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(54) Device for adjusting the position of a cylinder in printing machines, particularly for scoring units

(57) A device for adjusting the position of a cylinder in printing machines, particularly for scoring units, comprising a presser element (1) which is meant to apply pressure to a cylinder (3) of the printing machine; the particularity of the device is the fact that the presser element (1) comprises a box-like body (6) which is provided with engagement means (10, 11, 12) for arranging it in seats (20, 21) formed in two shoulders (2) which are suitable to support said cylinder (3), the box-like body (6) being provided with fine adjustment means (7, 9, 24) in order to precisely adjust its position with respect to the cylinder (3) on which the box-like body (6) is meant to apply pressure.

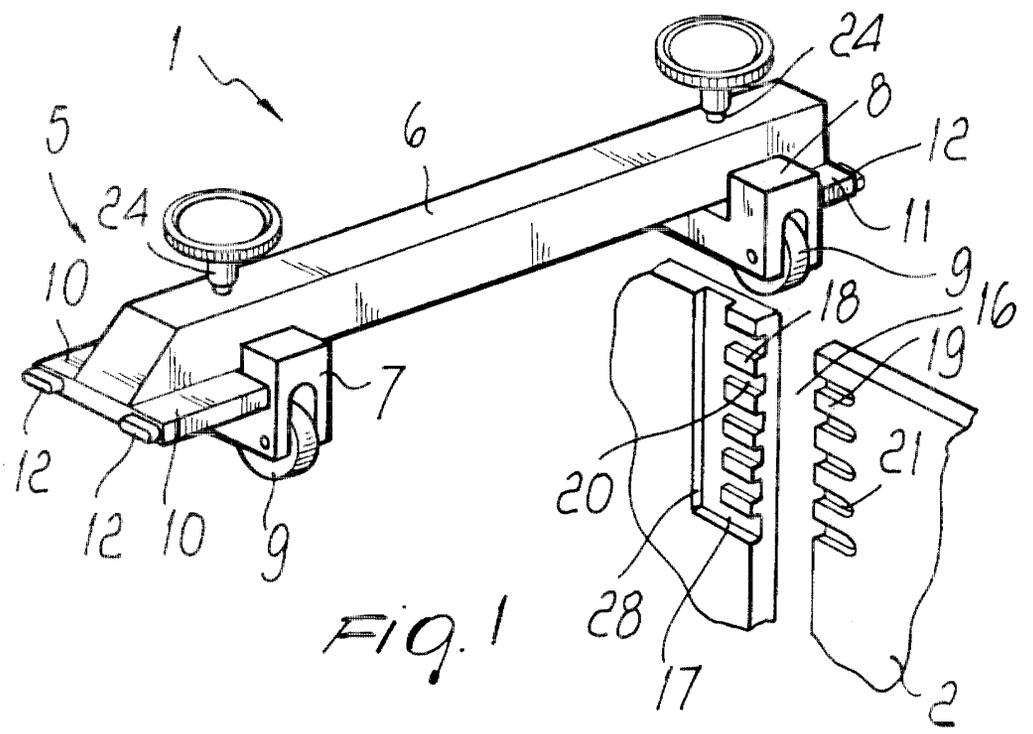

Fig. 1

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Description

[0001] The present invention relates to a device for adjusting the position of a cylinder in printing machines, particularly for scoring units.

[0002] It is known that the position of a cylinder, particularly a scoring cylinder in printing machines, is adjusted so as to place the scoring cylinder in contact with a cylinder located below it, so that the scoring cylinder applies pressure to the underlying cylinder, with paper or another medium to be scored passing between the two cylinders.

[0003] Conventional scoring units in printing machines are generally provided with a system for adjusting the position of the scoring cylinder with respect to the underlying cylinder. Said adjustment device is provided with presser elements which are moved so as to apply pressure to the upper surface of the scoring cylinder, so as to keep it in a stable position with respect to the cylinder located below it.

[0004] These presser elements are generally constituted by a frame which is arranged above the scoring cylinder and is moved so as to make contact with the scoring cylinder.

[0005] However, moving the frame that constitutes the presser element meant to apply pressure to the scoring cylinder requires time for the pressing action to occur.

[0006] It is in fact necessary to lower, for example by means of a screwing action, the presser elements into contact with the scoring cylinder, with a considerable useful stroke in order to make the presser elements finally contact the scoring cylinder.

[0007] This operation accordingly entails a machine downtime which is ultimately economically wasteful.

[0008] Finally, conventional presser elements have a considerable bulk, occupying considerable space above the cylinders of the scoring unit.

