G. S. SHAW.

GRINDING MACHINE.

APPLICATION FILED AUG. 25, 1913.

1,166,640.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

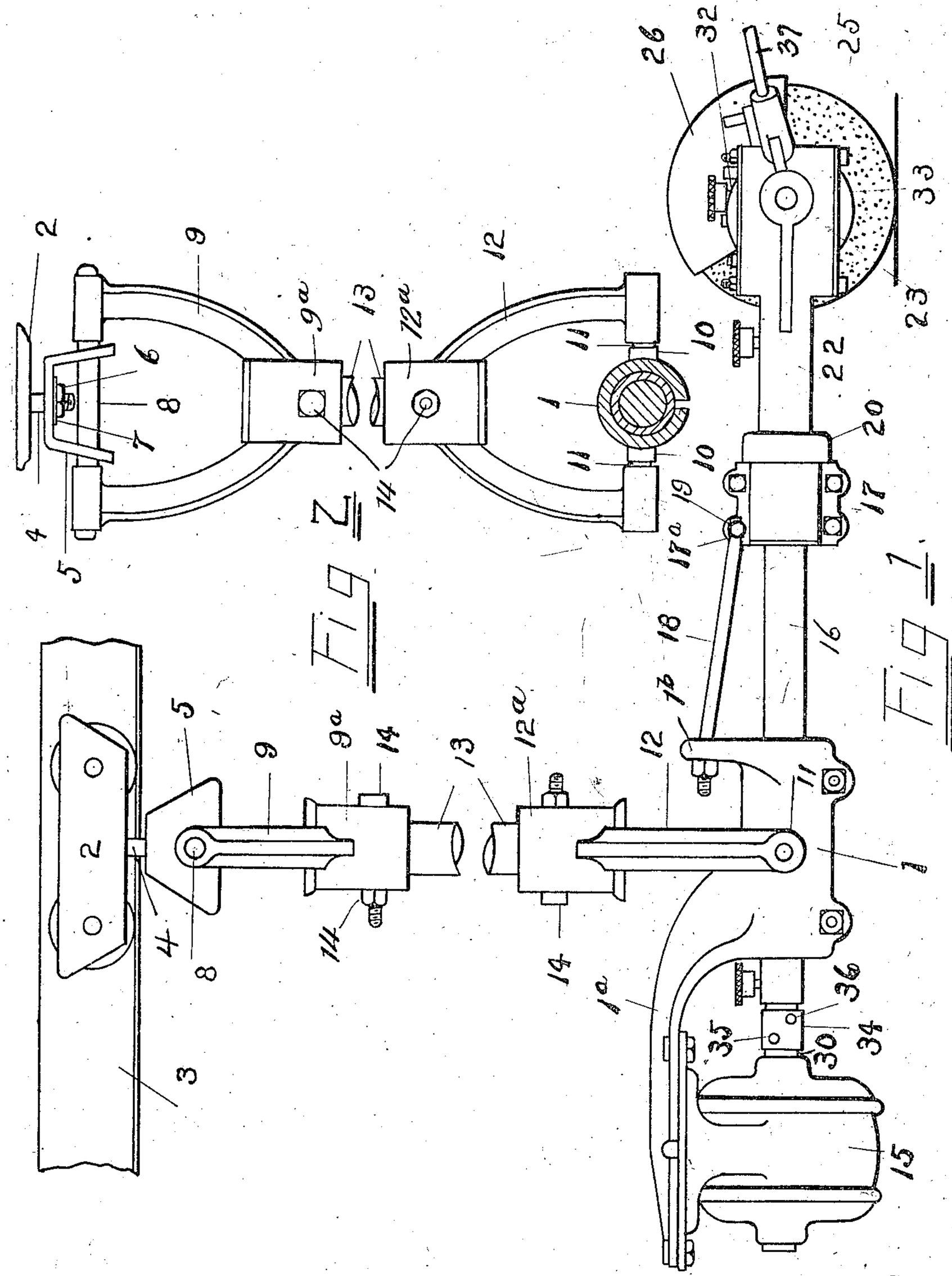

Fig. 1.

Fig. 2.

