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W. KOCH

2,730,362

DEVICE FOR SIDE REGISTERING SHEETS
IN PRINTING OR SIMILAR MACHINES

Filed Jan. 4, 1951

2 Sheets-Sheet 1

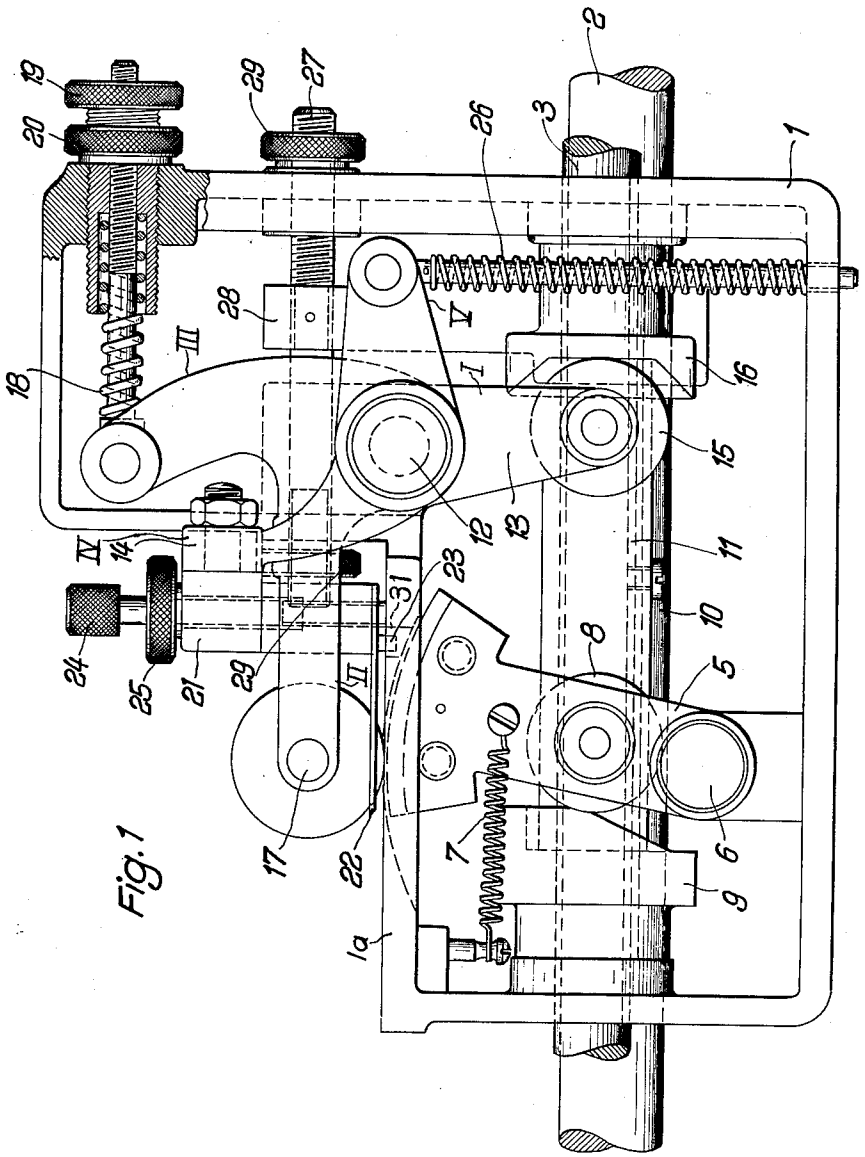


Fig. 1

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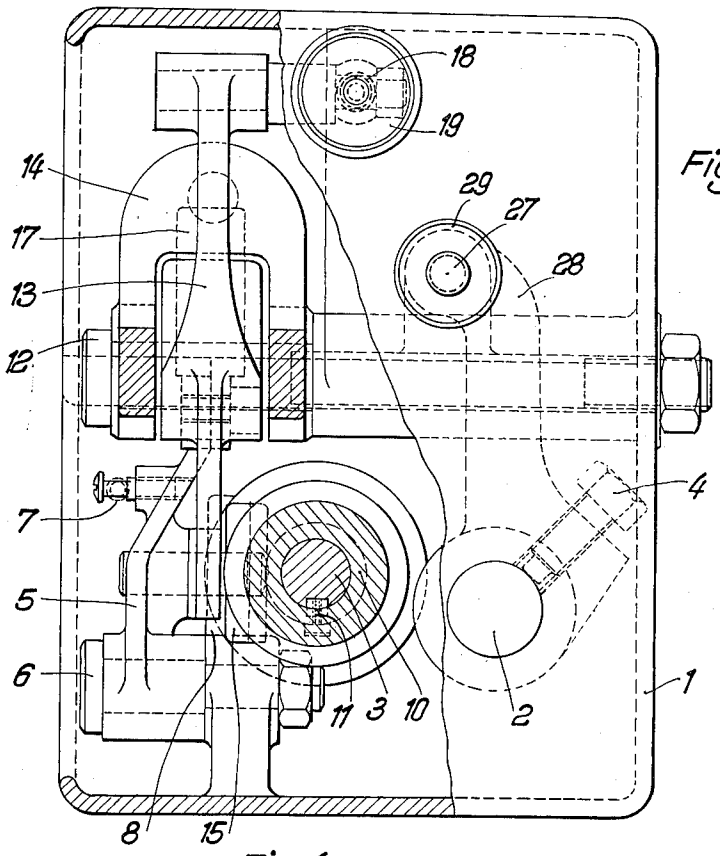


