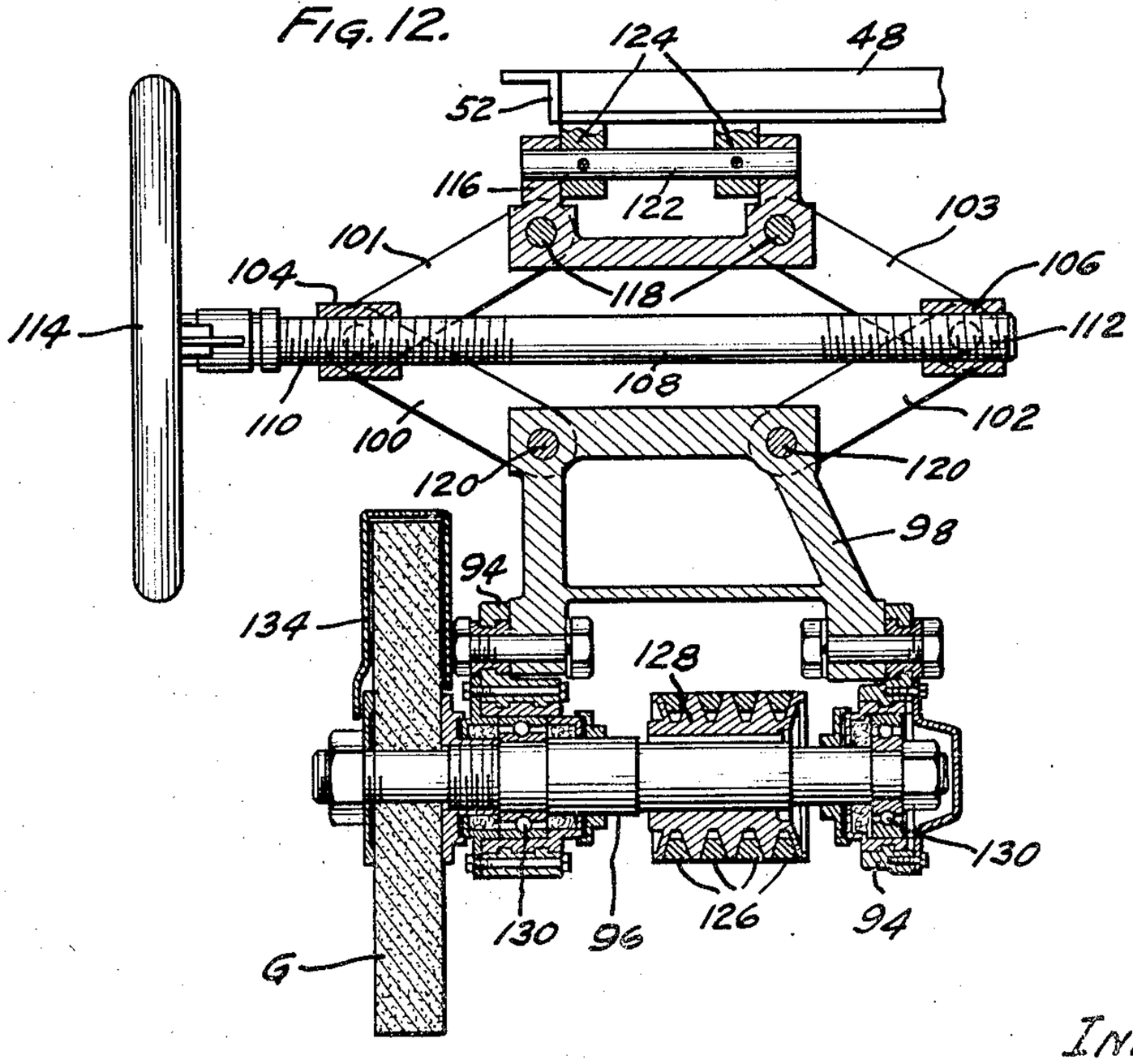


FIG. 12.



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TRACK GRINDING MACHINE

Filed Sept. 17, 1937 8 Sheets-Sheet 8

Fig. 13.

