US 20020017755A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0017755 A1**

Dobberstein et al. (43) **Pub. Date: Feb. 14, 2002**

(54) **METHOD FOR ALIGNMENT OF SHEET-LIKE MATERIALS**

(76) Inventors: **Dieter Karl-Heinz Dobberstein**, Melsdorf (DE); **Joachim Heinrich Haupt**, Eschborn (DE); **Karlheinz Walter Peter**, Molfsee (DE); **Frank Pierel**, Kiel (DE); **Jurgen Sahlmann**, Ellerdorf (DE); **Gerhard Rudolf Sing**, Kiel (DE); **Rolf Johannes Spilz**, Gettorf (DE); **Hans-Gunter Werner Staack**, Kiel (DE)

Correspondence Address:
Lawrence P. Kessler
Patent Department
NexPress Solutions LLC
1447 St. Paul Street
Rochester, NY 14653-7103 (US)

(21) Appl. No.: **09/855,479**

(22) Filed: **May 15, 2001**

(30) **Foreign Application Priority Data**

May 17, 2000 (DE)..... 100 23 919.6

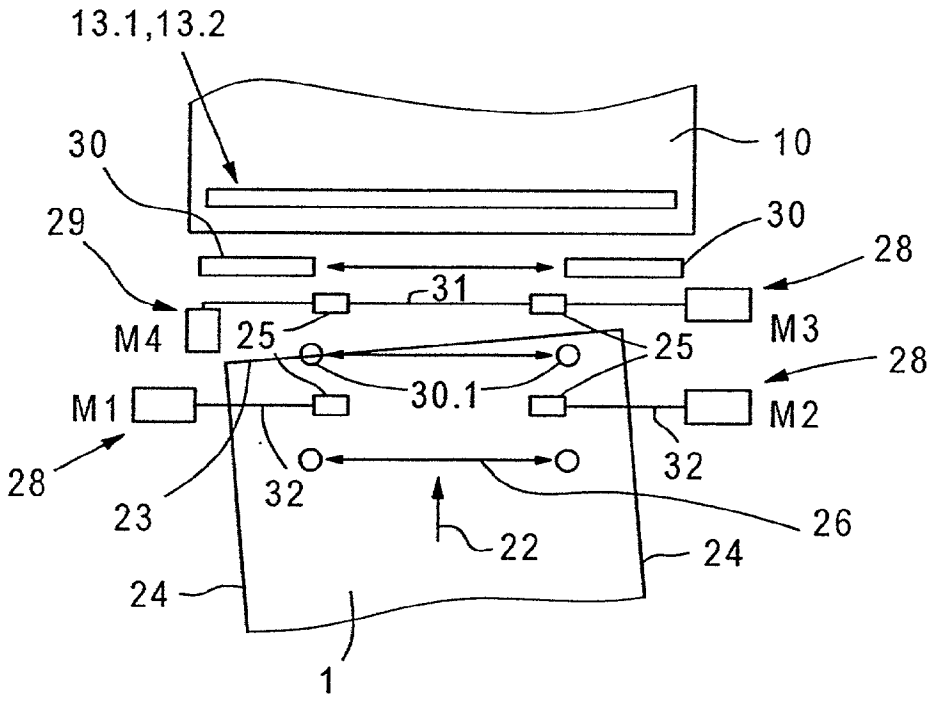
Publication Classification

(51) **Int. Cl.**[7] **B65H 7/02**

(52) **U.S. Cl.** **271/227**

(57) **ABSTRACT**

The invention relates to a method for the alignment of sheet-like material (**1**). Its alignment occurs via rotation elements (**25**), wherein the sheet-like material (**1**) is rotated around its central axis in order to print on the front and backsides. During the rotation of the sheet-like material (**1**) around its central axis, the material's leading edge (**23**) remains in its aligned position. Into the conveyor surface (**9**) is incorporated a sensor pair (**30**), preferably in the form of CCD line sensors, with which the sheet-like material (**1**) is aligned on the same lateral edge (**24**) following the rotation, as is the case during the alignment procedure of the sheet-like material (**1**) before it is rotated around its center axis.



