

UNITED STATES PATENT OFFICE.

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DEVICE FOR PREVENTING SMEARING.

SPECIFICATION forming part of Letters Patent No. 697,174, dated April 8, 1902.

Application filed June 1, 1901. Serial No. 62,731. (No model.)

To all whom it may concern:

Be it known that I, OSCAR ROESEN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Devices for Preventing Smearing, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to certain improvements in devices for preventing offset and smearing in printing-machines.

In printing-machines, and more especially in machines which print upon webs, stationary guides are employed for the purpose of supporting the traveling web and for giving it direction. When a traveling web which has been freshly printed passes over such a stationary guide, it is liable to become smeared, especially where, as in many instances, the web carries heavily-printed cuts. This difficulty referred to frequently occurs in forwarding webs where the webs are caused to pass around angle or turner bars for the purpose of changing the direction of movement. In such cases the web is strained around the bar and its freshly-printed surface, especially where this surface, as has been before stated, is composed in whole or in part of heavily-inked cuts, is apt to become rubbed or smeared, and, furthermore, any ink which is rubbed off onto the bar will set off onto the succeeding portions of the web.

15 In an application, Serial No. 62,729, filed at even date herewith, I have described a means for preventing smearing and offset which consists, primarily, in interposing a moving shield between the stationary guide and the printed web, and in the specific form of construction shown in said application this moving shield comprises an endless band or belt which coöperates with all the guides. Furthermore, in a patent granted to me, No. 660,970, dated October 30, 1900, there is shown a stationary guide which is provided with ribs or raised portions which operate to hold the printed parts of the web or sheet away from the guiding-surface as the web or sheet passes over it. While this construction is efficient when the web has parallel printed portions with an intervening space between them, as is the case

where the columns are parallel to the general direction of movement of the web and the web is to be slit to form two separate webs, so that three guiding ribs can be used, one for each edge of the web and one for the central portion, it is not as readily available for use with webs where the columns are at right angles to the direction of movement of the web and the web is single wide, so that no intermediate rib can be used.

The present invention has for one of its objects to produce an offset device of the character set forth in the application referred to, but in which the moving shield consists of a plurality of tapes or belts, one for each stationary guide.

A further object of the invention is to produce an improved device for preventing offset in which a moving shield of the character heretofore referred to shall be employed in connection with a stationary guide having ribs, the two operating to prevent a web or sheet from being smeared as it passes over the guide.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts, Figure 1 illustrates a plan view of so much of a printing-machine as is necessary to an understanding of the invention. Fig. 2 is a side view of the construction shown in Fig. 1, the view being taken in the direction of the arrow 2 in said figure. Fig. 3 is a side view of the construction shown in Fig. 1, the view being taken in the direction indicated by the arrow 3 in said figure.

Referring to the drawings, I indicate portions of the side frame of a printing-machine, which frame may be of any approved construction. In the present machine the printed product consists of a perfected double-wide web the columns of which are at right angles to the general direction of movement of the web. This web may be printed upon by printing-couples of any approved type; but since the construction of these couples has no relation to the present invention they are not shown. The web after leaving the printing-couples is led over a guide 4, which is or may be a compensating roll of the usual type. After leaving the compensating roll

the web passes over a slitting-roll 5, where it is divided into two sections, A and B, by means of a slitter 6 of any ordinary construction. After leaving the slitting-roll the portion A of the web is led forward and over a stationary guide 7, which in the present instance is a turner-bar, by which the web is given a direction of movement at right angles to the line of movement it had when it left the slitter. The portion B of the web after leaving the slitter is led forward to a stationary guide 9, which in the present instance is a turner-bar, by which the direction of the web is changed so that it runs beneath the portion A, in order that it may be associated therewith. The two webs are led together over a guide 10, after which they pass to any suitable form of delivery mechanism, such as a cutting and folding mechanism. (Not shown.)

The guides 7 and 9 in the preferred form of the construction will be provided with ribs or raised portions 40, similar to those described in Patent No. 660,970 before referred to, said ribs or raised portions being when used so located on the guides that the unprinted marginal portions of the slit web are brought against it. These ribs will operate to hold the printed portions of the webs, near their edges, from contact with the guides; but there is a liability that the central portions of the webs will sag, so that they will come in contact with the stationary guides, and thus be smeared. In order to prevent this smearing action, a suitable moving shield is employed, by which the central portions of the webs are held away from the guides. This shield may vary in construction, but preferably consists, as shown, of narrow traveling belts or tapes. While the shield might be composed of a single belt or tape, said belt or tape passing over both guides, in the present construction two such tapes are employed, one of the tapes 41 being used in connection with the bar 9 and the other tape 42 being used in connection with the bar 7. These traveling belts or tapes may be mounted and operated in any desired manner. As shown, a shaft 43 is provided, said shaft being journaled in suitable bearings in the side frames and being driven, by means of a bevel-gear 44, through mechanisms which will be hereinafter described. This shaft 43 is provided with pulleys 45 and 46. (See dotted lines in Fig. 1.) A stationary bar 47 also extends across the machine between the side frames, said bar carrying pulleys 48 and 49. From the bar 47 rise brackets 50 and 51, the bracket 50 carrying pulleys 52 and 53 and the bracket 51 carrying pulleys 54 and 55. From the bracket 50 extends an arm 56, carrying a pulley 57, and from the bracket 51 extends an arm 58, carrying a pulley 59. The pulley 52 is arranged over the pulley 48 and stands at an angle thereto, and the pulley 53 is arranged over the pulley 57 and stands at an angle thereto. Similarly the pulley 54 is arranged over the pulley 49 and stands at an angle there-

