Aug. 5, 1924.

1,503,520

B. D. STEVENS

SIDE GUIDE MECHANISM

Filed March 25, 1922

2 Sheets-Sheet 1

Fig. 1

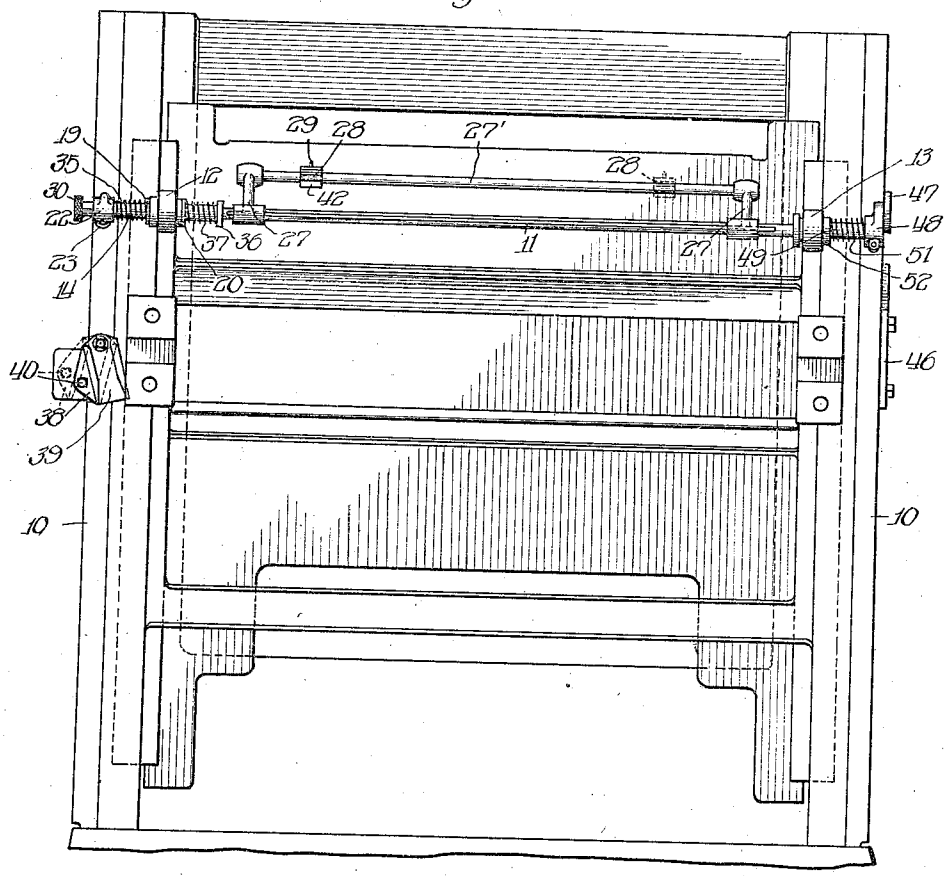
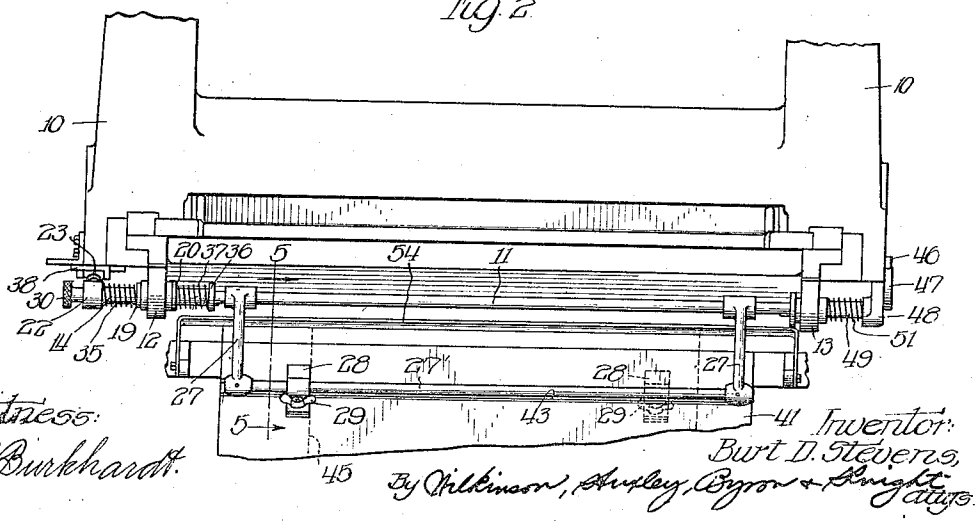


