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NAIL MACHINE WHISKER SEPARATOR

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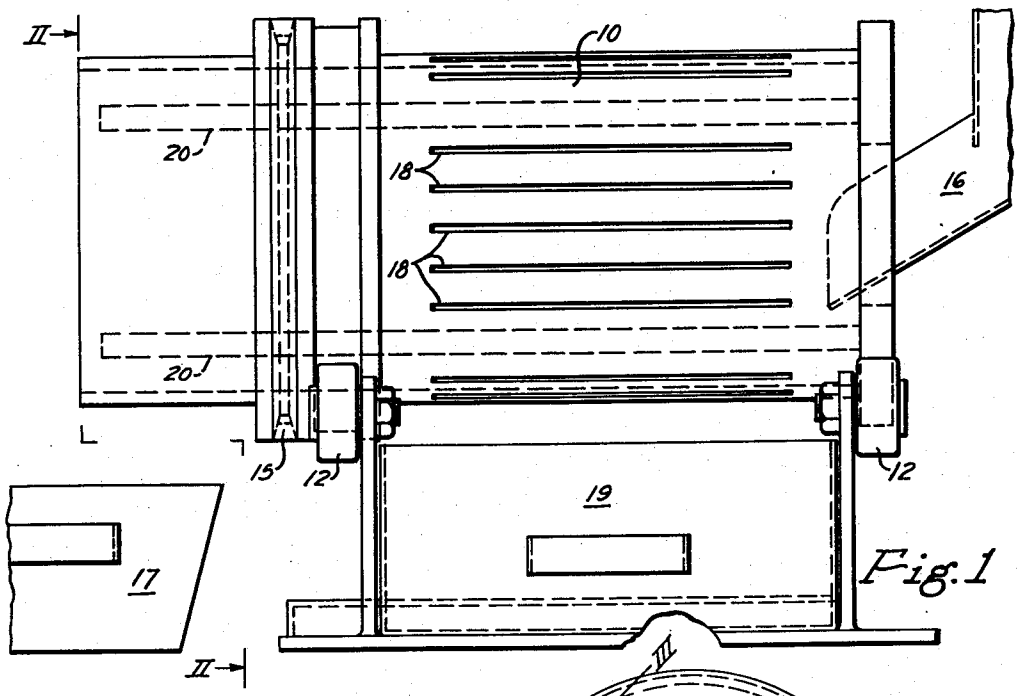

Fig. 1

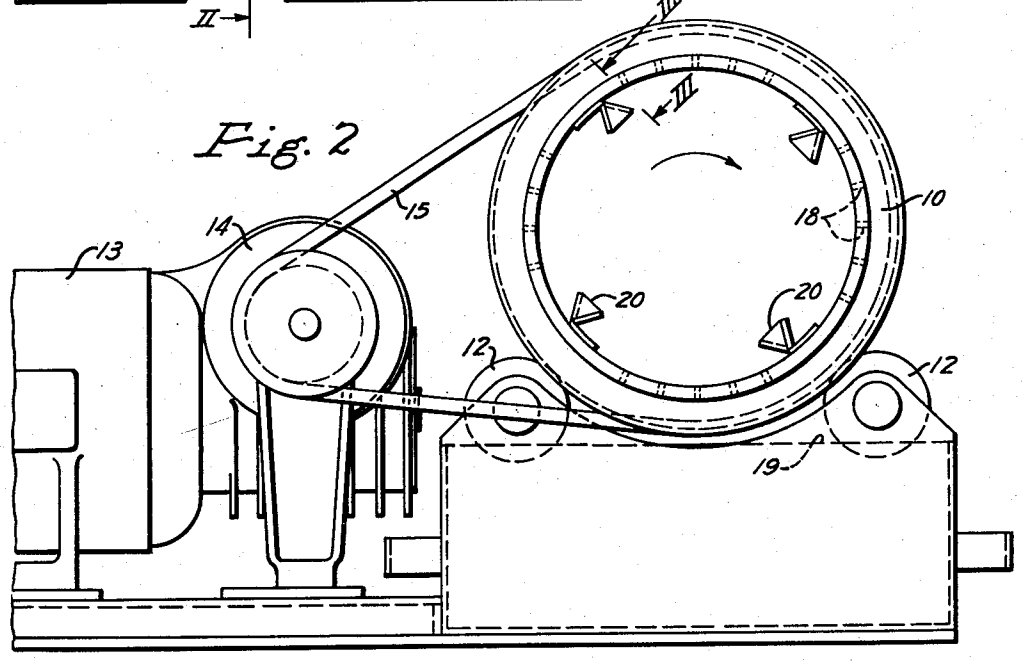

Fig. 2

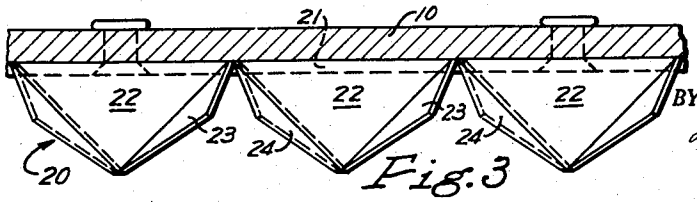

Fig. 3

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NAIL MACHINE WHISKER SEPARATOR

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5 Claims. (Cl. 209—86)

This invention relates to an improved "whisker" separator for nails.

