No. 844,461. PATENTED FEB. 19, 1907.

F. NEWBOLD.

ROTARY PRINTING PRESS.

APPLICATION FILED MAY 3, 1906.

2 SHEETS—SHEET 1.

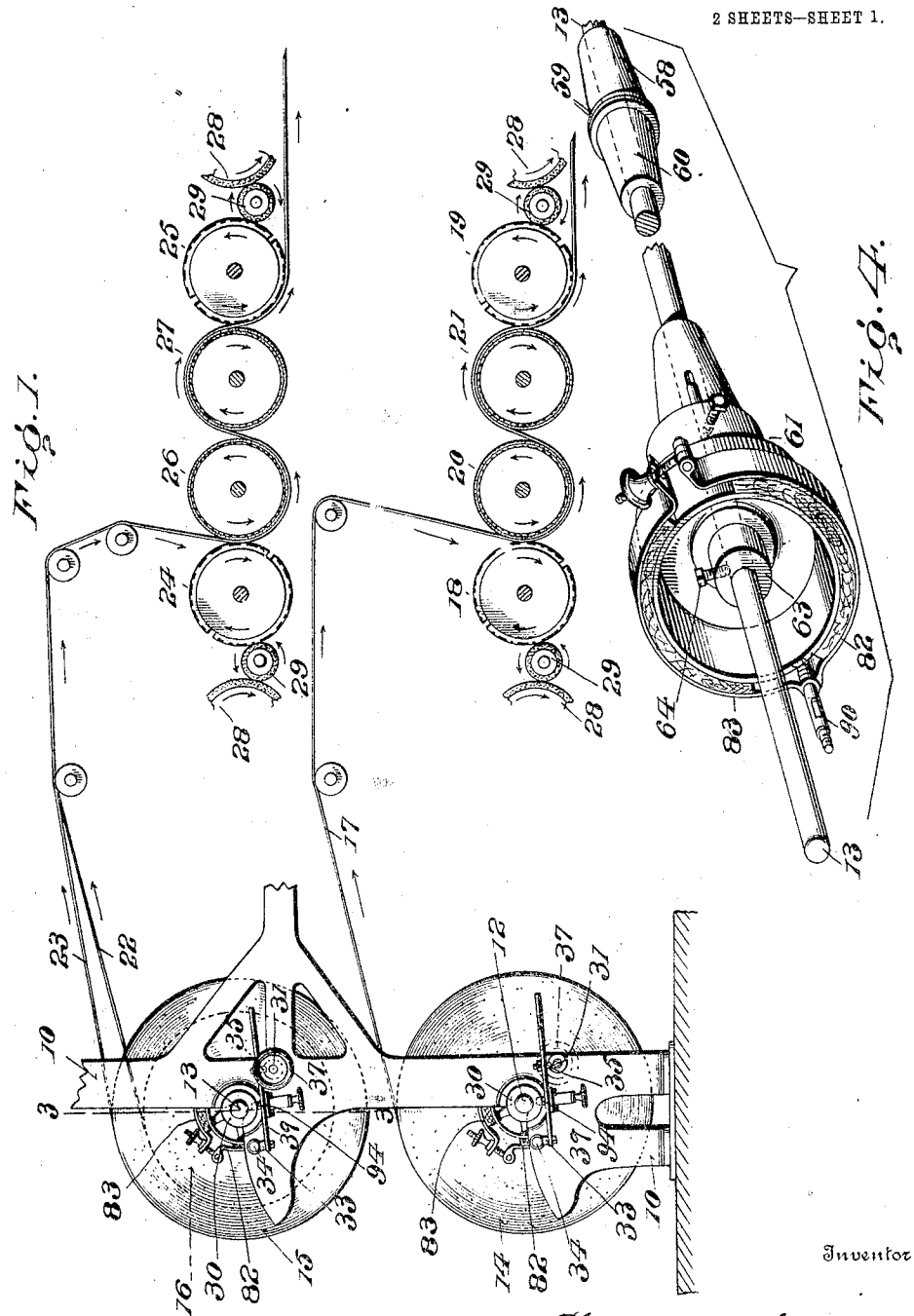


Fig. 1.

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 2.