Fig. 2

Fig. 4

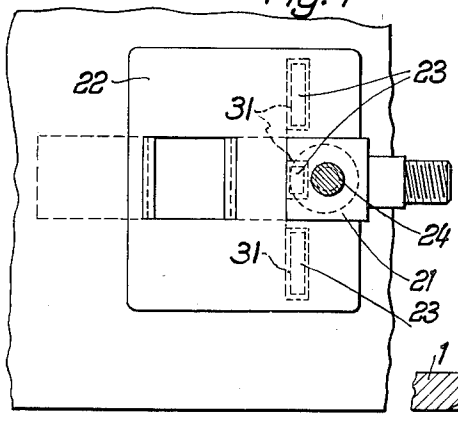
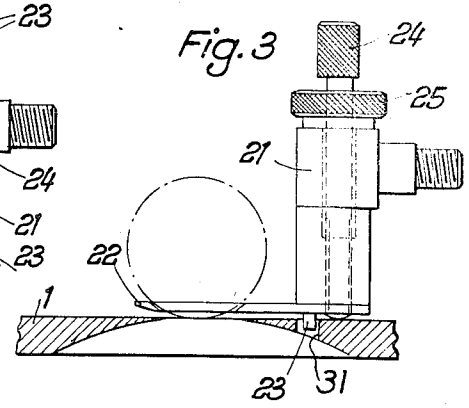


Fig. 3



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DEVICE FOR SIDE REGISTERING SHEETS IN PRINTING OR SIMILAR MACHINES

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Claims priority, application Germany January 10, 1950

4 Claims. (Cl. 271—59)

My invention relates to devices for the side registering of sheets in printing or similar machines.

In printing machines the side registering of the sheets is operated by means of a so-called lateral stops or side gauges. A sufficient alinement or positioning will only be possible if the lateral mark will be duly adjusted. This adjustment of the lateral mark essentially depends on the correct adjustment of the so-called guide plate. On the one hand, the sheet of paper must not jam below said guide plate and on the other hand, it has to be so guided during the feeding operation that even if consisting of thin paper any jamming between guide plate and stop or between stop and feed plate will be avoided.

Prior art devices of the said type are preferably provided with a guide plate screwed to the lateral stop in a position corresponding to the thickness of the paper, as the case may be. This operation, however, is inconvenient and troublesome in practice.

It is, therefore, an object of my invention to provide an improved device for sideways positioning of the sheets of paper which essentially facilitates the adjusting operation by swivably mounting the guide plate about an axis of rotation parallel with the feeding sense of the sheet path.

With this and other objects in view which will become apparent as the specification proceeds, my invention will be best understood by reference to the following specification and claims and the diagrammatic illustrations in the accompanying drawings, in which:

Figure 1 is a front view of the lateral mark or sideways positioning device;

Figure 2 is a side view of the same;

Figure 3 is an elevation of the guide plate and lateral stop; and

Figure 4 is a plan view of the same.

Similar letters refer to similar parts throughout the several views.

Referring now more specifically to the drawings, there is shown a housing **1** having a sheet feeding surface **1***a* displaceably mounted upon both a traverse or cross bar **2** and a shaft **3**. The lateral mark or sideways positioning device is adapted to be secured in any desired position by means of a set screw **4**. A segment lever **5** is pivoted on a bolt **6**. A spring **7** is adapted to advance a roller **8** to a drum cam **9** milled in a sleeve **10** which is driven by the shaft **3** by means of a sliding key **11**. The sleeve **10** is at its sides fitted into the housing **1** so as to be driven by any lateral displacement of the mark. Moreover, there is fastened to the housing **1** a bolt **12** on which levers **13**, **14** are pivoted. The lever **13** is a triple-cranked lever the lower arm I of which carries a roll **15** advancing to a drum cam **16** which is also milled into the sleeve **10**. The lever arm II extending to the left according to Figure 1 carries a drop roller **17**. The lever arm III extending to the upper side is connected to a spring **18** which can be put in tension by means of a threaded bushing **19** secured by a nut **20**. After screwing out the bushing **19** the spring

18 is interchangeable. The lever **14** is a double lever to the main part IV of which is fastened a block **21** being provided at its lower side with a guide plate **22** and a lateral stop or side gauge **23**, adapted to penetrate into a slot **31** in the sheet feeding surface **1***a* of the machine housing, so that adjustments of the guide plate **22** in accordance with the thickness of the sheets will automatically also adjust the side gauge **23**. A stop screw **24** located in the block **21** is adjustable with respect to the feed plate of the housing **1** and secured by a lock nut **25**. A spring **26** engaging the right arm V of the lever **14** urges the set screw **24** against said feed plate. The lateral fine adjusting is effected by means of adjusting nuts **29** which are screwed on a screw **27**. The traverse or screw **2** is secured in a holder **28** which is provided with the set screw **4**. In Figures 3 and 4 the block **21** is illustrated once more, especially the arrangement of the stops **23** (Fig. 4).

