

What is Claimed is:

1. A needle shield remover comprising:
 - a body having a tubular configuration with first and second ends, the body formed from a sheet of material having opposing first and second longitudinal edges; and
 - a closure configured to couple the first and second longitudinal edges together to form the tubular configuration of the body, the closure comprising:
 - a plurality of teeth extending laterally outwardly from the first longitudinal edge; and
 - a plurality of grooves extending laterally inwardly into the sheet of material from the second longitudinal edge.
2. The needle shield remover of claim 1, wherein the plurality of teeth extend generally perpendicularly away from the first longitudinal edge; and the plurality of grooves extend along axis at an angle with respect to the second longitudinal edge, such that the plurality of teeth bend as each respective tooth enters a respective one of the plurality of grooves.
3. The needle shield remover of claim 2, wherein each of the plurality of teeth include an associated cut-out portion configured to relieve stress within the material as a result of the plurality of teeth bending.
4. The needle shield remover of claim 3, wherein the cut-out portion is disposed in an edge of each of the plurality of teeth or in a corner between each of the plurality of teeth and the first longitudinal edge.
5. The needle shield remover of any one of claims 2 to 4, wherein the plurality of grooves extend along an axis at an angle of between 5 degrees and 20 degrees with respect to the second longitudinal edge.
6. The needle shield remover of any one of claims 2 to 5, wherein the axes of the plurality of grooves are staggered to extend above or below a horizontal line extending between the first and second longitudinal edges.
7. The needle shield remover of any one of the preceding claims, further comprising:
 - a first plurality of barbs arrayed around a circumference of the body adjacent to the first end; and
 - a second plurality of barbs arrayed around a circumference of the body adjacent to the second end;
 - wherein each of the first plurality of barbs and the second plurality of barbs comprise a member extending within an opening of the body, a distal end of the member having laterally spaced pointed tips.
8. The needle shield remover of any one of the preceding claims, further comprising:
 - a first plurality of barbs arrayed around a circumference of the body adjacent to the first end; and
 - a second plurality of barbs arrayed around a circumference of the body adjacent to the second end;
 - wherein the first plurality of barbs and the second plurality of barbs extend inwardly into the body.
9. The needle shield remover of any one of the preceding claims, wherein the needle shield remover is symmetrical about a horizontal plane extending through a midpoint of the body perpendicular to a longitudinal axis thereof.

10. An auto-injector drug delivery device comprising:
- a housing;
 - a drug container coupled to the housing, the drug container including a needle;
 - a needle shield disposed at least partially over a distal end of the needle of the drug container;
 - a removable cap coupled to the housing; and
 - a needle shield remover coupled to the removable cap and the needle shield, such that uncoupling the removable cap from the housing removes the needle shield off the needle of the drug container, the needle shield remover comprising:
 - a body having a tubular configuration with first and second ends, the body formed from a sheet of material having opposing first and second longitudinal edges;
 - and
 - a closure coupling the first and second longitudinal edges together to form the tubular configuration of the body, the closure comprising:
 - a plurality of teeth extending laterally outwardly from the first longitudinal edge; and
 - a plurality of grooves extending laterally inwardly into the sheet of material from the second longitudinal edge, the plurality of grooves receiving the plurality of teeth to couple the first and second longitudinal edges together.
11. The autoinjector drug delivery device of claim 10, wherein the plurality of teeth extend generally perpendicularly away from the first longitudinal edge; and the plurality of grooves extend along axis at an angle with respect to the second longitudinal edge, such that the plurality of teeth bend as each respective tab enters a respective one of the plurality of grooves.
12. The autoinjector drug delivery device of claim 11, wherein the axes of the plurality of grooves are staggered to extend above or below a horizontal line extending between the first and second longitudinal edges.
13. The autoinjector drug delivery device of any one of claims 10 to 12, wherein the needle shield remover further comprises:
- a first plurality of barbs arrayed around a circumference of the body adjacent to the first end, the first plurality of barbs gripping the removable cap;
 - a second plurality of barbs arrayed around a circumference of the body adjacent to the second end, the second plurality of barbs gripping the needle shield;
14. The autoinjector drug delivery device of claim 13, wherein each of the first plurality of barbs and the second plurality of barbs extend within an opening of the body and include a distal end having laterally spaced pointed tips.
15. The autoinjector drug delivery device of claim 13 or 14, wherein the first plurality of barbs and the second plurality of barbs extend inwardly into the body.
16. The autoinjector drug delivery device of claim 15, wherein the removable cap comprises a central wall configured to be gripped by the first plurality of barbs and an annular wall spaced outwardly from the central wall configured to engage an outer surface of the first end of the body.

17. The autoinjector drug delivery device of any one of claims 10 to 16, wherein the needle shield remover is symmetrical about a horizontal plane extending through a midpoint of the body perpendicular to a longitudinal axis thereof.

18. A method of forming a needle shield remover from a strip of metal, the method comprising:

forming a sheet from the strip of metal having first and second longitudinal edges and end edges, the sheet comprising a closure for the needle shield remover including a plurality of teeth extending laterally outwardly from the first longitudinal edge and a plurality of grooves extending laterally inwardly into the sheet of material from the second longitudinal edge;

forming a first plurality of barbs across a width of the strip of metal;

forming a second plurality of barbs across the width of the strip of metal; and

creating a tubular form from the sheet by forcing the plurality of teeth into the plurality of grooves.

19. The method of claim 18, wherein the plurality of teeth extend generally perpendicularly away from the first longitudinal edge; the plurality of grooves extend along axis at an angle with respect to the second longitudinal edge; and creating the tubular form from the sheet comprises bending the plurality of teeth as each respective tooth enters a respective one of the plurality of grooves.

20. The method of claim 18 or 19, further comprising punching guide holes into the trip of metal to form a cutting pattern for the closure, the first plurality of barbs, and the second plurality of barbs.