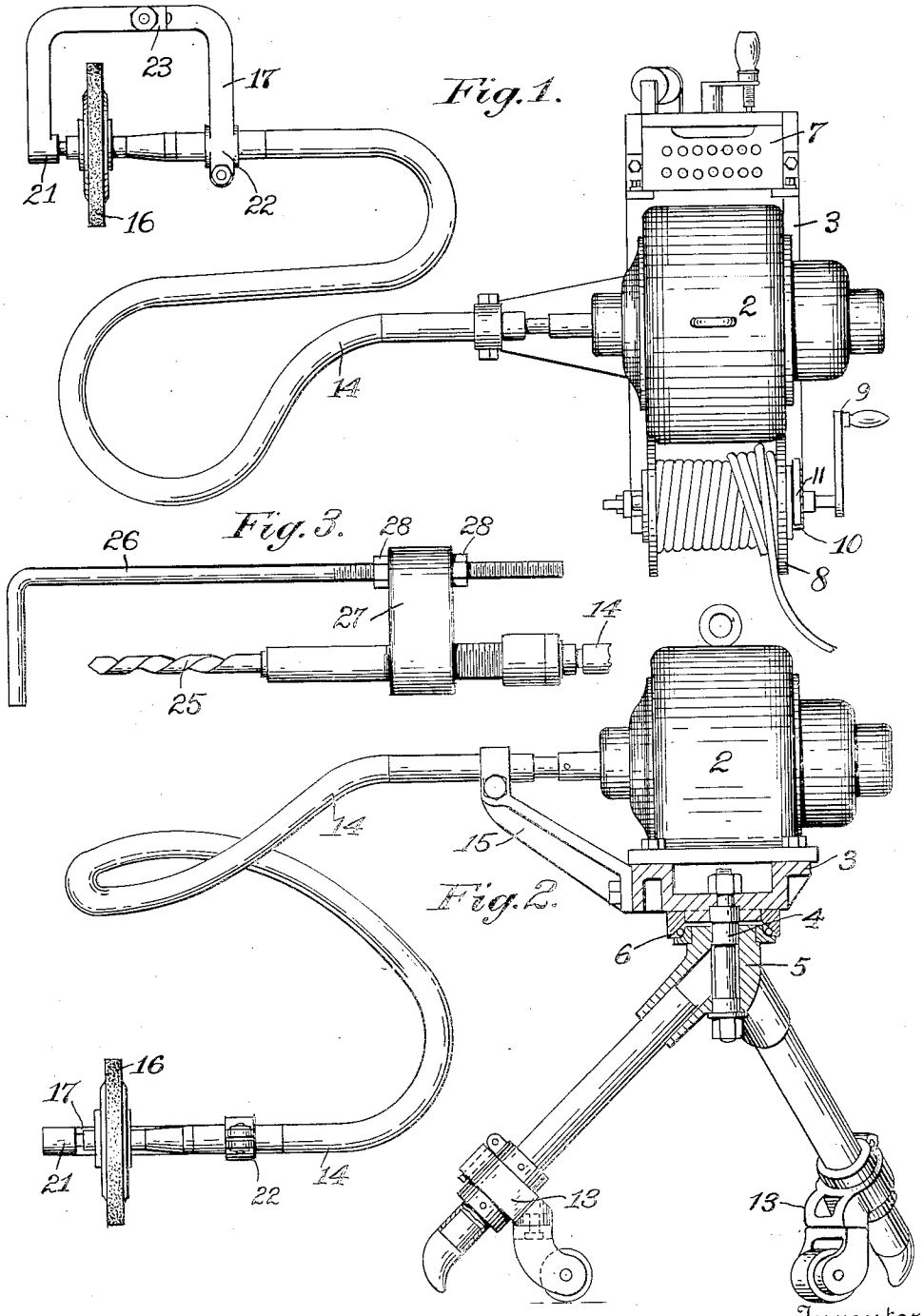
M. F. APGAR.

PORTABLE GRINDER.

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PORTABLE GRINDER.

1,085,840. Specification of Letters Patent. Patented Feb. 3, 1914.

