



US006221046B1

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

(10) **Patent No.:** **US 6,221,046 B1**
(45) **Date of Patent:** ***Apr. 24, 2001**

(54) **RECYCLABLE MEDICATION DISPENSING DEVICE**

(75) Inventors: **Andrew Burroughs**, Kenosha, WI (US); **Dave Hixson**, Evanston, IL (US); **Andrew Hodge**, San Francisco, CA (US)

(73) Assignee: **Eli Lilly and Company**, Indianapolis, IN (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.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **08/678,528**

(22) Filed: **Jul. 9, 1996**

Related U.S. Application Data

(63) Continuation-in-part of application No. 08/399,764, filed on Mar. 7, 1995, now abandoned.

(51) **Int. Cl.**⁷ **A61M 1/00**; **A61M 5/00**; **A61M 5/315**

(52) **U.S. Cl.** **604/153**; **604/207**; **604/220**; **604/232**; **604/208**

(58) **Field of Search** **604/207**, **208**, **604/209**, **210**, **211**, **181**, **186**, **187**, **232**, **224**, **218**, **220**, **228**, **229**, **71**, **72**, **404**, **246**; **222/309**, **390**, **391**

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 4,413,760 11/1983 Paton .
- 4,592,745 6/1986 Rex et al. .
- 4,865,591 * 9/1989 Sams .
- 4,883,472 11/1989 Michel .
- 4,936,833 * 6/1990 Sams .
- 4,973,318 * 11/1990 Holm et al. .
- 5,017,190 5/1991 Simon et al. .

- 5,042,977 * 8/1991 Bechtold .
- 5,085,641 2/1992 Sarnoff et al. .
- 5,092,842 * 3/1992 Bechtold et al. 604/209
- 5,104,380 4/1992 Holman et al. .
- 5,112,317 5/1992 Michel .
- 5,114,406 * 5/1992 Gabriel et al. .
- 5,232,459 8/1993 Hjertman .
- 5,244,465 9/1993 Michel .
- 5,279,585 1/1994 Balkwill .
- 5,279,586 1/1994 Balkwill .
- 5,295,976 3/1994 Harris .
- 5,304,152 4/1994 Sams .
- 5,308,340 5/1994 Harris .

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

- 349 592 5/1988 (EP) .
- 498 737 8/1992 (EP) .
- WO 92/18179 10/1992 (WO) .
- WO 93/07922 4/1993 (WO) .
- WO 94/15120 7/1994 (WO) .

Primary Examiner—Richard K. Seidel

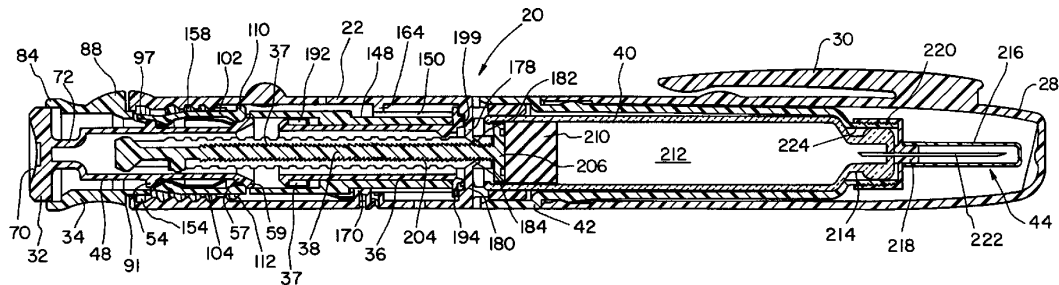
Assistant Examiner—Michael J Hayes

(74) *Attorney, Agent, or Firm*—Michael T. Bates

(57) **ABSTRACT**

A multi-use medication dispensing pen made of a plastic material that is recyclable after the contents of the medication cartridge have been exhausted. The pen is made of a minimal number of parts, which include a housing, a dial mechanism, a generally cylindrical button assembly located within the proximal end of the dial mechanism, an internally threaded nut, and an externally threaded leadscrew. The pen is arranged so that the dial mechanism must be rotated to the zero-dose position prior to setting a dose. The pen includes a lockout mechanism that prevents the dial mechanism from being inadvertently depressed during dosing. The pen further includes a mechanism that limits the maximum dosage that can be dialed up and a mechanism that prevents the user from dialing up a dosage greater than that remaining in the cartridge.

