May 27, 1958 E. GERICKE 2,836,417

FLAT-BED PRINTING MACHINES

Original Filed April 24, 1952 2 Sheets-Sheet 1

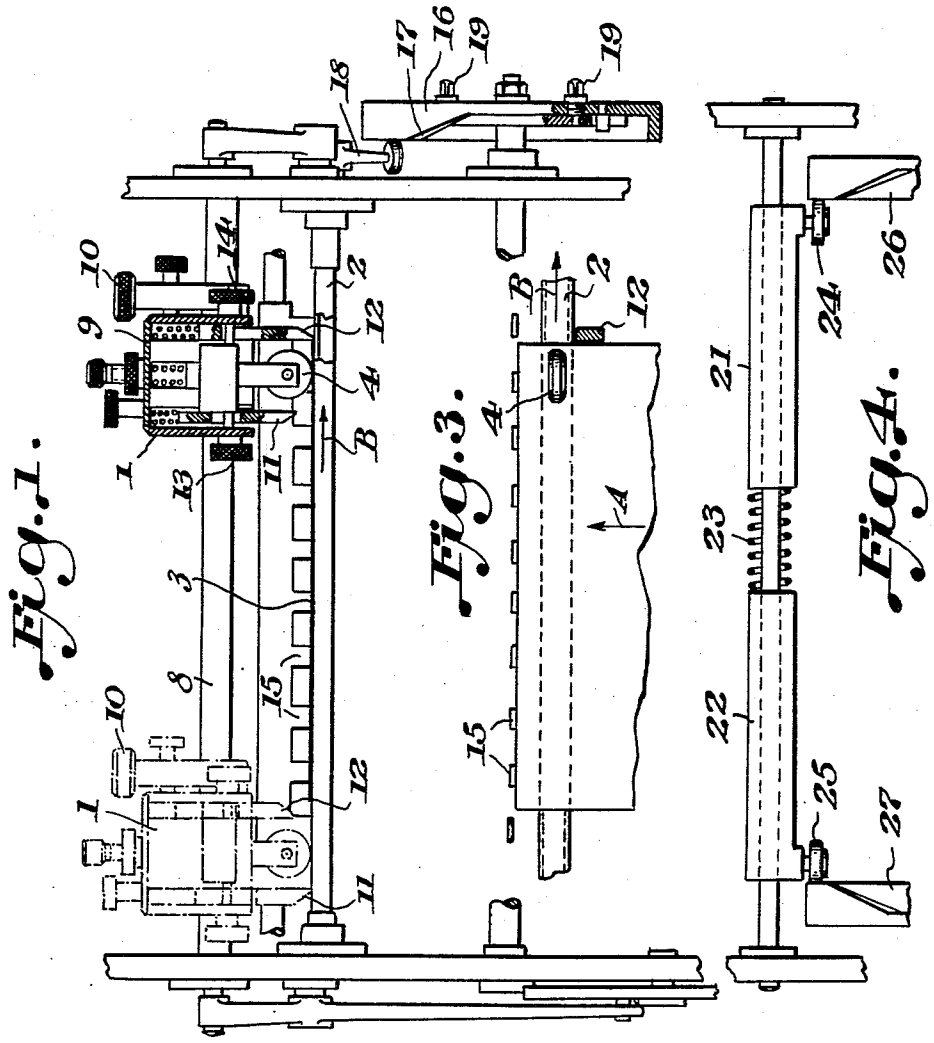


Fig. 1.

Fig. 3.

Fig. 4.

INVENTOR.
Erich Gericke,
BY
Wenderoth, Lind & Ponack
ATTYS.