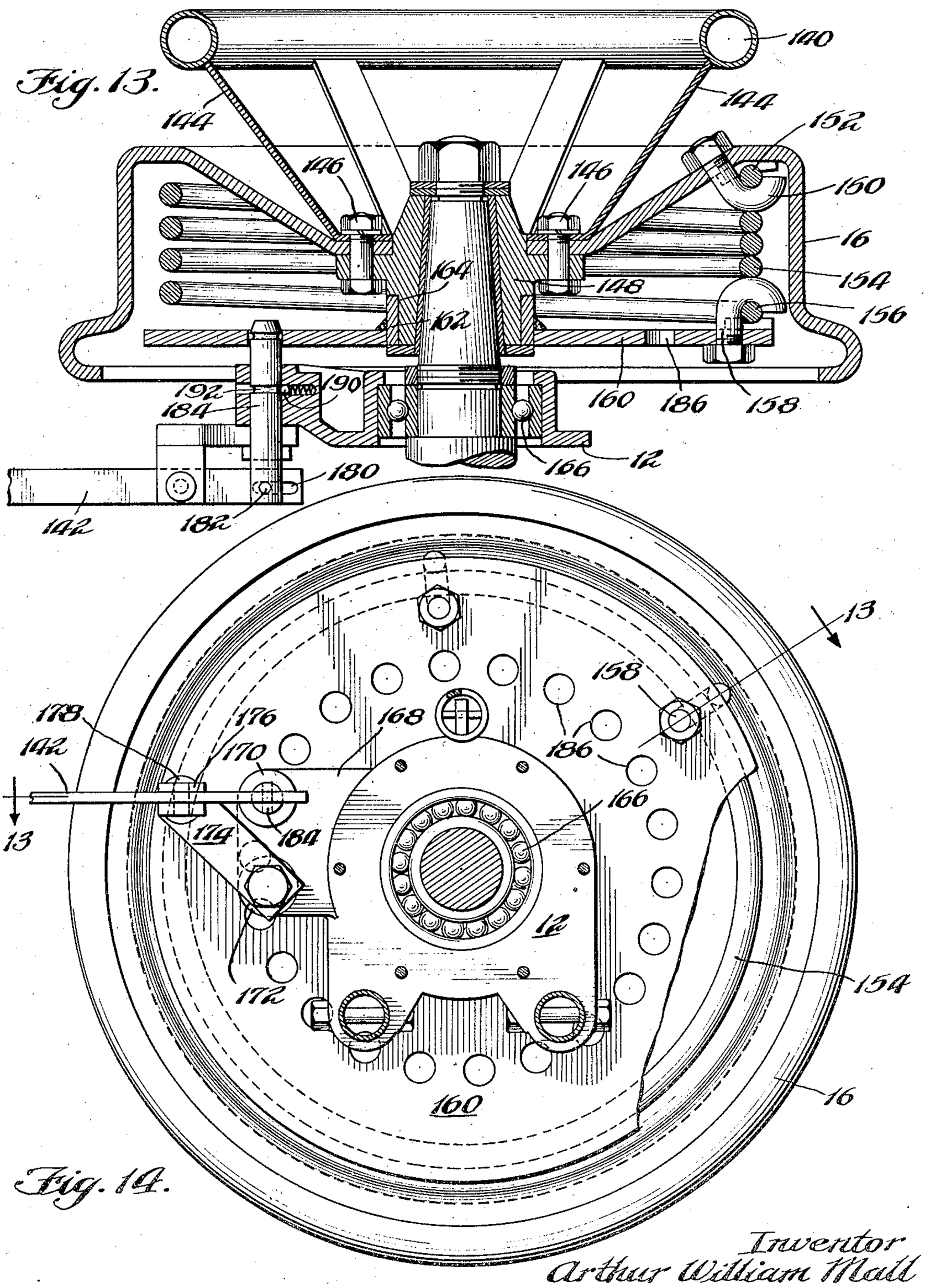

Fig. 14.

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UNITED STATES PATENT OFFICE

2,148,766

TRACK GRINDING MACHINE

Arthur William Mall, Chicago, Ill.

Application September 17, 1937, Serial No. 164,270

22 Claims. (Cl. 51—178)

The invention relates to improvements in apparatus for surfacing or grinding rails for railway tracks.

The electrical arc method of welding rails has now come into general use on both electrical and steam railroads. An electrical weld, however, leaves a roughened surface, thus necessitating the use of suitable apparatus for resurfacing the rails. For this purpose it has been proposed to employ a portable grinding machine mounted upon the track.