[0009] The aim of the present invention is to provide a device for adjusting the position of the cylinder in printing machines, particularly for scoring units, in which the stroke for the adjustment of the adjustment device is considerably shorter than currently provided in conventional devices.

[0010] Within the scope of this aim, an object of the present invention is to provide a device for adjusting the position of a cylinder in printing machines, particularly for scoring units, in which the time required for adjustment is considerably shorter than in conventional adjustment devices.

[0011] Another object of the present invention is to provide a device for adjusting the position of a cylinder in printing machines, particularly for scoring units, in which the presence of the presser elements arranged above the scoring cylinder is substantially eliminated, improving the overall dimensions of the scoring unit.

[0012] Another object of the present invention is to provide a device for adjusting the position of a cylinder in printing machines, particularly for scoring units, which is highly reliable, relatively easy to manufacture and at competitive costs.

[0013] This aim, these objects and others which will become apparent hereinafter are achieved by a device for adjusting the position of a cylinder in printing machines, particularly for scoring units, which comprises a presser element which is meant to apply pressure to a cylinder of said printing machine, characterized in that said presser element comprises a box-like body which is provided with engagement means for arranging it in seats formed in two shoulders which are suitable to support said cylinder, said box-like body being provided with fine adjustment means in order to precisely adjust its position with respect to said cylinder on which said box-like body is meant to apply pressure.

[0014] Further characteristics and advantages of the invention will become apparent from the description of a preferred but not exclusive embodiment of the device according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the adjustment device according to the invention, shown removed from its operating seat;

Figure 2 is a view, taken in the direction in which the medium to be punched is transported, of the adjustment device in the operating position;

Figure 3 is a view, taken transversely to the advancement direction of the medium to be punched, of the adjustment device in a preliminary operating step; and

Figure 4 is a view, taken transversely to the advancement direction of the medium to be punched, with the adjustment device in the final operating position.

[0015] With reference to the above figures, the device for adjusting a cylinder in a printing machine, generally designated by the reference numeral 1, comprises, for example in the case of a scoring unit, in which the reference numeral 2 designates a shoulder for supporting a first scoring cylinder 3 and a second contact cylinder 4, a presser element 5 which is meant to apply pressure to the upper surface of the scoring cylinder 3.

[0016] Advantageously, the presser element comprises a box-like body 6 which is shaped substantially like a parallelepiped and with whose ends two conveniently L-shaped brackets 7 and 8 are associable; each one of said brackets is provided with at least one contact wheel 9. Conveniently, at least one of the ends of the box-like body is beveled.

[0017] Advantageously, the box-like body 6 has at its ends, in a position which is adjacent to the connecting point of the brackets 7 and 8, two respective pairs of wings 10 and 11 which protrude laterally with respect to the longitudinal extension of the box-like body 6. Each

one of the wings 10 and 11 is provided with a protruding tooth 12 which is suitable to engage the shoulder 2 and the opposite shoulder, designated by the reference numeral 15, which form the supports for the scoring cylinder 3 and for the contact cylinder 4.

[0018] Conveniently, as shown in the figures, each one of the shoulders 2 and 15 is provided with a guiding seat for positioning the presser element 5.

[0019] In particular, as shown in detail in Figure 1, each shoulder 2 and 15 is provided with a slot 16 arranged vertically with respect to the longitudinal axis of the cylinders 3 and 4.

[0020] The sides of the slot 16 are shaped so as to accommodate the presser element 5. In detail, at least one side of the slot 16 is shaped so as to have a recess 17 with teeth 18 formed therein which are arranged mutually opposite to teeth 19 formed at the opposite edge of the slot 16.

[0021] Figure 2 illustrates the engagement of the teeth 12 of the pairs of wings 10 and 11 at slots 20 and 21 formed respectively between the teeth 18 and 19 arranged laterally to the slot 16.

[0022] The engagement of the presser element 5 therefore occurs at both shoulders 2 and 15.

[0023] The coupling of the brackets 7 and 8 to the lower surface of the box-like body 6 occurs by means of a threaded pin 24 which engages a female thread accommodated in the body of the bracket 7, and the screwing or unscrewing of the pivots 24 allows to vary the position of the brackets 7 and 8 with respect to the box-like body 6.

[0024] With reference to the above-cited figures, operation of the device according to the present invention is as follows.

[0025] The user first of all inserts the box-like body 6, with its pairs of wings 10 and 11 and the teeth 12, in the mutually opposite slots 16 formed in each one of the shoulders 2 and 15 and places the box-like body 6 as close as possible to the scoring cylinder 3, accordingly engaging the teeth 12 in the slots 20 and 21 formed between the teeth 18 and 19 of the sides of the slots 16 and 17.