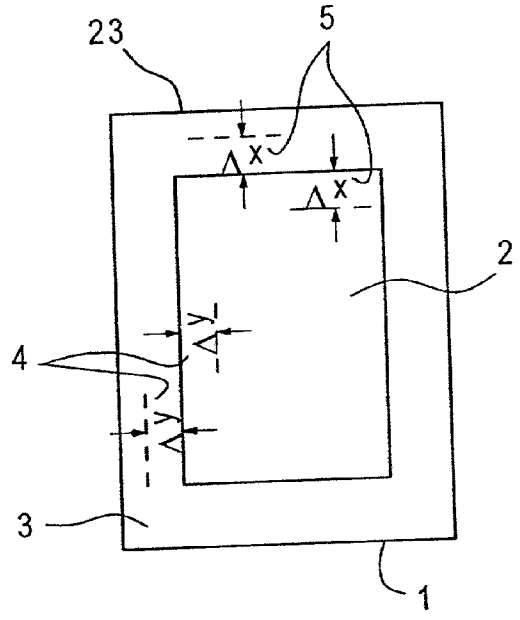


Fig.1

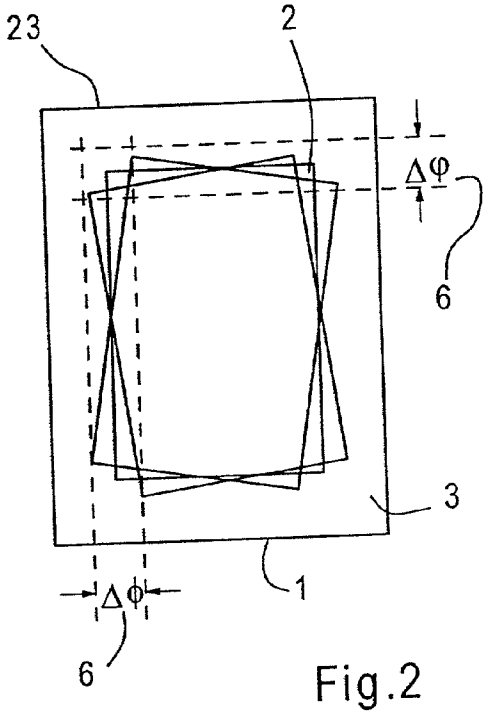


Fig.2

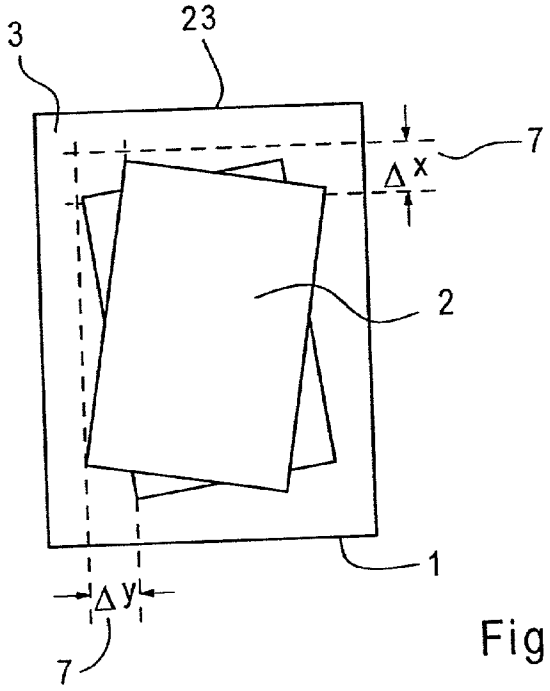


Fig.3

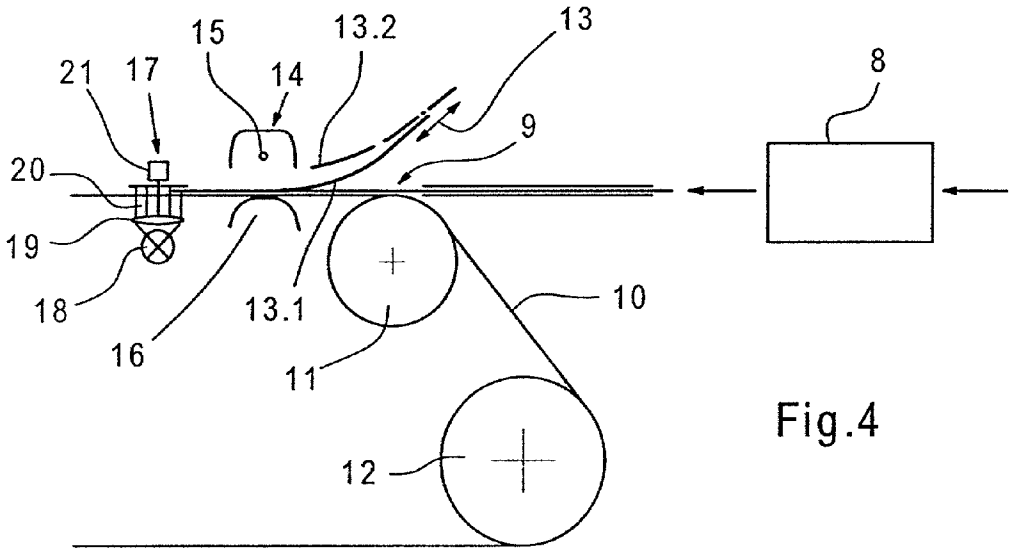


Fig.4

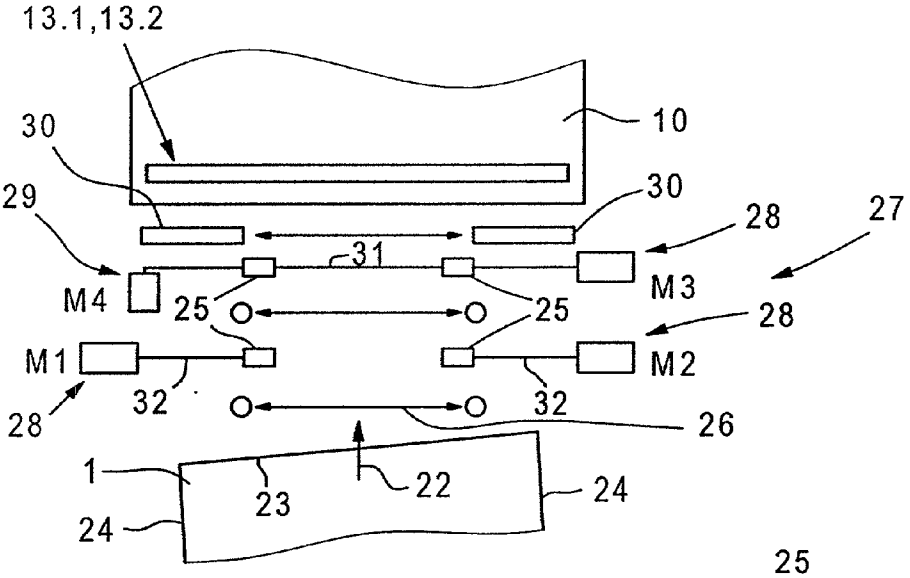


Fig.5

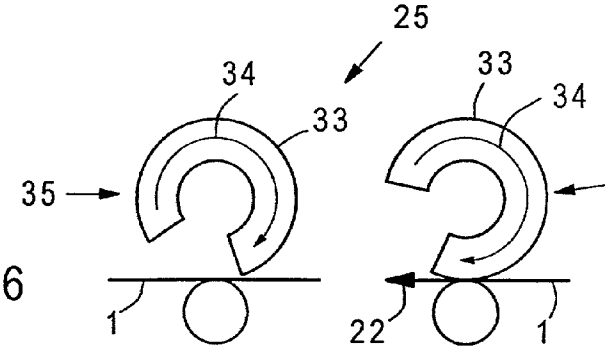


Fig.6

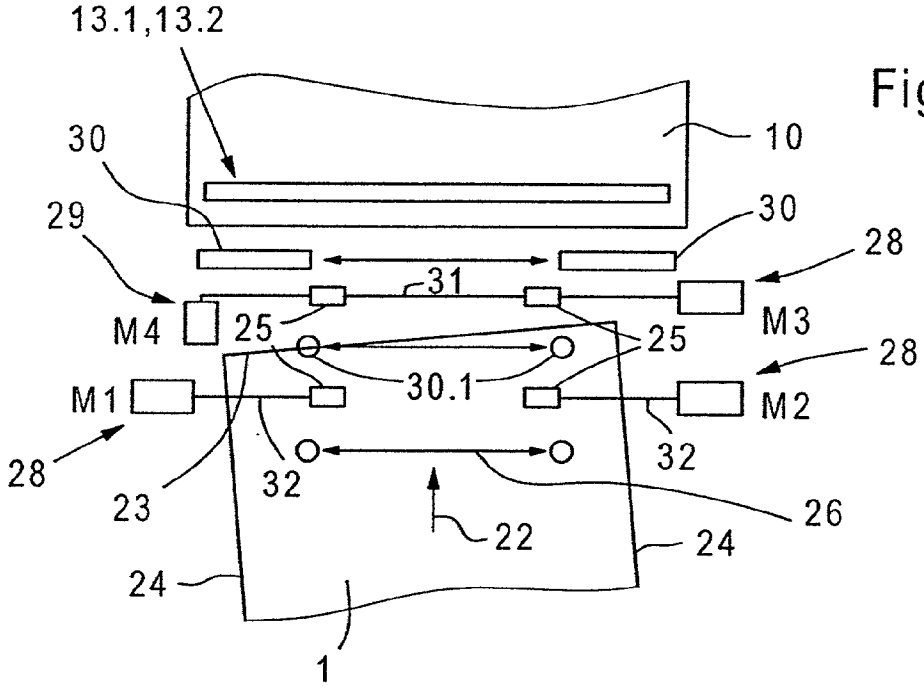

13.1,13.2
10
30
29
30
28
31
M4
25
25
M3
28
30.1
M1
M2
28
32
32
23
26
22
24
24
1

Fig.7

METHOD FOR ALIGNMENT OF SHEET-LIKE MATERIALS

[0001] The invention relates to a method for improving the alignment precision of a sheet-like material, which, prior to further processing, is accurately aligned on a conveyor surface with respect to its rotational position, i.e., its slanting position viewed in the feed direction.