These machines generally comprise a frame supporting a motor and an adjustable grinding wheel mounted thereon and driven by the motor.

In machines of this type, several features of construction are highly desirable from the standpoint of efficiency of operation as well as reduction of cost and reduction of labor required. For example, it is highly desirous in a machine of the type described to be able to operate the grinder upon one rail of the track and then by as little effort as possible pivot the machine and swing it around to be able to grind the other rail.

In view of the fact that most of the machines for this purpose carry a grinding wheel which is narrower than the width of the rail to be ground, it is necessary to move the grinding wheel back and forth over the width of the rail to grind the same. Thus, it is desirable to have the wheel so mounted that the same is easily movable back and forth. Of necessity, the grinding wheel must also be raised and lowered to come in contact with the surface of the rail and to grind to a depth sufficient for the purpose, and no further. It is desirable that mechanism for this purpose be as easily operative as possible. In addition to the above movements of the grinding wheel, the same is necessarily oscillated back and forth longitudinally upon the rail to grind down the complete roughened surface left by the electric weld. It is desirable to be able to move the grinding wheel back and forth with a minimum of effort.

In addition to the above enumerated requirements in a track grinding machine, it is also desirable to have a machine that is easily and quickly removable from the track, since in working upon the main lines of some of the principal railroads, frequent train service necessitates the removal of the track grinding machine whenever trains approach, and it is obviously desirable to remove the track grinding machine as quickly as possible.

With these and other objects in mind, the principal object of the present invention is to provide an improved, high speed track grinder of the portable type, capable of riding upon the rails of the railroad to be ground and equipped with a single abrasive or grinding wheel.

A further object of the invention is to provide in a machine of the type described an improved structure whereby the grinding wheel and associated parts may be laterally moved during a grinding operation.

A further object of the invention is to provide improved apparatus for moving the grinding wheel in a vertical direction during a grinding operation.

A further object of the invention is to provide an improved construction in a machine of this type whereby the entire machine, including the frame and driving motor and associated parts, is so arranged that the entire machine is moved transversely of the track during the lateral movement of the grinding wheel across the face, and the entire machine is moved to and fro in conjunction with the grinding wheel during the longitudinal movement of the grinding wheel on the track.

A further object of the invention is to provide skid members associated with the frame of the machine so arranged that when it is necessary to quickly remove the machine from a railroad track, the machine can be swung at right angles and may be slid off the track on the skid members with comparatively little effort.

A further object is to provide an improved frame structure including skid members so arranged that the machine may be easily dislodged from the rails upon which it rests and be slid sideways off the track.

A further object of the invention is to provide an improved frame construction that is comparatively light yet sufficiently rigid to support the heavy motor required, and one capable of easy lateral movement upon the axles of the wheel truck upon which the same is mounted.

A further object of the invention is to provide an improved construction of axle and frame whereby a comparatively light yet sufficiently rigid construction is provided for the heavy duty for which the machine is constructed.

A further object is to provide improved means for locking the frame in an inoperative position during movement of the machine to and from places of work.

A further object is to provide an improved drive means associated with the motor on the machine whereby a flexible shaft take-off may

be associated therewith for driving a supplemental grinding wheel or other tool.

A further object is to provide an improved linkage connected between the frame and the grinding wheel support for raising and lowering the grinding wheel during its operation.

A further object is to provide an improved rigid steel frame construction capable of supporting a motor in such a manner that the same is rigidly held in position, yet easily removable for repair or replacement.

Other objects and advantages will be more apparent from the following description wherein reference is had to the accompanying eight sheets of drawings upon which

Fig. 1 is a plan view of the complete machine;

Fig. 2 is a side elevational view thereof looking from the side upon which the grinding wheel is located;

Fig. 3 is a front elevational view thereof;

Fig. 4 is a plan view of the auxiliary or axle support frame including the axle end bearings;

Fig. 5 is a side elevational view of the parts shown in Fig. 4;

Fig. 6 is a plan view of the combined motor support frame and skid members;

Fig. 7 is a side elevational view of the same;

Fig. 8 is a fragmentary sectional view through the axle housing and skid member and is taken generally on the line 8—8 of Fig. 1;

Fig. 9 is a vertical sectional view through one of the skid handles taken on the line 9—9 of Fig. 7;

Fig. 10 is an enlarged vertical sectional view through the motor support frame lock member taken generally on the line 10—10 of Fig. 1;

Fig. 11 is a plan sectional view through the flexible shaft drive unit taken generally on the line 11—11 of Fig. 8, and

Fig. 12 is a vertical sectional view through the grinding wheel and its support members.

