US009409743B2

(12) **United States Patent**
Arimura

(10) **Patent No.: US 9,409,743 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **SHEET EJECTING DEVICE AND IMAGE FORMING APPARATUS**

(71) Applicant: **KYOCERA Document Solutions Inc.**, Osaka-shi (JP)

(72) Inventor: **Shingo Arimura**, Osaka (JP)

(73) Assignee: **KYOCERA Document Solutions Inc.**, Osaka (JP)

(*) 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.: **14/750,687**

(22) Filed: **Jun. 25, 2015**

(65) **Prior Publication Data**

US 2015/0375956 A1 Dec. 31, 2015

(30) **Foreign Application Priority Data**

Jun. 26, 2014 (JP) 2014-131533

(51) **Int. Cl.**

B65H 7/02	(2006.01)
B65H 29/14	(2006.01)
B65H 43/08	(2006.01)
B65H 29/12	(2006.01)
B65H 43/02	(2006.01)
B65H 29/52	(2006.01)
B65H 29/70	(2006.01)

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

CPC ***B65H 43/08*** (2013.01); ***B65H 7/02*** (2013.01); ***B65H 29/125*** (2013.01); ***B65H 29/14*** (2013.01); ***B65H 29/52*** (2013.01); ***B65H 29/70*** (2013.01); ***B65H 43/02*** (2013.01); *B65H 2404/612* (2013.01); *B65H 2404/64* (2013.01); *B65H 2511/528* (2013.01); *B65H 2513/53* (2013.01); *B65H 2553/612* (2013.01); *B65H 2801/06* (2013.01)

(58) **Field of Classification Search**

CPC B65H 7/02; B65H 7/14; B65H 43/08; B65H 29/12; B65H 29/125; B65H 29/20; B65H 29/22; B65H 5/36; B65H 29/14

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,963,754	A *	10/1999	Itoh	B65H 29/14	271/258.01
6,295,081	B1 *	9/2001	Kashima	B65H 39/11	271/290
6,443,449	B1 *	9/2002	Takagi	B65H 31/22	271/279
7,532,854	B2 *	5/2009	Shin	B65H 29/14	399/405

FOREIGN PATENT DOCUMENTS

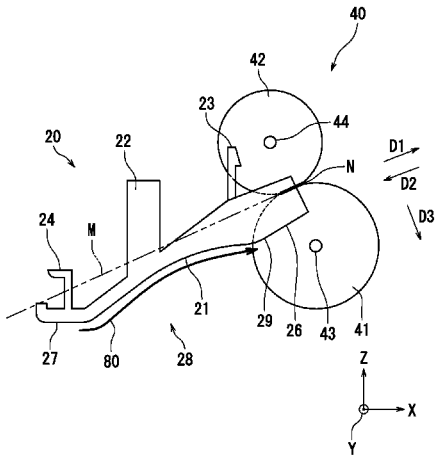
JP	10186738	A *	7/1998
JP	2003-192225	A	7/2003
JP	2006008271	A *	1/2006

* cited by examiner

Primary Examiner — Luis A Gonzalez

(74) *Attorney, Agent, or Firm* — Studebaker & Brackett PC

(57) **ABSTRACT**

A sheet ejecting device includes a sheet conveyance path, an exit port, at least one ejection roller pair, and a sheet detection portion. The sheet detection portion detects a sheet being ejected. The sheet detection portion includes an actuator and a sensor. The actuator moves by contact with a sheet passing along the sheet conveyance path. The sensor detects the actuator. The actuator moves between a detectable position where the actuator is detectable by the sensor and an undetectable position where the actuator is not detectable by the sensor. The actuator has a sheet guide portion. The sheet guide portion extends along a sheet conveyance direction. The sheet guide portion moves, in a direction transverse to the sheet conveyance direction such that the actuator moves to the detectable position, by contact with the sheet passing along the sheet conveyance path and guides the sheet in the sheet conveyance direction.

6 Claims, 6 Drawing Sheets