Sept. 29, 1953 A. M. HALLEY 2,653,539

ROTARY PRINTING MACHINE

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Fig. 1.

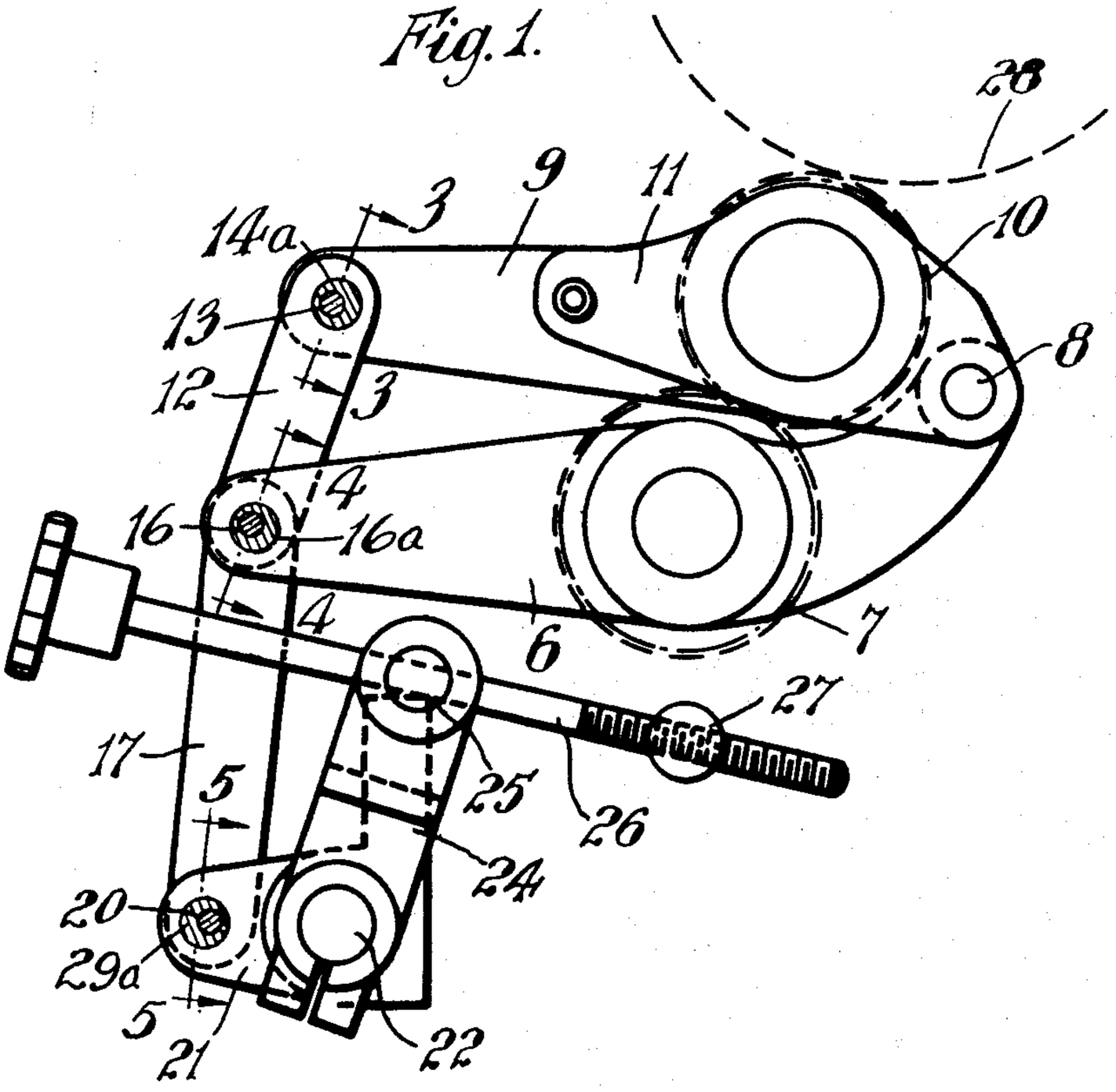
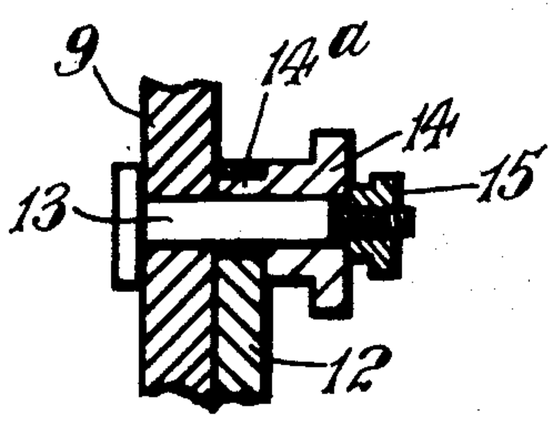


Fig. 3.



