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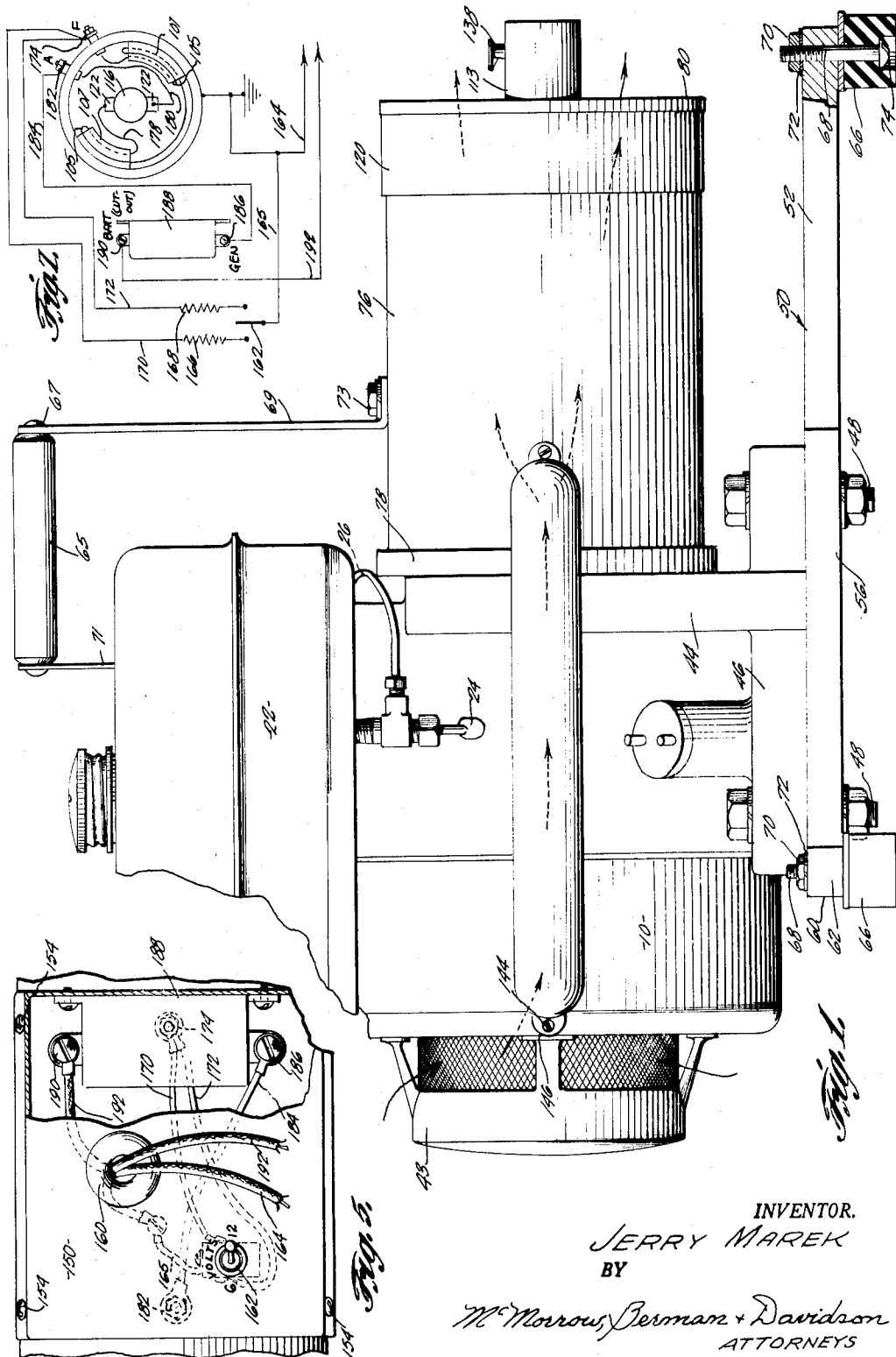
J. MAREK