May 27, 1958 E. GERICKE 2,836,417

FLAT-BED PRINTING MACHINES

Original Filed April 24, 1952 2 Sheets-Sheet 2

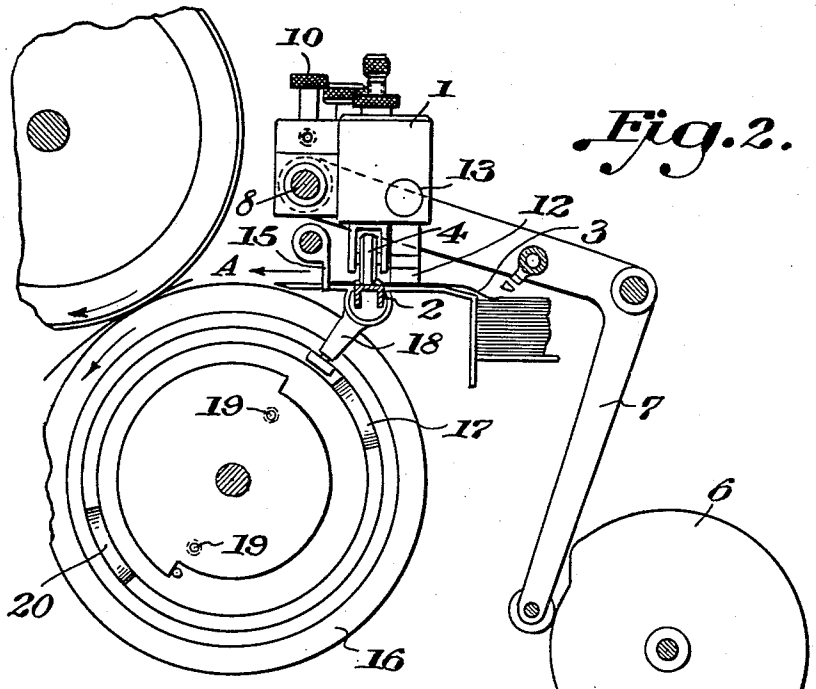


Fig. 2.

Fig. 5.

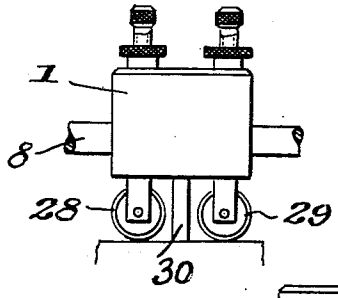


Fig. 6.

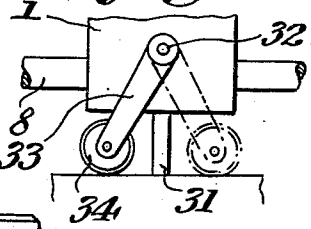
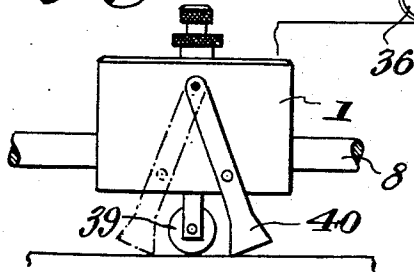


Fig. 8.



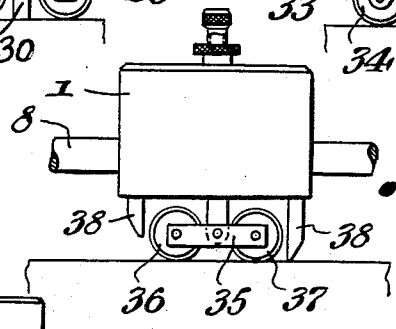


Fig. 7.

INVENTOR.
Erich Gericke,
BY
Wenderoth, Lind & Ponack
ATTYS.

United States Patent Office 2,836,417 Patented May 27, 1958

2,836,417

FLAT-BED PRINTING MACHINES

Erich Gericke, Berlin-Steglitz, Germany

Original application April 24, 1952, Serial No. 284,055, now Patent No. 2,807,466, dated September 24, 1957. Divided and this application August 27, 1956, Serial No. 606,378

Claims priority, application Germany April 26, 1951

8 Claims. (Cl. 271—59)

This application is a division of my application Serial No. 284,055 filed April 24, 1952, entitled "Flat-Bed Printing Machines," now Patent No. 2,807,466.

The invention relates to a pulling-mark head on printing machines, especially offset machine, wherein a castor is provided to press a sheet of paper periodically on a pulling rail located beneath it and thereby pulls a sheet of paper against a stop arranged at the pulling-mark head and being adjustable with said head.

It is an object of the invention to provide a pulling-mark operating with a castor for right-hand and left-hand application. It is suggested according to the invention to provide the pulling-mark head with one castor and on both sides of the castor with a stop each, or with one stop and one swingable castor on the right- and left-hand side of the stop, or with two castors and a stop arranged between these castors or on both sides of the castor-pair with a stop each and being applicable by means of turning on or turning off the stop or by means of swinging of one roll and displacement on the traverse for desired right-hand or left-hand application.

Printing machines provided with adjustable side-marks over the whole width of the applying table have been known so far, on which the sheet of paper can be arranged on both sides and wherein the adjusting head is adjustable for right-hand and left-hand application as well. On these hitherto known printing machines the sheet of paper was not adjusted by pulling but by pushing. It is an object of the present invention to provide a pulling-mark operating with castors for right-hand and left-hand application.