Witnesses

Esther E. Pfeifer

Edward J. Mehl

Inventor

George S. Shaw

By Philip Hall & Donovan

Attorneys

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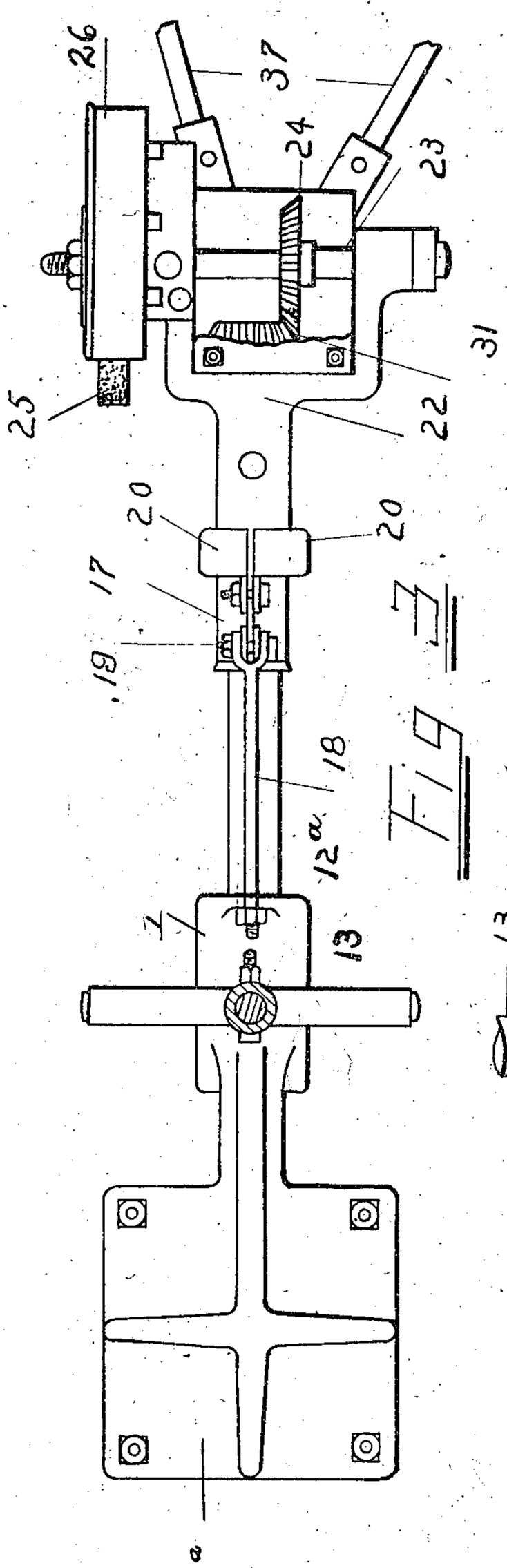

Fig 3

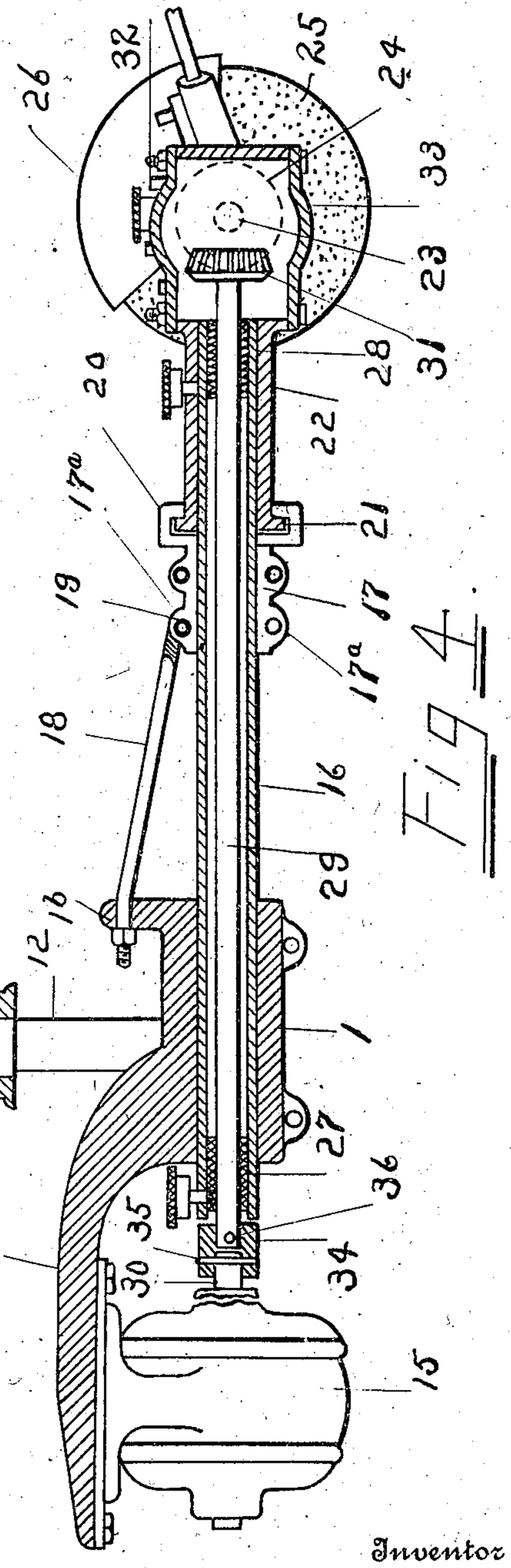

Fig 4

Witnesses

Esther E. Pfeifer

Inventor

George S. Shaw

By Philip Hall Townsend

Attorney

UNITED STATES PATENT OFFICE.

GEORGE S. SHAW, OF SPRINGFIELD, OHIO.

GRINDING-MACHINE.

1,166,640. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 25, 1913. Serial No. 786,506.

To all whom it may concern:

Be it known that I, GEORGE S. SHAW, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Grinding-Machines, of which the following is a specification.

My invention relates to improvements in grinding machines and it relates more particularly to a grinding machine especially adapted for grinding heavy work such as railroad frogs and switches.

