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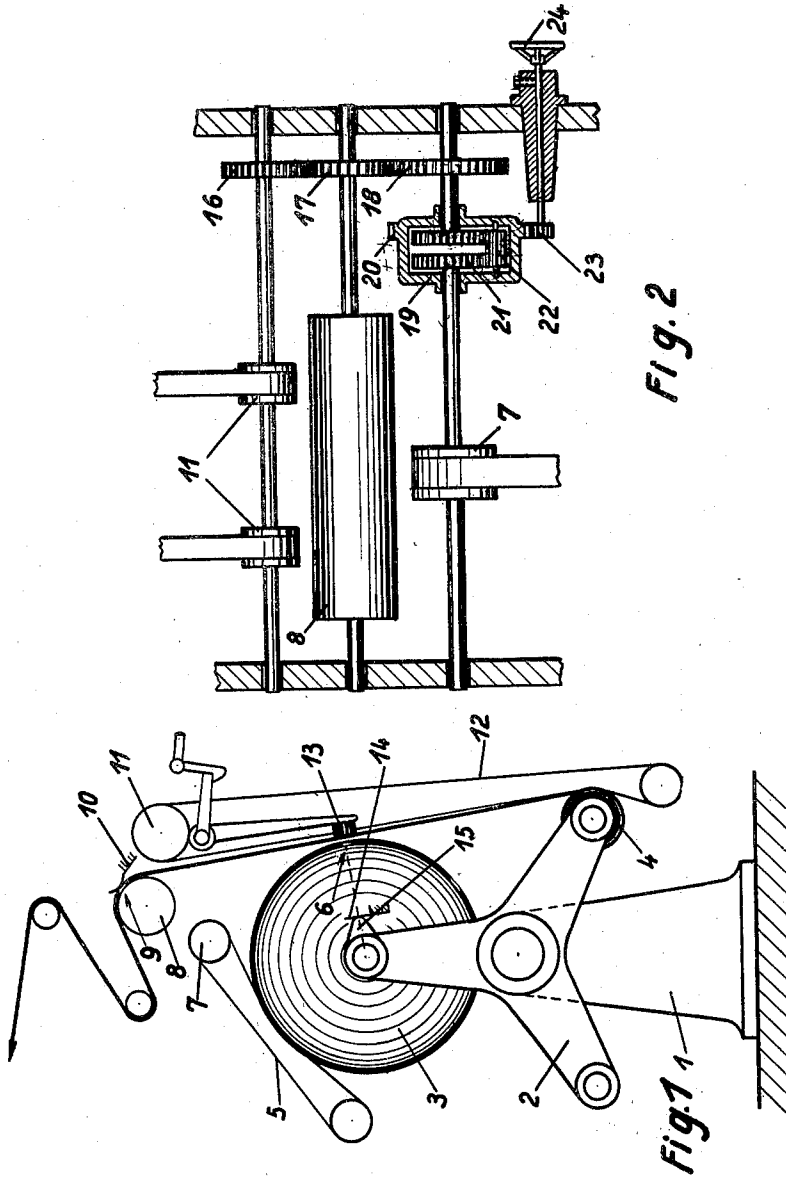
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PAPER-REEL CHANGING DEVICE IN ROTARY PRINTING MACHINES

