



US010928052B2

(12) **United States Patent**
Ayala et al.

(10) **Patent No.:** **US 10,928,052 B2**

(45) **Date of Patent:** **Feb. 23, 2021**

(54) **HANDS-FREE HEADLAMP SYSTEM**

(71) Applicants: **Rita Ayala**, Miami, FL (US); **Santiago Ayala**, Miami, FL (US)

(72) Inventors: **Rita Ayala**, Miami, FL (US); **Santiago Ayala**, Miami, FL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/681,269**

(22) Filed: **Aug. 18, 2017**

(65) **Prior Publication Data**

US 2018/0051870 A1 Feb. 22, 2018

Related U.S. Application Data

(60) Provisional application No. 62/376,902, filed on Aug. 18, 2016.

(51) **Int. Cl.**

F21V 23/00 (2015.01)

F21V 23/04 (2006.01)

A42B 3/04 (2006.01)

A41D 1/00 (2018.01)

A41D 20/00 (2006.01)

A42B 1/244 (2021.01)

F21V 33/00 (2006.01)

F21S 9/02 (2006.01)

F21V 21/084 (2006.01)

F21Y 115/10 (2016.01)

(52) **U.S. Cl.**

CPC **F21V 23/0471** (2013.01); **A41D 1/002** (2013.01); **A41D 20/00** (2013.01); **A42B 1/244** (2013.01); **A42B 3/0446** (2013.01); **F21S 9/02** (2013.01); **F21V 21/084** (2013.01); **F21V 33/0008** (2013.01); **F21Y 2115/10** (2016.08)

(58) **Field of Classification Search**

CPC **F21V 23/0471**; **F21V 21/084**; **F21V 33/0008**; **F21V 23/0442**; **F21V 21/088**; **F21V 21/0832**; **F21V 33/00**; **A41D 1/002**; **A41D 20/00**; **F21S 9/02**; **A42B 1/244**; **A42B 3/0446**; **A42B 1/242**; **A42B 1/24**; **A42B 3/0433**; **A42B 3/044**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,156,942 A * 6/1979 Isfeld **A42B 1/10**
2/422
6,764,194 B1 * 7/2004 Cooper **F21V 21/084**
362/103

6,955,444 B2 10/2005 Gupta
7,008,074 B1 3/2006 Halm

(Continued)

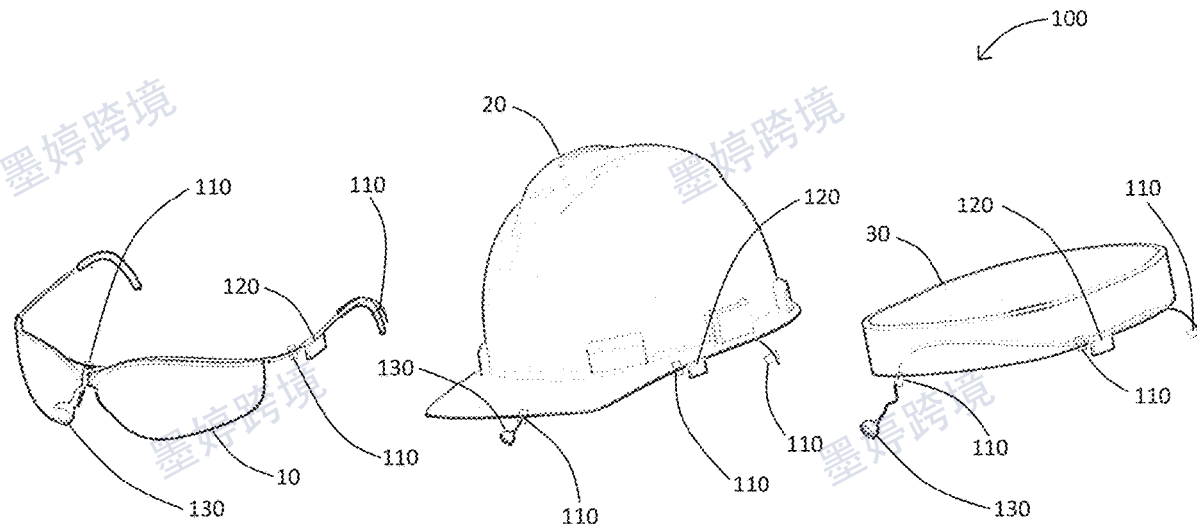
Primary Examiner — Y M. Quach Lee

(74) *Attorney, Agent, or Firm* — Runyan Law; Charles Runyan

(57) **ABSTRACT**

A hands-free headlamp system for an item of headwear, the hands-free headlamp system including: a housing including headwear fastener, the headwear fastener configured to attach to the item of headwear an energy storage affixed to the housing; a light source mechanically coupled to the housing and electrically coupled to the energy storage; a motion sensor mechanically coupled to the housing and electrically coupled to the energy storage, the motion sensor configured to detect hand motion of a user; a controller mechanically coupled to the housing, electrically coupled to the energy storage, and communicably coupled to the motion sensor, the controller configured to operate the light source in response to detected hand motions of the user.