23 Claims, 4 Drawing Sheets



US 6,221,046 B1

Page 2

U.S. PATENT DOCUMENTS

5,370,629	12/1994	Michel et al .		5,611,783	*	3/1997	Mikkelsen	604/211
5,383,865	*	1/1995	Michel .	5,626,566	*	5/1997	Petersen et al.	604/208
5,582,598	*	12/1996	Chanoch	5,938,642	*	8/1999	Burroughs et al.	604/208
5,591,136	*	1/1997	Gabriel					

* cited by examiner

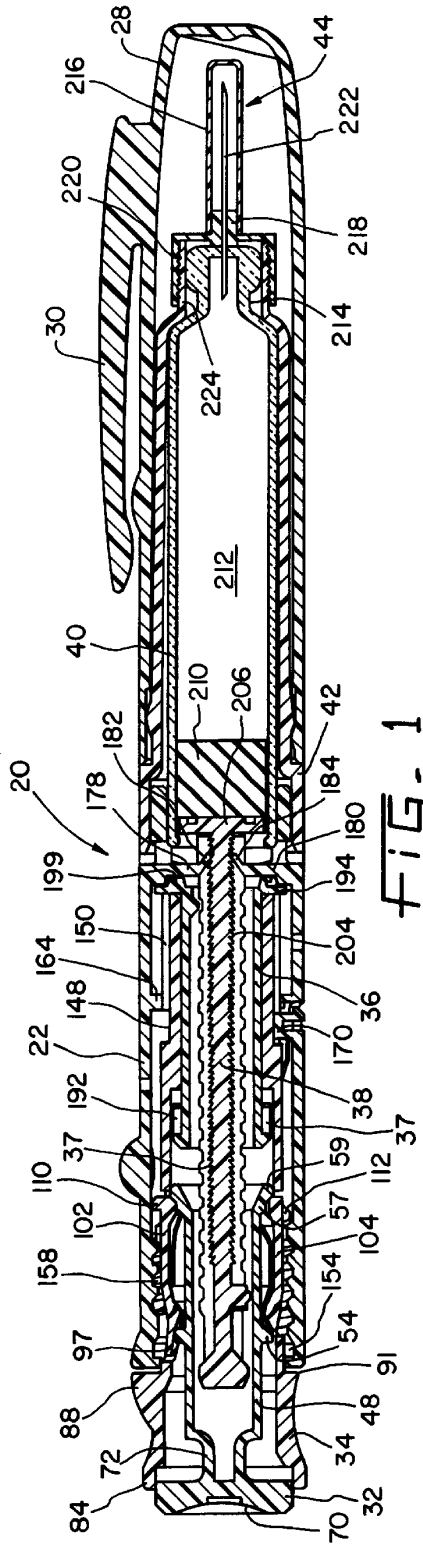


FIG. 1

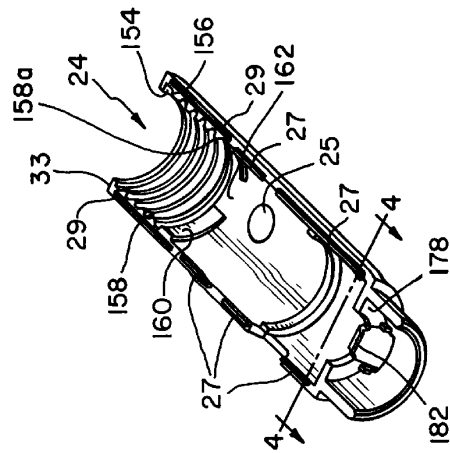


FIG. 3

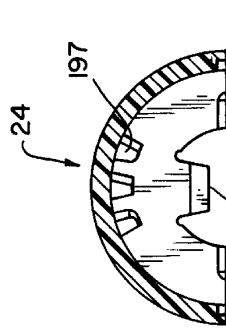


FIG. 4

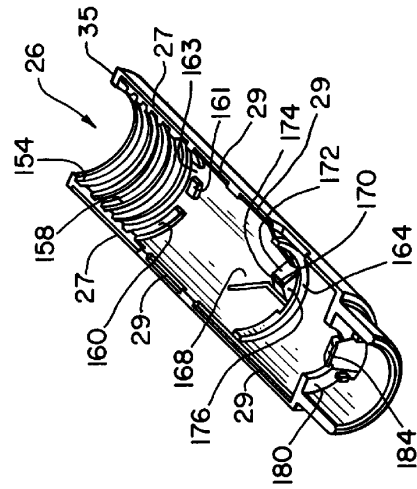


FIG. 5

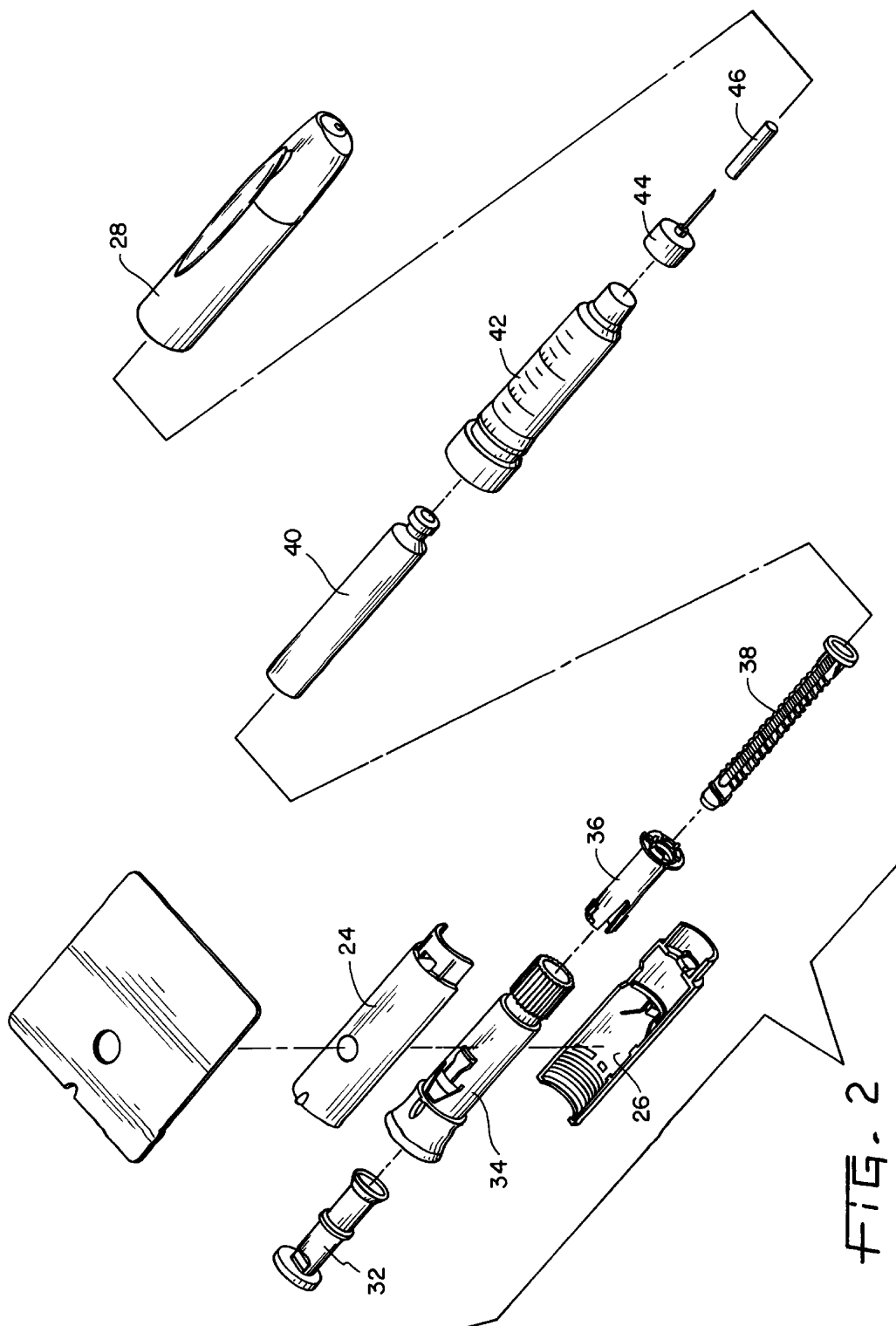


FIG. 2