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

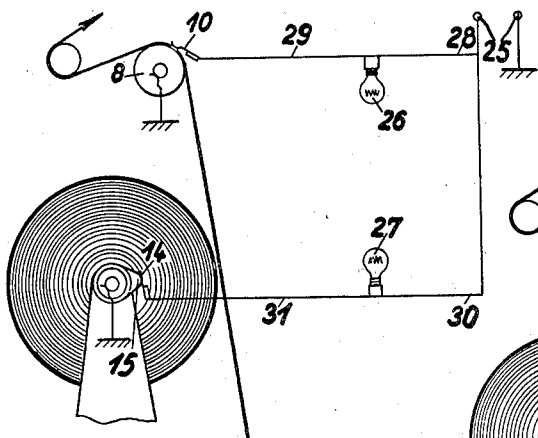


Fig. 3

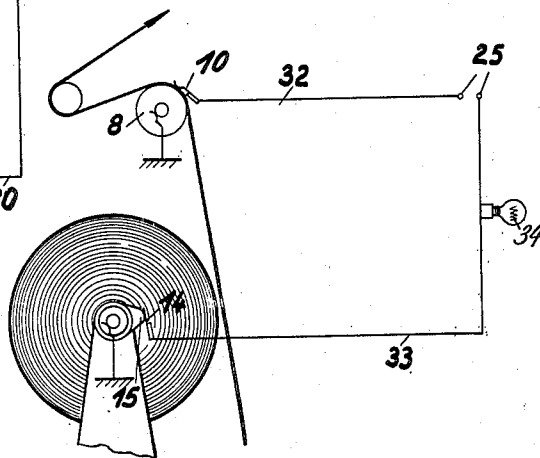


Fig. 4

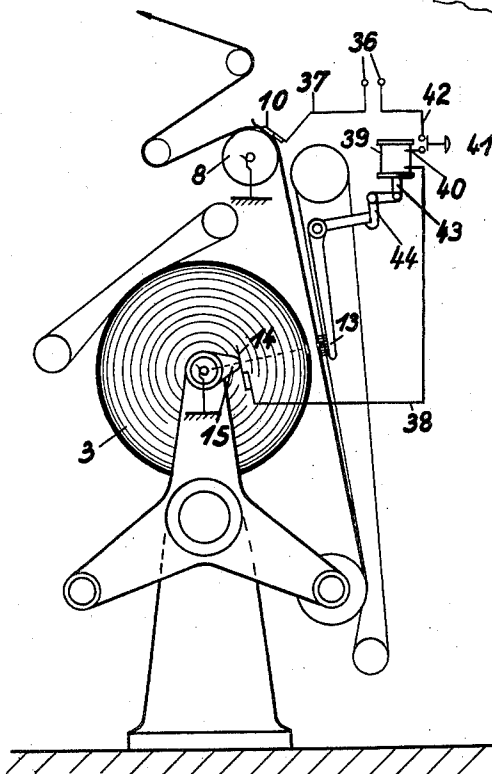


Fig. 5.

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UNITED STATES PATENT OFFICE

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PAPER-REEL CHANGING DEVICE IN ROTARY
PRINTING MACHINESFriedrich Pondorf, Plauen, Germany, assignor to
R. Hoe & Co., Inc., New York, N. Y., a corpora-
tion of New YorkApplication June 24, 1936, Serial No. 87,052
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4 Claims. (Cl. 242—58)

This invention relates to a paper-reel chang-
ing device for rotary printing machines, in which
the pasting operation is effected by causing a
point of the replacement reel to be connected in
register during pasting with one of the corre-
sponding periodically recurring points of the web
that is running off.

The invention contemplates a printed web of
paper provided with spaced control marks, which
runs into a rotary printing machine the products
of which are to be provided with supplements or
insets prepared on another printing machine.
In such cases it was hitherto impossible to
change the reels during operation of the machine
as it had to be stopped in order to join the webs
with the printing in register. The invention per-
mits the changing of reels without stopping the
machine, and automatically, even when the new
web has to be pasted in register with the old web.
The object of the invention is attained by mak-
ing the operation of the means for pasting the
new web to the old web, dependent upon the
pasting point on the replacement web being
brought opposite the point of the old web to be
united therewith, to effect which, the old web
is guided over a feeling device disposed the
length of a sheet from the pasting point. By
means of marks provided on the web and spaced
the length of a sheet the feeler actuates an elec-
tric contact device while a second contact device
connected with the replacement reel becomes op-
erative when the pasting point of the replace-
ment reel passes the web splicing means, so that
by synchronous operation of both contact de-
vices the web splicing means, for instance at the
simultaneous flashing of two signal lamps con-
nected in the respective circuits, can be released
by hand or automatically if the two contact de-
vices are connected in series in a circuit the cur-
rent of which passes through the releasing device.

To permit phase displacement between the web
that is running off and the revolving replacement
reel the adjustment of the latter may be addi-
tionally effected by a differential gear of suit-
able type.

By way of example, the invention is illustrated
in the accompanying drawings, in which Figure
1 is a simplified view of the paper-reel changing
device according to the invention; Fig. 2 shows
the arrangement of a differential gear; Fig. 3
is a wiring diagram of the signal arrangement
for two signal lamps; Fig. 4 is a wiring diagram
for one signal lamp; and Fig. 5 is a circuit dia-
gram showing the release of the pasting brush.