The rail or castor effecting the pulling movement of the pulling-mark head is arranged between the front-mark and the side stops. The pulling rail can be divided transversely and pulls on the right half towards the right and on the left half towards the left-hand side, so that the pulling-mark head has to be adjusted only towards the right-hand side. According to another feature of the invention, a continuous pulling rail can be provided which by shifting of the drive for said rail can be brought to a reverse pulling movement accordingly as to whether the pulling mark head is to be used for right-hand or left-hand application.

Embodiments of the invention are shown in the drawings in which:

Figure 1 is a front elevation, partly in section, of the pulling head situated on the right-hand side edge, the pulling head comprising one castor and two stops;

Figure 2 is a side elevation of the pulling head;

Figure 3 is a plan of the printing sheet and of the stops which determine the position of the printing sheet;

Figure 4 is an elevation of the pulling rail for the printing sheet;

Figure 5 is an elevation of a pulling head with two castors and one stop;

Figure 6 is an elevation of a pulling head with one castor and one stop;

Figure 7 is an elevation of a pulling head with two castors and two stops; and

Figure 8 shows a detail of a further embodiment of the invention.

Cooperating with the pulling head 1 is a ledge 2 which carries out the pulling movement and which lies transversely of the direction of running of the paper sheet 3 in the vicinity of the front edge of the sheet and beneath the paper. A castor 4, which is periodically moved up and down, of the pulling head presses the sheet 3 that is to be straightened on to the ledge or rail 2, so that the sheet 3 is pulled by these castors 4 to the side stop 12. The periodic up and down movement of the pulling head 1 is effected by the cam 6 through a bell-crank lever 7, which acts upon a cross-bar 8. The pulling movement of the ledge 2 is effected from a cam disc 16 which, with an inclined surface 17, displaces the arm 18 of the ledge 2 horizontally.

According to the invention, the casing 9 of the pulling head 1 is mounted on the cross-bar 8, so that the casing can be displaced over the whole width of the paper and can be clamped in any desired position by means of a clamping screw 10.

In the construction represented in Figure 1, the casing 9 carries a castor 4 and two paper-stop marks 11 and 12 which are acted upon by spring pressure and can be locked in their position of rest by clamping screws 13 and 14. Only one of these stop marks will be required at any time, while the unused stop mark, for example the mark 11 in Figure 1, will be pulled up and fixed by the clamping screw 13.

When a sheet (Figure 2) is inserted in the direction of the arrow A, it is first straightened on its front edge at the front mark 15. After this has been effected, the castor 4 is put on the sheet 3 and the side rail or ledge 2 located beneath it carries out the pulling movement to the right indicated by the arrow B, so that the sheet 3 is pulled to the stationary mark 12. When this is done, the sheet 3 remains located in front of the mark 12, while the transverse rail 2 moves on through a small distance. When the transverse rail 2 comes to rest, the castor 4 is raised, owing to the periodic lifting movement of the cross bar 8 by the action of the cam 6 on the bell-crank lever 7, from the sheet 3 which now lies straightened at the front mark 15 and at the right-hand side mark 12.

The front mark 15 then effects a further slight straightening of the front edge of the sheet. The cylinder grippers then seize the sheet and lead it to the printing operation while, at the same time, the front mark 15 swings out and frees the path for the sheet 3.

If the sheet is to be straightened on the left-hand edge of the paper, the claimping screw 10 is loosened and the whole pulling-mark head 1 is pushed to the left-hand side of the machine. The right-hand stop 12, which is no longer required, is pushed up and is fixed by its clamping screw 14, while the clamping screw 13, which holds the stop 11, is loosened, so that the stop 11 occupies, under the action of its spring, the bottom position which is represented by dot-and-dash lines on the left of Fig. 1 and in which it acts as a stop for the left-hand side of the sheet. Since, now, the pulling movement of the spring-controlled ledge 2 must take place in the opposite direction, the cam disc 16 is, after loosening the square-headed screws 19, rotated about its axis through 180°, so that, on the straightening of the sheet on the left-hand side edge, the opposite inclined surface 20 acts against the stop 11.

Fig. 4 shows a construction of the rail 2 which carries out the pulling movement, in which the rail is divided into sections 21 and 22 which are forced apart by a spring 23 and rest, with their castors 24 and 25, on cams 26

and 27 respectively mounted at opposite ends of the machine. The right-hand half 21 of the rail then pulls to the right and the left-hand half 22 of the rail then pulls to the left on the straightening of the sheet.

Fig. 5 shows a pulling-mark head 1 which comprises two castors 28 and 29 as well as a stop 30 located between them. In order to straighten the right-hand edge of the sheet (seen in Fig. 1), the right-hand castor 29 is raised and fixed, while, in order to straighten the left-hand edge of the sheet, the pulling-mark head 1 is pushed on the cross-bar 8 to the left-hand side of the machine and the left-hand castor 28 is raised and fixed whereas the right-hand castor 29 is released and lowered.