Fig. 13 is a sectional view thereof taken generally on the line 13—13 of Fig. 14; and

Fig. 14 is a sectional view taken generally on the line 14—14 of Fig. 1 showing the manner in which the inertia spring is mounted in one of the wheels.

The track grinding machine of my invention may generally comprise an axle support frame 10 provided with right and left hand bearing members 12 for supporting a pair of axles 14 upon which standard track wheels 16 may be journaled and so positioned that they are trained upon the standard rails 18 that are to be worked upon. The frame 10, shown in detail in Figs. 4 and 5, may be formed with two pairs of parallel cross bar members 10*a* and 10*b* upon the front and rear ends of the frame. These bars may have their ends engaged in suitable bores in bosses 12*a* formed on the upper side of the bearing members 12. Suitable bolt members 12*b* may rigidly fasten the bearing members to the cross frame members 10*a* and 10*b*. The frame members 10*a* and 10*b* are connected and rigidly held in spaced relation by a bar member 10*c* connected between the closest bars 10*a* and 10*b*. Stub bars 10*d* connected between the parallel bars 10*a* and 10*b* assist in giving the desired rigidity to the frame. In addition to the connecting bar 10*c*, an arcuately shaped bar 10*f* is provided connecting between the closest bars 10*a* and 10*b*. Additional stub bars 10*g* form a continuation of the arcuate bar 10f. Suitable bracing bars 10*h* are provided between the bracing bars 10*c* and 10*f*, and with all of the bars preferably connected by welding, it can be seen that a highly rigid supporting frame is provided.

The manner in which the wheel axles 14 are supported in the bearings 12 has not been shown, it being understood that they may be mounted in any preferable manner or in the manner shown in my co-pending application, Serial No. 103,497 which has become Patent No. 2,106,034 dated January 18, 1938.

The combined skid members and motor support frame (see Figs. 6 to 10) has a pair of spaced parallel T members 15 and 17 connected together adjacent their ends by a pair of parallel axle housing members 20 and 22. The axle housings 20 and 22 enclose the axles 14 previously mentioned and are adapted to be secured adjacent their ends by welding or otherwise to the skid frame members 15 and 17. Each of the skid members may comprise a lower T-shaped member 24 that extends longitudinally below and past the axle housings 20 and 22 and terminates in a rounded upwardly extended portion 26. The butt ends of the portions 26 are welded or otherwise secured below handle portions 28 of the upper skid T members 30 which extend diagonally downward and partially encircle the axle housings 20 and 22 extending downwardly adjacent these housings and having a portion 32 resting directly upon the upper face of the lower skid members 24. Diagonal brace members 33 are provided between the axle housings and the lower skid members to form in connection with the upper skid members and the cross axles a comparatively light, yet extremely rigid and serviceable structure.

A base to support the motor M is provided and comprises an angle iron 34 secured at one end to a vertical angle 35 and at its opposite end to a cross brace 36 which extends between the skid members. The angle is provided with suitable bolt holes 36*a* to rigidly fasten the motor in position upon one side. Plate members 38 provided with bolt holes 40 and mounted upon the upper face of the upper skid 30, provide the other necessary mountings for the motor.

A tool box 42 may be positioned between the skid 15 and an angle member 43 supported upon cross brace 36 and a vertical angle member 44 extending downwardly from axle housing 22. Gusset plates 45 and 46 secured to the skid members assist in reinforcing the frame generally in the vicinity of the cross brace 36. An upper cross brace member 48 directly above the cross brace 36, may extend from the skid 15 diagonally upward over a vertical support 50 and extend beyond the skid 17 parallel to the axle housings 20 and 22. This cross member may carry a horizontal angle 52 and provide means for supporting the reciprocal grinding wheel G in a manner which will be described later.