[0002] DE 44 16 564 A1 relates to a sheet alignment device. This device for aligning a sheet moving along an essentially flat conveyor belt enables the alignment of a moving sheet in a multitude of orthogonal directions, for example, transversing the conveyor belt, in the direction of the conveyor belt, and to eliminate skewed positions of the sheet-like material in relation to its conveyor belt. The device has a first roller arrangement, having a first pressure roller, that is positioned in such a way that it can revolve around an axis that lies on a surface running parallel to the surface of the conveyor belt and progresses essentially at a right angle to the direction of the sheet conveyor along the conveyor belt. A second roller arrangement has a second pressure roller that is positioned in such a way that it can revolve around an axis that lies on a surface running parallel to the surface of the conveyor belt and progresses essentially at a right angle to the direction of the sheet conveyor along the conveyor belt. Furthermore, a third roller arrangement is provided, having a third pressure roller, that is positioned in such a way that it can revolve around an axis that lies on a surface running parallel to the surface of the conveyor belt and progresses essentially at a right angle to the direction of the sheet conveyor along the conveyor belt. The third roller arrangement, which can revolve around an axis that lies on a surface running parallel to the surface of the conveyor belt and progresses essentially at a right angle to the direction of the sheet conveyor along the conveyor belt, can be moved along its rotational axis in a direction transversing the conveyor belt. Finally, a control device is provided that is connected to the first, or respectively second, or third roller arrangement and that alternatively controls the rotation of the first and second roller arrangement, in order to align the leading edge of a sheet rotating in the direction of the sheet conveyor along the conveyor belt in a position that is at a right angle to the direction of the sheet conveyor. The control device furthermore controls the rotation and transverse movement of the third roller arrangement, in order to align the moving sheet in the direction transversing the direction of the sheet conveyor, as well as in the direction in which the sheet moves along the conveyor belt.

[0003] The sheet alignment device known from DE 44 16 564 A1 is capable of fulfilling the required alignment precision only to a limited degree. In order to achieve the required alignment precision, an extensive modification of the sheet alignment device from DE 44 16 564 A1 is necessary, which does not appear to be economical.

[0004] In the case of rotary printing presses that process sheets (of paper) and function according to the offset principle, the sheets are conveyed on the feeder table in a ragged or uneven arrangement before they are aligned on the side and pull guides provided on the surface of the feeder table. After the effected alignment of the sheet-like material, the materials is transferred in an aligned condition to a pre-gripper, which accelerates the sheet-like material up to machine speed and then delivers it to a paper-guiding cylinder that is located behind the pre-gripper device. Other alignment concepts generally use cylinder-shaped rollers, on the core of which there is a rubber coating. If, with such a configuration, an alignment of sheet-like material is performed during its feeding, by changing the speed between rollers that grip the sheet-like material on the left and right, then the sheet-like material is rotated around a point of rotation that is located on the stationary roller or, during the feeding, outside the roller with the lower rotational speed or between the two rollers.

[0005] If the printing of the front and backsides of the sheet-like material is accomplished with the same printing mechanism in two passes, then a double adjustment of the sheet-like material is imperative. If the leading edge is to be retained during the rotation, then the sheet is rotated around the center axis in the feed direction, in the process of which the lateral edges of the sheet are reversed. If the lateral alignment occurs with only one sensor, then the reference edge is lost for the subsequent operation, so that the quality of the registration stability of the printing image on the front side in relation to the printing image on the reverse side of the sheet-like material is limited by the angle tolerances and the size fluctuations of the paper format.

[0006] In view of the solutions known from prior art, as well as the demonstrated technical problems, the task of the invention is the substantial improvement of the alignment precision of sheet-like material during feeding in the direction of sheet feed.

[0007] According to the invention, this task is accomplished by the features of claim **1**.

[0008] The advantages attainable according to the invention can be seen above all in the fact that now the influences of the angle tolerances and size fluctuations of the respective matter to be printed in relation to the quality of the alignment are eliminated, since the sheet-like material is aligned on one and the same lateral edge during the first pass and after the rotation. The lateral alignment with only one sensor would mean a loss of the reference edge for the subsequent operation, whereas the pair of line sensors within the alignment surface, which is provided according to the invention, allows a referencing to one and the same position during first form (printing), as well as during the first form and reprinting.

[0009] According to the method recommended by the invention, a sensor pair is provided in the conveyor surface for the sheet-like material, within the area of the lateral edges of the sheet-like material, wherein the line-shaped extension reaches over such an area perpendicular to the feed direction of the sheet-like material, in which the respective lateral edge of the sheet will most likely be encountered. The larger the dimensions of the extension of the pair of line-shaped sensors arranged perpendicular to the feed direction of the sheet-like material, the greater the flexibility of the printing matter format that can be processed.