2 Claims, 5 Drawing Sheets



U.S. Patent

Feb. 23, 2021

Sheet 1 of 5

US 10,928,052 B2

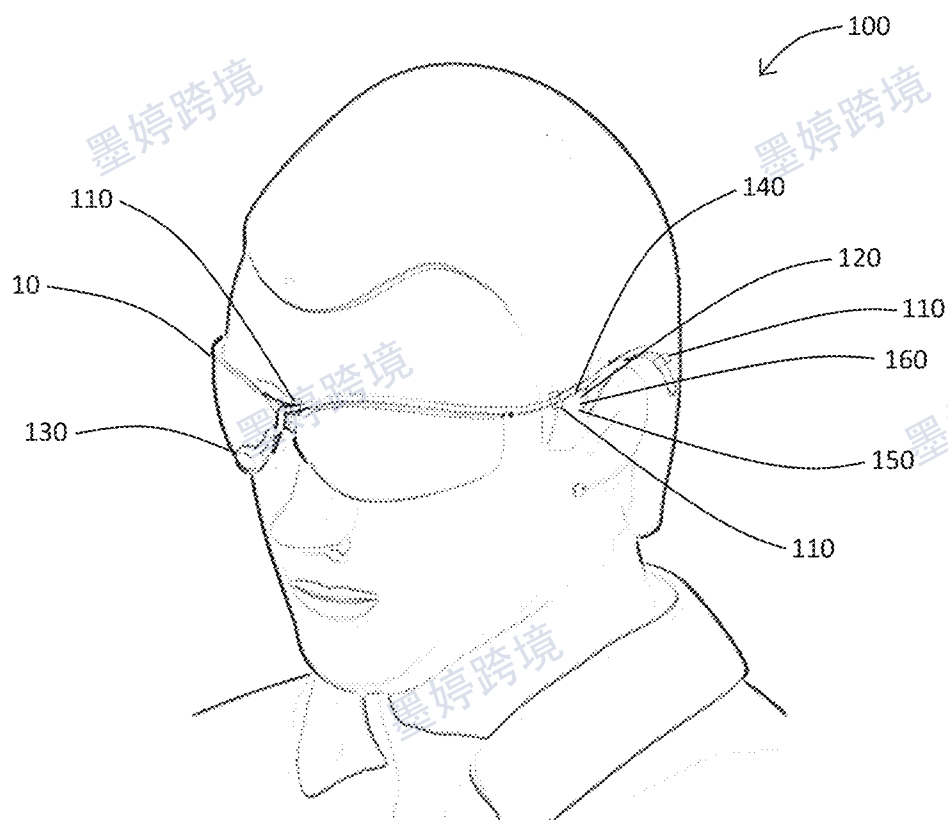


FIG. 1

U.S. Patent

Feb. 23, 2021

