Sept. 3, 1935. F. LAMATSCH 2,013,497

WEB GUIDING MECHANISM FOR PRINTING MACHINES

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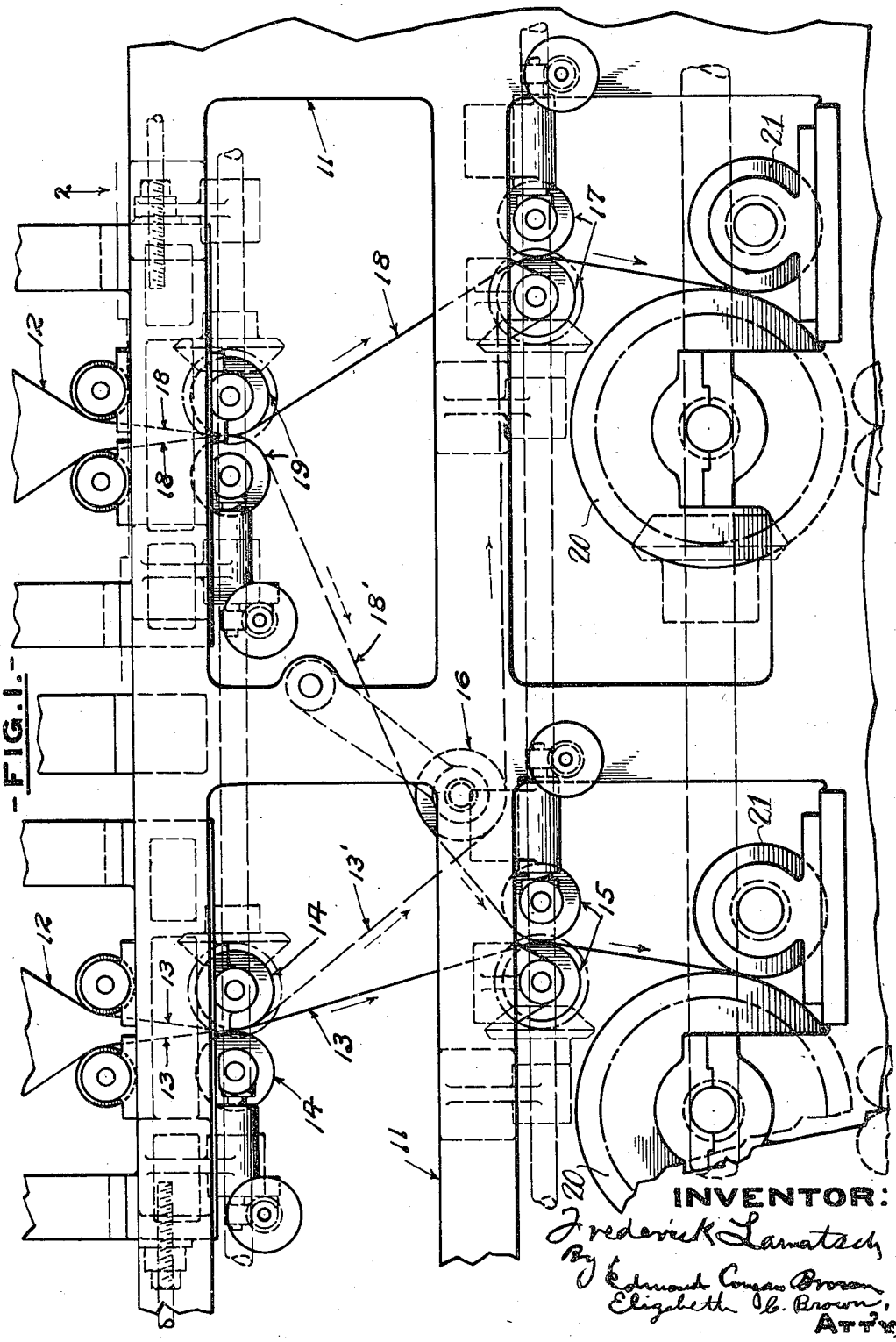