[0010] In another embodiment of the recommended method according to the invention, the same measuring point is always used for aligning the sheet-like material on the lateral edge. By this means, the alignment of the sheet-like materials, following its rotation in a rotating module, is independent from the printing matter tolerance, such as, for example, lateral shrinking of the printing matter. The deter-

mination of the position of the lateral edge of the sheet-like material results preferably via a sensor array of the sensor pair that is oriented perpendicular to the feed direction of the sheet-like material. In an advantageous embodiment, a CCD line sensor can be arranged as a sensor pair on the sheet-feeding plane within a feeding arrangement of sheet-like material. According to the recommended method of the invention, the alignment occurs in the area whose leading edge borders on areas of the respective lateral reference edge of the sheet-like material. By evaluating the offset of the respective frontal area of the lateral edges in relation to the leading edge of the sheet-like material, the smallest offsets can be measured by the line sensors arranged on the conveyor surface of the sheet-like material and corrected by the succeeding segment rollers. A recording of the lateral offset of the rear areas of the lateral edge of the sheet-like material would delay the detection of the offset of the lateral edge to one page; on the other hand, the offset being adjusted on the rear edge of the sheet-like material would be measured so large that, in the case of large formats, it would lie outside of the recognition and recording range of the CCD line sensors.

[0011] The arrangement recommended according to the invention for the detection of the side positions of a sheet-like material by means of a sensor pair that is arranged in the conveyor surface, can particularly be used on sheet-processing printing presses or according to the principle of electrography or electro-photography, or also on other digital printing presses. In this regard, it is irrelevant whether an image is generated on the surface of image-generating or image-display cylinders of the enumerated printer or printing machine by the depositing of a toner, which is ultimately fixed, or whether the image is generated according to other methods on the surface of image-transmitting components. Essential for the transmission of the printing image to the surface of the sheet-like material is its correct alignment in relation to its feed direction through the printing press or the printer.

[0012] With the aid of the drawing, the invention will now be explained in more detail.

[0013] Shown are:

[0014] **FIG. 1 a** apparent positional deviation of a printed printing image relative to the printing matter surfaces receiving this image,

[0015] **FIG. 2** an offset of the printing image on the sheet-like material characterized by a rotational offset,

[0016] **FIG. 3** an offset of the printing image imprinted on the underside and top side of a sheet-like material in first form and reprint,

[0017] **FIG. 4** the lateral view of a sheet intake area of a sheet-processing machine reproduced schematically,

[0018] **FIG. 5** top view of the alignment components, the sensory mechanism, and the drives for the sheet-like material relative to the rotation elements aligning its feed direction,

[0019] **FIG. 6** the rotation elements designed as segment rollers above the sheet conveyor surface of the sheet-like material, and

[0020] **FIG. 7** the alignment of a sheet-like material with the drives of the segment rollers effecting the alignment.

[0021] The representation according to **FIG. 1** shows a sheet-like material, for example, a printing sheet **1**, which is aligned at a right angle to its feed direction **22**. Imprinted on the surface of the printing sheet **1** is a printing image **2** that is surrounded by a frame-like border **3**. The marked deviations of Δx or Δy within the printing surfaces **2** and the frame **3**, which indicate a positional error in the x and y directions, can be adjusted by pressing on the printing image **2** on the surface of the printing sheet **1**. The deviations designated by reference numbers **4** and **5** respectively are positional deviations, whereas in the representation according to **FIG. 2**, angle deviations $\delta\theta$ of printing image **2** are represented in relation to its position on the printing sheet **1**.

[0022] In the representation according to **FIG. 2**, the apparent angle errors $\Delta\phi$ are designated by reference number **6**. The printing image **2** can be imprinted at the indicated positions on the surface of the printing material **1**, during which this (material) is conveyed forward, with its leading edge **23** in the sheet feed direction.

[0023] The representation according to **FIG. 3** shows in a schematic view the so-called turn registration, wherein the offsets appearing respectively between the printing images **2** on the front and reverse sides of the sheet-like material **1** are marked by reference number **7**. In the representation according to **FIG. 3**, these are designated by reference number **7** or with "and". The turn registration particularly plays a role in the case of translucent papers of marginal weight and extremely light paperweight, as well as of brochure printing.

[0024] The representation according to **FIG. 4** shows in a schematically reproduced lateral view the intersecting point of sheet alignment and the ascent onto a conveyor belt. An aligning unit **8** precedes a conveyor belt **10**, which encircles a run-up roller **11** or, respectively, a control roller **12**, on the surface of which the sheet-like material **1** is transported up to the conveyor surface **9**. After passing the alignment unit **8**, which will be described in more detail below, the aligned sheet-like material **1** reaches the surface of the conveyor belt **10** at the conveyor surface **9**. After passing the run-up roller **11**, the sheet-like material **1** is admitted by means of an adjustment flap or adjustment lip, which is movable in the direction of adjustment **13**. The adjustment lip or adjustment flap can be a plastic component that can be moved from an engaged position **13.1** to a disengaged position **13.2**. Here, this is represented merely schematically in solid or dotted lines, wherein, for the adjustment, a separate drive in the form of a pneumatically actuating regulator, an electrical drive, can be provided, just as an adjustment by manual means is also conceivable.