Sheet 2 of 5

US 10,928,052 B2

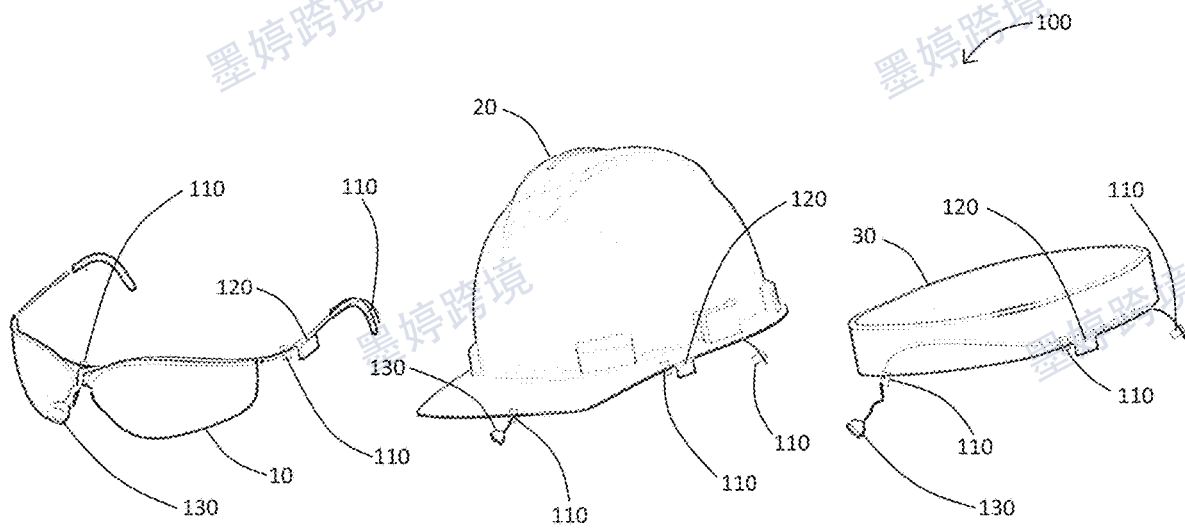


FIG. 2

U.S. Patent

Feb. 23, 2021

Sheet 3 of 5

US 10,928,052 B2

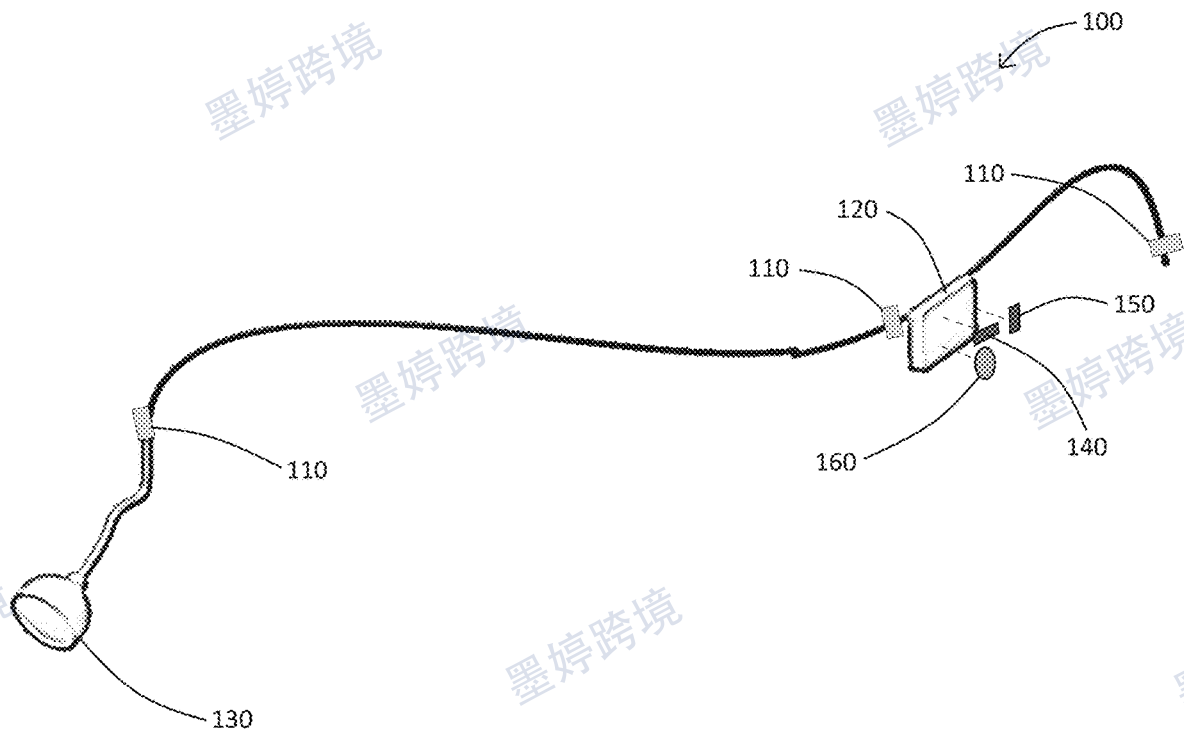