ANGUS MURRAY HALLEY
INVENTOR

Marshall, Marshall & Leonard
ATTORNEYS

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Fig. 2.

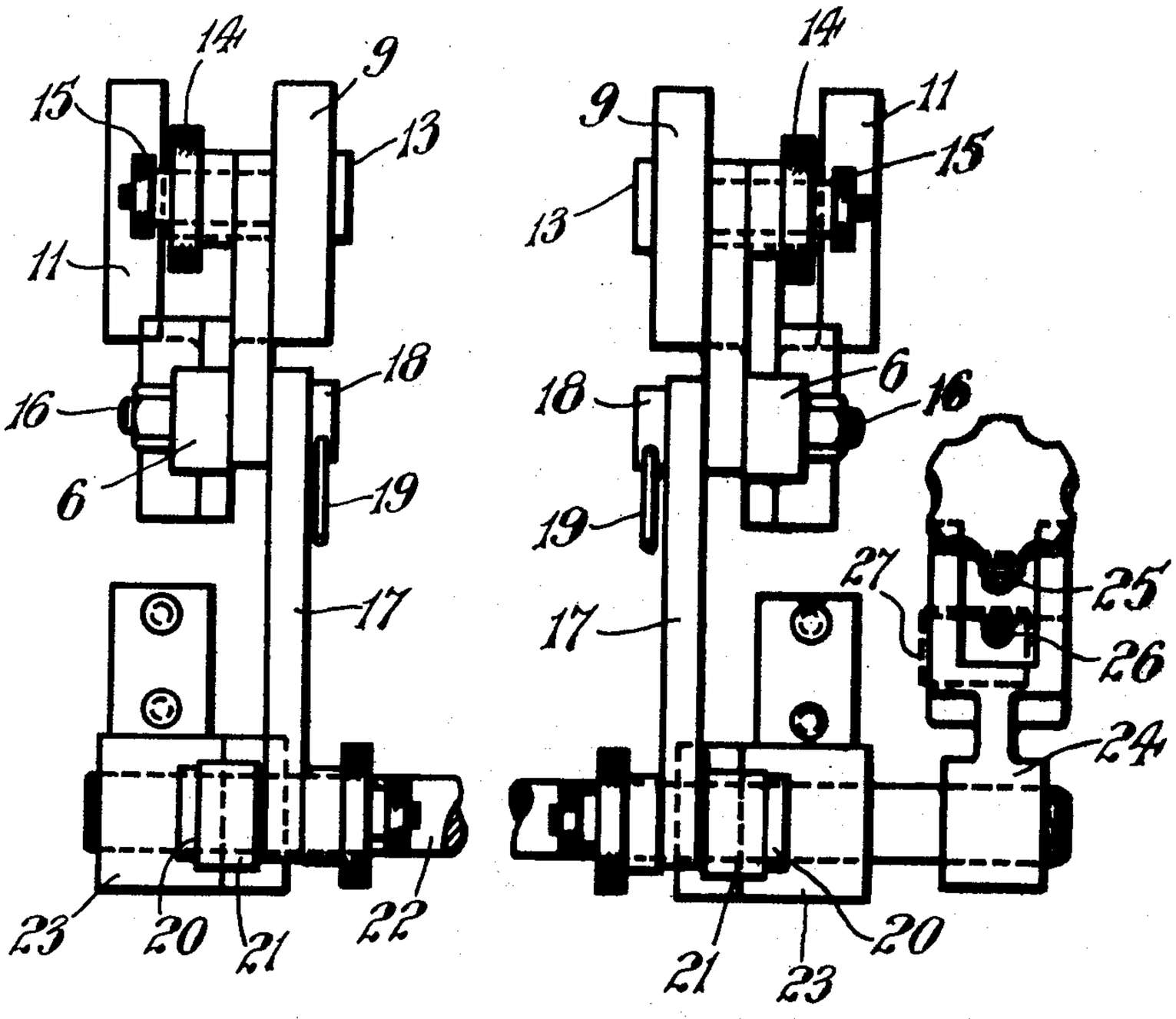


Fig. 4.