Application filed October 19, 1911. Serial No. 655,511.

To all whom it may concern:

Be it known that I, MARSHALL F. APGAR, a citizen of the United States, residing at High Bridge, in the county of Hunterdon and State of New Jersey, have invented certain new and useful Improvements in Portable Grinders, of which the following is a specification.

This invention relates to portable universal grinders, and more particularly to a portable flexible shaft grinder, the object of the invention being to provide an improved machine of this character which is self-contained, so that driving shafting and counter shafting is unnecessary, and in which the motor and the grinder will be directly connected, so that there is no lost motion nor lost power, and in which the grinder can be used for work anywhere within a radius equal to the length of the flexible shaft, thus making it possible to work around very large castings without moving the machine, and which machine is also portable, so that it can be readily carried from place to place as may be desired.

In the drawings accompanying and forming part of this specification, Figure 1 is a top view of this improved portable grinder; Fig. 2 is a side, partly sectional, view thereof; and Fig. 3 is a view illustrating a drill adapted for use with this improved machine.

Similar characters of reference indicate corresponding parts throughout the drawings.

The overhead shafting and counter shafting required by ordinary grinding and drilling machines is entirely done away with by means of the present improvement, which comprises a suitable motor, such as an electric motor 2, mounted upon a suitable support or platform 3 swiveled, as at 4, to a tripod 5, suitable ball bearings 6 being provided between the tripod and the platform thereby to permit the motor to adjust itself to any position which the grinder and its flexible shaft may assume, thus materially lengthening the life of the shaft. Located on the platform at one side is the usual rheostat 7, and at the opposite side there is located a spring-controlled reel 8 automatically operative to take up the slack of the electric conductor to the motor, thus removing the danger of injury to the conductor as well as maintaining the same out of the way. Connected to this reel is a small crank 9, having a ratchet wheel 10 with which a pawl 11 is adapted to engage, and by means of which crank the electric conductor may be rolled or unrolled, as may be desired. The legs of the tripod are fitted with suitable adjustable casters 13, which may be easily thrown into a rolling position to permit the motor to be easily moved across the floor.

Connected with the motor is a flexible shafting 14, the point of connection thereof with the motor being supported by an outwardly extending bracket or arm 15 connected with the platform upon which the motor is mounted. The end of this flexible shafting is connected with the desired tool to be actuated, which in Figs. 1 and 2 is shown as a grinding wheel 16, while in Fig. 3 it is shown as a drill.

The grinding wheel is provided with a suitable handle 17, shown as of U-shaped form and provided with a bearing 21 for the extreme end of the grinding wheel shaft and with a clamp 22 for attachment to the flexible shaft. This handle is so located that it is not only very convenient for the operator in holding the grinding wheel, but also enables great pressure to be exerted on the wheel in grinding. This handle is made as a two-part member fastened together as at 23, whereby the outer portion thereof may be removed to enable the grinding wheel to be operated close to the corners of various shapes of work.

In practice, as hereinbefore stated, a suitable drill 25 may be used in place of the grinding wheel, and as the driving mechanism may be removed a considerable distance from the work this makes it possible, by means of a long handle, to drill holes in recesses otherwise inaccessible. In the form show the drill is provided with a clamping member 26 extending through a holder or bracket 27 and adjustable therein, suitable check-nuts 28 being provided for clamping it in position relatively to its holder, the drill being supported for rotary movement in the holder.

By the present improvement it will be observed that the grinder, or the drill, is directly connected by a flexible shaft with the motor, which may be moved from place to place and which, by means of the long flexible shaft, can be used for work anywhere within a radius equal to the length of the flexible shaft about the center of the

tripod, thus making it possible to work around very large castings and also to use the machine without moving the same where the castings are small and are moved forward in regular order as is now quite common in large manufacturing houses.

By means of the present improvement the necessity for universal joints in the shafting is entirely removed, as the motor will adjust itself to any position of the shaft and its grinding wheel.

One of the advantages of the present improvement is that the speed of the grinder and drill may be controlled to suit the particular work in hand.