Referring to the drawings, on the stand 1 the

star-shaped reel carrier 2 is rotatably disposed.
4 is the unrolling reel which is driven by the belt
12 from the pulleys 11. The replacement reel 3
is driven by the belt 5 from the pulley 7 at the
same circumferential speed as the reel 4. The
web from the unrolling reel 4 is led over a drum
8 from which it is directed into the printing
machine. On the shaft of the replacement reel
3 one or more cams 15 are so arranged that a
contact device 14 is actuated when a mark or
perforation 6 provided on the web of the replace-
ment reel 3 is opposite the brush or web splicing
means 13. The contact device 14 may be of
different construction, provided it is connected
with the replacement reel 3 in such manner that
the contact or contacts are actuated always at
the time specified. The contact device 14 may
either light up or extinguish a signal lamp or
close an interruption in the circuit whereby the
brush releasing device is controlled or actuated.

The release of the web splicing means is rendered
dependent also upon the adjustment of the
old web to the pasting point in such manner that
the release can be effected only if corresponding
portions of the replacement reel and of the old
web are oppositely positioned at the pasting point.
For this purpose a second contact device 10 is
provided which is arranged in association with
the drum 8 to bear on the old web at a distance
of the length of a sheet or a multiple thereof
behind the pasting point. At this point the con-
tact device 10 is actuated when the marks or
perforations arranged the distance of a sheet-
length on the unrolling web, pass under the con-
tact device 10, and permit it to contact the drum
8 at the point 9. In this manner a second signal
lamp may be lighted or extinguished, or a con-
tact device serially connected with the contact
14 in the circuit influencing the release of the
web splicing means may be closed. In the lat-
ter case, the brush 13 is automatically released
when the two contact devices of the releasing
circuit are closed by the markings of the reel 3
and of the unrolling web coming into register.
If signal lamps are actuated by the contact de-
vices release of the brush 13 can take place by
hand.

The motion of the star-shaped carrier of the
reels can be automatically or manually controlled
by known means.

The requisite synchronism of the replacement
reel with the unrolling web can be brought about
by the operation of a differential gear 19, 20, 21,
22, 23 which may be disposed on the shaft driv-
ing the belt 5. In the construction shown in

Fig. 2 the hand wheel 24 fixably arranged in the side frame of the machine effects rotation of the pulley 7 relative to the toothed wheel 18 driving it, and thereby causes rotation of the reel 3 relative to the unrolling web by means of the pinion 23, the toothed rim 20 of the differential casing 19 and one or more planet wheels 22. The drives of the unrolling web by the pulleys 11, the feeler drum 8 and the drive of the reel 3 by the pulley 7 are connected by means of the toothed wheels 16, 17 and 18. The contact device 10 may simultaneously serve in known manner for controlling the feeding in register of the printed supplement to the folder of the rotary printing machine, with the products of which the printed supplement may be folded. For this purpose it may be constructed along the lines of the known in-setting devices so as to cause the perforations on the web moving past the contact device 10 always to remain at the feeling point by suitably accelerating or decelerating the drive of the replacement web roll.

In connection with the various circuits referred to in the foregoing, Figs. 3 to 5 illustrate the various details of the control devices. In Fig. 3, 25 indicates the connections to a source of current as for example to a power line in which one or the other pole of the circuit can be chosen for the signal lamps and the other grounded. The current flows through the wire 28 to the signal lamp 26 and then through the further wire 29 to the contact brush 10. When a perforation in the paper web passes over the drum 8 the electric current is grounded and the lamp 26 will light up. At the same time the electric current also flows through the second circuit by means of the wire 30 and the signal lamp 27 and the further wire 31 to the contact brush 14 which latter cooperates with the rotating cam 15. The cam 15 is grounded and in accordance with the circuit illustrated in Fig. 3 the release of the brush 13 of Fig. 1 can take place at the moment when both signal lamps 26 and 27 are simultaneously lighted.

Fig. 4 shows a wiring diagram in which the circuit is connected to a source of current 25. The current flows through the wire 32 to the contact brush 10 and when a perforation appears in the paper web the circuit is grounded through the drum 8. The signal lamp 34 is in the circuit 33 and at the instant that the contacts 10 and 14 simultaneously make contact respectively, with the drum 8 and the cam 15, this lamp 34 will be lighted. The current flows through the frame of the machine from the drum 8 to the cam 15 which is also grounded and from there through the contact brush 14 and the wire 33 to the signal lamp 34.