The handle members 28 may be formed of wooden portions 30*b* grooved to embrace the vertical section 30*a* of the T members 30 and be secured thereto by rivet members 30*c*. A spark breaker plate 54 is supported from a rod member 56 which extends upwardly, outwardly, and then at an angle from the skid member 30 to support the plate in the proper location.

Thus far I have described the axle support frame which rigidly holds the axles and the wheels in spaced relation to each other, so that regardless of any side movement of the motor support frame and its associated parts, the complete machine and the wheels are always capable of forward or back movement upon the rails of

the track. The axle housings 20 and 22 are provided in a manner similar to that shown in my copending application, with extensible guards in the form of accordion type protection jackets 58 fastened between the opposite faces of the bearings 12 and bearings 59 formed at the ends of the axle housings 20 and 22. Upright ears 60 may be formed upon two of the bearings 12 to provide connections for a coiled spring 62 connected to the arms 63 extending from the housings 20 and 22. The spring may be utilized in securing the momentum necessary to effect the back and forth movement of the grinding wheel and its associated parts, which include the motor frame, during a grinding operation.

In Fig. 10 I have illustrated means for locking the motor frame rigidly to the axle support frame 10. This means may include a socket 65 secured by welding or otherwise upon one side of the upper skid frame member 30 and a cross bar 66 connected between the axle frame rods 10*b*. Both of these members are provided with vertical bores which are in alignment in the position of the motor support frame shown in Fig. 1, so that a locking pin 67 may be dropped through the members to rigidly lock the two frames together. This is always done whenever the machine is being transported from one work position to another.

The motor which forms a source of power for my improved machine may be preferably an internal combustion motor provided with a drive shaft 68 (see Fig. 11). The drive shaft 68 preferably extends from both sides of the motor and is provided upon one side with a fly wheel 69 to which a drive pulley 72 is connected by a suitable coupling member 70. I provide a plurality of V-belts 73 trained upon the pulley 72 and over a driven pulley 74 connected to the end of a spindle 75. I provide a spindle housing 76 which is carried by a bracket 77 that is pivotally mounted adjacent its lower end 78 upon a pin member 79. The pin member 79 may be fixedly mounted in a bracket 80 rigidly fastened to the axle housing 20. In order to compensate for slack in the V-belts 76, the bracket 77 is normally yieldingly held in a spaced-away position from the motor drive pulley by a compression spring 82 connected between a lug 83 on the bracket 77 and a rigid arm 84 extending outwardly from the axle housing 20.

Limit stops 85 and 86 are provided on the bracket 77 to provide definite limitations to the location of the driven pulley 74. The spindle housing 76 may enclose well known means for effecting a right hand drive and a suitable connection for a flexible shaft F. In track working machines of this type, it is frequently desirable to have a flexible drive shaft so that other work tools may be employed in the same locality if desired, these tools being driven by means of the flexible shaft. When a flexible shaft is not in use, the end of angle housing 76 may be closed by a cap member 88.

The opposite end of motor shaft 68 may be provided with a drive pulley 90 and be journalled in a combined pulley housing and bearing member 92 secured to the side of the motor housing. The housing may also support a bracket 94 adapted to extend downwardly and carry at its lower end the grinding wheel spindle 96 and the grinding wheel G. The bracket 94 being rotatably supported in the housing 92, is connected to the lower end of a support arm 98 which is in turn connected by toggle arms 100 and 102 to a pair of movable brackets 104 and 106 that are screw threadedly mounted upon a shaft member 108. The shaft member 108 may be formed with the right hand threads 110 and the left hand threads 112 and a hand wheel 114. The brackets 104 and 106 may be connected to a fixed support bracket 116 by means of a pair of toggle links 101 and 103. The link members are pivotally connected to the brackets 104 and 106 and also upon the pivot pins 118 and 120. From the above described construction it can be seen that rotation of the hand wheel 114 in one direction will easily and quickly lower the grinding wheel G and its associated parts, and movement of the hand wheel in the opposite direction will raise the same. The support bracket 116 may be mounted upon a stub shaft 122 carried by journal members 124 secured to the lower side of the skid frame brace member 48. A comparatively strong compression spring 126 is adapted to be connected between the bracket 94 and an adjustably mounted rod 128 supported by the angle arm 52.