3,206,627

PORTABLE BATTERY CHARGER

Filed Aug. 1, 1961

3 Sheets-Sheet 1



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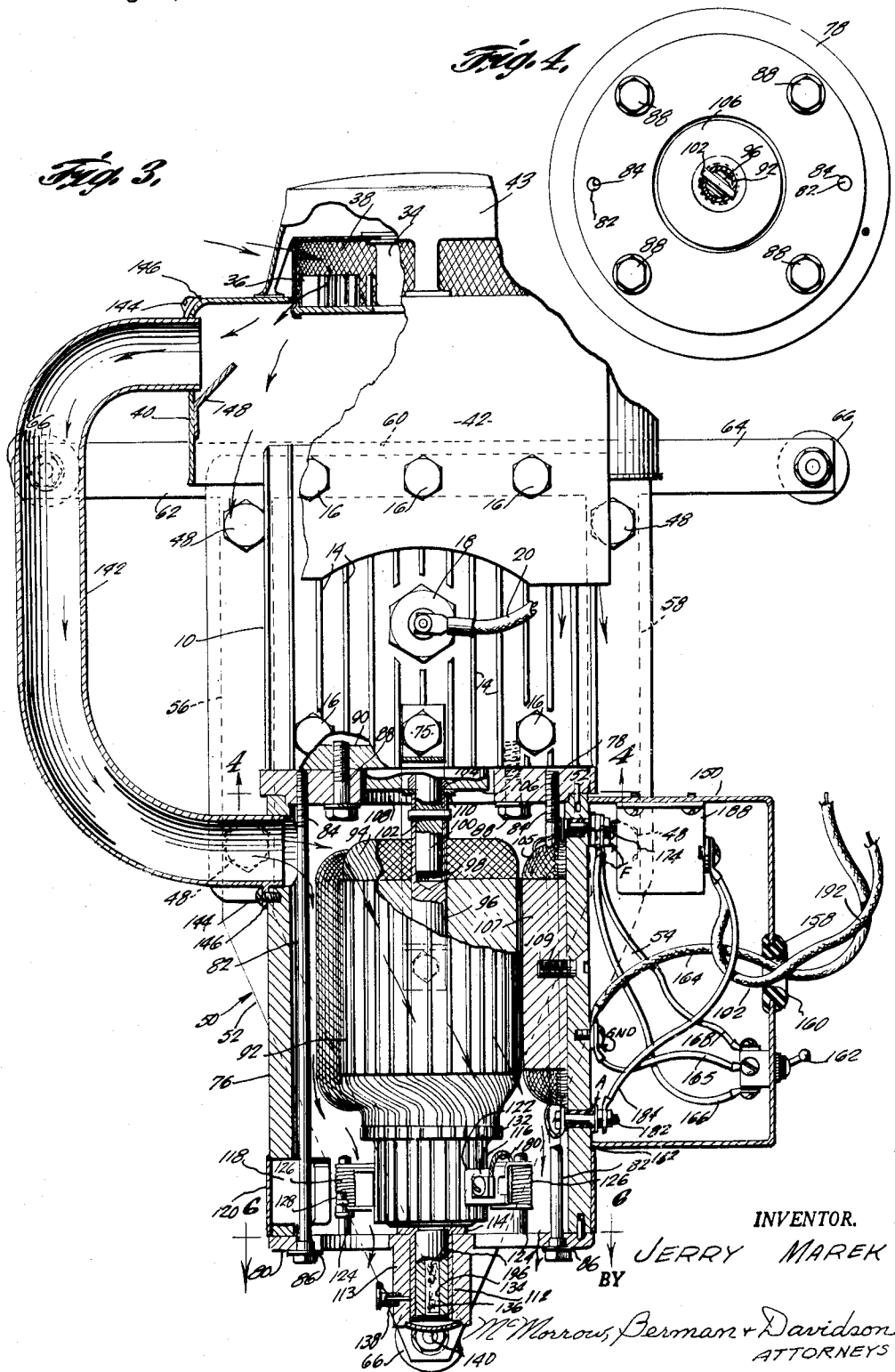
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PORTABLE BATTERY CHARGER

