What is claimed is:

1. A portable fan, comprising an airflow portion and a display screen, wherein the airflow portion comprises an air outlet, the air outlet is disposed surrounding a periphery of the display screen;

wherein the display screen has an arc-shaped outer surface; and the display screen is configured to display at least one of: a remaining battery power level, a current air speed, a battery power level during charging, and an operating state; and

wherein the outer surface of the display screen is at least partially concaved inwardly.

2. The portable fan according to claim 1, further comprising a handheld portion detachably connected to the airflow portion,

wherein a three-phase high-speed motor is arranged in the airflow portion; a battery is arranged in the handheld portion, the battery is configured to supply power to the three-phase high-speed motor.

3. The portable fan according to claim 2, wherein the airflow portion further comprises a pressurizing member, a receiving portion is formed at a side of the pressurizing member away from the three-phase high-speed motor; the portable fan further comprises a drive circuit board;

the drive circuit board is received in the receiving portion and is disposed between the side of the pressurizing member away from the three-phase high-speed motor and the display screen; or

the drive circuit board is arranged in the handheld portion.

4. The portable fan according to claim 2, wherein the handheld portion is arranged with a wheel button and an anti-misoperation button; the wheel button is configured to be rolled to adjust an air speed in a stepless manner and configured to be pressed to adjust an operating state of the handheld fan; the anti-misoperation button is configured to prevent any operation mistakenly performed to turn on the handheld fan.

5. The portable fan according to claim 4, wherein the handheld portion comprises a handheld shell having an inner cavity; a mounting bracket is received in the inner cavity; a circuit board assembly is mounted on the mounting bracket; the battery and the wheel button are received in the inner cavity; the wheel button is disposed on the mounting bracket; the wheel button is connected to the battery via the circuit board assembly; the handheld shell defines a first through slot having an opening facing towards the wheel button.

6. The portable fan according to claim 2, wherein,

the airflow portion comprises: an inner shell, an outer shell, and a fan assembly; the inner shell defines an airflow channel, an air inlet communicating with a side of the airflow channel, and the air outlet communicating with the other side of the airflow channel; the fan assembly is received in the airflow channel; the outer shell covers an outside of the inner shell and has a mounting opening;

the handheld portion comprises a handheld shell, a mounting mechanism and a fixing member;

the handheld shell covers an outside of the mounting mechanism, a part of the handheld shell is extended into the mounting opening, the fixing member extends through the outer shell and the handheld shell sequentially to be connected to the mounting mechanism.

7. The portable fan according to claim 2, wherein,

the airflow portion comprises: an inner shell, an outer shell, and a fan assembly; the inner shell defines an airflow channel; the fan assembly is at least partially received in the airflow channel; the outer shell covers an outside of the inner shell; the inner shell defines a wire opening; a side of the wire opening directly faces an electrical connection part of the fan assembly; the other side of the wire opening directly faces an electrical connection part of the handheld portion; the electrical connection part of the fan assembly is electrically connected to the electrical connection part of the handheld portion via a wire extending through the wire opening.

8. The portable fan according to claim 2, wherein,

the airflow portion comprises: an inner shell, an outer shell, and a fan assembly; the inner shell defines an airflow channel; the fan assembly is received in the airflow channel; the outer shell covers the inner shell and is slidably connected to the inner shell along a first axial direction; the first axial direction is a direction extending from the air inlet to the air outlet;

the outer shell comprises a sleeve and an inlet cover; the sleeve covers the inner shell; the sleeve is arranged with at least one limiting strip; the air inlet cover and the inner shell are detachably connected to each other; the air inlet cover is connected to the sleeve; the inner shell defines at least one snap slot; the air inlet cover is arranged with at least one snap head snapped with the at least one snap slot.

9. The portable fan according to claim 1, wherein,

the airflow portion comprises a first inner shell, a second inner shell engaged with the first inner shell, and an outer shell; a side of the first inner shell facing the second inner shell is arranged with a plurality of protrusions, the plurality of protrusions are evenly distributed; the second inner shell defines a plurality of recessed structures corresponding to the plurality of protrusions; the plurality of protrusions are engaged with the plurality of recessed structures; the outer shell covers an outside of the first inner shell and an outside of the second inner shell.