From the foregoing description it can thus be seen that a drive for the grinding wheel spindle 96 is obtained from the motor shaft by means of V-belts 126 which mesh with the drive pulley 90 and the driven pulley 128 keyed to the shaft 96. The shaft is journalled in suitable ball bearing members 130 in opposite ends of the bracket 94. It will further be evident that in any desired raised or lowered position the drive will be constant. Suitable shims 132 may be provided between separable parts of the bracket 94 to effect an adjustment in the event of belt stretch or pulley wear. A suitable guard 134 for the grinding wheel G may be carried by the bracket 94.

I also provide an inertia charged spring member for moving the grinding wheel G longitudinally of the wheel to be ground. This mechanism may be generally similar to that shown and described in my previously mentioned copending application and may be located in a manner similar to that shown in that application. The operating wheel 140 and the releasing lever 142 have been shown in a manner similar to the aforesaid application.

In the construction which I have shown, the hand wheel 140 is secured to the exterior of one of the wheels 16 by suitable strap members 144. The strap members may have inwardly turned, flattened portions with suitable openings so that bolt members 146 may pass through the flange of wheel 16 and a hub member 148 can fasten the same in position.

The specially constructed wheels which are provided, may have a hook bolt 150 fastened through the forward flange to secure one end 152 of a coiled spring member 154 rigidly in position. The other end 156 of the coiled spring may be held by a similar hook bolt 158 against the inner surface of a disc member 160 that has a hub portion 162 which rides upon a reduced shoulder 164 of the hub 148. The axle may extend through and be journalled in ball bearing member 166 in the bearing 12 which is secured, as previously described, to the frame 10. The bearing 12 may have a sidewardly extended flange 168 provided with a pair of bosses 170 and 172.

A strap member 174 is adapted to be secured to the lower boss 172. The same extends upwardly and carries an arm 176 which is provided with a pivot 178 for the lever 142. The lever 142 carries an elongated slot 180 at the outer end within which a pin 182 may extend.

The pin 182 is mounted in the end of a reciprocal stud 184 which passes through the boss 170. The stud 184 is adapted to engage in one of the holes 186 in the disc 160. For this purpose a circular row of holes 186 is provided so that the same may engage in any one that can be brought into alignment in a desired position. A spring pressed ball 190 is adapted to engage in the groove 192 in the stud 184 to hold the same in an inner or outer locked position.

The operation of this inertia charge spring member will now be described. When it is desired to move the grinding wheel longitudinally of the rail to be ground, it is accomplished by moving the entire apparatus by turning on the hand wheel 140. By movement of the lever 142, pin 184 is moved forward and engages in one of the openings 186 in the disc 160, thus holding the same against rotation. Rotation of the hand wheel 140 and the wheel 16 will tend to wind up the spring 154 as the truck is moved backward a definite distance on the rail. Upon reversing the direction of movement of the truck by turning the handle 140 in an opposite direction, the lug spring 154 will greatly assist in this movement and thus the truck will be rolled forward and the spring unwound and then wound up in an opposite direction. Thus it can be seen that to and fro movement of the complete apparatus is greatly assisted by the inertia spring 154 which is wound up first clockwise and then counterclockwise to assist in the movement of the truck, thus making it comparatively easy for a single man to move the truck and grinding wheel back and forth, a job which previously had required the services of several men. It can also be seen that by the use of the inertia member a to and fro action is greatly accelerated due to the fact that there is no momentary pause at the end of each back and forward stroke during which it is necessary to start the load from a dead stop position manually.

From the above and foregoing description and explanation, it will be apparent to those skilled in the art that I have provided track grinding mechanism that is comparatively light, yet extremely rigid, and capable of easy handling, both in the shifting back and forth of the grinding wheel and associated mechanism and the longitudinal movement of the same to and fro upon a track. The provision of the skid members and the manner in which they have been combined with the frame, provide in effect a light, yet extremely rigid motor frame structure and at the same time there is combined therein the desirable features of a skid mechanism which is highly desirable in a machine of this type for the reasons set forth. It will be apparent that upon the approach of a train, a single operator can easily and quickly, by grasping a pair of the handles 28, pull a machine off of the rails and then on the thin skid members easily slide the entire machine out of the way of an approaching train, thus saving the machine from destruction and in some instances the life of the operator.