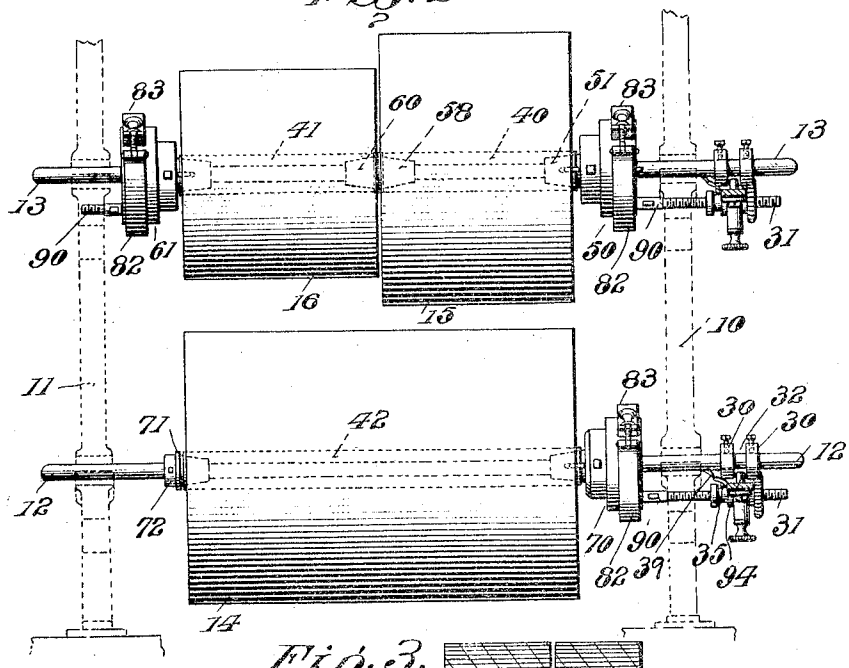
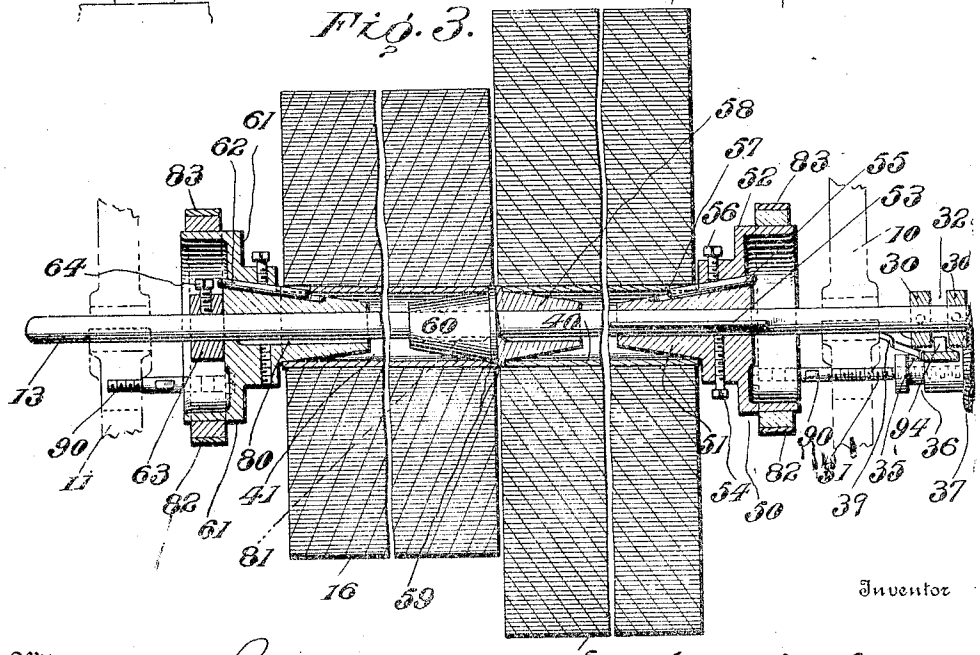


Fig. 3.



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UNITED STATES PATENT OFFICE.

FLEMING NEWBOLD, OF WASHINGTON, DISTRICT OF COLUMBIA.

ROTARY PRINTING-PRESS.

No. 844,461. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed May 3, 1906. Serial No. 315,049.