The operation of the device for side registering sheets, described with reference to Figures 1 to 4, is as follows:

Under the action of the cam **16** the lever **13** is swivelled whilst the roll **17** is lifted. When the roll **17** has been disengaged from the segment lever **5** the arm II of lever **13** strikes against arm IV of the lever **14** and drives it upwardly against the tension of the spring **26** thereby causing the guide plate as well as the lateral stop to occupy the lifted position so that the sheet of paper can be led into the lateral mark or sideways positioning device. While the two levers **13** and **14** are thus rocked about their common shaft **12** the segment lever **5** moves to the left under the action of the cam **9**. As soon as the sheet is duly positioned with respect to the front mark the roll **17**, the guide plate **22**, and the lateral stop **23** move downwardly to their working positions. Under the action of the spring **26** the lever **14** follows the lever **13** until the screw **24** strikes upon the feed plate of the housing **1**. In this position the lever **14** and thence the guide plate and lateral stop are maintained by the tension of the spring **26**. The lever **13** then continues to move under the action of the spring **18** until the roll will come into contact with the fed sheet. At this moment, the segment lever **5** begins to move to the right under the action of the cam **9**, thus causing the sheet clamped intermediate roll and segment lever to be moved to the right until its edge is stopped by the lateral stop **23**. Then the segment slides away under the sheet until its motion ends. The pressing force of the roll **17** is conveniently controllable by adjusting the threaded bushing **19**. As soon as sheets of another thickness are to be used the guide plate **22** is adjusted into its predetermined position by turning the stop screw **24**. It is of no importance that in case of thicker sheets the front part of the guide plate will occupy a higher position than the part adjacent the lateral stop since thicker papers exert a sufficient resistance against jumping up. With thinner sheets of paper the guide plate extends in parallel to the feed plate.

The manner of using and applying the illustrative embodiment of my invention set forth above will be clear from the foregoing description. It is, of course, to be understood that my invention is not limited to the specific embodiment thereof here shown and described for purposes of illustration only.

What I claim is:

1. In a printing machine through which sheets move to be printed, a device for the side registering of the sheets to be printed, comprising a housing, a sheet feeding surface on said housing, a one-piece side gauge and a guide plate and means for swinging said one-piece side gauge and guide plate about an axis which is parallel to the moving direction of the sheets, a cam-controlled lever, a shaft for pivotally supporting said

lever having its axis substantially in the plane of movement of the sheets, another lever on said shaft straddling said first-named lever and adapted to be rocked by the said first-named lever, a block rigidly secured to the free end of the second named lever, said one-piece side gauge and guide plate being rigidly connected to said block, and a hand-operable set screw extending vertically through said block and bearing with its lower end upon a part of the housing for adjusting the said side gauge and guide plate simultaneously in substantially vertical direction when the said levers are at rest in their operative position.

2. In a printing machine having guide plates and side gauges for the side registering of the sheets to be printed, a housing and a sheet-feeding surface on said housing across which sheets move to be printed, a shaft extending through said housing transverse to direction of movement of the sheets, a cam integrally connected to said shaft for controlling said side registering means, another cam also integrally connected to said shaft for controlling the sheet-feeding means from below the said sheet-feeding surface, a second shaft also extending through said housing at right angles to said first-named shaft, a three-arm lever on said second shaft having one arm controlled by said side registering control cam to move said three-arm lever swinging said one arm about said second shaft, a second arm actuated upon by a pressure regulating spring and a third arm carrying a drop roller at its extremity, a two-arm lever also on said second shaft having one arm acted upon by a spring and its other arm having a carrying block connected to its free

end, a combined one-piece guide plate and side gauge firmly connected to said carrying block, and a set screw passing substantially vertical through said block so as to rest with its other end upon a fixed part of the housing for simultaneously adjusting said block together with its guide plate and side gauge in their operative positions in relation to said sheet-feeding surface when the said levers are at rest in their operative position.

3. In a sheet printing machine a device for side registering the sheets as set forth in claim 2, in which the drop roller carrying arm of the three-arm lever is shaped so as to rock the said two-arm lever and side registering means when the said drop roller carrying arm is swung about said second shaft under the influence of the side registering control cam.

4. In a sheet printing machine a device for side registering the sheets as set forth in claim 2, in which the sheet feeding surface of the housing is provided with a slot and the side gauge is of such height as to penetrate into said slot in all working positions of the said side gauge.

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