The object of my invention is to provide a grinding machine in which the grinding element may be readily moved to any point on the work upon which the machine is operating.

The invention consists in the constructions and combinations of parts hereinafter described and set forth in the claims.

In the accompanying drawings,—Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a front elevation of the hanger, with some of the other parts shown in section. Fig. 3 is a top plan view. Fig. 4 is a longitudinal section, a portion only of the hanger being shown.

Like parts are represented by similar characters of reference throughout the several views.

In the said drawings, 1 represents a main support for the operating parts of the machine. In the present case, this support 1 is hung from a carriage 2 supported on an overhead track 3, although it may be, if desired, supported from any other suitable point, such as a stationary overhead beam. In the present case, the carriage 2 has a downwardly projecting screw-threaded stud 4 upon which is swivelly mounted a U-shaped bracket 5; this bracket being hung on the nut 6 on the screw-threaded end of the stud 4 and interposed washer 7, so that it may swivel or rotate about the stud 4. The bracket 5 has secured therein a rod 8 upon which rod is journaled a yoke 9. The frame part 1 has laterally-projecting trunnions 10 from which project studs 11 upon which is journaled a yoke 12. The two yokes 9 and 12 are connected by a rod 13 secured in bosses 9^a and 12^a, formed integral with said yokes by bolts 14; said rod 13 being provided with a series of openings (not shown) to receive said bolts, so that the length of the hanger may be altered as desired.

The support 1 has a rearwardly extending portion 1^a to which is bolted an electric motor 15. The support 1 is bored out to receive a casing 16 which is extended forwardly for a suitable distance and has bolted thereto a two-part sleeve 17.

A rod 18 secured at one end to the flange 1^b of said support and at the other end to one of the bolts 19 which secures the sleeve 17 in position, serves to form a support for the forward end of the casing, the rod 18 being bifurcated at its forward end to embrace the ears 17^a of the collar 17 through which the bolt 19 passes.

The parts of the collar 17 have enlarged groove-shaped portions 20 adapted to fit over the out-turned flange 21 of a head 22; the rear portion of the head 22 being journaled on the forward end of the casing 16 and the forward portion being enlarged to accommodate a transversely-arranged shaft 23 journaled therein and a beveled gear 24.

One end of the shaft carries a grinding wheel 25 partly covered by a hood 26 secured to the head 22. Each end of the casing 16 is provided with a bushing 27 and 28 within which is journaled a shaft 29, coupled at its rear end to the armature shaft 30 of the motor and having at its forward end a beveled pinion 31 meshing with the beveled gear 24, for the purpose of driving the grinding wheel 25. The top and bottom of the forward portion of the head 22 is formed open at the top and bottom but is ordinarily closed by removable plates 32 and 33, so that access may be obtained to the driving mechanism at this point. The coupling between the armature shaft and the shaft 29 is held by a collar 34 secured to the respective shafts by the pins 35 and 36, projecting at right angles to each other. The forward end of the head 22 has forwardly projecting handles 37. By this construction the operator may, by grasping the handles, turn the grinding wheel 25 to any position desired. By reason of the connection between the head 22 and the split collar 17, it will be seen that the head together with the grinding wheel, may be rotated or oscillated by the longitudinal axis of the driving shaft 29, the driving gears maintaining their driving relation.

By reason of the pivoted supporting yokes 9 and 12, the entire driving mechanism and grinding wheel may be swung back and forth, and by reason of the swiveled connection between the supporting carriage 2

and the bracket 5, the entire device may be swung about in a vertical direction. It will, therefore, be seen that the grinding wheel 25 may be moved to any point desired with respect to the work, which makes it highly efficient for operating upon work in which the parts to be ground extend at various angles and directions with respect to each other.

Having thus described my invention, I claim:

1. In a grinding machine, a support, a hanger, said hanger consisting of two connected yokes, one of said yokes being swiveled to a point of suspension and the other yoke pivotally connected with said support, a driving shaft and a grinding wheel carried by said support, together with means for oscillating said wheel about the longitudinal axis of said shaft, and a motor for said shaft also carried by said support on the opposite side thereof from said wheel.

2. In a grinding machine, a pivotally and swivelly mounted support, a motor mounted on one side of the pivotal point of said support and a grinding wheel on the other side thereof, said wheel being so arranged as to be capable of an oscillatory movement about said support, a drive shaft journaled in said support and operatively connected with the motor and also with said grinding wheel, the connection between said shaft and grinding wheel being such as to permit an oscillatory movement of said wheel about the longitudinal axis of said shaft.

3. In a grinding machine, a pivotally and swivelly mounted support, a motor mounted on one side of the pivotal point of said support and a grinding wheel on the other side, a drive shaft journaled in said support and operatively connected with said motor, and a driving connection between said shaft and wheel comprising bevel gears whereby said wheel may be oscillated about the longitudinal axis of said shaft.

In testimony whereof, I have hereunto set my hand this 14th day of August 1913.

GEORGE S. SHAW.

Witnesses:
CHAS. I. WELCH,
ESTHER E. PFEIFER.