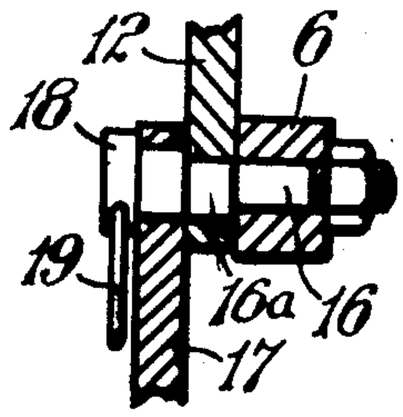
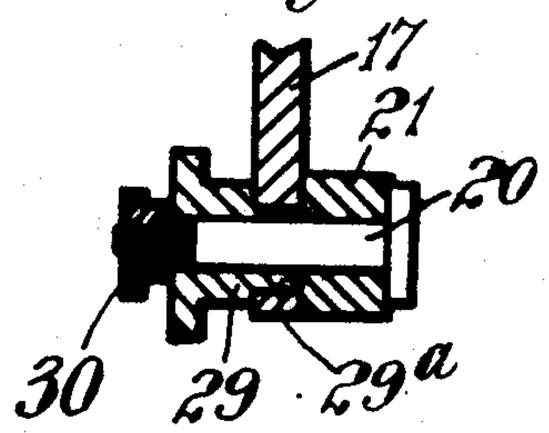


Fig. 5.



ANGUS MURRAY HALLEY
INVENTOR

Marshall, Marshall & Leonard
ATTORNEYS

Patented Sept. 29, 1953

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UNITED STATES PATENT OFFICE

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ROTARY PRINTING MACHINE

Angus Murray Halley, Moseley, Birmingham, England

Application June 29, 1950, Serial No. 171,155
In Great Britain May 8, 1950

6 Claims. (Cl. 101—352)

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This invention has reference to improvements connected with rotary printing machines and has particular reference to the mounting of the duct and forme rollers so as to provide for the ready settings thereof as follows:

(*a*) The setting of the clearance between the duct roller and the forme roller to adjust the quantity of ink being applied to the printing cylinder.

(*b*) The adjustment of the clearance between the forme roller and a printing cylinder to admit of the use of variable sizes of printing cylinder without changing the setting described in (*a*).

(*c*) The setting for parallelism between the forme roller and the printing cylinder without changing the setting described in (*a*).

(*d*) The quick removal of contact between the duct and forme rollers for breaks in operation of the machine to prevent gumming up of the two rollers due to quick drying of the ink.

The invention consists of a rotary printing machine characterised in that there is pivotally mounted at each side of the machine about the axis of a duct roller a lever pivotally connected, at one end to the one end of a lever carrying a forme roller and connected at its other end to the opposite end of the lever carrying the forme roller by a pivotal link and means whereby the effective length of the link connection between the two levers can be varied to change the setting of the forme and duct rollers relative to one another and means for changing the setting of the forme roller about the axis of the duct roller.

The invention will now be described with particular reference to the accompanying drawings in which:

Fig. 1 is a side elevation of the lever mechanism for effecting the adjustments as aforesaid. From this figure portions of the machine, forming no part of the present invention, have been omitted for the sake of clarity as have the details of the pivotal connections which are shown in detail in Figs. 3, 4 and 5 in the accompanying drawings.

Fig. 2 is an end elevation as seen from the left hand side of Fig. 1 again omitting all portions of the machine which form no part of the present invention.

Fig. 3 is a detail sectional view taken along the line **3—3** of Figure 1 through the setting device forming the connection between the lever **9** and the link **12**.

Fig. 4 is a detail sectional view taken along the line **4—4** of Figure 1 of the quick release mechanism forming the pivotal connection between the link **12** and the lever **6** and

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Fig. 5 is a detail sectional view taken along the line **5—5** of Figure 1 of the setting device forming the connection between the link **17** and the lateral arm **21**.

At each side of the machine a lever **6** is pivoted about the longitudinal axis of a duct roller **7** which is journalled in the frame of the machine. The one end of this lever **6** is turned upwardly and is pivotally connected at **8** to a downwardly turned end of a lever **9** which forms a mounting for the one end of a forme roller **10**. In parallel fixed spaced relationship with the lever **9** is a subsidiary lever **11** and between the levers **9** and **11** at each end of the machine a pinion forming a part of the drive to the forme roller is disposed. The free ends of the levers **6** and **9** at each side of the machine extend substantially parallel to one another and are interconnected by a pivotal link **12** the effective length of which can be varied by means of a setting device carried by the lever **9**. This setting device (Figure 3) comprises a pin **13** passing transversely through the lever **9** about which is rotatably mounted a knurled headed plug **14**, an eccentric portion **14a** of the shank whereof is adapted to fit closely within a hole in the upper end of the link **12**. Thus it will be appreciated that by rotating the knurled head of the plug **14** the effective length of the link **12** can be varied so as to adjust the clearance between the duct and forme rollers **7** and **10** by parting or closing the two levers **6** and **9** about the pivot **8**. The end of the pin **13** also carries a knurled headed lock nut **15** whereby the plug **14** can be locked at any desired setting. The pivot interconnection between the link **12** and the lever **6** incorporates a quick release mechanism (Figure 4) in the form of a pin **16** carried transversely by the lever **6** having an eccentric intermediate portion **16a** rotatable in a hole in the lower end of the link **12**. This pin also forms the pivotal connection for the upper end of a second link **17** to be referred to hereinafter and carries at its one end a head **18** with a radial arm **19** whereby the pin **16** may be rotated to provide a quick parting of the forme and duct rollers **10** and **7** so as to prevent gumming up when the operation of the machine is interrupted for any reason and to admit of the ready resetting to the initial position when restarted. The link **17** is pivotally connected at its lower end to a transverse pin **20** (Figures 2 and 5) carried by a radial arm **21** on shaft **22** extending across the machine and rotatable in bearings **23** fixed to the frame of the machine. This shaft **22** carries at one end a radially directed arm **24** (Figures 1

