Aug. 20, 1940. W. G. READ 2,211,910

PRINTING MECHANISM

Filed April 6, 1939 2 Sheets-Sheet 1

Fig. 1

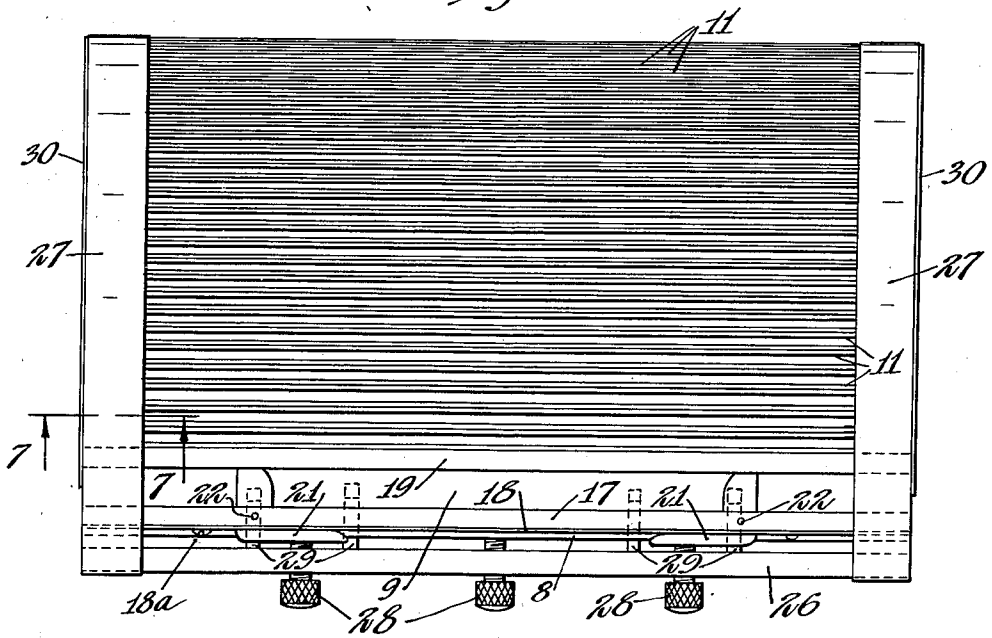

Fig. 2

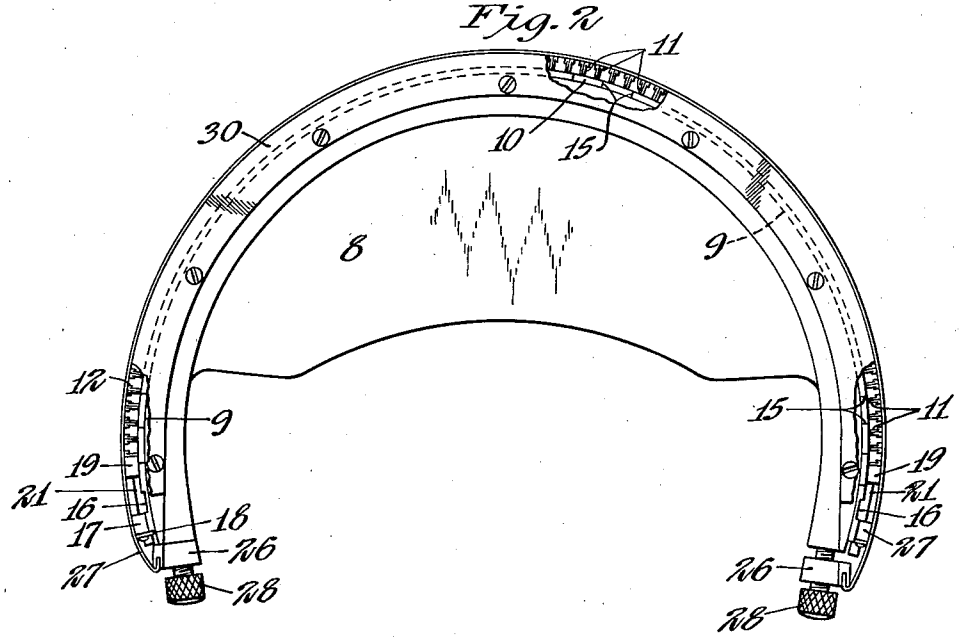

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Fig. 3

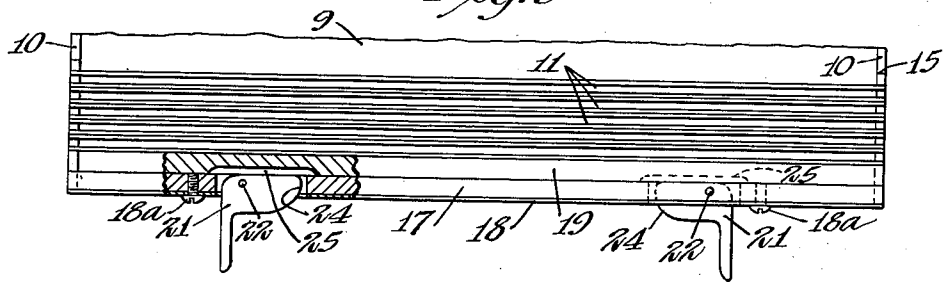


Fig. 4

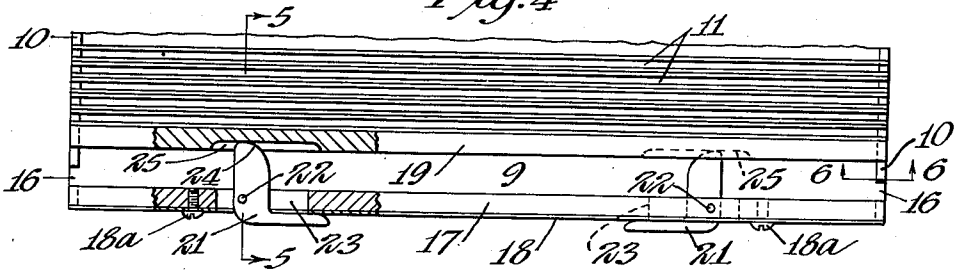


Fig. 5

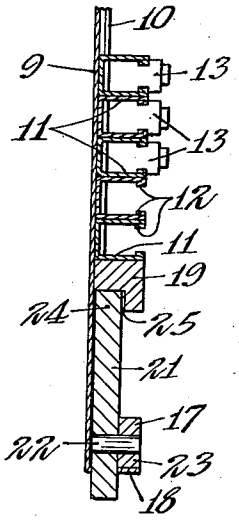


Fig. 6

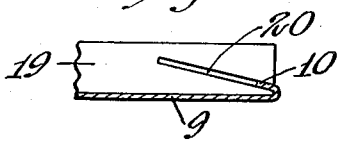
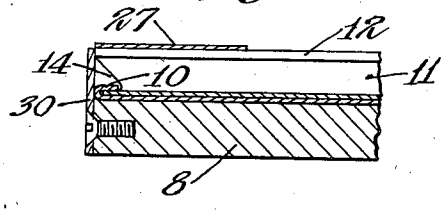


Fig. 7



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Patented Aug. 20, 1940 2,211,910

UNITED STATES PATENT OFFICE

2,211,910

PRINTING MECHANISM

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Application April 6, 1939, Serial No. 266,318

7 Claims. (Cl. 101—377)

This invention relates to improvements in printing mechanism of the class having individual type or line slugs mounted on a flexible holder or galley adapted to be laid flat when removed from the supporting element of the press and to be bent to an arc conforming with the periphery of a cylindrical supporting segment, the device being an improvement upon the mechanism described in my Patents No. 2,025,307, granted December 24, 1935, and No. 2,045,408, granted June 23, 1936.

It is an object of the present invention to provide novel means for quickly and easily consolidating and compressing individual line members circumferentially of such flexible holder or galley when the latter is bent to arcuate form.

A further object is to provide novel means of this class whereby considerable force of compression laterally of the line members is transmitted to and distributed along an edge of the form holder extending parallel to the line members, the compressing means being separate from and independent of the arcuate segment for supporting the holder.

The invention will be best understood by reference to the accompanying drawings in which:

Figure 1 is a side elevation of my device;

Fig. 2 is an end view of the same with fragmentary portions broken away to show parts otherwise concealed;

Fig. 3 is a fragmentary part plan and part sectional view showing my improved consolidating mechanism in the releasing or inoperative position on an edge of the form holder and with the latter removed from the arcuate supporting segment of the press;

Fig. 4 is a view similar to Fig. 3, but showing the consolidating mechanism in the operative or compressing position;

Figs. 5 and 6 are respectively sections taken on the lines 5—5 and 6—6 of Fig. 4 and on a larger scale, and

Fig. 7 is a section taken on the line 7—7 of Fig. 1.