[0025] By means of an adjustment flap or an adjustment lip, a pressing of the sheet-like material **1** onto the surface of the conveyer belt **10** occurs, wherein at the moment of adjustment, the sheet-like material **1** is located in its aligned state. After passing the pressure element, the sheet picked up on the surface of the conveyer belt **10** passes a loading unit **14**. In this loading device **14** an electrode **15**, which effects a static loading of the sheet-like material **1** and thereby provides for its adhesion to the surface of the supporting conveyer belt **10**, is contained within a hood-shaped covering. A leading edge sensor **17**, which is only schematically reproduced in the representation according to **FIG. 4**, is placed behind the loading device **14**. This sensor is comprised of a radiation source **18**, which precedes a lens

arrangement **19** and which is arranged underneath the sheet conveyer surface **3**. The radiation field **20** emanating from the lens arrangement **19** penetrates the sheet conveyer surface **9** and encounters an aperture arrangement that is provided above the conveyer surface **9** of the sheet-like material **1**. The aperture arrangement is followed by a receiver **21**, which senses and signals the presence of a leading edge **23** of the sheet-like material **1** in correspondence with the radiation penetrating the aperture arrangement.

[**0026**] From the representation according to **FIG. 5**, the top view shows the alignment unit **8**, the components of which are reproduced here in schematic representation. The alignment unit **8** is reached by a sheet-like material **1** that is transported in the feed direction **22**. The leading edge **23** of the sheet-like material **1** is offset in relation to the feed direction **22** of the sheet-like material **1**, whereby a slanted progression of the lateral edge **24** of the sheet-like material **1** becomes apparent. As soon as the sheet leading edge **23**, which lies in a slanted position in relation to the feed direction **22**, transverses a first light barrier **26**, the drivers **27**, marked with M1 or M2, which drive rotational elements **25** via single axes **32**, are accelerated to the rate of feed. Control of the drives **27** (M1 or M2), which is triggered via the light barrier **26**, ensures that each sample of sheet-like material **1** comes into contact with identical peripheral sections of the rotation elements **25**, which are arranged as segment rollers in the preferred embodiment. Possibly occurring differences of the feed movements, which could be traced back to the dimensional and shape tolerances of the two rotation elements **25**, thereby occur identically in each sample of the sheet-like material **1** and can easily be calibrated out.

[**0027**] After both of the rotation elements **25** are set into rotation motion by passing the first light barrier **26**, the sheet-like material **1** is transported at the rate of feed over one of the additional light barriers **30.1**, which are located behind the first light barrier **26**. This light barrier **30.1** can, for example, be positioned behind a CCD sensor cell, which extends essentially perpendicular to the feed direction of the sheet-like material **1**. By means of the line-shaped formation of the sensor line **30**, the lateral areas of all common printing matter formats can be recorded.

[**0028**] As soon as the first of the two sensors of the light barrier **30.1** has detected the sheet leading edge **23** of the sheet-like material **1**, a counter begins to count in motor steps. The counting process is then ended and the determined difference is stored when the second sensor trips the light barrier **30.1**. The CCD line sensors of the sensor pair **30** are embedded in the feed surface of the sheet in such a way that they do not impede the transport of the sheet-like material **1**. From the counter reading that was ascertained in this manner, a correction value is determined and communicated, as an additional feed, to the segment roller drive that was last activated, i.e., either drive **27**, which is designated by M1, or drive **27**, which is designated by M2. In this way, the rotation bodies **25**, which are appropriately shaped as segment rollers, are accelerated to the rate of feed until the preset path difference is completely equalized and, thereby, the sheet leading edge **23** of the sheet-like material **1** is aligned precisely perpendicular to the feed direction **22** of the sheet-like material **1**. At the end of this corrective process, the sheet leading edge **23** is oriented exactly perpendicular to the feed direction.

[**0029**] After the correction has occurred, the sheet-like material **1** is transported in the feed direction **22** and delivered from the first pair of segment rollers **25** to the subsequently arranged pair of rotation bodies **25**, which can be contained on a common axis **31**. Now, the segment roller pair **25** that is driven by drive **27**, or M1, and drive **27** (M2) is switched off and moves into its resting position, where it does not come into contact with the sheet-like material **1** with its peripheral surfaces.

[**0030**] The sheet-like material **1** that is now correctly aligned in relation to its relative position then ascends onto the sensor field **30**, e.g., onto the CCD line, where the position of the lateral edges **24** of the sheet-like material is determined. A positional change for drive **27**, which is designated by M4, is ascertained from the determined measurement value. The drive shaft of drive M4 extends parallel to the feed direction **22** of the sheet-like material **1**. By means of this drive **27**, which is recorded in a second orientation **29**, a correction of the position of the sheet-like material **1** occurs parallel to its feed direction **22**, (cf. **FIG. 7**) (i.e., a lateral alignment of the sheet-like material).