To all whom it may concern:

Be it known that I, FLEMING NEWBOLD, of Washington, District of Columbia, have invented a new and useful Improvement in Rotary Printing-Presses, which improvement is fully set forth in the following specification.

My invention relates generally to rotary printing-presses, but more particularly to the mounting of web-rolls from which the webs of paper printed upon are drawn.

In printing newspapers, for example, it is frequently desirable to deliver from two single or narrow width rolls of paper mounted in axial alinement or end to end on the same axle or shaft two single-width webs to be simultaneously printed upon by a double-width form-cylinder or by a plurality of such cylinders arranged in series in the same manner as said form cylinder or cylinders would print upon a single double-width web delivered from a double-width roll of paper mounted upon the same or a similar shaft. This is desirable, for example, in printing a sporting section of the Sunday edition of a newspaper upon a single or narrow width web of a different color from the paper of the other part of the edition or in printing a magazine section of the Sunday edition upon a single width or narrow web of a different quality or calendar of surface from the paper of the other part of the edition. Furthermore, when it is found, as sometimes happens that the single-width rolls of paper in stock are proportionately larger than the double-width rolls of the same paper it is often desirable to adjust the proportion by utilizing two single-width rolls where a double-width roll would ordinarily be used. Furthermore, as the desirability of using two single or narrow width rolls frequently applies only to editions issued on a certain day of the week—Sunday, for example—and as it is desirable for the other editions to use the usual double-width rolls in place of the two single-width rolls it is to that end necessary in order that the full capacity of the press may at all times be utilized that the improved means used in conjunction with two single-width rolls shall be quickly and readily interchangeable with the means used in conjunction with a single double-width roll. It is further desirable that in printing-presses having two or more decks the means used for one or two rolls shall be adapted to use on any deck and readily changeable from one deck to another.

The above and other desirable results and advantages are attained by my present invention, which is capable of expression in various mechanical forms.

In the accompanying drawings I have illustrated what I believe to be the preferred embodiment thereof and which in practical operation has given satisfactory and highly successful results.

In said drawings, Figure 1 is a side elevation of parts of a two-deck newspaper-printing press. Fig. 2 is a front elevation from the left of Fig. 1. Fig. 3 is a vertical sectional view on the line 3 3 of Fig. 1, and Fig. 4 is a perspective view of the shaft and parts thereon shown in Fig. 3.

10 is a part of the framework at one side, and 11 a part of the framework at the other side, of the press.

12 and 13 are axles or shafts rotatably mounted and supported at opposite ends in bearings in framework 10 and 11.

14 is a double-width roll of paper, or as it is commercially known, "web-roll," mounted on shaft 12 and from which web 17 is drawn and printed upon by the double-width form-cylinders 18 19 and impression-cylinders 20 and 21 of the lower deck of the press.

15 and 16 are two single-width web-rolls mounted in axial alinement upon shaft 13 and from which two single-width webs 22 and 23 are delivered or drawn side by side and simultaneously printed upon by the double-width form-cylinders 24 and 25 and impression-cylinders 26 27 of the upper deck. Each of the four form-cylinders has inking-rollers 28 29. As shown, the two form-cylinders of each deck are arranged in series to print upon opposite sides, respectively, of the web or webs. Furthermore, each form-cylinder, in addition to being of double width—*i. e.*, the width of two forms in an axial direction—has, as shown, two forms about its periphery. Consequently there are upon each form-cylinder four forms each adapted to print one page of a newspaper. It follows that

the two-form cylinders of each deck have a capacity of eight pages, or a total of sixteen pages for the two decks.

The common method of putting a web-roll in place in a press of the general type shown in the drawings is to first secure the axle or shaft in position through the roll and then elevate the roll and shaft until the ends of the latter engage the bearings in frame-work 10 and 11. The roll and shaft are then adjusted in an axial direction to bring the web into proper alinement with the form-cylinder. In the drawings I have shown in conjunction with each of the two shafts 12 and 13 well-known adjusting means for this purpose: One description will suffice.

30 30 are two collars fixed by set-bolts upon the end of shaft 12, which projects beyond framework 10 and forming between them and about the shaft an annular groove 32.

31 is a screw-threaded stud fixed to and projecting from framework 10.

