

To Promote the Progress



of Science and Useful Arts

The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Katherine Kelly Vidal

DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

Maintenance Fee Notice

If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.

Patent Term Notice

If the application for this patent was filed on or after June 8, 1995, the term of this patent begins on the date on which this patent issues and ends twenty years from the filing date of the application or, if the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121, 365(c), or 386(c), twenty years from the filing date of the earliest such application ("the twenty-year term"), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b), and any extension as provided by 35 U.S.C. 154(b) or 156 or any disclaimer under 35 U.S.C. 253.

If this application was filed prior to June 8, 1995, the term of this patent begins on the date on which this patent issues and ends on the later of seventeen years from the date of the grant of this patent or the twenty-year term set forth above for patents resulting from applications filed on or after June 8, 1995, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b) and any extension as provided by 35 U.S.C. 156 or any disclaimer under 35 U.S.C. 253.



US011761122B2

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

(10) **Patent No.:** **US 11,761,122 B2**
(45) **Date of Patent:** **Sep. 19, 2023**

(54) **APPARATUS FOR LOOSENING FIBER MATERIAL PACKED IN BALES**

(71) Applicant: **Roess Nature Group GmbH & Co. KG**, Twistringen (DE)

(72) Inventors: **Thomas Roess**, Twistringen (DE);
Henner Lischkowitz, Colnrade-Holtorf (DE)

(73) Assignee: **Roess Nature Group GmbH & Co. KG**, Twistringen (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 456 days.

(21) Appl. No.: **16/924,838**

(22) Filed: **Jul. 9, 2020**

(65) **Prior Publication Data**

US 2021/0010167 A1 Jan. 14, 2021

(30) **Foreign Application Priority Data**

Jul. 10, 2019 (DE) 202019103807.1

(51) **Int. Cl.**

D01G 7/04 (2006.01)
A01F 29/00 (2006.01)
A01F 29/06 (2006.01)
A01F 29/10 (2006.01)
A01F 29/12 (2006.01)
D01G 7/08 (2006.01)
D01G 7/10 (2006.01)
A01D 87/12 (2006.01)

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

CPC **D01G 7/04** (2013.01); **A01F 29/005** (2013.01); **A01F 29/06** (2013.01); **A01F 29/10** (2013.01); **A01F 29/12** (2013.01); **D01G 7/08** (2013.01); **D01G 7/10** (2013.01); **A01D 2087/128** (2013.01); **Y10S 241/605** (2013.01)

(58) **Field of Classification Search**

CPC **Y10S 241/605**; **A01F 29/005**; **A01F 29/06**;
A01F 29/10; **A01F 29/12**; **A01D 87/127**;
A01D 2087/128

USPC **241/605**
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,083,501 A * 4/1978 Ryan **A01F 29/005**
241/154
5,099,755 A * 3/1992 Montano **A01F 29/005**
83/425.3
5,505,391 A * 4/1996 Krueger **A01F 29/005**
241/223
5,556,041 A * 9/1996 Cheesman **A01F 29/005**
241/200

(Continued)