After nails are formed and cut in a nail machine, it is customary to eliminate cuttings or "whiskers" before further processing. One type of whisker separator includes a rotating cylindrical tumbler which receives nails at one end and discharges them from the other. The interior of the tumbler contains means such as rake flights for propelling the nails lengthwise of the tumbler as it rotates. The tumbler wall has perforations of a size that allows whiskers to drop out, but retains nails.

An object of the present invention is to provide a separator of the foregoing type equipped with improved rake flights which are less expensive to construct, require less maintenance, and assure a more uniform flow of material through the tumbler.

A more specific object is to provide a separator whose rake flights are formed of integral sheet metal strips cut and bent to shape and fixed to the interior of the tumbler parallel to the axis of rotation thereof.

In accomplishing these and other objects of the invention, I have provided improved details of structure a preferred form of which is shown in the accompanying drawing, in which:

Figure 1 is a top plan view, partly in section, of a separator constructed in accordance with my invention;

Figure 2 is a vertical cross section on line II—II of Figure 1; and

Figure 3 is a fragmentary longitudinal section on a larger scale on line III—III of Figure 2.

Figure 1 shows a nail separator which comprises a hollow cylindrical tumbler **10** supported for rotation on rollers **12**. The tumbler is rotated at a relatively slow rate through a drive mechanism which includes a motor **13**, a speed reducer **14** and a belt and pulley connection **15**. Nails and whiskers are introduced to the one end of the tumbler from a feed hopper **16**, which preferably receives nails directly from a nail-making machine. Dewhiskered nails discharge from the other end to a tote pan **17**, from which they are delivered to the cleaning equipment. In the illustration, rotation of the tumbler is clockwise as viewed in Figure 2, the feed hopper is at the right as viewed in Figure 1, and the tote pan at the left, but obviously these relations can be changed. The tumbler wall contains perforations **18** through which whiskers drop to a receiving tray **19**, but which are too small to allow the nails to drop from the tumbler. A plurality of rake flights **20**, shown as four in number and constructed in accordance with my invention, propel the nails through the tumbler.

As best shown in Figure 3, each rake flight **20** includes a continuous base portion **21** attached to the tumbler wall and extending parallel to the axis of rotation thereof. The base portion carries a series of integral triangularly shaped segments **22** bent at right angles thereto and extending inwardly radially of the tumbler. The edges of the segments **22** carry integral, oppositely directed, triangularly shaped wings **23** and **24**. The wing **23** on the entry or upstream side of each segment **22** is bent ahead toward the direction in which the tumbler **10** rotates, while the wing **24** on the exit or downstream side is bent back away from this direction, simulating internal screw threads. Each entire rake flight preferably is constructed by appropriately cutting and bending a single strip of sheet metal.

From the foregoing description, it is seen that the separator of the present invention can be constructed very economically and at the same time is rugged and not likely to cause failure. It is especially adapted for small sizes where it can be installed with existing nail machines and does not delay the complex cleaning and packaging line which commonly follows such machines.

While I have shown, and described only a single embodiment of the invention, it is apparent that modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

I claim:

1. In a nail whisker separator which includes a hollow cylindrical tumbler having perforations in its wall of a size to retain nails and drop whiskers, means for introducing nails and whiskers to one end of said tumbler, means for receiving nails discharged from the other end, and means for rotating said tumbler, the combination with said tumbler of a plurality of rake flights spaced circumferentially around the inside for propelling nails along the length thereof, each of said rake flights extending the major portion of the length of the tumbler and comprising a base attached to the inside of the tumbler wall, a plurality of segments integral with said base and extending inwardly therefrom radially of the tumbler, and oppositely directed wings integral with said segments extending from the edges thereof, the wing at the entry edge of each segment extending toward the direction of rotation of the tumbler and that at the exit edge extending away from the direction of rotation to simulate internal screw threads.

2. A combination as defined in claim 1 in which said rake flights extend parallel with the axis of rotation of said drum, and said segments and wings are triangular.

3. A combination as defined in claim 1 in which each of said rake flights is formed from a single strip of metal cut and bent to provide the base, segments and wings.

4. A rake flight comprising a sheet metal base, a plurality of triangularly shaped segments integral with said base and extending at right angles therefrom, and oppositely directed triangularly shaped wings integral with said segments extending from two of the three sides thereof, the third side of each segment being common with said base.

5. A rake flight as defined in claim 4 formed from a single strip of metal cut and bent to provide the base, segments and wings.

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