Fig. 5 shows at 36 the connection to the source of current and the wire 37 connecting one side of the source with the contact brush 10 and the drum 8 from and to the ground. From the ground, that is the frame of the machine the current flows through the grounded cam 15 to the contact spring 14 and by means of the wire 38 to the electro-magnet 39. From the electro-magnet 39 the current flows to a switch 41 by means of a wire 40 and from the switch to the other connection 36 by means of the wire 42. When the electro-magnet 39 is energized the armature 43 will be pulled into the magnet and in this way the web splicing means 13 is released from the latch 44. By means of the switch 41 the web splicing means can be made self acting.

I claim:

1. In a paper reel changing device for a machine arranged to produce printed products in which a previously printed web is associated with a web printed by the machine, means for rotatably supporting a replacement reel having a printed web and for supporting a web reel from which a printed web is being led adjacent to the replacement reel and thence fed to the machine, said webs having perforations therein spaced a page length apart, a first contact making device including a part rotatable with the replacement reel in line with a perforation in the web thereof and actuated when the perforation in the web of the replacement reel passes a selected point, a second contact making device in the path of the web being fed and at a distance from the said point governed by the page length of the printed products, means to drive the replacement reel at a speed corresponding with the speed of the web being fed, means to alter the speed of the driving means to bring the perforations in the said webs in opposite relation, signal means actuated by operation of the said contact making devices to indicate when a perforation in one web is opposite a perforation in the other web, and means for joining the web of the replacement reel to the web being fed.

2. In a paper reel changing device for a machine arranged to produce printed products in which a previously printed web is associated with a web printed by the machine, means for rotatably supporting a replacement reel having a printed web and for supporting a web reel from which a printed web is being led adjacent to the replacement reel and thence fed to the machine, said webs having perforations therein spaced a page length apart, a first contact making device including a part rotatable with the replacement reel in line with a perforation in the web thereof and actuated when the perforation in the web of the replacement reel passes a selected point, a second contact making device in the path of the web being fed and at a distance from the said point governed by the page length of the printed products, means to drive the replacement reel at a speed corresponding with the speed of the web being fed, means to alter the speed of the driving means to bring the perforations in the said webs in opposite relation, means for joining the web of the replacement reel to the web being fed, and means actuated when a perforation on the replacement reel is opposite a perforation on the running web, to automatically actuate the web joining means.

3. In a paper reel changing device for a machine arranged to produce printed products in which a previously printed web is associated with a web printed by the machine, means for rotatably supporting a replacement reel having a printed web and for supporting a web reel from which a printed web is being led adjacent to the replacement reel and thence fed to the machine, said webs having perforations therein spaced a page length apart, a first contact making device including a part rotatable with the replacement reel in line with a perforation in the web thereof and actuated when the perforation in the web of the replacement reel passes a selected point, a second contact making device in the path of the web being fed and at a distance from the said point governed by the page length of the printed products, means connected to the machine to drive the replacement reel at a speed corresponding with the speed of the web being

fed, a normally inactive differential device associated with the replacement reel driving means and manually operable to superimpose an advancing and a retarding motion on the replacement reel with respect to the motion of the web being fed, signal means actuated by operation of the said contact making device to indicate when a perforation in one web is opposite a perforation of the other web, and means for joining the web of the replacement reel.

4. In a paper reel changing device, means to rotatably support a replacement reel having a printed web and a reel from which a printed web is being led adjacent to the replacement reel, said webs having spaced apart perforations therein, the spacing of perforations in one web being equal to the spacing of perforations in the other web, a first electrical contact making de-

vice including a part rotatable with the replacement reel and in line with a perforation in the web thereof, said contact making device being actuated when the perforation in the web reaches a determined point, a second electrical contact making device in the path of the web being led and at a distance from the said point governed by the spacing between the perforations in the webs, means to drive the replacement reel at a speed corresponding to the speed of the web being led, means to vary the speed of said driving means to register the perforations in said webs, an electrically operable device energized when said contact making devices are simultaneously actuated, due to the perforations in said webs being in register, and means to join said webs.

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