[0026] In this position, the user then performs fine adjustment by acting on the threaded pins 24 so as to move the brackets 7 and 8, so that they make abutment contact against the upper surface of the scoring cylinder 3, at its central region, so that the wheels 9 rest at a lateral region of the scoring cylinder 3, so as to keep the cylinder locked in position.

[0027] In this manner it is possible to perform a fine adjustment of the position of the scoring cylinder 3 with respect to the contact cylinder 4.

[0028] The insertion of the box-like body 6 in the slot 16 occurs by placing the box-like body so that the wings 10 and 11 are in contact with the side 28 of the cavity 17, and once the suitable position of the box-like body 6 with respect to the scoring cylinder 3 has been found, the teeth 12 are engaged in the corresponding cavities 20 and 21 of the sides of the slot 16 by way of a translatory motion, i.e., a motion toward the opposite side of the slot 16, thus locking the box-like body 6 in position.

[0029] The above-described operations are shown in detail in Figures 3 and 4, in which particularly with reference to Figure 3 the vertical arrow indicates the maneuver for positioning the box-like body 6 in the slot 16, adjacent to the side 28 of the cavity 17, and the arrow to the right indicates the translatory motion for locking in its seat the box-like body 6 with its teeth 12.

[0030] In practice it has been observed that the adjustment device according to the invention allows to fully achieve the intended aim and objects, since the adjustment stroke to which the presser element must be subjected is reduced to a fine adjustment performed by means of the adjustment screws that move the brackets, since coarse adjustment of the position of the presser element is performed manually by directly placing the presser element at the chosen height.

[0031] Moreover, the adjustment device according to the invention allows to reduce the dimensions of the presser element to those of the box-like body, accordingly reducing the dimensions of the scoring unit and facilitating access to the corresponding cylinders.

[0032] The adjustment device thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept; all the details may also be replaced with other technically equivalent elements.

[0033] In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

[0034] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A device for adjusting the position of a cylinder in printing machines, particularly for scoring units, comprising a presser element which is meant to apply pressure to a cylinder of said printing machine, characterized in that said presser element comprises a box-like body which is provided with engagement means for arranging it in seats formed in two shoulders which are suitable to support said cylinder, said box-like body being provided with fine adjustment means in order to precisely adjust its position with respect to said cylinder on which said box-like body is meant to apply pressure.

2. The device according to claim 1, characterized in

that said box-like body is substantially shaped like a parallelepiped and is provided, at each one of its ends, with two wings which protrude laterally, each one of said wings being provided with a tooth which protrudes in the direction of the longitudinal extension of said box-like body.

3. The device according to claim 2, characterized in that said fine adjustment means comprise two L-shaped brackets, each of which has at least one wheel, each one of said brackets being adjustably connected to the lower surface of said box-like body.

4. The device according to one or more of the preceding claims, characterized in that each one of said two shoulders has a slot which allows the passage of said box-like body, the sides of said slot being shaped with teeth which are suitable to form engagement cavities for said teeth that protrude from said pairs of wings of the box-like body.

5. The device according to one or more of the preceding claims, characterized in that at least one of the sides of said slot formed in each one of said shoulders has a cavity in which said teeth are formed, said cavity being suitable to be engaged by said box-like body.

6. The device according to one or more of the preceding claims, characterized in that said box-like body has a beveled end in order to facilitate the insertion of said box-like body between said two shoulders.