Some of the advantages of the present improvement may also be obtained by supporting the motor and its accessories herein shown by a ball bearing fixture pendent from above if preferred. In other words, the motor may be provided at the top thereof with a ball bearing swiveled fixture, so that the tripod may be readily disconnected and the grinder complete, hooked to a crane, and transferred quickly from one point to another where work is to be done.

The present improvement is particularly designed for use in connection with manganese steel castings and particularly with castings of large size which are difficult to handle, and therefore it is essential that some simple portable self-contained apparatus be provided which will permit work upon these castings at various sides and points without the necessity of moving the casting itself and in which apparatus the motor can control the operation of the machine at the point where the work is being done.

I claim as my invention:

1. A self - contained portable machine adapted to work on heavy steel castings, comprising a platform, an electric motor secured to said platform and carrying means for suspending the same, a tool carrying flexible shaft connected to said motor and supported by said platform and adapted to interchangeably carry a grinding wheel or a drill, means located at one side of said platform and portable therewith for controlling the operation of said motor, and means located at another side of said platform and portable therewith for carrying an electric conductor and automatically operative to take up the slack thereof.

2. A self - contained portable machine adapted to work on heavy steel castings, comprising a platform having a forwardly projecting arm, an electric motor secured to said platform and carrying means for suspending the same, a tool carrying flexible shaft connected to said motor and supported by said arm for rotation with said platform and adapted to interchangeably carry a grinding wheel or a drill, means located at one side of said platform and movable therewith for controlling the operation of said motor, and a reel located at the opposite side of said platform and movable therewith for carrying an electric conductor and automatically operative to take up the slack thereof.

3. A self - contained portable machine adapted to work on heavy steel castings, comprising supporting means having adjustable means shiftable in position to permit the same to be rolled around on the floor, a platform rotatably secured to said supporting means, an electric motor secured to said platform for rotation therewith, a tool carrying flexible shaft connected to said motor and supported for rotation with said platform and adapted to interchangeably carry a grinding wheel or a drill, means located at one side of said platform and portable therewith for controlling the operation of said motor, and means located at another side of said platform and portable therewith for carrying an electric conductor and automatically operative to take up the slack thereof.

4. A self - contained portable machine adapted to work on heavy steel castings, comprising supporting means having adjustable means shiftable in position to permit the same to be rolled around on the floor, a platform detachably and rotatably secured to said supporting means, an electric motor secured to said platform for rotation therewith and carrying means for suspending the same when detached from its floor supporting means, a tool carrying flexible shaft connected to said motor and supported for rotation with said platform and adapted to interchangeably carry a grinding wheel or a drill, means located at one side of said platform and portable therewith at all times for controlling the operation of said motor, and means located at another side of said platform and portable therewith at all times for carrying an electric conductor and automatically operative to take up the slack thereof.

5. A self - contained portable machine adapted to work on heavy steel castings, comprising an electric motor, means detachably and rotatably secured thereto at the underside thereof for supporting it at such underside, means secured thereto at its upper side for suspending it when detached from its underside supporting means, a tool carrying flexible shaft connected to said motor and supported for rotation therewith and adapted to interchangeably carry a grinding wheel or a drill, means located at one side of said motor and portable therewith at all times for controlling the operation of said motor, and a reel located at another side of said motor and portable therewith at all times for carrying an electric

conductor and automatically operative to take up the slack thereof.

6. A self - contained portable machine adapted to work on heavy steel castings, comprising tripod supporting means having adjustable means shiftable in position to permit the same to be rolled around on the floor, a platform detachably and rotatably secured to said supporting means and having a forwardly projecting arm, an electric motor secured to said platform for rotation therewith and carrying means for suspending the same when detached from its tripod supporting means, a tool carrying flexible shaft connected to said motor and supported by said arm for rotation with said platform and adapted to interchangeably carry a grinding wheel or a drill, means located at one side of said platform and portable therewith at all times for controlling the operation of said motor, and a reel located at another side of said platform and portable therewith at all times for carrying an electric conductor and automatically operative to take up the slack thereof.

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