FOREIGN PATENT DOCUMENTS

CN 106435842 A * 2/2017 **D01G 7/04**
WO WO-9317548 A1 * 9/1993 **A01F 29/005**

Primary Examiner — Katrina M Stransky

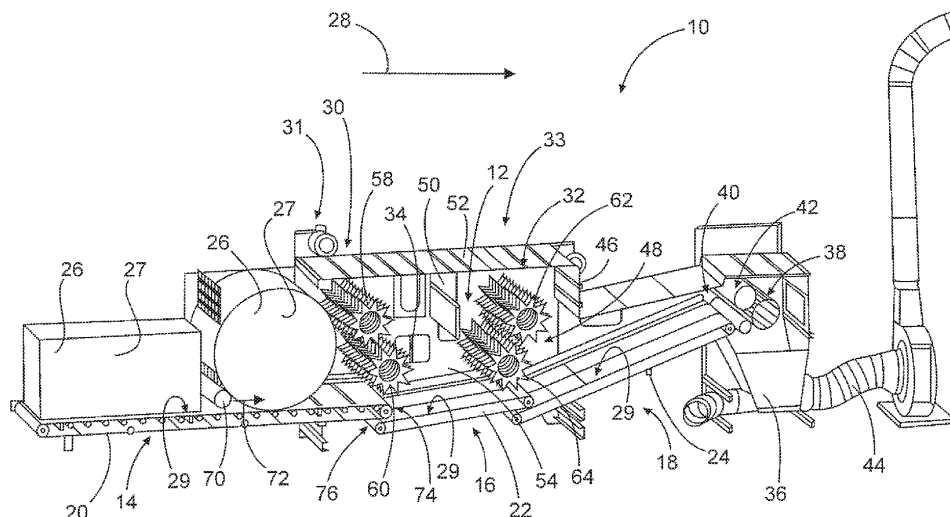
Assistant Examiner — Jared O Brown

(74) *Attorney, Agent, or Firm* — SEED INTELLECTUAL PROPERTY LAW GROUP LLP

(57) **ABSTRACT**

The present invention concerns an apparatus for loosening fiber material packed in bales, comprising a conveyor region for conveying the fiber material along a conveyor direction. The conveyor region includes a feed portion, a buffer portion and a discharge portion. A first roller arrangement is arranged in the transitional region between the feed portion and the buffer portion and a second roller arrangement is arranged in the transitional region between the buffer portion and the discharge portion.

14 Claims, 2 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

6,546,986	B1 *	4/2003	Waggoner	B27N 1/00 241/605
9,163,191	B2 *	10/2015	Zeeck	F23G 5/444
2006/0054460	A1 *	3/2006	Rubenach	D01G 7/08 198/464.4
2018/0162563	A1 *	6/2018	Lischkowitz	B65B 35/24

