Plasma device for tapes and other flexible materials

Plasma treatment to activate or clean surfaces is a common step in state-of the art manufacturing processes. Current plasma-based solutions for flexible materials do however either lack efficiency or are technically too complex and hence error-prone. Scientists at the University of Applied Sciences and Arts (HAWK) developed a plasma roller device for effective and fast plasma treatment of flexible materials, like tapes, foils, films, paper or textiles.

Challenge

Nowadays plasma treatment of flexible materials like tapes, foils or textiles typically rely on a small treatment zone between a plasma roll or a concave electrode and its counter (electrode) roll. To cover larger areas, multiple such plasma devices need to be installed, which is technically more complex and error-prone and more costly.

Our Solution

Scientists at the HAWK University of Applied Sciences and Arts developed a compact plasma roller device for effective plasma treatment of flexible materials, like tapes, foils, films, paper or textiles.

Advantages

- Effective and fast plasma treatment of flexible materials, like tapes, foils, films, paper or textiles
- Plasma ignition around the plasma roll allowing for a larger treatment area
- Simple device with just one plasma roll – no need to have multiple plasma rollers or counter rollers as electrodes
- Compact technical design – enabling a hand-held device for taping or sealing
- Suitable for automated processes for plasma treatment of flexible materials

Applications

The plasma roller device can be used to effectively treat flexible materials prior to tape, seal, glue, print etc. Due to the compact technical design it is suitable either for implementation in an automated process or as a simple hand-held device.

Developmental Status

A first working model as a hand-held plasma tape dispenser currently exists.

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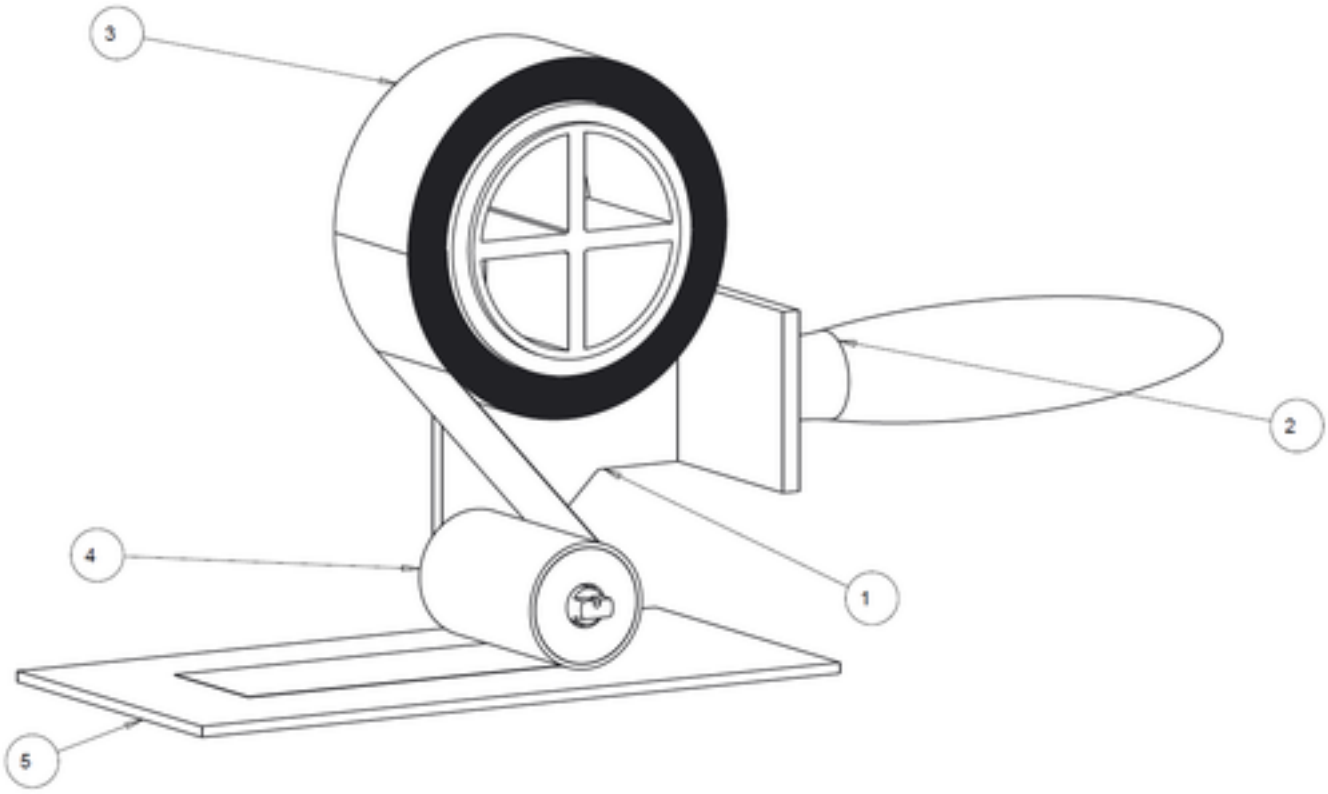

Technical example for plasma roller: Hand-held plasma tape dispenser (1) with holder (2), tape (3) and the plasma roll (4), which also works as a press roll for taping/sealing a surface (5). Source: DE102015108884.

Patent Status

An international patent application has been filed (Applicant: HAWK University of Applied Sciences and Arts).

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