Nov. 11, 1924. 1,514,894

R. L. CARTER

PORTABLE ROUTING AND PROFILING MACHINE

Filed Sept. 29, 1923 2 Sheets-Sheet 1

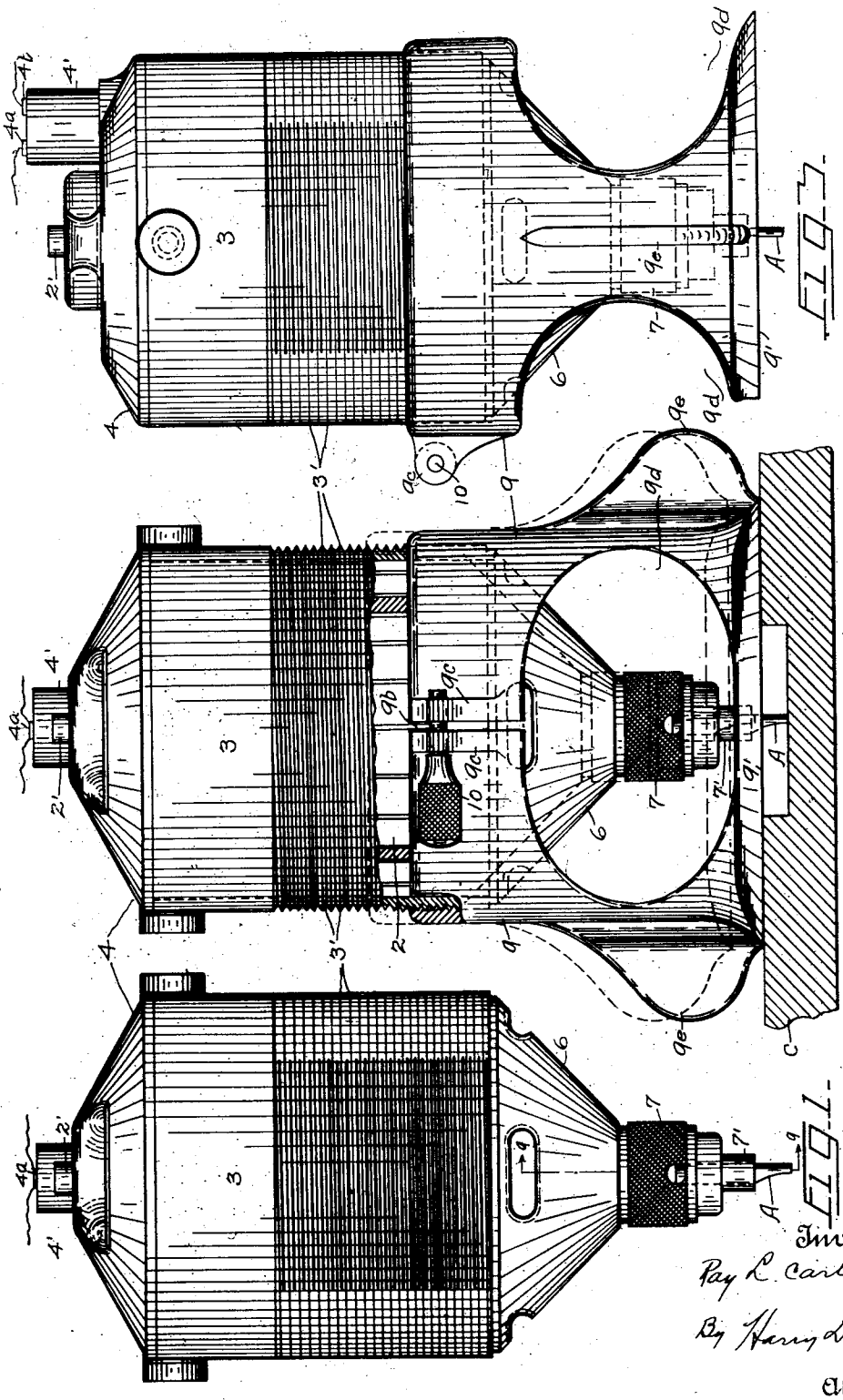


FIG. 2.

FIG. 1.

