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HYPODERMIC UNIT

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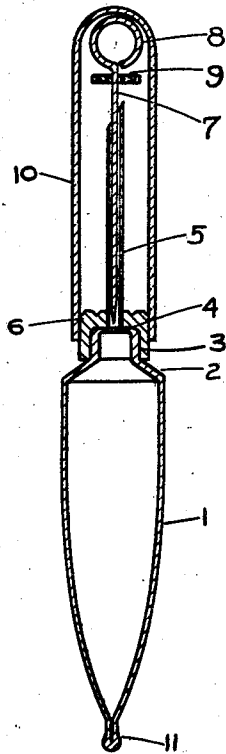


FIG. 1

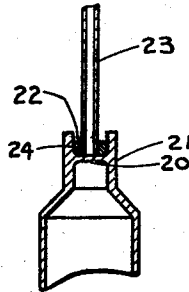


FIG. 2

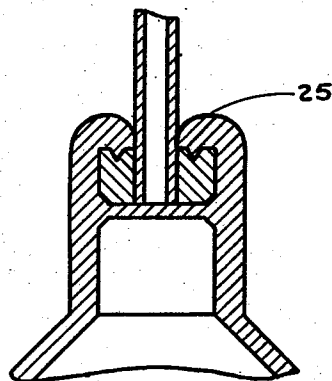


FIG. 3

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HYPODERMIC UNIT

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6 Claims. (Cl. 128—216)

This invention relates to hypodermic units—
i. e., units enabling medicines and other sub-
stances to be promptly and efficiently admin-
istered by injection directly from sterile original
packages—, and has for its object the provision
of such units characterized by exceptional sim-
plicity of structure, inexpensiveness of manufac-
ture, and ease, convenience, and dependability in
use.

The hypodermic unit of this invention com-
prises essentially (1) a hermetically sealed col-
lapsible soft-metal tube having a readily-pierce-
able blind (i. e., integrally-closed) discharge end;
(2) a hypodermic needle having a base rigidly
secured to the tube, the lumen of the needle
communicating with the outside of the blind
end; (3) a stiff wire, preferably headed at its
outer end and pointed at its inner end, in the
lumen of the needle; preferably, (4) a guard disc
impaled on the wire near the head; and prefer-
ably (5) a detachable protective cover enclosing
the needle and the wire.

The invention will be described in detail in
connection with the accompanying drawing
wherein:

Fig. 1 is an axial section of a hypodermic unit
embodying my invention;

Fig. 2 is a fragmentary axial section of a sim-
ilar unit in which there is provided a different
means for connecting the collapsible tube and the
hypodermic needle; and

Fig. 3 is a somewhat enlarged fragmentary ax-
ial section of the unit shown in Fig. 2, with the
connection completed.

Referring first to Fig. 1, the unit shown com-
prises a collapsible soft-metal tube 1 having a
conventionally-shaped shoulder 2, an unthreaded
neck 3, and a blind end 4, the tube having been
formed by extrusion, in the customary manner.
The shoulder and neck of the tube are prefer-
ably thicker than the body of the tube, for rigid-
ity; and the blind end 4 is relatively thin, at
least at its center, so as to be readily pierceable
by a stiff wire. A hypodermic needle 5 is se-
cured—as by welding, soldering, or otherwise
(for example by being made integral)—to a base,
preferably of the type of hub 6, and the hub,
which has an inner diameter slightly less than
the external diameter of the tube neck, is forced
upon the tube neck and thus frictionally en-
gaged therewith to form a rigid attachment. Al-
ternatively, the hub may be of greater diameter
than the neck and cemented or otherwise at-
tached thereto; and the base may assume any of
various other shapes. Within the lumen of the

needle is a stiff, pointed wire 7 having its outer
end modified to form a head or handle 8, the wire
being longer than the lumen of the needle and
being thus adapted to puncture the blind end
of the tube when thrust inwardly. Preferably
the wire has impaled thereon a guard disc 9 of
thick paper or other protective material which
will not dull the point of the hypodermic needle.
A protective cover 10 of synthetic plastic or the
like, preferably transparent, such as Celluloid or
Hycoloid, is frictionally engaged with the hub
of the needle, the engagement being tight enough
to exclude contaminants but permitting the cover
to be readily pulled off for use of the hypodermic
unit.