39 is a lever having at 33 a universal connection to a stud 34, Fig. 1, on framework 10. A spring-projected pin 94 on lever 32 is adapted to be readily engaged in groove 32, so than an attendant by gripping the handle end of lever 39 and swinging the same toward or from the framework 10 may axially move the shaft and web-roll until a second projection or stud 35 on lever 39 is brought into engagement with an annular groove 36 in the elongated hub of an adjusting hand-wheel 37, which latter makes screw-thread engagement with stud 31. With the parts thus engaged turning of said hand-wheel actuates lever 39 to give the finer adjustment for bringing the shaft and web-roll to the exact position desired.

As is well known, rolls of paper such as employed in newspaper printing are wound upon hollow metallic spools, which are simply sections of metallic tubing of uniform diameter without end flanges or other projections. Two such spools 40 and 41 are shown in Fig. 3 for web-rolls 15 and 16. 42, Fig. 2, is a similar spool for web-roll 14. Referring particular to Fig. 3, 50 is a combined cone and friction wheel, its cone part 51 tightly engaging within the end of spool 40 of web-roll 15, and its wheel part 52 being constituted by an annular flange which gives a cup-like form to the outer end of the element and affords lightness and also compactness of structure, as later pointed out. A cone 58 on shaft 13 engages within and supports the other end of spool 40 and its roll 15 in proper position on said shaft. The flange 59 of cone 58 should not exceed the diameter of the spool, so that the cone may, as shown in Fig. 3, be driven slightly into the end of the roll to enable the ends of the two rolls to be brought close together. Cone-wheel 50 is splined or feathered on shaft 13, 53 being the spline or feather fixed to said shaft, and is fixed against endwise movement by a set-bolt 54. A pin 55, fixed by a set-bolt 56 in an opening in the cone-wheel, projects at one end into the notch 57, commonly provided at one end of web-roll spools. It follows that shaft 13, cone-wheel 50, and web-roll 15 are interlocked so that they must turn together when rotated by the pull of the form and impression cylinders upon web 23, Fig. 1.

The inner end of web-roll 16 is supported upon shaft 13 by a cone 60, similar to cone 58, which may, as shown in Fig. 3, be driven slightly into the end of the web-roll, causing spool 41 to correspondingly project from the other end of said roll. Cone 60 is loose on the shaft 13 to rotate independently thereof or at a different speed, with its end face in engagement with the similar face of cone 58, which latter being forced tightly into spool 40 will rotate with web-roll 15, and consequently with shaft 13. At its outer end web-roll 16 is supported upon shaft 13 by a cone-wheel 61, preferably similar to and interchangeable with cone-wheel 50. Pin 62, similar to pin 55, locks cone-wheel 61 to web-roll 16, requiring them to turn together when rotated by the pull upon web 22, Fig. 1. There is no feather or spline, similar to 53, at this end of shaft 13, and instead of a set-bolt, such as 54, a collar 63, fixed on the shaft 13 by a set-bolt 64, prevents endwise movement of web-roll 16, cone 60, and cone-wheel 61, all of which are free to rotate on shaft 13 at a speed different from the speed of rotation thereof. As shown, the collar 63 engages shaft 13 within the cupped end of cone-wheel, where it is easily accessible. This conduces to compactness and facilitates the easy application of my improvements to presses now in use.

Referring particularly to Fig. 2, the double-width web-roll 14 is shown as mounted upon its shaft 12 in the same manner as single-width web-roll 15 is mounted upon shaft 13. A cone-wheel 70, feathered on shaft 12, interlocks with the spool of roll 14, requiring these parts to turn together when rotated by the pull upon web 17, Fig. 1. A cone 71, similar to cones 58 and 61, supports the other end of roll 14, and a collar 72, similar to 63, locks the roll against endwise movement.

As shown in Fig. 3, the cylindrical wall of cone-wheel 61, which turns on shaft 13, is provided with a longitudinal groove or channel 80 for receiving lubricant, such as axle-grease in a semiliquid or plastic condition. Cone 60 is provided with a similar groove 81. Cone-wheels 50 and 70 and cones 58 and 71 have similar grooves, making them inter-

changeable with cone-wheel 61 and cone 60. The cones and cone-wheels not only support the rolls upon their shafts, but properly center the rolls upon said shafts.