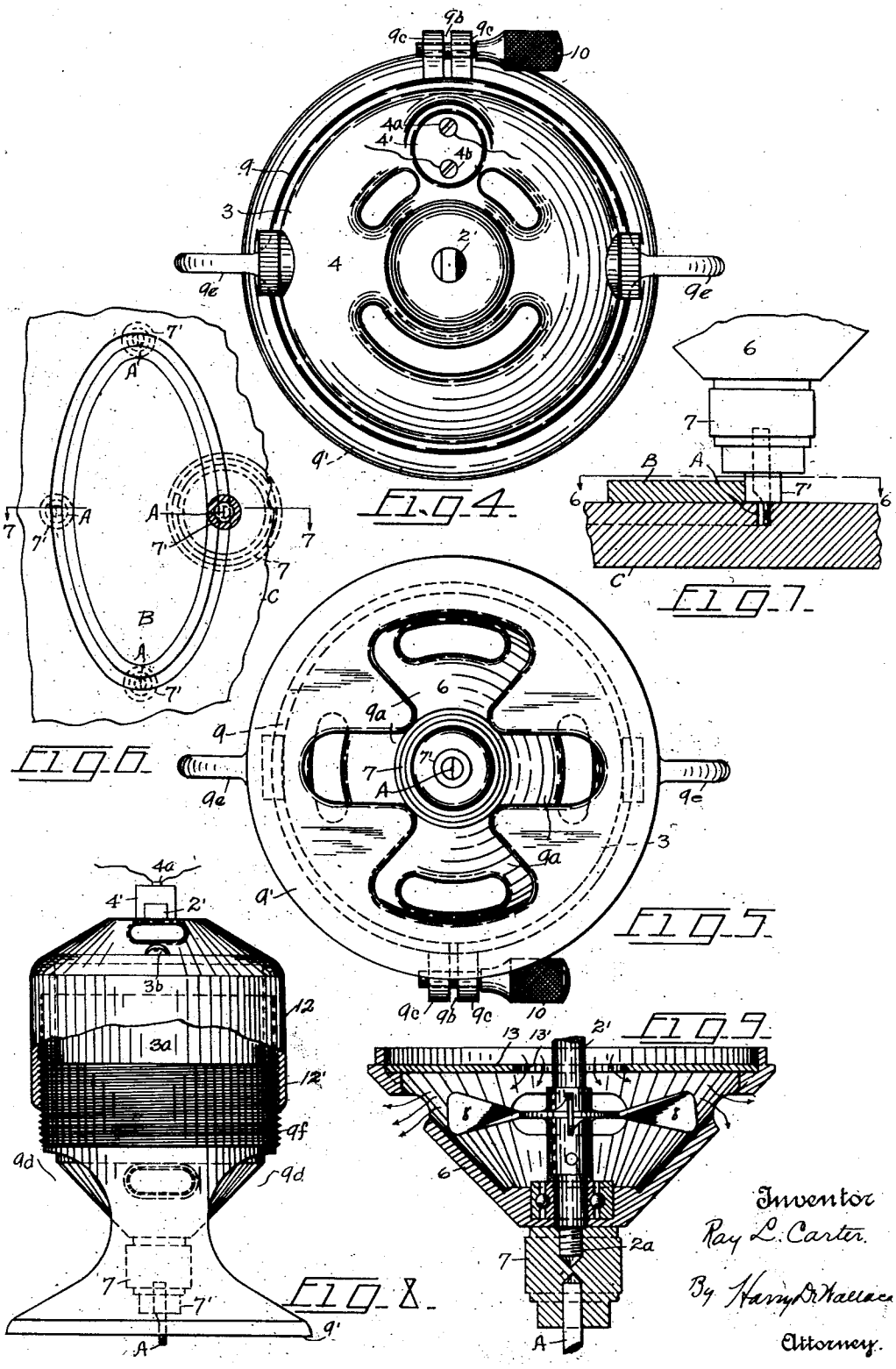
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UNITED STATES PATENT OFFICE.

RAY L. CARTER, OF SYRACUSE, NEW YORK.

PORTABLE ROUTING AND PROFILING MACHINE.

Application filed September 29, 1923. Serial No. 665,644.

To all whom it may concern:

Be it known that I, RAY L. CARTER, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Portable Routing and Profiling Machines, of which the following is a specification.