While I have illustrated and described a preferred embodiment of my invention, it will be apparent to those skilled in the art that changes and modifications may be made in the exact details shown, and I do not wish to be limited in any particular; rather what I desire to secure and protect by Letters Patent of the United States is:

1. Apparatus of the class described comprising a rigid frame member including pairs of parallel spaced rods, axle housings rigidly fixed upon the ends of both pairs of parallel rods, a pair of parallel spaced axles supported thereby, wheels on both ends of both of said axles, a movable axle housing on each axle, a grinding wheel support frame carried by said housings, a motor driven grinding wheel carried by said support frame and skid members connected with said movable axle housings and adapted to underlie the same.

2. Apparatus of the class described comprising a rigid frame member including pairs of parallel spaced rods, axle housings rigidly fixed upon the ends of both pairs of parallel rods, a pair of parallel spaced axles supported thereby, wheels on both ends of both of said axles, a movable axle housing on each axle, a grinding wheel support frame carried by said housings below said rigid frame, a motor driven grinding wheel carried by said support frame and parallel skid members connected with said movable axle housings and adapted to underlie the same.

3. Apparatus of the class described comprising a rigid frame member, a pair of parallel axle housings rigidly fixed upon opposite ends of said frame member, a pair of parallel spaced axles supported thereby, wheels on both ends of said axles, a movable axle housing on each axle, a grinding wheel support frame carried by said housings, a motor driven grinding wheel carried by said support frame and skid members connected with said movable axle housings and adapted to underlie the same, said skid members terminating in handle members at their ends.

4. Apparatus of the class described comprising a rigid tubular frame member including pairs of parallel spaced rods suitably connected together, axle housings rigidly fixed upon the ends of both pairs of parallel rods, a pair of parallel spaced axles supported thereby, wheels on both ends of said axles, a movable axle housing on each axle, a grinding wheel support frame carried by said housings below said rigid frame, a motor driven grinding wheel carried by said support frame and a pair of parallel longitudinally disposed skid members rigidly connected to said movable axle housings and adapted to underlie the same, said skid members having their ends extending upwardly and terminating in pairs of parallel handle portions.

5. A portable railway track grinding machine comprising a rigid frame having axle bearings in opposite ends, a pair of wheeled axle members mounted in said bearings, a motor support frame including axle housings slidably mounted upon said axles, a motor thereon and skid means mounted below and associated with said axle housings.

6. A portable railway track grinding machine comprising a rigid frame having axle bearings in opposite ends, a pair of wheeled axle members mounted in said bearings, a motor, a motor support frame including axle housings slidably mounted upon said axles, a grinding wheel driven thereby and skid means mounted below and associated with said axle housings.

7. A portable railway track grinding machine comprising a rigid frame having axle bearings in opposite ends, a pair of wheeled axle members mounted in said bearings, a motor, a motor support frame including axle housings slidably mounted upon said axles, means for locking said frames together, a grinding wheel associated with and driven by said motor and skid means mounted below and associated with said axle housings.

8. A portable railway track grinding machine

comprising a rigid frame having axle bearings in opposite ends, a pair of wheeled axle members mounted in said bearings, a motor, a motor support frame including axle housings slidably mounted upon said axles and skid means mounted below and associated with said axle housings, said skid means comprising a pair of longitudinally extending T members having handle members at their ends.

9. Apparatus of the class described comprising a frame formed with a pair of spaced skid members on the lower side thereof, a pair of horizontal axle housings secured thereto, a pair of axles in said housings, wheels secured to the ends of said axles, a second rigid frame connecting said axles adjacent said wheels, and a motor driven grinding wheel carried by said first mentioned frame, said first mentioned frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

10. Apparatus of the class described comprising a frame formed with a pair of parallel spaced skid members on the lower side thereof, said skid members longitudinally disposed and formed of T members, a pair of horizontal axle housings secured on the top of said T members, a pair of axles in said housings, wheels secured to the ends of said axles, a second rigid frame connecting said axles adjacent said wheels, and a motor driven grinding wheel carried by said first mentioned frame, said first mentioned frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

11. Apparatus of the class described comprising a frame formed with a pair of parallel spaced skid members on the lower side thereof, said members having a T formation and being longitudinally disposed of said apparatus and terminating in upwardly and outwardly extending arm portions, a pair of horizontal axle housings secured on the flat of said T formation, a pair of axles in said housings, wheels secured to the ends of said axles, a second rigid frame connecting said axles adjacent said wheels, and a motor driven grinding wheel carried by said first mentioned frame, said first mentioned frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

12. A rail grinder comprising a wheeled frame adapted to operate upon a railed track, said frame including a pair of axle housings, a pair of axles, wheels on said axles adapted to ride on said rails, a motor on said frame, a grinding wheel driven thereby and a pair of spaced parallel skid members secured on the under side of said axle housings.