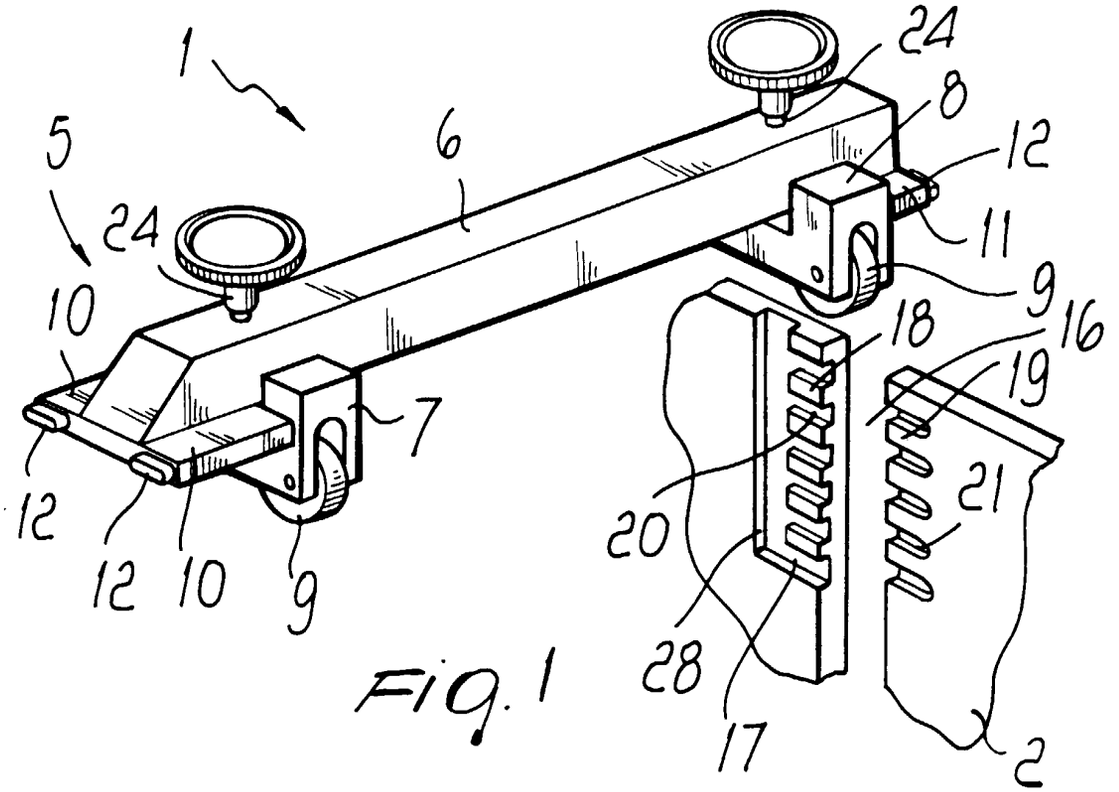
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FIG. 1

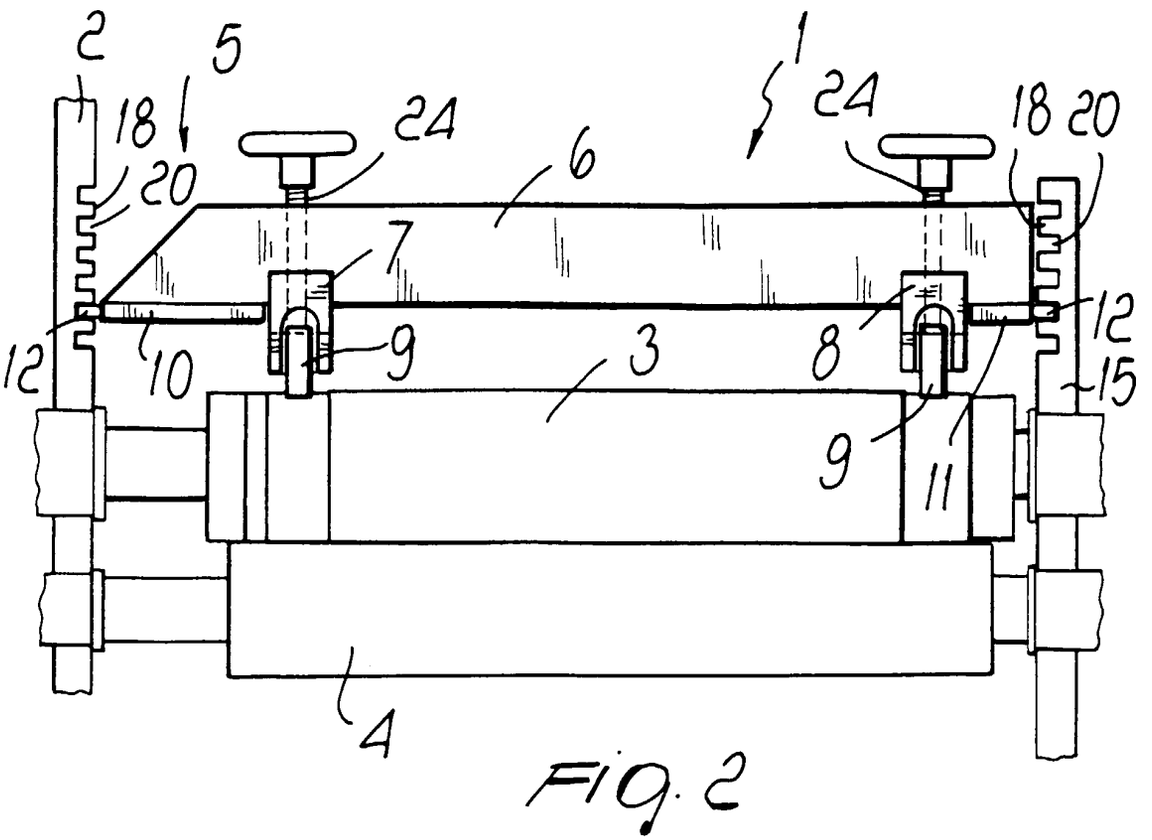
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FIG. 2