This invention relates to improvements in routers, and has for its object to provide an easily portable motor-driven device of the class adapted for routing, shaping and profiling either wood or metal work. A further object is to provide a relatively small high-speed motor, which is inclosed in an insulated casing, and which may be held and operated by one hand, the said casing being arranged for adjustably mounting the motor. A further object is to provide a novel detachable support, whereby the motor, and cutting tool driven thereby, may be adjusted axially, relatively to a plane surface of the support, which contacts with and is movable over the work, during the routing and other operations. A further object is to provide means for predetermining the depth of the routing or profiling work, and for guiding and steadying the tools. And a further object is to provide means for adjusting the support to suit variations of the diameter of the motor casing, and for locking the casing and support together for maintaining the various adjustments.

I attain these objects by the means set forth in the detailed description which follows and as illustrated by the accompanying drawings, in which—

Figure 1 is an elevational view of the encased motor with a cutting tool attached. Fig. 2 is a front side elevation of the motor and support; showing the routing tool in action; also showing the manner adjusting the said parts. Fig. 3 is an end elevation of the combined device. Fig. 4 is a top plan view of the device shown in Fig. 2. Fig. 5 is a bottom face view of the same. Figs. 6 and 7 are views showing the means for guiding the routing or profiling tool. Fig. 8 is a view showing modified means for adjustably connecting the motor and the support. And Fig. 9 is a central section, taken on line 9—9 of Fig. 1.

In the drawings, 2 represents an electric motor having the usual armature shaft 2′. 3 is the cylindrical casing or shell, preferably made of insulating material, which incloses the motor, the top end thereof being closed by a cap 4, which supports one end of the shaft 2′. Cap 4 is provided with an insulated boss 4′, in which is disposed the contacts or terminals 4^a—4^b of the motor circuit. The electric parts are usually supplied with current by a flexible cord, (not shown), which connects the said terminals with an ordinary electric lamp-socket. The lower end of the casing 3 is closed by a hollow conical cap 6, which supports the corresponding end of the armature shaft, the said shaft extending beyond the cap and being threaded as at 2^a, for attaching various tool holders or chucks, as 7. The caps 4 and 6 are both slotted for air-cooling the motor, in the usual manner, and for this purpose a fan 8 is mounted on and driven by the shaft 2′ (see Fig. 9). A represents one of many differently formed tools, which may be operated by the device for routing, or for any other boring, shaping, or profiling work (see Figs. 2, 6 and 7). When the tool is employed for profiling work, the holder 7 is usually formed with a reduced cylindrical guard 7′, which may engage and follow the perimeter of a templet or pattern B, while the tool is performing its work (see Figs. 6 and 7).

For routing and for various other precise work, where the tools require steadying and guiding for effecting cuttings to uniform depths, the motor 3 is mounted in a novel support 9, which consists of a relatively broad base, having a plane bottom 9′ which engages and may be moved over a flat surface of the work during the cutting operations (see Fig. 2). The plane face 9′ of the base is cut away, as at 9^a in Fig. 5, for affording access to the tools and their holders, as well as for facilitating the "spotting" and observation of the performance of the tools, and the escape of the chips and dust resulting from their work. The body of the support is hollow and substantially cylindrical, and its top end is internally threaded for engaging threads 3′ of the shell 3, by means of which the motor and the support may be readily, quickly and accurately adjusted relatively to each other, for varying the depth of the cutting of the tool A (see Fig. 2). In practice, the threads of the shell 3 and support 9 are preferably about one-sixteenth inch pitch, so that each revo-

lution of the motor or support in either direction moves the tool A correspondingly. By this arrangement the relatively fine subdivisions of the unit of measure, as well as greater fractional parts of an inch, may be arrived at instantly without tedious calculations. The threaded top end of the support is preferably split, as at 9^b, and is provided with registering perforated threaded lugs 9^e, to receive a clamping screw 10, by means of which the support may be expanded and contacted to suit any slight variations in the diameter of the shell 3. In practice, after the motor and support have been properly adjusted, the screw 10 is tightened up for preventing accidental shifting of the parts. The opposite sides of the support, are cut away, as at 9^d, for reducing the weight of the support, as well as for facilitating observation of the performance of the tools, and the removal of the chips and shavings. Near the base the support is provided with radial wings 9^e for facilitating the manual operation of the support.

In Fig. 8 is shown a modified cap 12, having a cylindrical portion 12′, which loosely telescopes the motor casing 3^a, the said portion being internally threaded to receive the externally threaded top end of the support 9^f. The cap 12 may be made of metal and is preferably secured to the casing 3^a by screws 3^b.