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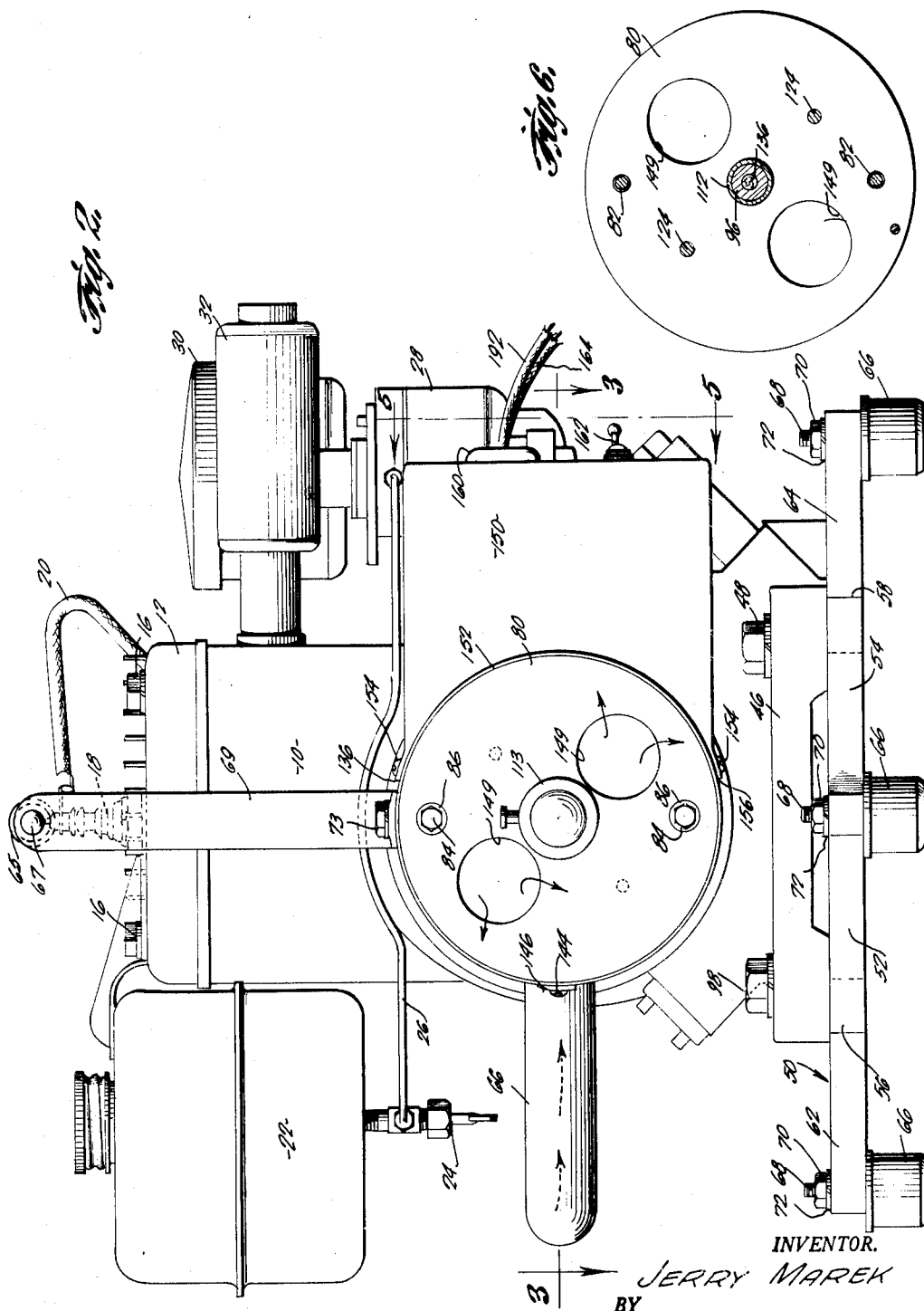
J. MAREK

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PORTABLE BATTERY CHARGER

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3,206,627  
**PORTABLE BATTERY CHARGER**  
Jerry Marek, Uvalde, Tex.  
(800 E. Gibbs, Del Rio, Tex.)  
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7 Claims. (Cl. 310—59)

This invention relates to a stand-by device for charging storage batteries, and in particular to a unitized system comprising a combined generator and power plant, which is hand portable.

It is a general object of the invention to provide a combined generator and power plant which is highly compact in form and light in weight, and a related object is to achieve the aforesaid object in a system which is rugged in construction and reliable in operation. A further object is to utilize an engine cooling system to cool the associated generator, and yet another object is to provide a supporting base for the system which requires no tie-down, yet provides ample support against overturning while maintaining minimized dimensions. A still further object is to provide a system of generator and prime mover which involves no belt or chain drives, or gearing.