The hypodermic unit is assembled as follows:
The open tube is placed on a mandrel providing
internal support for the tube neck, the needle
hub is positioned over the neck and forced into
frictional engagement therewith, the wire is in-
serted into the needle, and the protective cover
attached.

The collapsible tube is then filled with the de-
sired medicine or other substance,—inter alia,
narcotics, tetanus antitoxin, and insulin—in the
usual manner through its open end, and that is
suitably closed, preferably hermetically sealed, as
by electrically forming a bead-weld 11; and final-
ly the completed unit is heat-sterilized in the
usual manner. Alternatively, the needle, wire,
and protective cover may be assembled first, the
needle hub being provided with a flange at the
edge of its skirt, and the assembly forced upon
the neck of the tube by pressing the hub flange
and mandrel together.

In using the unit of this invention, the protec-
tive cover is first removed and the wire, as by
pressure on its head, thrust inwardly to puncture
the blind end of the tube, the guard disc prevent-
ing injury to the needle point as well as contam-
ination thereof by the fingers, and serving also to
assist withdrawal of the wire. The wire is then
withdrawn, the needle introduced into the sub-
ject, and the tube squeezed between the fingers to
inject the contents thereof into the subject. Al-
ternatively, the puncturing movement of the wire
may be effected by merely pushing the cover to-
ward the tube; and moreover the wire may be
fixed to the distal end of the cover so as to be
removable therewith, in a single operation.

In Fig. 2 there is shown an alternative means of
effecting a rigid inseparable connection between
the hypodermic needle and the collapsible tube.
An integral, readily-pierceable partition 20 is
situated within the bore of the neck 21 so as to

provide an outer cavity 22. The needle 23 is secured to a base consisting of a disc 24, and the disc is inserted in the cavity and rigidly secured therein by soldering, welding, or by turning over the edge of the neck 21, as shown at 25 in Fig. 3.

The invention may be variously otherwise embodied—for example as to form of protective cover, wire handle, and shapes, proportions, and arrangements of the several elements—within the scope of the appended claims.

I claim:

1. A hypodermic unit comprising a collapsible soft-metal tube having an integrally extruded, readily-pierceable blind end, and a hypodermic needle having a base immovably secured to the tube, the lumen of the needle communicating with the outside of the blind end.

2. A hypodermic unit comprising a collapsible soft-metal tube having an integrally extruded, readily-pierceable blind end, a hypodermic needle having a base immovably secured to the tube, the lumen of the needle communicating with the outside of the blind end, and a stiff wire longer than and carried in the lumen of the needle.

3. A hypodermic unit comprising a collapsible soft-metal tube having an integrally extruded, readily-pierceable blind end, a hypodermic needle having a base immovably secured to the tube, the lumen of the needle communicating with the out-

side of said blind end, a stiff wire longer than and carried in the lumen of the needle, and a detachable protective cover enclosing the needle and the wire.

4. A hypodermic unit comprising a collapsible soft-metal tube having an integrally extruded, readily-pierceable blind end, a hypodermic needle having a base immovably secured to the tube, the lumen of the needle communicating with the outside of the blind end, a stiff wire longer than and carried in the lumen of the needle, and a guard disc impaled on the wire beyond the outer end of the needle.

5. A hypodermic unit comprising a collapsible soft-metal tube having a neck provided with an integrally extruded, readily-pierceable blind end, and a hypodermic needle having a hub frictionally and immovably engaging the outside of the neck, the lumen of the needle communicating with the outside of the blind end.

6. A hypodermic unit comprising a collapsible soft-metal tube having a neck provided with an integrally extruded, readily-pierceable partition in its bore, and a hypodermic needle having a base immovably secured in the bore above the partition, the lumen of the needle communicating with the outside of the partition.

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