In the drawings the numeral 8 indicates a cylindrical segment adapted to be secured to a press in the usual or suitable manner. Fitting on the cylindrical outer surface of the segment 8 is a flexible form holder 9 formed at each side edge with an inturned flange 10 adapted to engage individual line holders 11. These line holders are channel shaped members extending parallel to the axis of the segment 8 and each formed with inturned flanges 12 adapted to slidably engage printing members 13 (Fig. 5) which may be either individual type, slugs of various lengths or other members bearing the characters to be printed. These printing members have grooves on opposite sides to receive the flanges 11 and the sides of the members 13 and of the line holders 11 preferably extend radially to the segment 8 when in place thereon.

As shown in Fig. 7 the ends of the line holders 11 are formed with notches 14 to slidably receive the flanges 10 of the form holders 11. The flanges 10 have slits 15 severing them transversely at suitable intervals to facilitate bending the holder 9 from the flat form in which it is usually handled when removed from the segment 8 to the arcuate shape of said segment. A portion of at least one of the flanges 10 is preferably cut away near an end of the holder 9, as indicated at 16, to facilitate insertion of the line holders 11 into engagement with the flanges 10.

Each end of the holders 9 has a rigid bar 17 fastened thereto by bending an edge 18 of the holder 9 at approximately a right angle to engage the outer edge of the bar 17 from end to end thereof and by joining said edge to the bar as by bolts 18a. A second bar 19 extends in parallel relation to the bar 17 and is movable to and from the latter in sliding engagement with the flanges 10. As best shown in Fig. 6, each of these flanges engages the bar 19 in a slot 20 extending in from the end thereof. A pair of cam levers 21 is mounted on the bar 17 to pivot on pins 22 respectively, these levers being approximately L-shaped and being movable in guide slots 23 formed in the bar 17. Cams 24 are formed on the levers 21 to engage the bar 19 and the latter is preferably formed with recesses 25 to receive and guide the cam ends of the levers. The bar 19 is sufficiently rigid and strong to transmit the thrust of the levers 21 and to distribute the pressure throughout the length of the line holders 11 when the latter are consolidated and securely held against movement during the printing. Each lever is locked in the operative position by my arrangement of the cam 24 which stops with the line of contact with the bar 19 slightly beyond the dead center position relative to the pivot pin 22.

In the operation of the device, individual type members or line slugs 13 are composed in the line holders 11 and the latter are mounted on the form holder 9 by engaging the ends of the line holders with the flanges 10 of the holder 9. This work is performed with the holder 9 laid flat. While retaining the holder flat, the rigid bar 19 is moved into engagement with the end line member 11 and with the cam levers 21 in the position

shown in Fig. 3. When the holder 9 is to be placed on the segment 8, the holder is bent to the arcuate shape while the levers 21 are actuated to force the cams 24 against the bar 19 and lock this bar in position to confine the line holders under considerable lateral pressure. This pressure is sufficient to retain the holder 9 in the arcuate shape during its subsequent attachment to the segment 8.

I provide means similar to those described in my Patent No. 2,045,408, granted June 23, 1936, for securing the form holder 9 on the segment 8. As shown in Figs. 1 and 2 the fastening means include rigid bars 26 extending along the edges of the segment 8 and having flexible bands 27 secured at their ends respectively to these bars and extending circumferentially of the segment in engagement with the outer edges of the line holders 11. To tighten the bands 27 a plurality of thrust screws 28 are threaded in each of the bars 26 with their ends engaging the ends of the segment 8, the bars 26 being guided for movement in parallel relation to the ends of the segment by a series of pins 29 which are movable longitudinally in recesses in the segment. To facilitate proper centering of the holder 9 on the periphery of the segment 8 arcuate end guides 30 are mounted on the segment to project at the ends of the line holders 11. The bands 27 are thin and the type faces project radially outward beyond the outer surfaces of these bands.

