ABSTRACT OF THE DISCLOSURE

A method of attaching a pliant web to a thermoplastic base utilizing a sonic element to press the web to the base, at the same time causing the base to melt and the web to adhere to the base.

This invention relates to attaching a pliant web, such as a business machine inking ribbon, to a thermoplastic base, such as the hub of a thermoplastic spool.

The attachment of the bitter end of a business machine inking ribbon to a spool has been a problem which has led to many solutions, none of which has been entirely satisfactory. The problem is, moreover, of increasing importance at this time in view of the rapid expansion of the business machine industry, and there is presently great need for low cost, high speed production of business machine inking ribbons wound on spools having a wide variety of shapes and sizes.

With the advent of the plastic spool a few years ago, efforts were made to heat-seal the bitter end of the inking ribbon to the hub of the spool, as such a technique would lend itself to highly automatic operation and would simplify the mechanical procedures required in attaching the ribbon to the spool. In the efforts to use a heated element pressing the ribbon against the hub of the spool and thus melt the hub and seal the ribbon, it was found that it was not possible to effect such a seal as the ribbon was destroyed at the point of contact of the heated element before effective melting of the hub took place.

In accordance with the present invention, it has now been found that heat-sealing of an inking ribbon to a thermoplastic hub by melting the hub momentarily while pressing the ribbon against the hub can effectively be accomplished using a pressure element which is resonated with a source of sonic vibrations. The shape of the face of the pressure element which contacts the ribbon is critical, as a smooth surface does not produce a satisfactory seal, but a coarsely roughened surface provides good results.

The invention is particularly useful in attaching a business machine inking ribbon to a thermoplastic base. It is especially useful for attaching an inked business machine inking ribbon to a thermoplastic spool or hub having a flat end and is adaptable for attaching a pliant web to a thermoplastic base in a process which is rapid, automatic, and economic. The invention is adaptable for attaching a variety of pliant webs to a thermoplastic base, such as inking ribbon for a typewriter, a business machine inking ribbon, and a business machine inking ribbon having a twined or braid-like construction.
7. The method of claim 6 in which said web is an inked silk ribbon.
8. The method of claim 6 in which said web is an inked cotton ribbon.
9. The method of claim 6 in which said web is an inked nylon ribbon.
10. The method of claim 1 in which said web is a wool fabric.
11. The method of claim 1 in which said web is photographic film.
12. The method of claim 11 in which said web further includes a paper backing web.