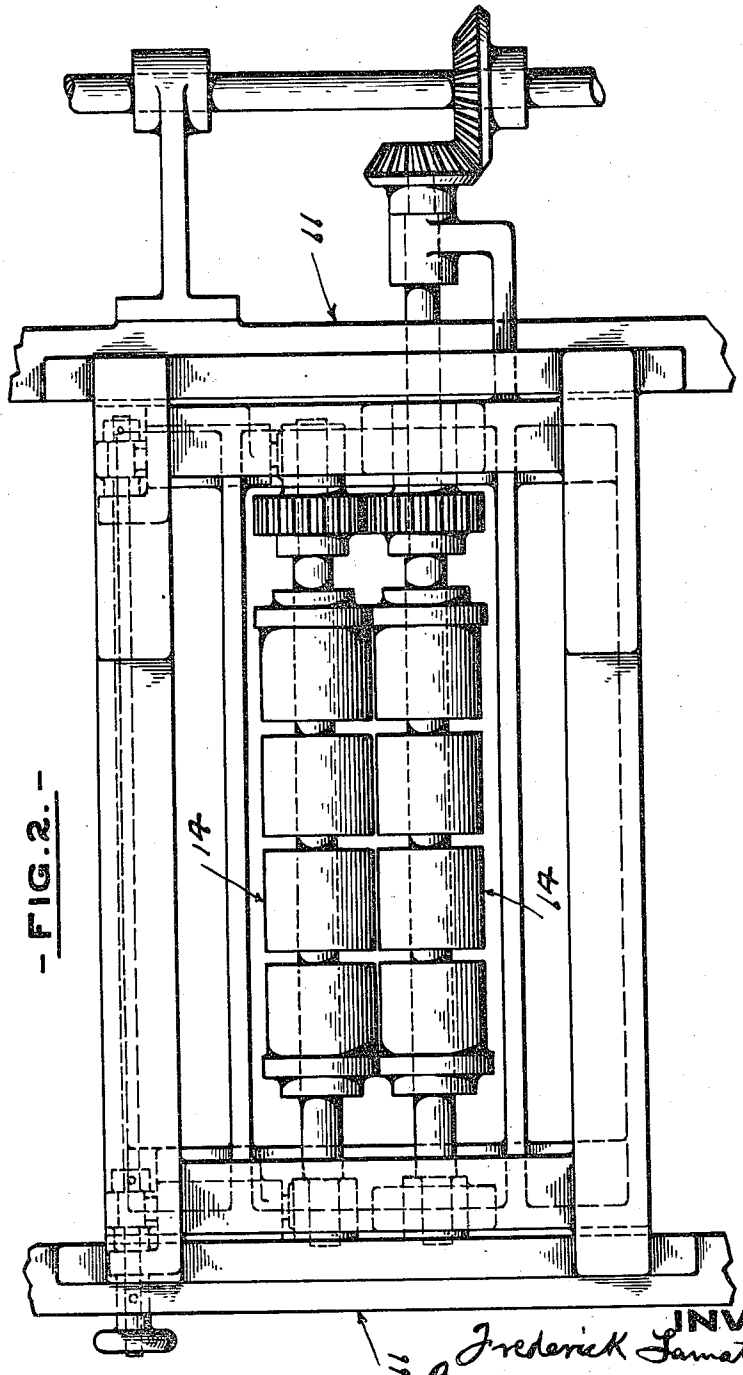
FIG. 1.

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- FIG. 2. -

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WEB GUIDING MECHANISM FOR PRINTING MACHINES

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Application July 27, 1931, Serial No. 553,267

3 Claims. (Cl. 270—41)

My invention relates to printing machines, and more particularly to folding and web-deflecting and guiding mechanism used as an appurtenance to such printing machines and to an improved method of guiding the webs of paper passing through such printing machines, and has for one of its principal objects to provide mechanism by which a web of paper or a plurality of such webs may be cut or slit into narrower strips and distributed and assembled in various ways as may be desired, in a simple and efficient manner, as will be hereinafter described. Further objects and advantages of the invention will be in part set forth in the following specification, and in part will be obvious therefrom without being specifically pointed out, the same being realized and attained by means of the instrumentalities and structural characteristics and relative arrangements and combinations which will be hereinafter more fully described or which will be pointed out in the claims hereof.