It is well known that in presses of the general type shown and described suitable web-tensioning means (the function of which is so so well-known as to require no explanation herein) must be provided for each web-roll. In the drawings I have shown similar web-tensioning means for each roll. The friction-wheel portion of each of the cone-wheels 50, 61, and 70 forms a part of said means. A single description will suffice. Referring particularly to Fig. 4, 90 is a stud screw-threaded into framework 11, Figs. 1 and 2. At the other side of the machine these studs 90 90 are shown as continuations of studs 31 31. 82 83 are two friction-segments hinged at one end on stud 90, constituting a friction-shoe, and faced with a suitable material, such as leather, which makes contact with the peripheral surface of the wheel portion of the cone-wheel. At their other ends segments 82 and 83 are connected by a screw-link and thumb-nut, whereby the frictional pressure of the segments upon the wheel may be regulated. The wheel-surface is made of such width as to permit of the desired range of adjustment of the web-roll and shaft in bringing the web into proper alinement with the form-cylinders, as heretofore explained. Any suitable means other than those herein shown may be employed for properly tensioning the web of each roll. With reference to parts 51, 58, 81, 61, 70, and 71 I have used the term "cone" as indicating the preferred form of centering and supporting sleeves at these points; but any other suitable form of sleeve may be employed.

From the foregoing description it will be apparent that in the proper operation of the mechanism the form and impression cylinders, which themselves grip and draw from the web-rolls the paper upon which they print, must simultaneously draw from the two web-rolls 15 and 16 equal lengths of web or paper, or, in other words, the webs 22 and 23 must be delivered from the rolls and advance to the printing mechanism at equal speeds. As it rarely if ever happens that two full web-rolls are of equal diameters, and furthermore, as it frequently is necessary or desirable—for example, in the case of two rolls of different-colored paper—to work together two partially-used rolls or one partially-used roll and one full roll of varying diameters, it is apparent that the two rolls 15 and 16 must, as provided for by the mechanism described, be capable of rotating independently of each other at the same peripheral speed, but at different axial speeds. The arrangement of means provided for independently tensioning the webs drawn from two web-rolls, supported by a single shaft, but capable of independent rotation, also constitute an important feature of the mechanism. It is also of importance that the means which admit of the independent feed of the two webs shall enable the web-rolls to be mounted and independently rotate with their inner ends in approximate abutment, preferably not in actual contact, but with sufficient intervening space to give a clearance, or, in other words, so close together that either a single double-width web or two single-width webs may be delivered to the same double-width form cylinder or cylinders without material or practical difference in the margins left in the two cases. It is also of importance that the improved means provided by this invention may be easily applied to newspaper-presses now commonly in use without material change or reconstruction and at minimum expense; also, that the additional parts necessary are few in number and may be used either for two single-width rolls or a single double-width roll and upon any deck of a multideck machine. Other important features of construction and advantages resulting therefrom not specifically mentioned herein will be apparent to those skilled in the art.

What I claim as new is—

1. In a printing-press, the combination of a single shaft supported at its ends and adapted to pass axially through two web-rolls, and means for centering and supporting the rolls upon the shaft so that said rolls are independently rotatable to deliver two webs side by side, said centering and supporting means including a sleeve or cone on the shaft for the inner end of each roll the opposing faces of said sleeves or cones making movable contact with each other.

2. In a printing-press, the combination of a single shaft supported at its ends and adapted to pass axially through two web-rolls, two sleeves or cones on the shaft having opposing faces in movable contact said cones engaging in the inner ends of the rolls respectively, two combined sleeve or cone and friction wheels on the shaft the sleeves or cones thereof engaging in the outer ends of the web-rolls respectively, the web-rolls thus supported upon the shaft being independently rotatable to deliver two webs side by side, and independent web-tensioning means for each web of which the friction-wheels of the cone-wheels form parts respectively.

3. In a printing-press, the combination of a single shaft for axially supporting two web-rolls so that they are independently rotatable to deliver two or more webs side by side; means for independently centering and supporting said rolls upon the shaft with their

inner ends in approximate abutment—whereby it is possible, for example, to deliver two single-width webs instead of a double-width web to a double-width form-cylinder without material difference in the margins left in the two cases; and web-tensioning means independently tensioning the web of each roll.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FLEMING NEWBOLD.

Witnesses:
REEVE LEWIS,
GUSTAVE R. THOMPSON.