Fig. 2



Witness:
R. Burkhardt.

Inventor:
Burt D. Stevens,
By Wilkinson, Huxley, Byron & Knight, Attys.

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2 Sheets-Sheet 2

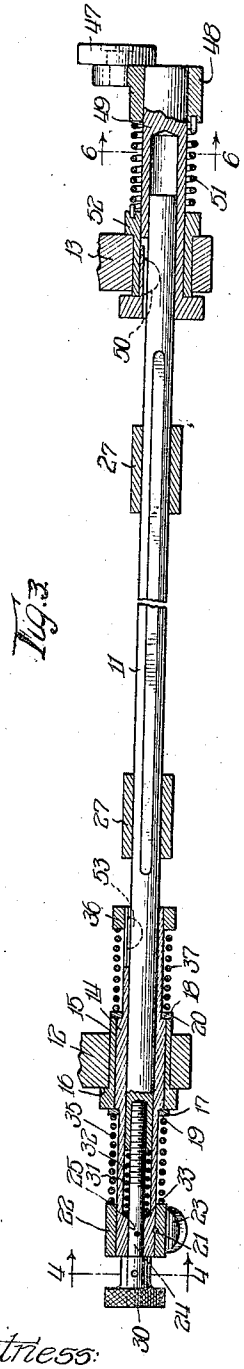


Fig. 3

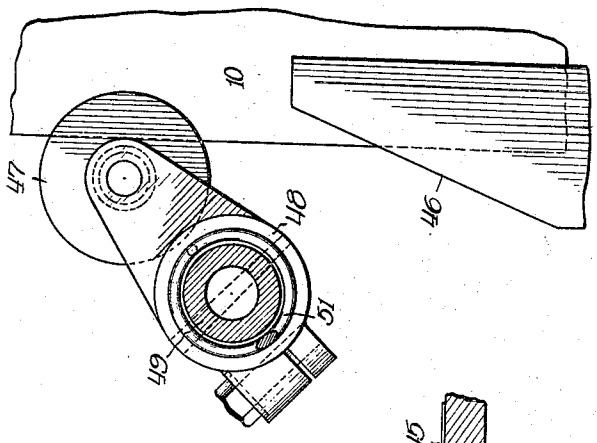


Fig. 6

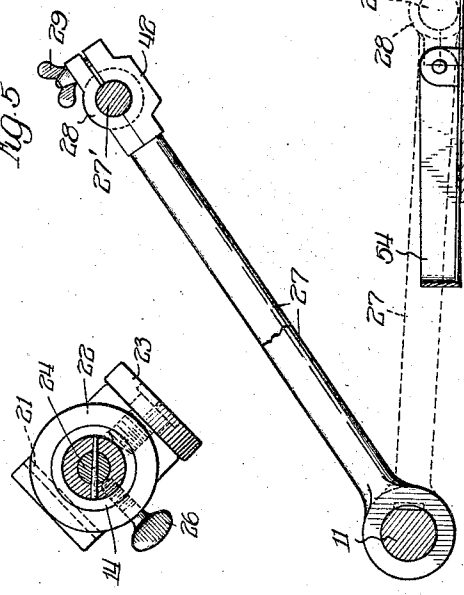


Fig. 5

Fig. 4

Witness:
R. Burkhardt

Inventor:
Burt D. Stevens:
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Attys

Patented Aug. 5, 1924. 1,503,520

UNITED STATES PATENT OFFICE.