The present invention relates more especially to the printing of tabloid papers, and in such practice the large sheet or web is slit in half before passing over the former, consequently the sheets passing over the former and into the first series of nipping rollers do not have the fold in front which is present when printing full-size newspapers. The lack of this fold causes no particular inconvenience when the webs are run from the nipping rollers to folding cylinders directly below them, but where webs or sheets are carried across from one former to a folding cylinder on the opposite side of the printing machine, as is frequently the case, it is difficult to hold the webs in proper alignment. One of the principal objects of my invention is to obviate this difficulty by the use of a second pair of nipping rollers, which, in the embodiment of the invention shown in the accompanying drawings and described in this specification, provides means for properly controlling the sheets as they are presented to the cutting and collecting cylinders.

With the above and other objects of the invention in view, the invention consists in the novel construction, arrangement and combination of various devices, elements and parts, as set forth in the claims hereof, one embodiment of the same being illustrated in the accompanying drawings and described in this specification.

In the accompanying drawings,

Fig. 1 shows, in a fragmentary and more or less diagrammatic way, a front view of part of a printing machine embodying my invention; and

Fig. 2 is a plan view of a portion of the mechanism, showing the additional paper-guiding rollers herein referred to.

In carrying my invention into effect in the particular embodiment thereof which is here shown and described, I provide a supporting frame of the usual or any suitable construction, designated 11 in the drawings, and in which the movable parts of the machine are mounted. I also provide formers 12, but as these are of the usual construction, which is well known in the art, and do not constitute an essential part of the particular invention here described, they are shown in a fragmentary way, only the lower part being represented. It will be understood that the web of paper passing over each former is slit and thus divided into two half sheets or strips, one of which passes down on each side of the former, making smaller webs or strips. At the left of the drawings the strips 13 are shown passing down from the former and between the nipping rollers 14 and down to the secondary nipping or guiding rollers 15, and thence to the folding and cutting mechanism, which includes a folding cylinder 20 and a cutting cylinder 31. These need not be more fully described, as such mechanism is well known and separately forms no part of the present invention.

It is sometimes necessary, however, to lead the strips 13 over to the part of the machine shown at the right hand in Fig. 1, instead of directly downward through the rollers 15, and in such case the sheets are deflected to the right, after passing through the rollers 14, as shown in dotted lines in Fig. 1, where the sheets are designated 13'. In such case the sheets are passed underneath the roller 16 and carried over to the right, where they pass down between nipping or guiding rollers 17 and then down to the cutting and folding mechanism.

As the right of the drawings in Fig. 1, a former is shown, similar to that already described, over which passes a slit web forming half webs or strips which are designated 18. These pass downward, assembled together, between the rollers 19 and down between the additional nipping or guiding rollers 17, 17, and thence to the folding and cutting mechanism. If it is desired, however, to cause these strips to pass over to the other side of the machine, shown at the left in Fig. 1, the assembled strips are deflected to the left, after passing through the rollers 19, as shown in dotted lines in Fig. 1, where the sheets are designated 18'. In such case the sheets are passed over the roller 16 and then down diagonally to the left, where they pass between the nipping or

guiding rollers 15, and then down to the cutting and folding mechanism.

It will be seen that by the provision of the additional or auxiliary nipping rollers 15, 15, and 17, 17, it is possible to handle a series of strips of paper passing in an assembled form from the formers and principal nipping rollers, and conduct the same to the folding and cutting mechanism at a part of the machine at some distance laterally from the respective formers, and still maintain the webs in proper alignment and assembled condition.

One of the most sensitive operative points of the entire printing press is the "former nose" inasmuch as at this point the first nipping rollers 14 and 19 engage the webs or strips 13 and 18 and draw them over the former. These rollers are adjusted to engage the webs with certain pressure so that sufficient traction is produced to pull the web over the former without cracking or tearing the web at the former nose. This adjustment is a very delicate matter. If the adjusted pressure of the first nipping rollers is not equally distributed, there is a tendency of the webs in passing down over the former to "drift", thereby causing one longitudinal edge to project beyond the other, which results in uneven folding. Again, even though the operating pressure of the nipping rollers is uniformly distributed, it is further necessary that the exact required pressure be applied to the webs to draw them over the former. If too much pressure is applied, torn or cracked outer webs will result, and if too little is applied, the web will tend to drift and wrinkle. If these delicate adjustments are made, it is then preferable that the web continue in a path of travel without turning or bending after passing the first set of nipping rollers 14 and 19, so that a uniform pull will be exerted on all the webs, especially when multiple webs are being drawn over the former. When multiple webs are passing over the former, if these webs are "bent" or "wrapped" around one of the first nipping rollers the outermost webs tend to travel at increased speed relative to the innermost webs because they are further from the center of the roll, but since the outermost is also in engagement with the periphery of the opposed nipping roller, which has the same peripheral speed as its coacting nipping roller, the speed of travel of the outermost web is opposed by the slower speed of the periphery of this roller, and thus if excessive "wrap" is made around one of the rollers, there is a tendency for the opposed roller, in opposing the increased speed of the outermost web, to crack or break the web at this point. Therefore, it is manifest that any arrangement that tends to reduce the wrap around the first nipping rollers aids in producing a better operating mechanism.