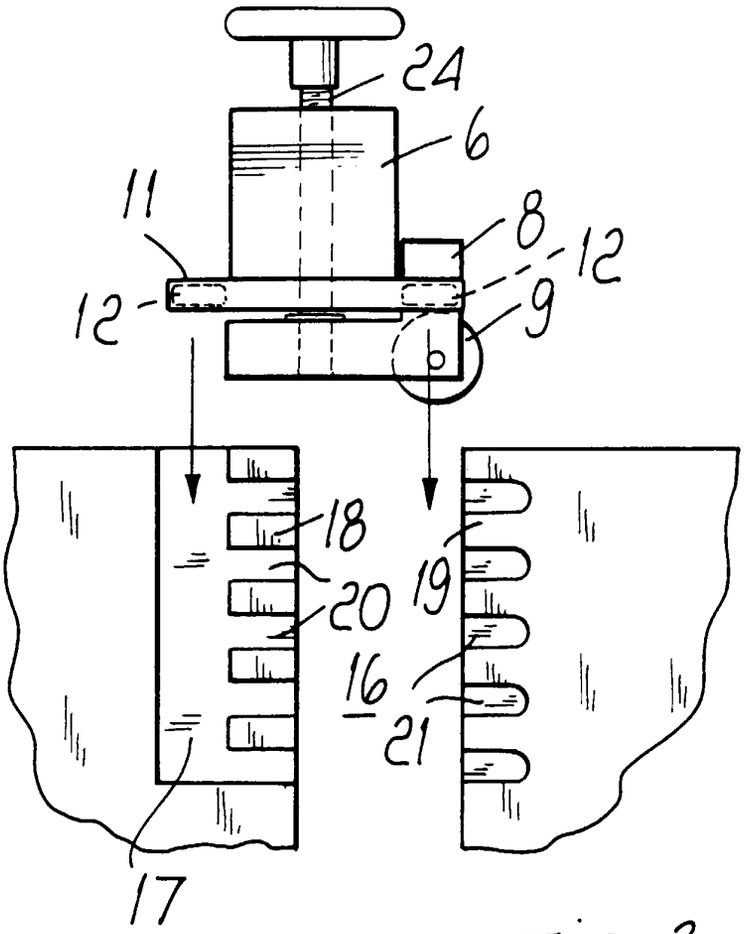

FIG. 3

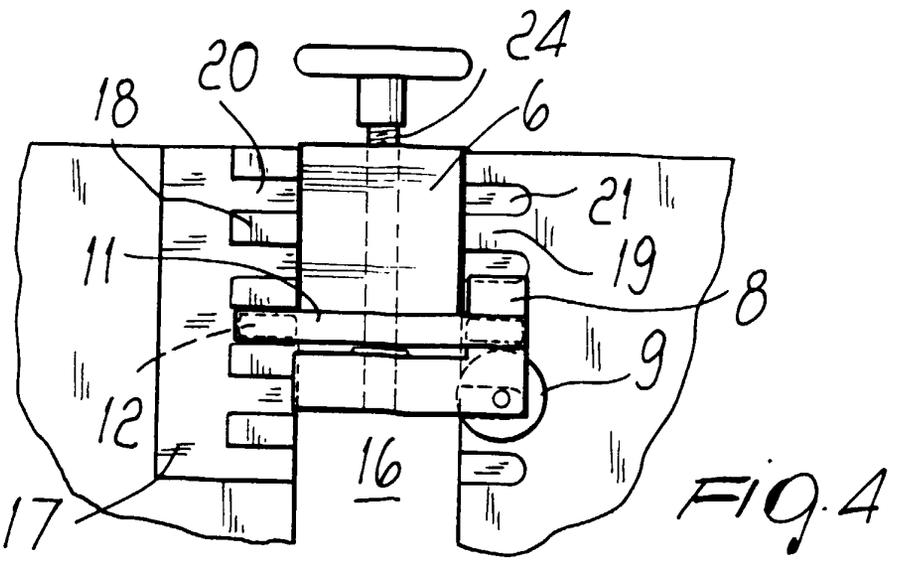

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0638

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B26D
B23D
B31F
B26F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10 March 2000	Vaglienti, G

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