BURT D. STEVENS, OF EVANSTON, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS & MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SIDE-GUIDE MECHANISM.

Application filed March 25, 1922. Serial No. 546,718.

To all whom it may concern:

Be it known that I, BURT D. STEVENS, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Side-Guide Mechanism, of which the following is a specification.

This invention relates to printing presses and more particularly to side guide mechanism therefor.

One object of the invention is to provide simple, efficient and reliable side guide means which may be used interchangeably for registering purposes at either side of the press.

Another object is to provide side register means having a member for preventing buckling during the registering operation of a fed sheet.

Another object is to provide a side guide mechanism for printing presses adapted to meet the various requirements for successful commercial use.

These and other objects are accomplished by means of the arrangements disclosed by the accompanying sheets of drawings, in which—

Figure 1 is a fragmentary front elevation of a printing press embodying my invention;

Figure 2 is a fragmentary top plan view of the same printing press;

Figure 3 is a detail sectional view through the main part of the side guide mechanism showing the cooperative relationship between various parts thereof;

Figure 4 is a sectional view taken in the plane of line 4—4 of Figure 3;

Figure 5 is an enlarged side elevation of the sheet engaging member, with its supporting member shown in section, taken in the plane of line 5—5 of Figure 2 and also showing the sheet supporting table;

Figure 6 is a fragmentary side elevation of the printing press frame and side guide operating mechanism, parts being shown in section, and taken in the plane of line 6—6 of Figure 3.

The various novel features of the invention will be apparent from the following description and drawings, and will be particularly pointed out in the appended claims.

Referring to the figures of the drawings, it will be noted that I have disclosed my invention in connection with a vertical type of printing press, including the main frame 10 which supports all of the other parts of the press. It might be stated that this printing press includes a type carrying bed and cylinder, both of which have simultaneous vertical movements in opposite directions, as disclosed in the Cheshire application, Serial No. 329,976, filed October 11, 1919, the cylinder being carried in a frame including frame members 12 and 13.

The side guide mechanism includes a shaft 11 which is supported by said cylinder frame members 12 and 13. More specifically, the left end of the shaft 11 is mounted in a sleeve 14 which is surrounded by a bushing 15 mounted in the frame member 12. The bushing 15 has a shoulder 16 which engages one side of the frame member 12 and the sleeve 14 is provided with shoulders 17 and 18 which are engaged by washers 19 and 20, respectively. Secured by a pin 21 to the left end of the sleeve 14, is a collar 22 which carries a roller 23 for cooperating to give the shaft a lateral movement in a manner to be referred to later. A micrometer adjusting screw 24 extends through a restricted opening 25 in one end of the sleeve 14 and is threaded into the left hand end of the shaft 11 for giving the sheet engaging member, to be referred to later, a final setting for accurate side registration of the sheet material. A set screw 26 extends through the collar 22 and sleeve 14 and normally is forced against the micrometer screw 24 so that when the roller 23 is given a right-hand movement, such movement will be transmitted to the shaft 11 for side registering purposes.

Keyed to the shaft 11 are two arms 27 which are spaced apart and located near opposite sides of the press. These arms 27 at their outer ends are connected by a rod 27' carrying thereon a side guide or gage 28 so that when the shaft 11 is given a lateral movement, the side guide 28 likewise will be

given a lateral movement and when the shaft is given a rotary movement the side guide 28 will be given an oscillatory or dipping movement in a manner such that it will side register a sheet which is being fed progressively to the impression means of the press. The member 27 is adjustably clamped on the cross-bar 27′ and provided with a tightening thumb screw 29 whereby the side guide 28 may be secured to the bar 27′ in any adjusted position.

In connection with setting the side guide member 28 it may be given a general adjustment or setting whereby the thumb screw 29 will be tightened for fixing the side guide 28 on the bar 27′. The side guide member 28 may then be given a micrometer adjustment by turning the knurled head 30 which is pinned to the micrometer screw 24, thereby causing the shaft 11 as a whole, together with the arms 27, rod 27′ and side guide member 28, to be adjusted endwise for giving such register member 28 its final setting.