[**0031**] Following this, such a sheet-like material **1**, which is aligned in its relative position and in its lateral position underneath an adjustment flap or adjustment lip element that is placed in a position **13.1** or **13.2**, ascends onto the conveyer belt **10**, in order to enter the printing unit that follows in the correctly aligned position. The representation according to **FIG. 6** shows a possible embodiment variant of the rotation elements **25** that are contained in the alignment unit **8** located above the conveyer surface **9**. The rotation elements **25** are designed, in the preferred embodiment, as segment rollers, which have a peripheral surface that is characterized by an interruption. The segment rollers **25** rotate in the rotational direction **34** characterized by the depicted arrow and describe an approximate ¾ circle in relation to their respective rotational axis. Under the respective segment rollers **25**, a roller that supports a sheet-like material **1** is depicted. This can be designed in one piece, or it can receive a coating on its periphery. The rotation bodies that serve as segment rollers **25** are depicted in a resting position in the left part of **FIG. 6**, while in the right part of **FIG. 6**, they seize, with the peripheral surface, a sample that is transported in the feed direction **22** of the sheet-like material **1**. This is thereby transported according to the rotational direction **34** in the feed direction **22** of the sheet-like material **1**. **FIG. 7** shows the correction of the relative position of the sheet-like material **1** when it passes the alignment unit **8**. In the position of the sheet-like material **1** shown in **FIG. 7**, the material's leading edge **23** has just reached the last sensor of the light barrier **30.1**, so that, at this point, drive **27** of the segment roller **25**, which is designated by M1, can be activated, in order to equalize the relative position of the sheet-like material **1** in relation to the feed direction **22**. In contrast to drives M3 and M4, which can be linked by means of a continuous drive shaft **31**, the segment rollers **25** that are connected to the drives M1 and M2 are driven respectively by single shafts **32**. After the relative position of the sheet-like material **1** is corrected by diverse feed rates on the respective drives **27** (M1 or M2) of the respective segment rollers **25**, the sheet-like material **1** receives a correction of its lateral position. After the position

of the lateral edges **24** of the sheet-like material **1** is measured by line-shaped CCD sensors **30**, the sheet-like material **1** is now correctly aligned laterally to the feed direction **22** by a displacement of the sheet-like material, via drive **M4**, which occurs on its conveyer surface **9** before reaching the adjustment element **13** and before ascending onto the conveyer belt positioned behind it. With the drive **27** (M3) oriented in the first orientation **28**, the feed of the sheet-like material **1** with a correctly aligned leading edge **23** is guaranteed by means of a common shaft **31**, whereas this material is aligned in lateral position by means of drive **27** (designated by M4) contained in a second orientation **29**.

[**0032**] With the method according to the invention that recommends the use of a CCD line sensor pair **30**, a retention of that lateral edge during the lateral alignment of the sheet-like material **1** can be made possible, which already served to align the sheet-like material **1** during the first printing. If the sheet-like material **1** that was already printed in the first printing is reprinted in the same printers, then its lateral edge **24** comes to lie above the other respective sensor of the line sensor pair **30** after being rotated around the middle axis of the sheet-like material **1**, so that the alignment occurs on the same lateral edge **24**. If the same measuring point in the area of the leading edge of the lateral edges **24** is used for this in both adjustment operations, then the registration stability for the positioning of the top side to the printing of the bottom side is directionally independent of the paper tolerances.

[**0033**] During a re-printing of the sheet-like material **1**, which has already been printed on one side, alignment impairments from paper tolerances can be avoided during alignment, if it is guaranteed that the alignment of the sheet-like material **1**, during its second run-through, through identical printing mechanisms, occurs on the same position of the lateral edge **24**, i.e., in the front area of the lateral edge **24**, which extends from the leading edge **23** of the sheet-like material **1**. If CCD line sensors are used as sensor pair **30** on the conveyer surface **9** for the sheet-like material **1**, then these can extend perpendicular to the feed direction **22** of the sheet-like material **1** to such an extent that all common printed material formats can be accommodated, regardless of whether they are for paper, for cardboard, or also for foils. This enables an increase in the flexibility of a printing press used for diverse printed materials, regardless of whether it is an electrographical, an electro-photographic, or another digital printing machine. The proposed method for aligning the sheet-like material **1** before the ascension onto a conveyer belt **10** can naturally also be used on conventionally operating rotary printing presses, which process sheet-like material **1**. For this purpose, the line sensor pair **30** should be arranged at the end of the feeder table directly in the area of the side and pull guides, which precede a pre-gripping device with which the aligned sheet-like material **1** is accelerated to machine speed and delivered to paper-guiding cylinders.

