

Application Report

BRUSHWELLMAN
ENGINEERED MATERIALS

AR 39-113-20

Industry: Consumer Products
Product: Beryllium Copper Strip

Although most users of pens and mechanical pencils take the pocket clip for granted, manufacturers of high quality writing instruments design these clips very carefully. A clip that is too stiff tends to resist attaching to the pocket. One that is too loose can lead to a lost pen or pencil.

Engineering Criteria

- Good Formability
- Age Hardenable
- Resistance To Stress Relaxation
- High Fatigue Strength
- Weldable

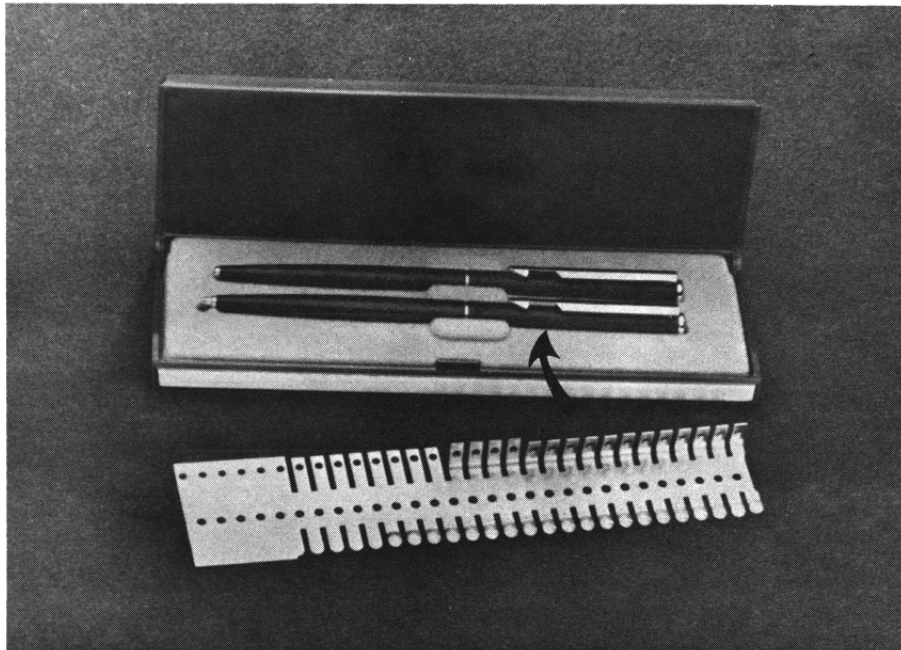
The spring element shown here is formed and stamped

from Brush Wellman Alloy 165.

Forming this part in its annealed temper creates a very accurate shape and provides good die life as well. The part is later age hardened to create the necessary spring and strength properties. Later, it is resistance welded to the back of a decorative brass "arrow".

For additional information, contact:

Marketing Department
Alloy Division
Brush Wellman Inc.
17876 St. Clair Avenue
Cleveland, Ohio 44110
(216) 486-4200

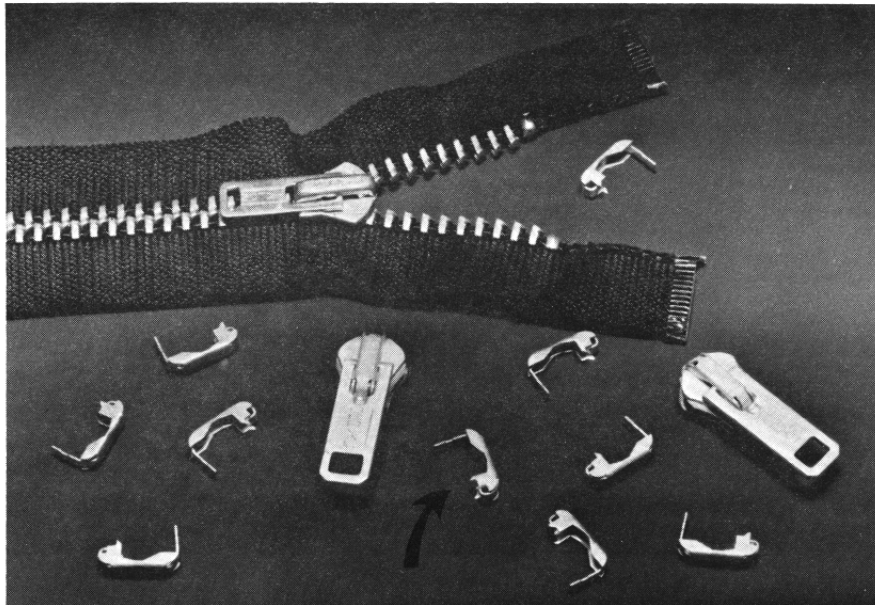


Application Report

BRUSHWELLMAN
ENGINEERED MATERIALS

AR 39-23-24

Industry: Consumer Products
Product: Beryllium Copper Strip



Although you have to look hard to see the beryllium copper, the material contributes to the performance of higher quality zippers. Tiny as it is, the zipper locking spring utilizes a number of beryllium copper properties.

Engineering Requirements

- High Fatigue Strength
- Good Formability
- Good Corrosion Resistance
- Heat Treatable
- Easily Plated Or Painted

Brush Wellman furnishes beryllium copper Alloy 165 $\frac{1}{4}$ H strip to a number of manufacturers. These components require rather extensive bending and forming in a small area, so a high degree of formability is

needed in the material. But high strength is also important. This is achieved by age hardening the beryllium copper locking spring after forming.

Corrosion resistance, and the ability of the material to be plated or painted, are important factors in the appearance of the zipper and its acceptance in the consumer market.

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