A spring 31 is mounted in a pocket 32 of the sleeve member 14 and interposed between a shoulder 33 of the sleeve and one end of the shaft 11 for taking up any lost motion between the threaded parts of the micrometer screw 24 and the shaft 11.

A coiled spring 35 surrounding the sleeve 14 is interposed between and engages the collar 22 and the washer 19 so that when the sleeve is moved to the right for positioning the side register member 28 for side registering a sheet of material, the spring 35 will be compressed so that when the sleeve 14 and the shaft 11 are released the spring 35 will return the parts to their normal positions. Secured to the inner end of the sleeve 14 is a collar 36 between which and the washer 20 is mounted a coiled spring 37 which surrounds the right-hand end of the sleeve 14. Such coiled spring 37 is not compressed during the right-hand movement of the shaft 11, but it is compressed when the side register member 28 is used for registering a sheet at the opposite side of the press and the shaft 11 is given a left-hand movement from its normal position shown in Figure 3, the compression in said coiled spring 37 then being used for returning the shaft 11 and accordingly the side register member 28 to their normal positions, as shown in Figure 3.

Referring to Figure 1 of the drawings, it will be noted that secured to the frame 10 is a control member 38 having a guide groove 39 set at an angle for the reception of the roller 23 so that as the cylinder frame members 12 and 13 are moved downwardly, carrying the shaft 11 and all of its associated parts, the roller 23 will enter the guideway 39 and cause the shaft 11 to be moved to the right for side registering a sheet of material at one side of the machine. During this movement the left-hand coiled spring 35 will be pressed, and as soon as the cylinder frame members 12 and 13 with the shaft 11 are again moved in an upward direction, the spring 35 will return the shaft 11 to its normal position, as shown in Figures 1 and 3. If it is desired to side register a sheet of material from the opposite side of the press, the same may be done by loosening the thumb screw 29 and shifting the side gauge member to the right, as shown in dotted lines in Figures 1 and 2, where said member may be secured by tightening the thumb screw, and by swinging the control member 38 into the dotted line position shown in Figure 1, whereupon when the roller 23 is moved downwardly into the guideway 39, the shaft 11, arms 27, rod 27′ and side guide member 28 will be moved to the left for side registering a sheet of material and compressing the other coiled spring 37. As soon as permitted, this coiled spring will return the shaft 11, arms 27, bar 27′ and the side register member 28 to their normal position. The control member 38 may be secured in either of its operative positions by a screw or bolt 40.

When the side register member is in an inoperative or raised position, it is lifted above the table 41 on which the sheet material is side registered, and when the member 28 is in its operative position for side registering a sheet, it is lowered, as shown in dotted lines in Figure 5. The enlarged or lower portion 42 of the side register member moves into the groove 43 in the table or support 41 and the laterally extending rod 27′ lies just over a sheet of material 45 for holding the latter in position and for preventing same from buckling. It prevents buckling not only transversely across the sheet as it is being fed forwardly, but it also prevents buckling of the sheet longitudinally thereof. This rod 27′, which extends completely across and over a sheet of paper being fed, is particularly valuable as an anti-buckling device in cases where relatively thin and flexible paper is being side registered, in which case there is a natural tendency for the paper to buckle longitudinally in the direction of the feed when the side guide member 28 engages the side of the sheet and pushes the latter sidewise on the table or support 41. However, such buckling is positively prevented by means of the rod 27′, which extends across the entire sheet and directly thereabove.

The shaft 11 is given a rotary oscillatory movement for dipping or swinging the side register member 28, by means of a cam member 46 secured to the frame 10 of the press and a roller 47 mounted in a collar 48 secured to a sleeve 49 which in turn is secured to the shaft 11 by a key 50. It is apparent, therefore, that when the roller

47 moving downwardly rides over the cam 46, the sleeve 49 and shaft 11 will be given a counterclockwise movement, as viewed in Figure 6, for causing the side register member 28 to dip into side registering position. During such rotative movement of the sleeve 49, a coiled spring 51 surrounding the sleeve and anchored at one end to the collar 48 and at its other end to a bushing 52 surrounding the sleeve 49 in the frame member 13, is wound up, storing energy therein for returning the sleeve 49 and roller 47 in a clockwise rotative movement, as viewed in Figure 6, to the normal position of such parts, as shown in said figure. It will be understood that the bushing 52 is anchored in the cylinder frame member 13.