It has been found that the cam levers 21 consolidate and compress the multiplicity of individual line holders with sufficient force to insure against the slightest movement of the type during the printing. This force which is directed circumferentially of the segment is combined with the radial confining force exerted by the bands 27 with the result that clear impressions and printing of high quality is obtained. When the form is to be unlocked for rearrangement or alteration and then reassembled with the changed composition, the levers 21 afford quickly and easily operable means for relieving or applying the laterally directed force. The work of changing the composition and fastening the form holder to the segment is also facilitated by reason of the fact that the holder may be held in the arcuate shape by the locking mechanism as a preliminary to placing the holder on the segment. Considerable force is required for this purpose and back thrust is distributed along the entire edge of the flexible form holder by the cam levers acting through the bar 17.

I have illustrated and described my preferred arrangement in which a pair of the levers 21 are mounted on each of the bars 17. This affords a desirable degree of compression without unduly extending the cams 24 from the pivot pins 22. However, under some circumstances it may be sufficient to provide a pair of levers at one end only of the form holder and to lengthen the cam arms of the levers sufficiently to exert the desired compressing force without unduly increasing the manual strength required to operate the levers.

Having described my invention what I claim as new any desire to protect by Letters Patent is:

1. Printing mechanism having in combination, a flexible form holder adapted to be mounted on the periphery of an arcuate segment, a multiplicity of individual line members extending in parallel relation to each other on said form holder, means on said holder for engaging and guiding the ends of said line members thereon, an abutment for one side of said members secured to said holder, a rigid bar secured to said form holder near the opposite side of said line members, means for fastening said bar on said form holder independently of said segment, means engaging said bar and extensible between said bar and line members for forcibly compressing said line members on the hoider and for tensioning said holder independently of said segment and means for attaching said form holder to said segment independently of said bar.

2. Printing mechanism having in combination a flexible form holder adapted to be mounted on the periphery of an arcuate segment, a multiplicity of individual line members extending in parallel relation to each other on said form holder, an abutment for one side of said members extending parallel thereto on said holder, a rigid bar secured to said form holder at the opposite side of said line holders in parallel relation thereto, a second rigid bar movable on said holder to engage said line members and extending substantially parallel to said first mentioned bar and means for forcibly spacing said bars to compress said members against said abutment comprising cam members movable between said bars to wedge said bars apart and means for actuating said cam members.

3. The printing mechanism specified in claim 2 in which said means for actuating said cam members comprise levers pivotally mounted on one of said bars and operative to force said cam members into engagement with the other of said bars.

4. The printing mechanism specified in claim 2 in which said means for actuating said cam members comprise levers integral with said cam members respectively and pivotally mounted on said first mentioned bar to actuate said cam members to and from engagement with said second bar.

5. Printing mechanism having in combination, a flexible form holder adapted to be mounted on the periphery of an arcuate segment, a multiplicity of individual line members extending in parallel relation to each other on said form holder, an abutment for one side of said members on said holder, a rigid bar secured to an end of said holder in parallel relation to said line members, a second rigid bar movable to and from said first mentioned bar on said holder to engage said line members and means for forcibly spacing said bars to compress said line members against said abutment comprising a cam member pivoted on said first mentioned bar to project into engagement with said second bar and a manually operable lever for operating said cam member projecting from the end surface of said first mentioned bar and movable from a position substantially parallel to said bar to a position substantially perpendicular thereto to relieve the pressure on said line members.

6. Printing mechanism having in combination, a flexible form holder of rectangular shape adapted to be mounted on the periphery of an arcuate segment, a multiplicity of individual line members extending in parallel relation to each other on said form holder, means on opposite side edges of said holder for engaging and guiding the ends of said line members thereon, rigid bars extending across opposite ends of said holder, the end edges of said holder being formed with flanges engaging said bars respectively, continuously across the entire width of said holder

and means for forcibly separating said bars from the line members on said holder independently of said segment, said separating means engaging said bars respectively to tension said holder and compress said line members between the bars with sufficient force to retain the assembly of line members and holder in substantially cylindrical shape independently of said arcuate segment.

7. Printing mechanism having in combination a flexible form holder adapted to be mounted on the periphery of an arcuate segment, a multiplicity of individual line members extending in parallel relation to each other on said form holder, an abutment for one side of said line members secured to said holder, a rigid bar extending along the opposite side of said line members on said holder, means for fastening said bar in engagement with said holder independently of said segments and cam means mounted on said bar and extensible between said bar and line members for forcibly compressing said line members while tensioning said holder independently of said segment.

WORTH G. READ.