The fan 8 draws the air downwardly through the casing 3 and forces it out through the slotted openings of the cap 6. Where the motors are operated at speeds above 7,000 R. P. M., the relatively small fan 8 is incapable of keeping the motors cool. To overcome this trouble, I provide a disk 13, which is disposed in the cap 6, preferably between the fan and the armature the said disk having a central opening 13′ through which the air is sucked by the fan. The disk 13 divides the relatively large hollow chamber in which the fan is disposed, and tends to prevent the fan from churning, instead of evacuating, the air.

My routing and profiling device is extremely simple, light, and compact, and may be produced at small cost. Owing to its small size, and light weight, it may be readily carried from place to place and applied to work that is usually inaccessible to the larger and heavier permanently installed machines.

Having thus described my invention what I claim, is—

1. A portable profiling machine including a motor having a shaft, a tool supported by said shaft, a casing inclosing said motor, a portion of said casing being threaded, a hollow cylinder having a split threaded portion adapted to engage the threaded portion of said casing whereby said tool may be moved relatively to the work and means for locking and holding the casing and cylinder in various adjusted positions.

2. A router comprising an encased motor adapted to support and drive a tool, a concentric hollow support, having a split portion adapted to adjustably grip the motor casing, said support having a plane bottom apertured for access to the tool adapted to be moved over the surface of the work for guiding the tool during the routine operations.

3. A router comprising an encased motor including the armature shaft, a tool supported by said shaft, a hollow support for said motor having a plane bottom adapted to be moved over a surface of the work parallel to the plane of the cutting effected by the tool, one end of said support being split and adapted to be clamped around the motor, and means for adjusting the tool relatively to the plane bottom of the support.

4. A portable router comprising a hollow cylindrical support having a plane bottom adapted to be moved over a surface of the work, the top of said support being split and threaded, a motor, a tool supported and driven by the motor, and a threaded casing inclosing the motor adapted to engage the threads of the split end of said support for positioning the tool concentric to said plane bottom and for predetermining the depth of the cutting by said tool.

5. The combination of a motor and a shaft driven thereby, a boring tool supported by said shaft, a casing inclosing said motor, said casing comprising a cylindrical body having circumferential threads, a support for said casing comprising a hollow cylinder having a plane portion perpendicular to the axis of said tool and having its opposite end threaded and adapted to engage the threaded portion of said casing for adjusting said tool relatively to said plane portion, and means for clamping the support to said casing for preventing accidental shifting of said parts.

6. The combination with a motor and a shaft driven thereby, of a tool supported and driven by said shaft, a cylindrical body for supporting said motor, said motor and said body alining axially and adapted to be moved relatively to each other for pre-determining the depth of the cutting by said tool, and means for locking and holding the motor and said support in various adjusted positions.

7. A portable routing machine comprising a hollow cylindrical body having a plane surface adapted to be moved over the work, a motor supported by said body, said motor having an externally threaded shell adapted to be screwed into said body and having a shaft adapted to support a tool in axial alignment with said body, said motor

adapted to be rotated for feeding the tool towards and from the work, and means for holding the tool rigid when adjusted.

8. The combination with a motor including the armature shaft adapted to support a tool, of a cylindrical shell inclosing said motor, said shell being threaded, a support comprising a hollow body having one end threaded for adjustably receiving said shell the opposite end of said support comprising a plane arranged perpendicular to the axis of the tool and having an aperture through which the tool may be projected when either the body or the shell are rotated in the proper direction, and means for clamping the body to the shell for preventing accidental endwise movement of said tool.

9. A machine of the class described, comprising a motor and a tool driven thereby, a cylindrical shell inclosing said motor, a hollow cylinder adapted to telescopically receive said shell, means for moving said support and said shell axially relatively to each other for predetermining the depth of the work effected by said tool, and means for clamping and holding the support and the motor rigid while the tool is performing its work.

10. A portable router and profiler, comprising an encased motor including the armature shaft and a tool driven by said shaft, the casing of said motor being threaded, a support for the motor having a plane surface perpendicular to the axis of the tool, and having a split portion adapted to adjustably receive the threaded portion of the casing whereby said shaft may be moved axially for predetermining the depth of the cutting by said tool.

In testimony whereof I affix my signature.

RAY L. CARTER.