and 2) having a bifurcated end between the limbs whereof is mounted a rockable block 25 having a diametric hole in which is rotatable but not slidable the shank of a knurled headed screw threaded spindle 26 engaging a tapped aperture in a rockable stud 27 (Figure 1) fixed to the framework of the machine. Rotation of this spindle 26 by means of the knurled head effects a partial rotation of the shaft 22 and thereby through the radial arm 21 and the link 17 a rocking of both the levers 6 and 9 about the axis of the duct roller 7 to adjust the clearance between the forme roller 10 and a printing cylinder 28 without changing the setting of the forme roller 10 relative to the duct roller 7. It will be appreciated that this adjustment admits of the forme roller 10 and duct roller 7 being moved together to adjust the machine for printing cylinders 28 of different diameters. At each side of the machine the pivotal interconnection between the radial arm 21 on the shaft 22 and the link 17 incorporates a setting device (Figure 5) whereby the effective length of the link 17 can be varied to admit of the setting for parallelism between the forme roller 10 and the printing cylinder 28 about the axis of the duct roller 7 whilst the setting between the forme roller 10 and the duct roller 7 remains unaltered. This setting device comprises the transverse pin 20 on the radial arm 21 about which is rotatably mounted a knurled headed plug 29 the shank whereof has an eccentric portion 29a disposed within a hole in the lower end of the link 17; the screw threaded end of the pin 20 carrying a knurled lock nut 30 whereby the setting of this plug 29 may be retained.

What I claim is:

1. In a rotary printing machine in combination, a duct roller, a first lever pivoted about the axis of the duct roller at one side of the machine, a second lever at the same side of the machine and pivotally connected at one end to one end of the first lever, a forme roller having an end mounted in the second lever, a link connection between the free ends of the first and second levers, means for adjusting the effective length of said link connection and means for rocking both of said levers about the axis of the duct roller.

2. In a rotary printing machine in combination, a duct roller, a first pair of levers pivotal about the axis of the duct roller one at each side of the machine, a second pair of levers one at each side of the machine each pivotally connected at one end to one end of a first lever, a forme roller mounted between the pair of second levers, link connections one at each side of the machine between the free ends of the first and

second levers, eccentric means for adjusting the effective length of at least one of said link connections, a shaft having radial arms thereon, link connections between said levers and said radial arms on said shaft and means for rotating said shaft to rock both pairs of first and second levers about the axis of the duct roller.

3. In a rotary printing machine in combination a duct roller, a pair of first levers pivotal about the axis of the duct roller one at each side of the machine, a pair of second levers one at each side of the machine pivotally connected at one end to one end of a first lever, a forme roller mounted between the pair of second levers, a rotatable eccentric carried by each second lever, a pair of links each having one end engaging one of said eccentrics and being pivotally connected at its other end to a first lever, a rotatable shaft having radial arms thereon, links connecting said first levers to said radial arms on said rotatable shaft and means for rotating said shaft to rock each first and second lever together about the axis of the duct roller.

4. In a rotary printing machine according to claim 3 the provision of a rotatable eccentric forming the connection between each first lever and the link connected thereto.

5. In a rotary printing machine in combination a duct roller, a first pair of levers pivotal about the axis of the duct roller one at each side of the machine, a second pair of levers one at each side of the machine each pivotally connected at one end to the one end of one of said first levers, a forme roller mounted between the pair of second levers, link connections one between the free ends of the first and second levers at each side of the machine, rotatable eccentrics forming the connections between said link connections and each first and second lever, a shaft having radial arms thereon, link connections between each first lever and a corresponding radial arm on said shaft and screw operated means for rotating said shaft.

6. In a rotary printing machine according to claim 5 the provision of a rotatable eccentric forming a connection between each of said radial arms and the link connections.

ANGUS MURRAY HALLEY.

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