

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THE NOCO COMPANY, INC.,
Petitioner,

v.

PILOT, INC.,
Patent Owner.

IPR2022-01237
Patent 11,124,077 B2

Before JEFFREY W. ABRAHAM, JULIA HEANEY, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

AMUNDSON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

The NOCO Company, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–24 in U.S. Patent No. 11,124,077 B2 (Exhibit 1001, “the ’077 patent”) under 35 U.S.C. §§ 311–319. Paper 1 (“Pet.”). Pilot, Inc. (“Patent Owner”) did not file a Preliminary Response.

In the Institution Decision, we instituted review based on all challenged claims and all challenges included in the Petition. Paper 7 (“Inst. Dec.”). We have jurisdiction under 35 U.S.C. § 6. We issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons explained below, Petitioner has shown by a preponderance of the evidence that claims 1–24 in the ’077 patent are unpatentable. *See* 35 U.S.C. § 316(e) (2018).

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies itself as the real party in interest. Pet. 74. Patent Owner identifies itself as the real party in interest. Paper 3, 2. The parties do not raise any issue about real parties in interest.

B. *Related Matters*

Petitioner and Patent Owner identify the following civil action as a related matter involving the ’077 patent: *Pilot, Inc. v. The NOCO Company, Inc.*, No. 2:22-cv-00389-PHX-SRB (D. Ariz. filed Mar. 14, 2022). Pet. 74; Paper 3, 2.

C. *The ’077 Patent (Exhibit 1001)*

The ’077 patent, titled “Automobile Charger,” issued on September 21, 2021, from an application filed on April 21, 2021. Ex. 1001, codes (22), (45), (54). The patent identifies that application as the latest in a

series of continuation applications that began with an application filed on December 12, 2014. *Id.* at 1:5–15, code (63). The patent claims priority to an application filed in China on April 28, 2014. *Id.* at 1:14–16. The patent states that the disclosure “relates to an automobile charging device,” in particular, “a novel automobile charger with a safe power supply charging quickly.” *Id.* at 1:21–23; *see id.* at code (57).

The ’077 patent describes problems with conventional automobile chargers. *See* Ex. 1001, 1:24–34. For instance, the patent states that “current automobile chargers have common problems” because they cannot “automatically detect” the following:

- (1) “whether a load is connected”;
- (2) “whether an electrode is connected with an automobile storage battery reversely”;
- (3) “whether an automobile engine or the storage battery has a reverse current”; and
- (4) “whether the battery state is suitable for heavy current power generation.”

Id. at 1:28–34. The patent purports to address those problems with “a novel automobile charger with the safe power supply charging quickly.” *Id.* at 1:34–38, 1:42–45; *see id.* at 2:31–58.

The '077 patent's Figure 1 (reproduced below) depicts a block diagram for an automobile charger:

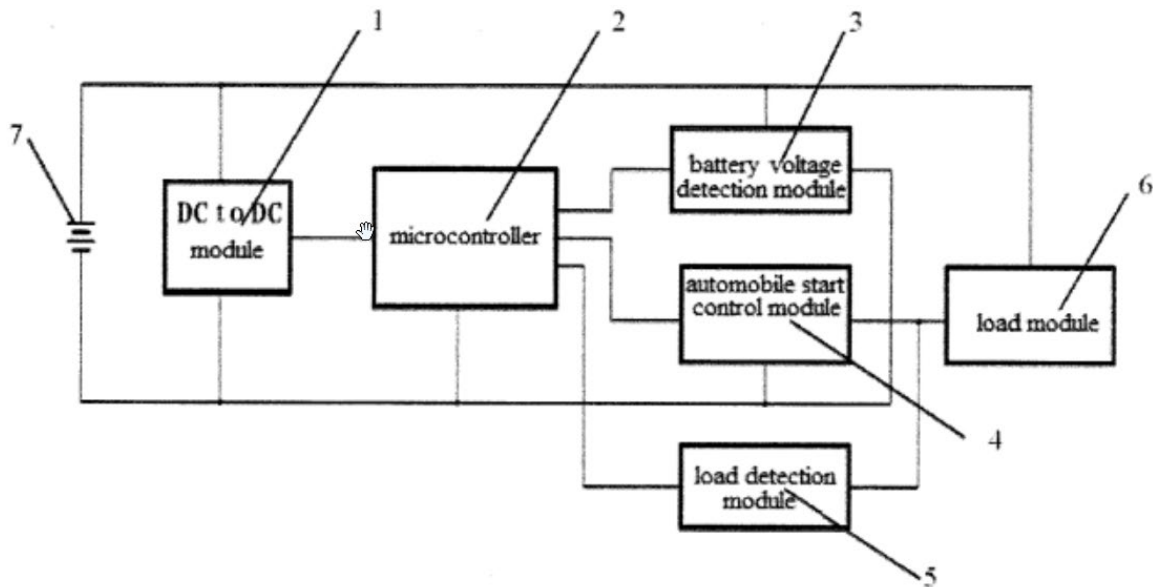


Figure 1

Figure 1 illustrates an automobile charger including the following components:

- (1) DC-to-DC module 1;
- (2) microcontroller 2;
- (3) battery voltage detection module 3;
- (4) automobile start control module 4;
- (5) load detection module 5;
- (6) load module 6; and
- (7) direct current power supply 7.

Ex. 1001, 2:62–63, 2:66–3:2, 3:15–35, Fig. 1.

The DC-to-DC module “provides a stable voltage for the microcontroller.” Ex. 1001, 2:1–3, 4:13–14. The microcontroller “collects relevant data to conduct the corresponding control.” *Id.* at 2:2–4, 4:14–15.

The battery voltage detection module “conducts the measurement of” the power-supply battery’s voltage and “provides protection” for the power-supply battery to “prevent damages caused by the discharging of the direct current power supply.” *Id.* at 2:4–5, 2:16–19, 4:15–17. The automobile start control module “conducts the power supply or the power outage for the load module” and corresponds to an electronic switch controlled by the microcontroller. *Id.* at 2:5–8, 2:29–30, 4:18–20, 4:42. The load detection module “detects whether the load module is correctly connected” and “prevents improper operations of the user,” such as “reversed polarity.” *Id.* at 2:8–10, 2:20–22, 2:40–43, 4:20–25. The load module “comprises the automobile storage battery and the automobile engine.” *Id.* at 3:32–34.

Additionally, the microcontroller “determines whether the automobile storage battery is connected with the automobile engine through the load detection module.” Ex. 1001, 4:23–25. The automobile start control module is “automatically activated and the battery starts to supply power to the load module when the load is correctly connected.” *Id.* at 4:26–28. The automobile start control module is “automatically deactivated and the battery stops supplying power to the load module when assuming that the load is not connected or the positive and negative polarities are reversely connected.” *Id.* at 4:28–32.

The automobile charger includes a standby mode where “the microcontroller closes all outputs when the battery voltage is lower than 9V.” Ex. 1001, 4:32–34; *see id.* at 2:23–26. The automobile charger “recovers the normal operation only when the battery voltage is larger than 10V.” *Id.* at 4:34–35; *see id.* at 2:23–28.

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