

Some known devices such as disclosed in WO 2014/053496 and US
2013/0317434 provide visual indicators associated with device use. However, known
indicators that do not provide sufficient updates during a medication injection, or that rely
on a user looking for a portion of a sealing plunger that resides within a cartridge or fluid
5 container barrel, may not be adequate or convenient for some users.

Thus, it would be desirable to provide an automatic medication injection device
with a visible indicator which can overcome one or more of these and other shortcomings
of the prior art.

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BRIEF SUMMARY

In one form thereof, the present disclosure provides an automatic medication
injection device including a user grippable housing, a container of medication, a drive
mechanism and a plurality of injecting progress indicators. The user grippable housing
has a length extending in an axial direction between a proximal end and a distal end. The
15 container of medication includes an outlet that is disposed proximally of the housing
proximal end at least during injection. The container includes a barrel and a sealing
plunger, which sealing plunger is in sealing engagement with the barrel. The drive
mechanism is within the housing and when triggered automatically advances the sealing
plunger proximally within the container to force medication from the container outlet.
20 The plurality of injecting progress indicators are visible along a periphery of the housing.
At least one of the plurality of injecting progress indicators is located distally of the
container during an injection. The injecting progress indicators include a flag element
movable as the drive mechanism advances the sealing plunger proximally within the
container. The plurality of injecting progress indicators are configured to indicate

sequentially in an axial direction during a single injection as the flag element moves to cooperatively complete different injecting progress indicators at different times during the single injection, whereby injecting progress of the injection may be monitored by a user.

In one aspect of the present disclosure, there is provided an automatic medication
5 injection device comprising:

a user grippable housing having a length extending in an axial direction between a proximal end and a distal end;

a container of medication including an outlet that is disposed proximally of said housing proximal end at least during injection, said container including a barrel and a
10 sealing plunger, said sealing plunger in sealing engagement with said barrel;

a drive mechanism within said housing which when triggered automatically advances said sealing plunger proximally within said container to force medication from the container outlet; and

a plurality of injecting progress indicators visible along a periphery of the housing,
15 at least one of said plurality of injecting progress indicators located distally of said container during an injection, said injecting progress indicators including a flag element movable as the drive mechanism advances said sealing plunger proximally within said container, said plurality of injecting progress indicators configured to indicate sequentially in an axial direction during a single injection as the flag element moves to cooperatively
20 complete different injecting progress indicators at different times during the single injection, whereby injecting progress of the injection may be monitored by a user.

One advantage of the present disclosure is that an automatic medication injection device may be provided with a visible indicator of injecting progress.

Another advantage of the present disclosure is that an automatic medication injection device may be provided with a visible indicator of injecting progress that updates during the medication delivery.

Still another advantage of the present disclosure is that an automatic medication injection device may be provided having a visible indicator of injecting progress that is easily readable due to its form as well as its positioning within the device housing.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other advantages and objects of this invention, and the manner of attaining them, will become more apparent, and the invention itself will be better understood, by reference to the following description of embodiments of the invention taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a front view of an automatic injection device with a visible injecting progress indicator of the present invention shown prior to use;

Fig. 2 is a cross-sectional side view of the device of Fig. 1 prior to use, wherein portions of the device are omitted or shown schematically;

Fig. 3 is a cross-sectional side view of the device of Fig. 2 after triggering and at a point when the needle has been extended for user penetration but before the start of the medication dose actually injecting into the user through the needle;