10. The portable fan according to claim 2, wherein,

the airflow portion comprises a first inner shell, a second inner shell engaged with the first inner shell; the first inner shell is disposed near the air inlet; the second inner shell is disposed near the air outlet; a fan base is arranged inside the second inner shell; a fan impeller is arranged at a side of the fan base facing towards the first inner shell; the fan impeller is arranged inside the first inner shell; an end of the first inner shell near the air outlet extends beyond an end of the fan impeller near the air

inlet.

11. The portable fan according to claim 1, wherein,

the airflow portion comprises a shell, an inlet cover connected to the shell, and a motor arranged inside the shell; the motor defines a shaft hole, a motor rotation shaft is rotatable with respect to the motor and is received in the shaft hole; a top of the motor rotation shaft is connected to fan blades; a vibration damping spring is disposed between the motor and the fan blades; the vibration damping spring sleeves the motor rotation shaft;

an inner diameter of an end of the vibration damping spring away from the motor is greater than an inner diameter of an end of the vibration damping spring near the motor; and/or

a spacing between spring coils of the end of the vibration damping spring away from the motor is smaller than a spacing between spring coils of the end of the vibration damping spring near the motor.

12. The portable fan according to claim 1, wherein,

the airflow portion comprises an air inlet cover and an airflow assembly; the air inlet cover comprises a cover body and an air guiding portion connected to the cover body and extending towards the airflow assembly; the airflow portion defines a first receiving cavity; an air guiding cone and fan blades arranged on the air guiding cone are received in the first receiving cavity; a first gap is formed between the air guiding cone and the air guiding portion.

13. The portable fan according to claim 12, wherein the air guiding portion is columnar, an end of the air guiding portion is received in the first receiving cavity; the first gap is formed between an end of the air guiding cone near the air inlet cover and an end of the air guiding portion near the air guiding cone; the first gap is greater than 1mm and less than 14mm.

14. The portable fan according to claim 12, wherein a diameter of a circumcircle of an end face of the air guiding portion is greater than 5mm and less than 12 mm; an end face of the end of the air guiding cone near the air inlet cover is circular; a diameter of the end face of the end of the air guiding cone near the air inlet cover is greater than 1 and less than 7 mm.

15. The portable fan according to claim 1, further comprising a handheld portion,

wherein the airflow portion comprises an air inlet cover, an outlet cover, a first shell, and a fan module; the air inlet cover comprises a plurality of air guiding plates that are connected to each other and are arranged to be scattered around a preset axis; the preset axis is extending from the air inlet cover to the air outlet cover; an air inlet gap is formed between every two adjacent ones of the plurality of air guiding plates;

each of plurality of air guiding plates protrudes towards a side away from the air outlet cover; and/or a width of each of plurality of air guiding plates reduces along a direction from a periphery of

the air inlet cover towards a center of the air inlet cover.

16. The portable fan according to claim 1, wherein the airflow portion comprises an outer shell and an inner shell detachably connected to the outer shell; the outer shell defines a first receiving cavity that receives the first inner shell; the inner shell defines a second receiving cavity therein to receive an airflow assembly; a vibration damping structure is disposed between the outer shell and the inner shell.

17. The portable fan according to claim 1, further comprising at least one of: a fast charging management unit and a charging management unit; wherein the fast charging management unit comprises a fast charging module, a fast-charging control signal output module, a fast-charging voltage setting module, a fast-charging current setting module;

the charging management unit comprises: a charging communication module, a charging drive module, a charging current detection module, a termination voltage setting module, and an overtemperature protection module.

18. The portable fan according to claim 1, further comprising a battery boost charging circuit, comprising at least one of: a boost module, a boost charging management module, a charging voltage presetting module; an overtemperature protection module, a charging state indication module;

wherein an end of the boost module is connected to an end of the boost charging management module; at least one of the charging voltage presetting module, charging state indication module, and the overtemperature protection module is connected to the other end of the boost charging management module.

19. The portable fan according to claim 2, further comprising at least one of: a cooling component and a spray component, wherein the cooling module is arranged inside the airflow portion, and the spray component is arranged inside the handheld portion.