* cited by examiner

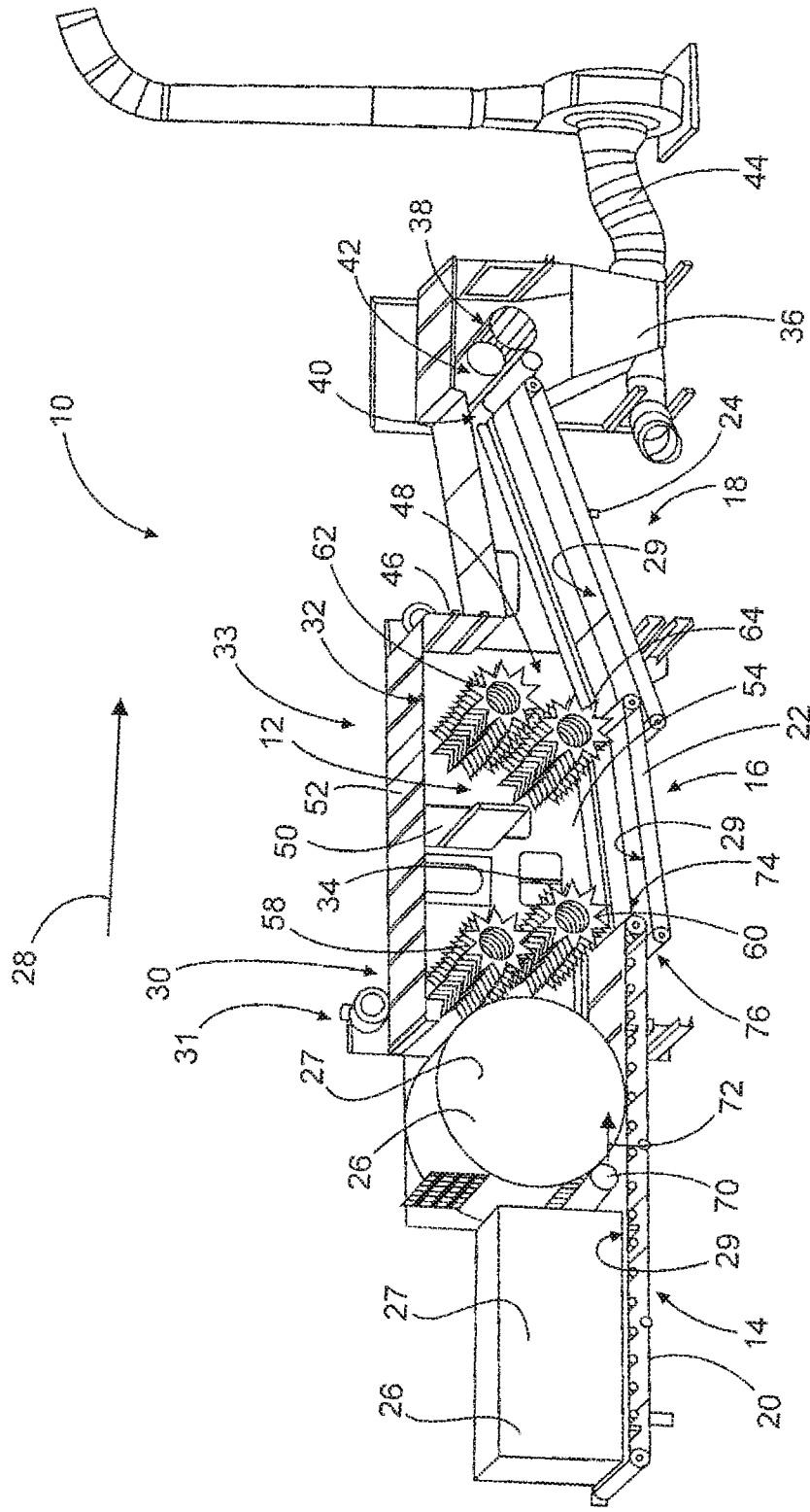


Fig 1

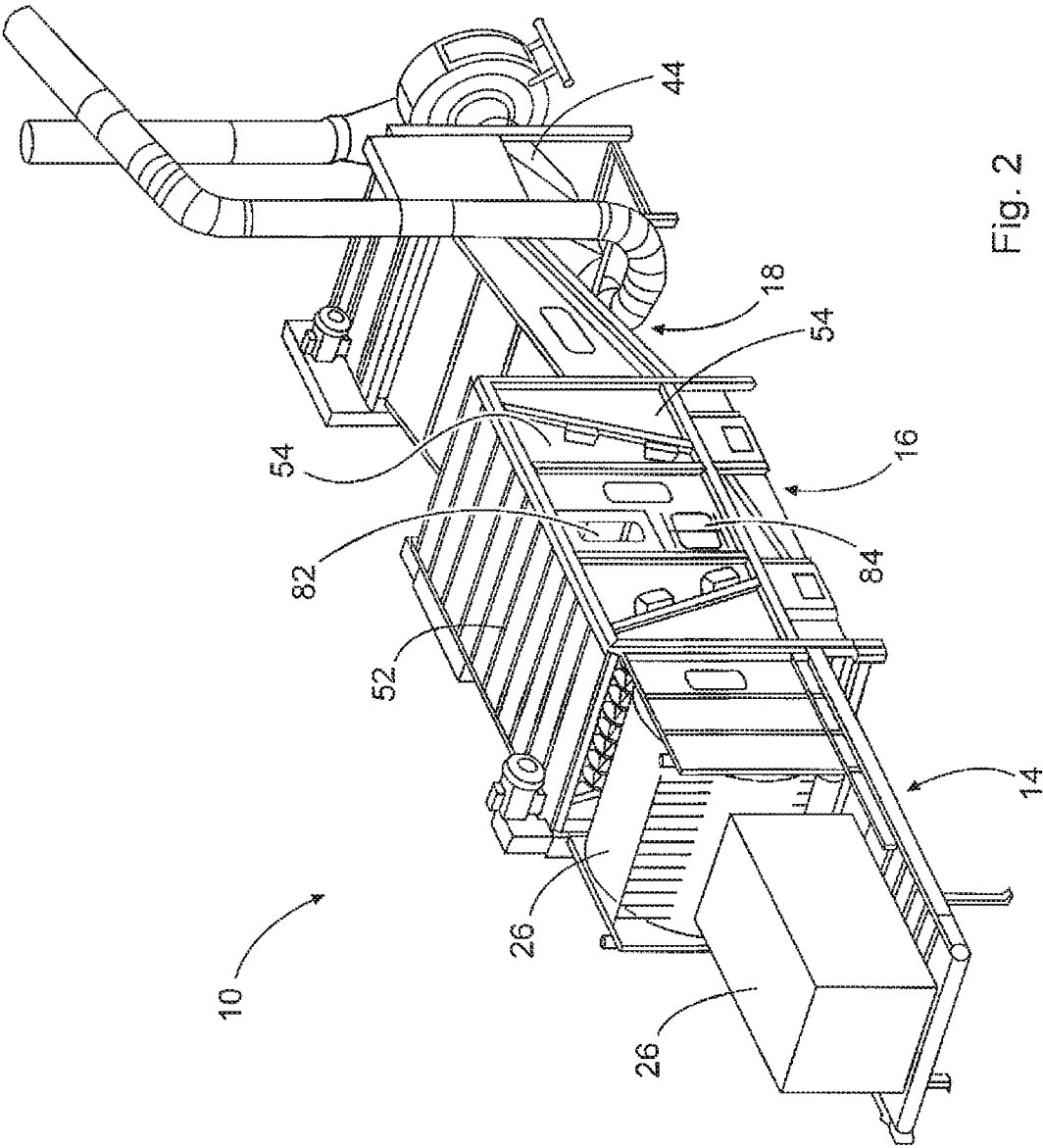


Fig. 2