These and other objects, which will be apparent to those skilled in the art, are attained by the present invention, which may be briefly described as comprising an internal combustion engine and an electric generator, arranged coaxially, in tandem, supported on a bifurcated base having a three-point dwell, and an engine-cooling system which also services the generator.

For a more detailed description of the invention, reference is made to the following specification, as illustrated in the drawings, in which:

FIGURE 1 is a side elevational view, partly broken away, and partly in section, of the engine-generator system, mounted on its supporting base platform,

FIGURE 2 is an end elevational view of the device shown in FIGURE 1, as seen from the right of that figure,

FIGURE 3 is a sectional view taken on the plane of line 3—3 of FIGURE 2, showing most of the engine in top plan,

FIGURE 4 is a sectional view taken on the plane of line 4—4 of FIGURE 3, showing the inner end plate of the generator,

FIGURE 5 is a detail view taken on the plane of line 5—5 of FIGURE 2, showing the outer plate of the switch and wiring box,

FIGURE 6 is a sectional view taken on the plane of line 6—6 of FIGURE 3, showing the outer end plate of the generator, and

FIGURE 7 is a schematic view showing the wiring diagram.

Referring to the drawings by characters of reference, there is shown a gasoline engine 10, which is of conventional construction in its major aspects, with head 12, having cooling fins 14, head bolts 16, spark plug 18, ignition wire 20, gasoline tank 22, drain cock 24, gasoline feed line 26, carburetor 28, with filter 30, and exhaust muffler 32. A spool 34 on the engine shaft carries a cooling fan 36, to which is attached a filtering screen 38, of cup form, the air flow being guided around the sides of the engine by an out-size hood 40, having a top skirt 42, secured by head bolts 16, and otherwise suitably secured to the engine, and having a central opening, over which is secured a spider-like, cup-shaped end cap 43, enclosing the fan screen.

The engine is secured in a saddle 44, carried by a base plate 46, which in turn is secured by four bolts 43 to the supporting platform 50. The platform, shown partly

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in dotted lines in FIGURE 4, is of V-form on one end, with a pair of diverging arms 52, 54, joining a parallel pair of arms 56, 58, and a transverse arm 60, joining the outer ends of arms 56, 58, and having protruding end sections 62, 64. Platform 50 is supported on three legs 66, of rubbery material, secured to the underside of the platform by bolts 68 and nuts 70, with lock washers 72, one of the legs being located at the apex of V arms 52, 54, and the other two on the respective, parallel arms 56, 58, near the cross arm 60. The openwork construction, and yoke form of the platform provide a satisfactory spread of the points of dwell, to resist overturning, while minimizing material and weight, without sacrifice to strength; the three-point suspension guarantees seating without wobbling, on non-level surfaces, and the resilient legs provide a non-slip feature, in addition to cushioning engine vibrations. It will be noted, further, that the legs 66 have a counterbore 74 receiving the screw head, and this further enhances the non-slip feature, by a suction-cup effect.

For carrying about, the assembly is provided with a handle 65, secured by a pin 67, to the upper ends of a pair of upright straps 69, 71, secured, respectively, by a bolt 73, to the top of generator housing 76, and by a bolt 75, to the top of the engine block.

The generator comprises an outer, cylindrical, housing sleeve 76, having an inner, circular end plate 78, and an outer, circular, end plate 80, the assembly being secured by a pair of diametrically opposite tie bolts 82, passing through bores in outer plate 80, and with threaded ends 84 engaged in threaded bores in inner plate 78, the bolt heads engaging lock washers 86. The generator is secured to the engine by four cap screws 88, passing through bores in plate 78, and received in threaded bores in the wall 90 of the crankshaft compartment of the engine.

The generator armature 92, with windings 94, is mounted on a shaft 96, having a blind, axial bore 98 in its inner end, which is snugly received on the free end 100 of the engine shaft, to which it is secured, and driven in rotation by means of a pin 102. End 100 of the engine shaft is journaled in a bearing sleeve 104, carried in an axial bore in a boss 106, extending outwardly of the engine wall 90, and plate 78 of the generator has a central opening 108 to accommodate the boss. A thrust bearing washer 110 is provided between generator shaft 96 and bushing 104. The field coils 105 surround cores 107, secured to sleeve 76 by screws 109.

