Sept. 15, 1970 E. GUGGISBERG 3,529,168

AUTOMATIC DEVICE FOR COUNTING FOLDED PAPERSHEETS OR PRINTED MATTERS, ESPECIALLY FOLDED NEWSPAPERS WHICH ARE CONVEYED IN SHINGLED MANNER ON A CONVEYORBAND

Filed Feb. 23, 1967

Fig.1

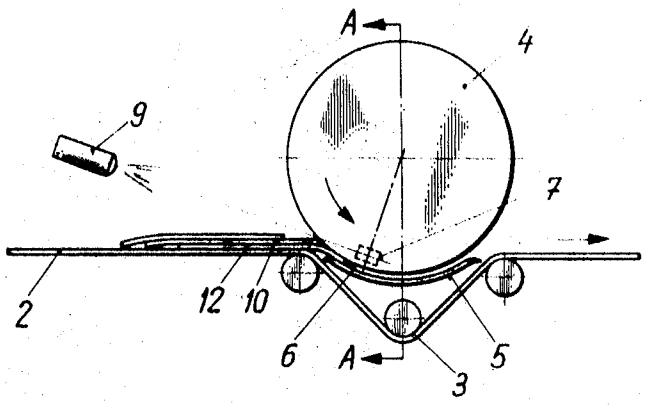


Fig.2

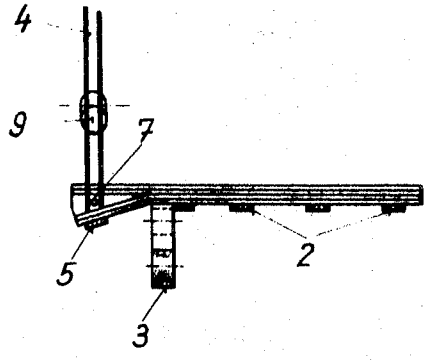


Fig.3

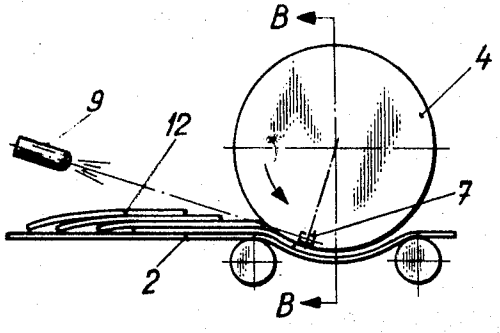
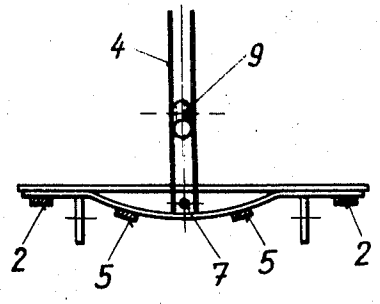


Fig.4



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AUTOMATIC DEVICE FOR COUNTING FOLDED PAPERSHEETS OR PRINTED MATTERS, ESPECIALLY FOLDED NEWSPAPERS WHICH ARE CONVEYED IN SHINGLED MANNER ON A CONVEYORBAND

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U.S. Cl. 250—223 5 Claims

ABSTRACT OF THE DISCLOSURE

A device for counting paper sheets or folded matters, especially newspapers which are quickly conveyed in shingled manner with their fold ahead on top of conveyorbelts, having an electronic light barrier which is laid through a gap produced between the papers travelling along and which is connected to an electric counter registering every time the gap is closed through the following paper on the conveyorbelts. The light barrier is laid at right angle to the route direction through a gap produced at the outside edge of the paper.

In paperhandling industry, there are well known conveyorbands in use for the transport of paper sheets, especially of newspapers and other various folded printed matters. These conveyorbands often perform changes of their direction and, for instances, also turn in spiral fashion. On account of the high speed with which the papers are conveyed coming from the delivery of a rotary-printing-press, it is difficult to count them while they are conveyed.

The automatic device which is the object of this invention, counts the newspapers by means of an electrically controlled light barrier combined with a counter which enables it to register efficaciously in spit of the great speed of the conveyorband, an accurate counting. It creates for example in a mechanical manner, a gap between the sheets at right angle to the paper surface of the papers which are following one another in shingled fashion. Through the gap, a light barrier is laid with a photoelectric cell on one side of the gap and a flash on the opposite side of the gap. Every time the gap is opened, the flash strikes the cell which forwards an impulse to the counter for the registration.

This object and other objects of the invention will be apparent from the following detailed description, read in conjunction with the figures of the accompanying drawings, wherein:

FIG. 1 is a side-view of the first embodiment of the invention.

FIG. 2 is a cross-section according to the line A—A through the device shown in FIG. 1.

FIG. 3 is a cross-section the same as in FIG. 2, but of a modified execution of the device which shows the gap with the light barrier in the center of the conveying course.

FIG. 1 shows the papers **10** and **12** with their folds **6** in advance coming along on the conveyorbands **2** and **3** in shingled fashion one on top of the other with one of their shorter edge projecting over the conveyorband **3** somewhat. A double disc **4** which is driven with the same circumferential speed as the conveyorbands and presses the paper edge down lightly to create in this way the gap. Through the constand movement of the paper on the conveyorbands and the disc **4**, the paper edge is forced by the guide **5** up onto the level of the conveyorbands **2**.

The following papers **10** are moving along until their fold **6** at the paper edge touches the disc **4**, the circumference of which is knurled and through which they are taken along on their course. Normally the papers are shingled on the conveyorband at an equal spacing allowing consequently the creation of an appropriate gap for the light barrier.

Between the two sheaves of the disc **4** and parallel to them at a proper distance, a photoelectric cell **7** is placed which receives the light-jet from a flash **9** set at the central axis of the photoelectric cell **7**, which latter is connected with and acts on a counter. Each interruption of the light barrier registers one counting cipher; however, if one or more papers are missing, no counting is registered. As such electric counters are able to register a great number of times per second, an efficacious and accurate counting can be performed with this device, even at very high speed.

FIG. 3 shows an exemplary variation of the device with the light barrier laid through the middle and in a vertical manner across the conveyorband.

I claim:

1. A device for counting folded paper sheets such as newspapers which are stacked over each other on a transporting band by which they are conveyed through a counting station comprising a rotating disc at said counting station having a periphery for engaging and positioning said paper sheets, a guide member for said paper sheets partially surrounding and spaced from the periphery of said disc, a photoelectric cell positioned above and adjacent said disc periphery above said guide member, an electric counter operatively connected to said photoelectric cell and a light beam directed to the periphery of said disc above said guide member and said photoelectric cell.

2. A device as claimed in claim **1** wherein said disc consists of two spaced apart connected discs between which said photoelectric cell is positioned and said discs having grooved peripheries.

3. A device as claimed in claim **2** wherein said guide member has opposite ends in line with the level of the transporting band and said transporting band passes below said guide member at said counting station.

4. A device as claimed in claim **1** wherein said light beam is directed at a sharp angle to the forward edge of said paper sheets being engaged by said disc and to said photoelectric cell.

5. A device as claimed in claim **1** wherein said guide member and said disc are positioned for guiding said paper sheets, forward edges downwardly from the level of said transporting band at said counting station.

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