to, and the pulley 55 is arranged over the pulley 59 and stands at an angle thereto. The tape or belt 41 is led from the pulley 45 over and around the bar 9, being interposed between the bar and the traveling web. After leaving the bar it passes around the pulley 57 and then over the pulleys 53 and 52, the angular arrangement of which changes the direction of movement of the belt, as is clearly shown in Fig. 1. After leaving the pulley 52 the tape or belt 41 passes downward around the pulley 48 and then back to the pulley 45. The tape or belt 42 passes around the pulley 46, then over the bar 7, passing between the bar and the web. After leaving the bar the tape 42 passes over the pulleys 59, 55, 54, and 49 and then back to the pulley 46. As the shaft 43 carries the pulleys 45 and 46 and is a driven shaft, it is obvious that the tapes will also be driven, and as the speed of the shaft is so regulated as to give the tapes a movement which is substantially the same as the movement of the traveling webs these tapes will prevent the centers of the webs from coming in contact with the guides 7 and 9. Inasmuch as the edges of the webs will be held away from the guides by ribs 40, it will be seen that the webs will pass over the bars without any danger of smearing.

The shaft 43 may be driven in any suitable manner. As shown, the bevel-gear 44 engages with a bevel-gear 60, mounted on a shaft 61, carried in bearings located inside one of the frame-pieces. The other end of the shaft 61 carries a bevel-gear 62, which engages with a similar bevel-gear 63, mounted on the shaft 5' of the slitter-roll 5.

The slitter-roll may be driven in any suitable manner. As shown, it is driven by a train of gears, (indicated by dotted lines in Fig. 3,) said gears being driven from any suitable moving part of the machine.

While the preferred construction will be that which has been described, in which a traveling belt is employed for each guide-bar, in connection with ribs on the bar, it will be understood that a single tape or belt might be employed for all the bars, said belt or tape being used in connection with ribs on each bar, or a plurality of wide traveling belts, one for each bar, might be used without employing the ribs. Other changes and variations in the construction are also possible without departing from the invention.

What is claimed is—

1. The combination with a plurality of stationary web-guides, of a plurality of shields interposed between the web and the guides, and means for driving the shields, substantially as described.

2. The combination with a plurality of stationary web-guides arranged to change the direction of movement of the web, of a plurality of shields, one for each guide, interposed between the web and the guides, and means for driving the shields, substantially as described.

3. The combination with a plurality of stationary web-guides, of a plurality of endless shields, one for each guide interposed between the web and the guides, and means for driving the shields, substantially as described.

4. The combination with a plurality of stationary web-guides, arranged to change the direction of movement of the web, of a plurality of endless belts, one for each guide, interposed between the web and the guides, and means for driving the belts, substantially as described.

5. The combination with a stationary web-guide provided with means for preventing parts of the web from coming in contact with the guide, of a shield cooperating with said means, and means for driving the shield, substantially as described.

6. The combination with a stationary guide-bar having parts or ribs operating to prevent certain parts of the web or sheet from coming in contact with the body of the bar, of a shield interposed between said raised parts, and means for driving the shield, substantially as described.

7. The combination with a stationary guide-bar provided with raised parts or ribs operating to prevent certain parts of the web from coming in contact with the guide-bar, an endless belt passing around said guide-bar, and means for driving the belt, substantially as described.

8. The combination with a plurality of stationary guides, each guide being provided with raised parts operating to prevent certain parts of the web from coming in contact with the guide, of a plurality of belts, one for each

guide interposed between the web and the guides, and means for driving the belts, substantially as described.

9. The combination with a turner-bar having spirally-arranged ribs operating to prevent certain parts of a passing web from coming into contact with the bar, of a belt interposed between the bar and the web, and means for driving the belt, substantially as described.

10. The combination with a plurality of turner-bars having spirally-arranged ribs thereon, of a shield cooperating therewith, and means for driving the shield, substantially as described.

11. The combination with a plurality of turner-bars having spirally-arranged ribs thereon, of a shield comprising a plurality of belts, one for each bar, and means for driving the belts, substantially as described.

12. In a printing-machine, the combination with means for forwarding two webs, of a turner-bar, one for each web, said bars having spirally-arranged ribs thereon, a plurality of endless belts, one for each bar, a shaft around which the belts pass, means for driving the shaft, and suitably-arranged guides whereby one run of the belts is interposed between the turner-bars and the web passing thereover, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OSCAR ROESEN.

Witnesses:

GEO. M. BROWN,
WILLIAM KOERNER.