[**0034**] List of Reference Numbers

[**0035**] **1** sheet-like material

[**0036**] **2** printing image or format

[**0037**] **3** frame

[**0038**] **4** positional error in y direction

[**0039**] **5** positional error in x direction

[**0040**] **6** rotational error

[**0041**] **7** offset printing ground (or base), front and back sides (**1**)

[**0042**] **8** alignment unit

[**0043**] **9** conveyor surface

[**0044**] **10** conveyor belt

[**0045**] **11** run-up roller

[**0046**] **12** control roller

[**0047**] **13** adjustment direction

[**0048**] **13.1** first position

[**0049**] **13.2** second position

[**0050**] **14** loading unit

[**0051**] **15** electrode

[**0052**] **16** support

[**0053**] **17** leading edge sensor

[**0054**] **18** radiation source

[**0055**] **19** lens

[**0056**] **20** radiation field

[**0057**] **21** radiation receiver

[**0058**] **22** conveyor direction of sheet-like material

[**0059**] **23** leading edge

[**0060**] **24** lateral edge

[**0061**] **25** segment rollers

[**0062**] **26** light barriers (Ernst)

[**0063**] **27** drivers of segment roller

[**0064**] **28** first orientation drive

[**0065**] **29** second orientation drive

[**0066**] **30** line sensor pair

[**0067**] **30.1** light barrier

[**0068**] **31** continuous shaft

[**0069**] **32** single shaft

[**0070**] **33** segment roller periphery

[**0071**] **34** rotational direction

[**0072**] **35** segment roller, active position

[**0073**] **36** segment roller, inactive position

1. Method for aligning sheet-like materials (**1**), wherein the alignment is performed by means of rotation elements (**25**) and the sheet-like material (**1**) is rotated around its middle axis, in order to print the front and back sides, wherein the leading edge (**23**) of the sheet-like material (**1**) remains in its aligned position, characterized in that a conveyer surface (**9**) contains a sensor pair (**30**), with which the sheet-like material (**1**) is aligned on the same lateral edge after it has been rotated around its middle axis, just as during the alignment process of the sheet-like material (**1**) prior to its rotation around its middle axis.

2. Method according to claim 1, characterized in that the sensor pair (30) is provided in the conveyer surface (9) within the areas of the lateral edges (24) of the sheet-like material (1).

3. Method according to claim 1, characterized in that the same measuring point is always used for aligning the sheet-like material (1) on the lateral edge (24).

4. Method according to claim 1, characterized in that the determination of the position of the lateral edge (24) of the sheet-like material (1) occurs by means of a sensor array of the sensor pair (30) that is oriented perpendicularly to the feed direction (22) of the sheet-like material (1).

5. Method according to claim 1, characterized in that two CCD line sensors (30) are included in the determination of the lateral alignment of the sheet-like material (1).

6. Method according to claim 1, characterized in that the alignment of the sheet-like material (1) occurs in the area of the lateral edges (24) that borders on its leading edge.

7. Method according to claim 5, characterized in that during the rotation of the sheet-like material (1) around its middle axis, an exchange of position of the lateral edges (24) occurs, while the position of the leading edge (23) of the sheet-like material is retained.

8. Arrangement for the alignment of sheet-like material (1), wherein the alignment of the sheet-like material (1) is undertaken by means of rotation elements (25), and the sheet-like material (1) is rotated around its center axis in order to print on the front and back sides, wherein the leading edge (23) of the sheet-like material (1) remains in its aligned position, characterized in that a sensor pair (30) in the form of lines, which enables the alignment of the sheet-like material (1) on the same lateral edge (24) of the sheet-like material following its rotation around its central axis, is incorporated into the upper conveyor surface (9).

9. Printing press with a feeding arrangement for sheet-like material (1), wherein the alignment of the sheet-like material (1) occurs by means of rotation elements (25) and the sheet-like material (1) is rotated around its central axis in order to print on the front and back sides, wherein the leading edge (23) of the sheet-like material (1) remains in its aligned position, characterized in that a sensor pair (30), with which the sheet-like material (1) is aligned on the same lateral edge (24) following the rotation around its central axis, as is the case during the alignment procedure of the sheet-like material before it is rotated around its central axis, is incorporated into a conveyor surface (9).

10. Digital printing press with a feeding arrangement for sheet-like material (1), wherein the alignment of the sheet-like material (1) occurs by means of rotation elements (25), and the sheet-like material (1) is rotated around its central axis in order to print on the front and back sides, wherein the leading edge (23) of the sheet-like material (1) remains in its aligned position, characterized in that a sensor pair (30), with which the sheet-like material (1) is aligned on the same lateral edge (24) following the rotation around its central axis, as is the case during the alignment procedure of the sheet-like material (1) before it is rotated around its center axis, is incorporated into a conveyor surface (9).

11. Electro-(photo)graphic printer with a feeding arrangement for sheet-like material (1), wherein the alignment of the sheet-like material (1) occurs by means of rotation elements (25), and the sheet-like material (1) is rotated around its central axis in order to print on the front and back sides, wherein the leading edge (23) of the sheet-like material (1) remains in its aligned position, characterized in that a sensor pair (30), with which the sheet-like material (1) is aligned on the same lateral edge (24) following the rotation around its central axis, as is the case during the alignment procedure of the sheet-like material (1) before it is rotated around its center axis, is incorporated into a conveyor surface (9).

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