13. A rail grinder comprising a wheeled frame adapted to operate upon a railed track, said frame including a pair of axle housings, a pair of axles, wheels on said axles adapted to ride on said rails, a motor on said frame, a grinding wheel driven thereby and a pair of spaced parallel skid members secured on the under side of said axle housings, said skid members having a narrow edge portion and being extended longitudinally of said rail grinder.

14. A rail grinding machine comprising a wheeled frame adapted to operate upon a railed track, said frame including a pair of axle housings, a pair of axles, wheels on said axles adapted to ride on said rails, a motor on said frame, a grinding wheel driven thereby and a pair of spaced parallel skid members secured on the under side of said axle housings, said skid members being of a T formation and extruded longitudinally of said machine with their ends extending upwardly to a point above said wheels and then outwardly and formed with handle portions.

15. A frame for a track grinding machine comprising longitudinally extending spaced parallel T members with their ends extending upwardly and outwardly and formed with handle portions, a pair of crosswise axle housings secured to and mounted above said T members and forming cross braces therefor, and motor support members secured between one of said axle housings and said T members.

16. A frame for a track grinding machine comprising a structure including longitudinally extending spaced parallel T members with their ends extending upwardly, similarly shaped inverted T members associated therewith and formed with handle portions, a pair of crosswise axle housings secured to and mounted above a pair of said T members and forming cross braces therefor, diagonal braces between said axle housings and said T members and motor support members secured between one of said axle housings and said T members.

17. A frame for a track grinding machine comprising a structure including a pair of longitudinally extending spaced parallel T members with their ends extending upwardly, a pair of inverted T members secured thereto throughout a portion of their length and formed with handle portions, a pair of crosswise axle housings secured between said pairs of T members and forming cross braces therefor, and motor support members and a tool box secured between said axle housings and said T members.

18. A frame for a track grinding machine including longitudinally extending spaced parallel T members, one set of T members having their ends extending upwardly and one set having their ends extending outwardly above and parallel to said first set and formed with handle portions, a pair of crosswise axle housings secured to and mounted between said T members and forming cross braces therefor and motor support members secured between said axle housings and said T members.

19. A rail grinder comprising a wheeled frame adapted to operate upon a railway track, said frame including a rigid cross structure, pairs of bearings thereon, axles supported in said bearings and a secondary frame mounted upon said axles below said rigid cross-structure, a pair of longitudinally extended skid members secured to said secondary frame in close proximity to the ground, said secondary frame including a pair of axle housings positioned on said skid members and being shorter than said axles, extensible guards on both sides of said axle housings extending to said wheels, a motor on said secondary frame, a grinding wheel driven thereby, means associated with said grinding wheel for raising or lowering the same and inertia means associated with said wheeled frame for moving said frame and associated mechanism to and fro.

20. In apparatus of the class described the combination of a wheeled frame having parallel longitudinal skid members secured to the lower side thereof and extending downwardly therefrom, a stationary plate carried by said frame, a coiled spring between said plate and one of the wheels of said frame, said spring having one end

engaging said plate and one end engaging said wheel and means for locking said plate and wheel in operative engagement to coil and uncoil said spring by rotation clockwise and counterclockwise of said wheel.

21. Apparatus of the class described comprising a frame including a pair of horizontal axle housings, a pair of axles in said housings, wheels secured to the ends of said axles, a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel and skid members secured to said frame and underlying the same.

22. Apparatus of the class described comprising a frame including a pair of horizontal axle housings, a pair of axles in said housings, wheels secured to the ends of said axles, a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel and skid members secured to said frame and underlying the same, said skid members being parallel and having upwardly turned handle portions.

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