FIG. 3

U.S. Patent

Feb. 23, 2021

Sheet 4 of 5

US 10,928,052 B2

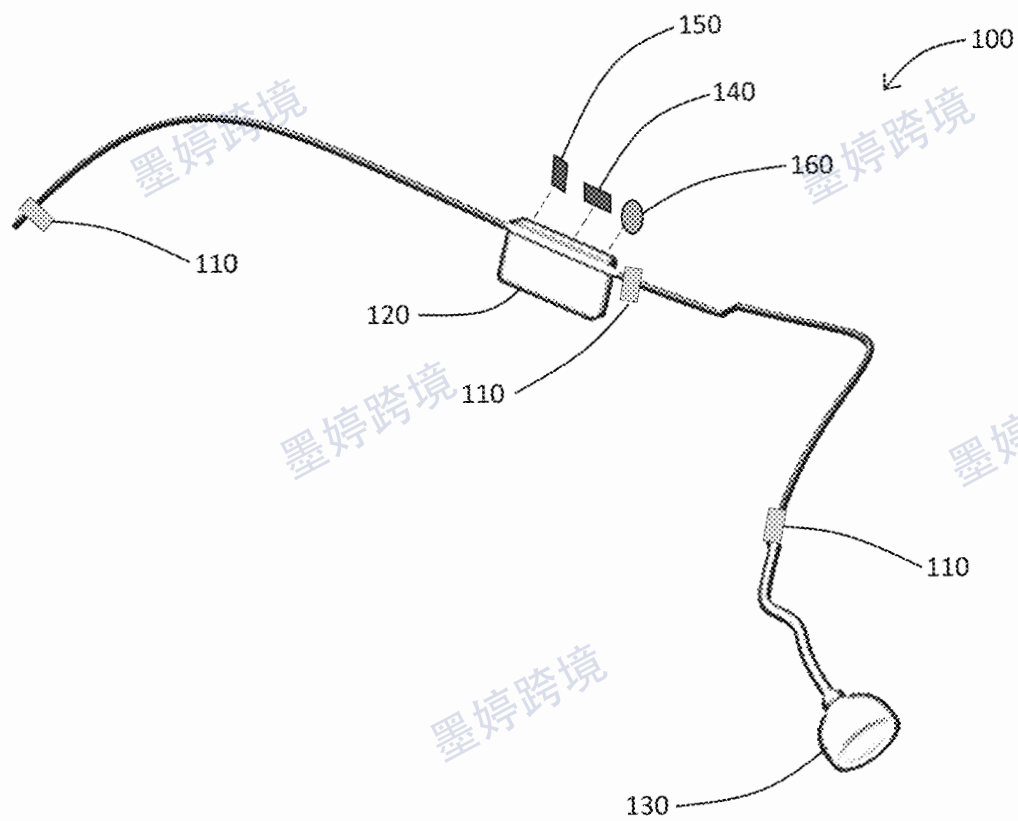


FIG. 4

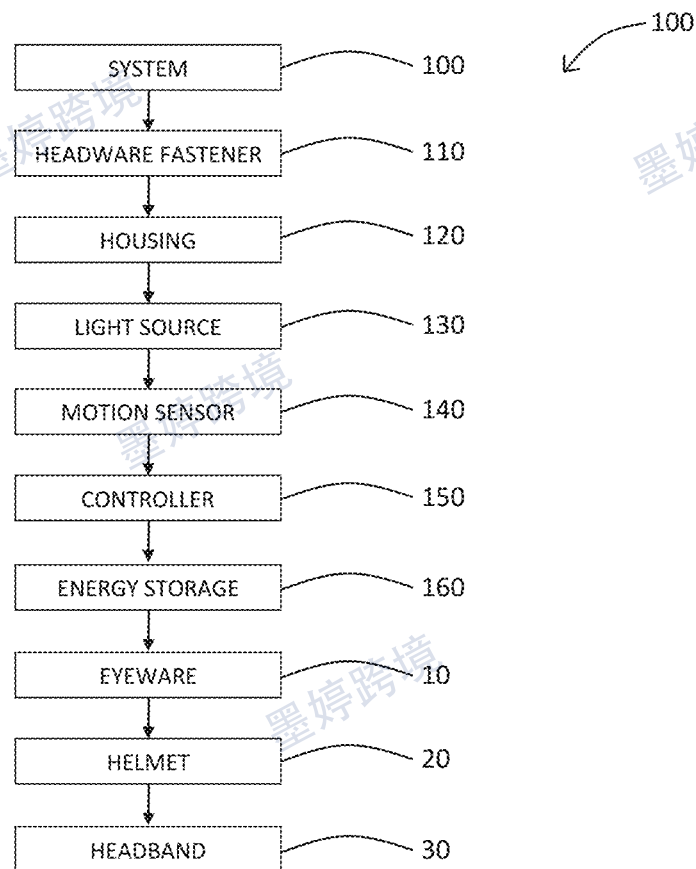


FIG. 5