Not only is the shaft 11 given a rotative movement as a result of the roller 47 riding downwardly over the cam 46, but also the sleeve 14 and collar 22 are rotated at the same time by virtue of the keyed connection 53 between the shaft 11 and sleeve 14 for bodily moving the roller 23 for placing it in the proper plane for cooperation with the slot 39 in the control member 38. In other words, the cam 46 and roller 47 do two things; they dip the member 28 into a given horizontal position preparatory to accurately side registering a sheet of material and cause the roller 23 to take a position whereby it may be received in the guideway 39 of control member 38 whereby the side register member 28 may be moved sidewise to accurately side register the sheet of paper.

All of the parts of this side register mechanism are simple and cooperate in a novel manner, and are all arranged accessibly to meet all of the requirements for successful commercial operation.

A bar 54 is carried by the table 41 at the front end thereof and is given the usual up and down movement. The bar is down in engagement with a sheet on the table at the time the sheet is front registered with the cylinder grippers for the purpose of holding the front edge of the sheet down in a position to be gripped.

It is my intention to cover all modifications of the invention falling within the spirit and scope of the following claims.

I claim:

1. In a printing press, the combination of a supporting member, a bar extending across the press and supported from said supporting member and which is adapted to extend completely across a sheet of material being fed for preventing buckling of the latter.

2. In a printing press, the combination of a supporting member, a rod supported by said supporting member and extending transversely of the press, and a side register member mounted on said rod for side registering a sheet of material fed, said rod overlying said sheet of material for preventing buckling of said sheet of material as it is side registered.

3. In a printing press, the combination of a cylinder frame, means mounted thereon and extending completely across a fed sheet of paper and overlying said sheet of paper in a manner to prevent buckling of the latter.

4. In a printing press, the combination of supporting means, means supported therefrom and extending completely across a fed sheet of paper and overlying said sheet of paper in a manner to prevent buckling of the latter, and side registering means mounted on said aforesaid means for giving said sheet of material a side registering movement.

5. In a printing press, the combination of a table on which sheet material is fed progressively in the press, a member arranged to extend completely across a fed sheet of material and overlying the same for preventing buckling of said sheet material as the latter is being side registered.

6. In a printing press, the combination of a table on which sheet material is fed progressively in the press, a member arranged to extend completely across a fed sheet of material and overlying the same for preventing buckling of said sheet material, and side register means mounted on said member for giving said sheet of material a side registering movement while on said table.

7. In a printing press, the combination of a table on which sheet material is fed progressively in the press, means extending completely across the sheet material and overlying same to prevent buckling of the latter, and means adjustably mounted on said aforesaid means whereby sheet material may be side registered at opposite sides of the press.

8. In a printing press, a support over which sheet material is fed progressively in the press, means mounted over and given a lateral movement with respect to said sheet of material as it is fed progressively for preventing the sheet from buckling, and a side register member carried by said means for giving said sheet a side registering movement.

9. In a printing press, the combination of a shaft, arms mounted on said shaft, a rod connecting said arms and extending over and across a sheet of material being fed for the purpose of preventing buckling of the latter, and a side register member mounted on said rod for engaging the sheet of material for giving the latter a side registering movement.

10. In a printing press, the combination of a shaft, arms mounted on said shaft, a

rod connecting said arms and extending over and across a sheet of material being fed for the purpose of preventing buckling of the latter, a side register member mounted on said rod for engaging the sheet of material for giving the latter a side registering movement, and means whereby said side register member may be adjusted on said rod for side registering a sheet of material at opposite sides of the press.

Signed at Chicago, Illinois, this 2nd day of March, 1922.

BURT D. STEVENS.