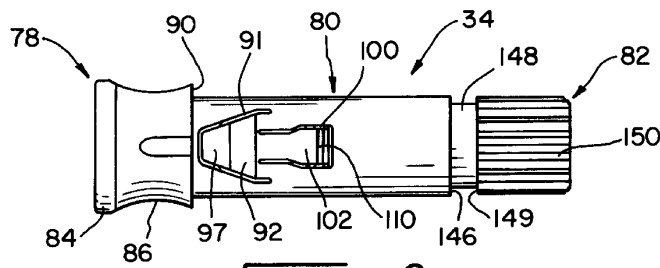


FIG. 6

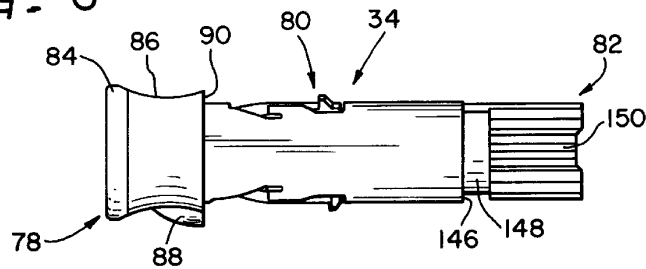


FIG. 7

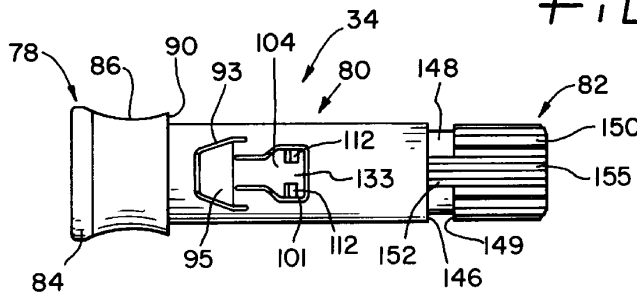


FIG. 8

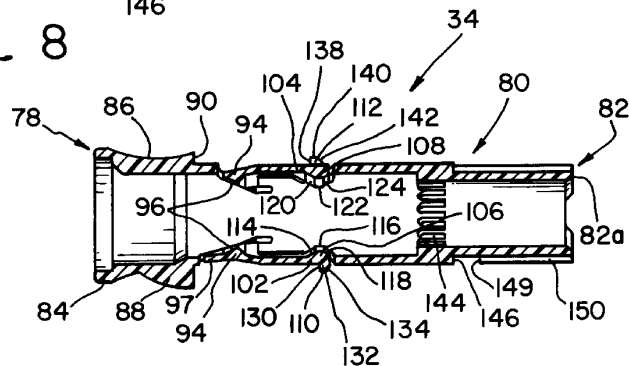


FIG. 9

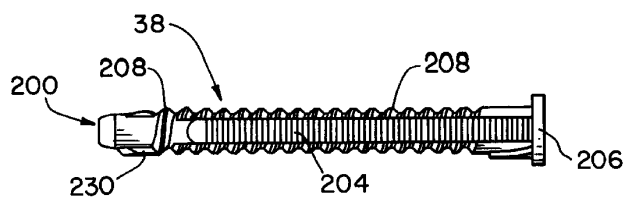


FIG. 12

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.