At its outer end, generator shaft 96 is journaled in a bearing sleeve 112 carried in an axial bore in an outer, central boss 113 on plate 80, the sleeve having an inner flange 114 serving as a thrust bearing. Adjacent the commutator 116 of the generator, the housing sleeve of the latter is provided with a pair of window openings 118, providing access to the brushes, for inspection and adjustment, and the openings are normally covered against entry of foreign matter by the usual band, 120. The brushes 122 have a wiping action on the commutator, by virtue of a swing mounting on pivot pins 124 carried by outer plate 80, the brushes being biased into wiping engagement by helical springs 126, surrounding the pivot pins, and having one end engaging a brush, and the other end anchored on a pin 128. Leads are attached to the brushes by screw-fastened clips 132. The outer end of shaft 96 has an axial bore 134 containing a fibrous, oil-retaining wad 136, an oil cup 138 is carried in a bore in boss 113, and a convex closure cap 140 is secured in a counterbore in the outer end face of boss 113.

For cooling the generator, part of the moving air supplied by fan 36 is shunted through a U-shaped conduit 142, with one end secured in a circular opening in hood

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40, by a screw 144, passing through a bore in a bent tongue 146 on the conduit, and engaging a perforation in hood 40, and the other end similarly secured in an opening in generator sleeve 76 by a screw 144 and tongue 156. Diversion of the moving air to conduit 142 is assisted by a baffle 148, suitably secured to the inner face of hood 40, and disposed at a suitable angle. After passing through the generator housing, the moving air escapes to the atmosphere through a pair of circular openings 149 in outer plate 80.

The wiring for the system is contained in a box 150, of generally rectangular form, but having a pair of sides with arcuate, inner edges 152, mating with the periphery of generator housing sleeve 76, to which the wiring box is secured by screws 154, passing through perforations in bent, terminal flanges 156 on the top and bottom faces of the box. An outlet for the leads to the battery is provided in a circular opening 158, with a grommet 160. A toggle switch 162 mounted on box 150 is adapted to close the circuit for 6 volt or 12 volt delivery, selectively.

The wiring is best understood with reference to FIGURE 7, and the reference numerals therein are applied also to corresponding elements in FIGURES 3 and 5. One battery lead 164 is connected, as through ground, or a line 165 to the terminal of switch 162, which is selectively engageable with connections to a pair of resistors, 166, 168, which lead through lines 170, 172 to the field coil terminal 174, the resistors adapted to provide outputs for charging 6 and 12 volt batteries, respectively. Within the generator, the circuit flow is through a lead 176 from the post 174 to one field coil, and serially to the second, the terminal end 178 of the field wire being connected to one of the brushes 122. The circuit continues through the armature winding 94, out through the other brush, and from thence through a lead 180 to a terminal post 182. A line 184 leads from post 182 to one terminal 186 of a cut-out 188, and from the other terminal 190, a line 192 leads to the other side of the battery. Obviously, the type of wiring is subject to variation, and is not limited to the type shown and described.

In general, various modifications will be apparent to those skilled in the art, in the light of this disclosure, and the invention should not, therefore, be deemed as limited, except insofar as shall appear from the spirit and scope of the appended claims.

I claim:

1. A portable generator system comprising a supporting base platform having a cross arm, a pair of spaced, parallel arms extending perpendicularly to said cross arm, and located inwardly from the ends thereof, and a pair of arms at the ends of said parallel arms, converging to a vertex at a line midway of the distance between said parallel arms, a three-point support comprising feet of rubbery material having bottom recesses and secured, respectively at said vertex, and at the ends of said cross arm, a saddle mount secured on said platform, an internal combustion engine mounted on said saddle, and having a horizontal output shaft, a generator having a tubular housing with an air intake opening and a shaft telescopically connected to said output shaft, and keyed thereto for rotation therewith, said generator having removable inner and outer end plates, the inner plate being secured to said engine and having an opening accommodating said shafts, the outer plate journalling one end of the generator shaft and having a plurality of openings for venting cooling air, a blower carried by said engine, a guiding hood associated with said blower, an air conduit communicating with the interior of said hood, and with the air intake in said generator housing, a baffle in said hood for directing air into said conduit, and a carrying means for the system comprising a strap secured to the top of the generator, a strap secured to the top of said engine, and a handle secured to said straps.