In newspaper printing presses, the webs are usually four pages wide, and, consequently, the centers of the formers are placed laterally apart a distance equal to the width of two pages. Thus it is manifest that a definite lateral spacing of the former centers is established when this fact is recited, and, if a definite vertical spacing of the first and second sets of nipping rollers is established, then it is obvious that the angular degree of "turn" or "bend" of the webs about the first nipping rollers 14 and 19 is also established. The folding cylinder diameter being known and defined by the dimensions of a printed page, and the lateral spacing of the former centers being also defined by dimensions of a printed page, and the vertical distance between the first nipping rollers and the second nipping rollers being defined by its relationship to the diameter of the folding cylinder, it is manifest that a definite relationship is established between the recited components, thereby defining the angular degree of turn or bend of the printed webs around the first nipping rollers 14 and 19.

The method of operation of my invention has already been pointed out in connection with the construction and arrangement of the various parts.

The advantages of my invention will be obvious from what has been above said with regard to the construction and operation of the same.

I do not limit myself to the particular details of construction set forth in the foregoing specification and illustrated in the accompanying drawings, as the same refer to and set forth only one embodiment of the invention, and it is obvious that the same may be modified, within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is as follows:

1. In a printing machine folder, the combination of two spaced formers adapted to receive printed webs from the printing machine, a set of first nipping rollers located immediately below each former and adapted to forward the webs therefrom, cooperating cutting and folding cylinders located in fixed position below each former and adapted to receive the webs therefrom and to cut the webs in page lengths, a set of second nipping rollers located in fixed positions below each former and between the first nipping rollers and the cutting and folding cylinders and arranged to guide the webs to the cutting and folding cylinders, a single fixed guide roller located intermediate all the sets of nipping rollers and positioned to guide the printing webs in accurate page registration from either set of first nipping rollers to either set of second nipping rollers, the webs from one former passing over the guide roller and the webs from the other former passing beneath the guide roller.

2. In a double folder for printing machines, the combination of two formers adapted to receive printed webs from the printing machine, the centers of the formers being spaced laterally apart a distance equal to the width of two pages of the printed web, a set of first nipping rollers located immediately below each former and adapted to draw the webs thereover, cooperating cutting and folding cylinders located in fixed position below each former and adapted to receive the printed webs therefrom and to cut the webs into page lengths, the circumference of each folding cylinder being equal to the length of two or more pages, a set of second nipping rollers located below each former and between the first nipping rollers and the cutting and folding cylinder and arranged to guide the webs to the cutting and folding cylinders, the second nipping rollers being spaced vertically from the first nipping rollers a distance greater than the diameter of the folding cylinders, a single fixed guide roller located intermediate the nipping rollers and positioned to guide the printed webs into accurate page registration from either set of first nipping rollers to either set of second nipping rollers.

3. In a double folder for printing machines, the combination of two formers adapted to re-

ceive printed webs from the printing machine, the centers of the formers being spaced laterally apart a distance equal to the width of two pages of the printed web, a set of first nipping rollers located immediately below each former and adapted to draw the webs thereover, cooperating cutting and folding cylinders located in fixed position below each former and adapted to receive the printed webs therefrom and to cut the webs into page lengths, the circumference of each folding cylinder being equal to the length of two or more pages, a set of second nipping rollers located below each former and between the first nipping rollers and the cutting and folding cylinder and arranged to guide the webs to the cutting and folding cylinders, the second nipping rollers being spaced vertically from the first nipping rollers a distance greater than the diameter of the folding cylinders, a single fixed guide roller located intermediate the nipping rollers and positioned to guide the printed webs into accurate page registration from either set of first nipping rollers to either set of second nipping rollers, the webs from one former passing over the guide roller and the webs from the other former passing under the guide roller.

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