Fig. 6 shows a pulling-mark head 1 which carries a stationary stop 31 and a single castor 34 which can be swung about the pivot 32 and is mounted on the arm 33. In order to straighten the right-hand edge of a sheet, the castor is brought into the position represented in full lines while, in order to straighten the left-hand edge of a sheet, the shifting of the castor 34 into the position represented in dot-and-dash lines is effected, the pulling-mark head 1 being, at the same time, shifted, on the cross-bar 8, to the left-hand side of the machine.

Fig. 7 shows a construction in which a bail 35 with two castors 36 and 37 lies on the pulling-mark head 1. Stops 38, the level of which can be adjusted, are provided outside the castors. In the position represented, the straightening of the right-hand edge of a sheet is effected.

Fig. 8 shows a detail of another embodiment of the invention. On the flat-bed printing machine having the pulling-mark head 1, a rail is provided beneath said head, and a stationary adjustable stop is provided on said head in the manner as shown in Figs. 1–4. A castor is provided to press a paper sheet periodically on the rail beneath the head, and the rail is divided transversely into two halves, one of the halves adapted to pull the sheet to one side and the other of the halves adapted to pull the sheet to the other side so that the rail can pull the sheet toward the stationary adjustable stop on the pulling-mark head. As shown in Fig. 8, the head comprises castor 39 and stationary stop 40, this last mentioned stationary stop 40 adapted to shift to the right-hand side or to the left-hand side of castor 39 as may be required.

Advantageously, the arrangement of the rail or castor or castors that carries or carry out the pulling movement is between the front mark and the side stops.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the forms, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the forms hereinbefore described and illustrated in the drawings being merely preferred embodiments thereof.

I claim:

1. A sheet register for flat-bed printing machines comprising a cross bar, a pulling head mounted upon said cross bar, a pulling rail located below said head, means for reciprocating said pulling rail, a castor mounted in said pulling head, means for moving said castor periodically for pressing a paper sheet to be registered against said rail, a stop mounted upon said pulling head and means for adjusting said stop in said pulling head to either side of said castor for registering either side of a sheet.

2. A sheet register as set forth in claim 1 wherein said stop is pivotally mounted upon said pulling head.

3. A sheet register for flat-bed printing machines comprising a cross bar, a pulling head mounted upon said cross bar, a pulling rail located below said head, means for reciprocating said pulling rail, a castor mounted in said pulling head, means for moving said castor periodically for pressing a paper sheet to be registered against said rail, a stop mounted upon said pulling head and means for changing the relative lateral positions of said stop and castor so that said stop may be utilized for registering either side of a sheet.

4. A sheet register for flat-bed printing machines comprising a cross bar, a pulling head mounted upon said cross bar, a pulling rail located below said head, means for reciprocating said pulling rail, a castor mounted in said pulling head, means for moving said castor periodically for pressing a paper sheet to be registered against said rail, a stop mounted upon said pulling head and means for adjusting said castor in said pulling head to either side of said stop for registering either side of a sheet.

5. A sheet register as set forth in claim 3 wherein said rail is divided into two parts.

6. A sheet register for flat-bed printing machines comprising a cross bar, a pulling head mounted upon said cross bar, a pulling rail located below said head, means for reciprocating said pulling rail, a stop mounted upon said pulling head, a first castor mounted in said pulling head at one side of said stop, a second castor mounted in said pulling head at the other side of said stop, means for moving one of said castors to inoperative position depending upon which side of a sheet is to be registered, and means for moving the other operative castor periodically for pressing a paper sheet to be registered against said rail.

7. A sheet register as set forth in claim 4 wherein said castor is pivotally mounted upon said pulling head.

8. On a flat-bed printing machine, the combination comprising a pulling-mark head, a rail beneath said head, a stationary stop on said head and a castor on each side of said stop for pressing a paper sheet periodically on said rail, said rail being adapted to pull said sheet towards said stationary stop, said rail being divided transversely into two halves, one of said halves being adapted to pull said sheet to one side and the other of said halves being adapted to pull said sheet to the opposite side and said stationary stop and castors being adjustable for a right-hand or a left-hand application of said sheet.

References Cited in the file of this patent

UNITED STATES PATENTS

1,092,912	Hollings	Apr. 14, 1914
1,404,376	Christophel et al.	Jan. 24, 1922
1,988,791	Harrold	Jan. 22, 1935