2. A portable generator system comprising a support-

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ing base platform having a cross arm, a pair of spaced, parallel arms extending perpendicularly to said cross arm, and located inwardly from the ends thereof, and a pair of arms at the ends of said parallel arms, converging to a vertex at a line midway of the distance between said parallel arms, a three-point support comprising feet of rubbery material having bottom recesses and secured, respectively at said vertex, and at the ends of said cross arm, a saddle mount secured on said platform, an internal combustion engine mounted on said saddle, and having a horizontal output shaft, a generator having a tubular housing with an air intake opening and a shaft telescopically connected to said output shaft, and keyed thereto for rotation therewith, said generator having removable inner and outer end plates, the inner plate being secured to said engine and having an opening accommodating said shafts, the outer plate journalling one end of the generator shaft and having a plurality of openings for venting cooling air, a blower carried by said engine, a guiding hood associated with said blower, an air conduit communicating with the interior of said hood and with the air intake in said generator housing, and a baffle in said hood for directing air into said conduit.

3. A portable generator system comprising a framework platform of tapering form having three, resilient, supporting legs in triangular disposition, an engine having a blower, carried by said platform, a generator having a cylindrical housing with an air-intake opening, and two end plates, one of said plates having a central opening, and secured to said engine with the opening aligned with the output shaft of the engine, and the other of said plates having a central journal and a plurality of air vents, an armature having a shaft with one end mounted in said journal, and its other end telescopically connected with the output shaft of the engine, and keyed thereto for rotation therewith, an air conduit communicating with said blower, and with said air-intake opening in the generator housing, and a carrying handle secured to the top of said engine and said generator.

4. A portable generator system comprising a framework platform of tapering form having three, resilient, supporting legs in triangular disposition, an engine having a blower, carried by said platform, a generator having a cylindrical housing with an air-intake opening, and two end plates, one of said plates having a central opening, and secured to said engine with the opening aligned with the output shaft of the engine, and the other of said plates having a central journal and a plurality of air vents, an armature having a shaft with one end mounted in said journal, and its other end telescopically connected with the output shaft of the engine, and keyed thereto for rotation therewith, and an air conduit communicating with said blower and with said air-intake opening in the generator housing.

5. A portable generator system comprising a framework platform having resilient means providing a three-point dwell, an engine having a blower, carried by said platform, a generator having a cylindrical housing with an air-intake opening and two end plates, one of said plates having a central opening, and secured to said engine with the opening aligned with the output shaft of the engine, and the other of said plates having a central journal and a plurality of air vents, an armature having a shaft with one end mounted in said journal, and its other end telescopically connected with the output shaft of the engine, and keyed thereto for rotation therewith, and an air conduit communicating with said blower, and with said air-intake opening in the generator housing.

6. A portable generator system comprising a platform having resilient feet providing a three-point dwell, an engine carried by said platform, a generator secured to said engine and having an armature shaft, end-coupled to the output shaft of said engine, an enclosed blower on said engine, a laterally disposed, exterior air conduit communicating with said blower and with the interior of said

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generator, said generator having vent means for escape of cooling air, and a carrying handle attached to said engine and to said generator.

7. A portable generator system comprising a platform having resilient feet providing a three-point dwell, an engine carried by said platform, a generator secured to said engine and having an armature shaft, end-coupled to the output shaft of said engine, an enclosed blower on said engine, and a laterally disposed, exterior air conduit communicating with said blower and with the interior of said generator, said generator having vent means for escape of cooling air.

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## References Cited by the Examiner

## UNITED STATES PATENTS

|           |       |            |       |        |   |
|-----------|-------|------------|-------|--------|---|
| 1,638,146 | 8/27  | Buchenberg | ----- | 290—1  | X |
| 1,921,030 | 8/33  | Hiday      | ----- | 310—58 |   |
| 1,924,462 | 8/33  | Scofield   | ----- | 290—1  | X |
| 1,989,139 | 1/35  | Koch       | ----- | 310—58 | X |
| 2,355,208 | 8/44  | Devol      | ----- | 290—1  | X |
| 2,630,537 | 3/53  | Wiegman    | ----- | 290—1  | X |
| 2,959,918 | 11/60 | West       | ----- | 310—52 | X |

MILTON O. HIRSHFIELD, *Primary Examiner*.DAVID X. SLINEY, *Examiner*.