

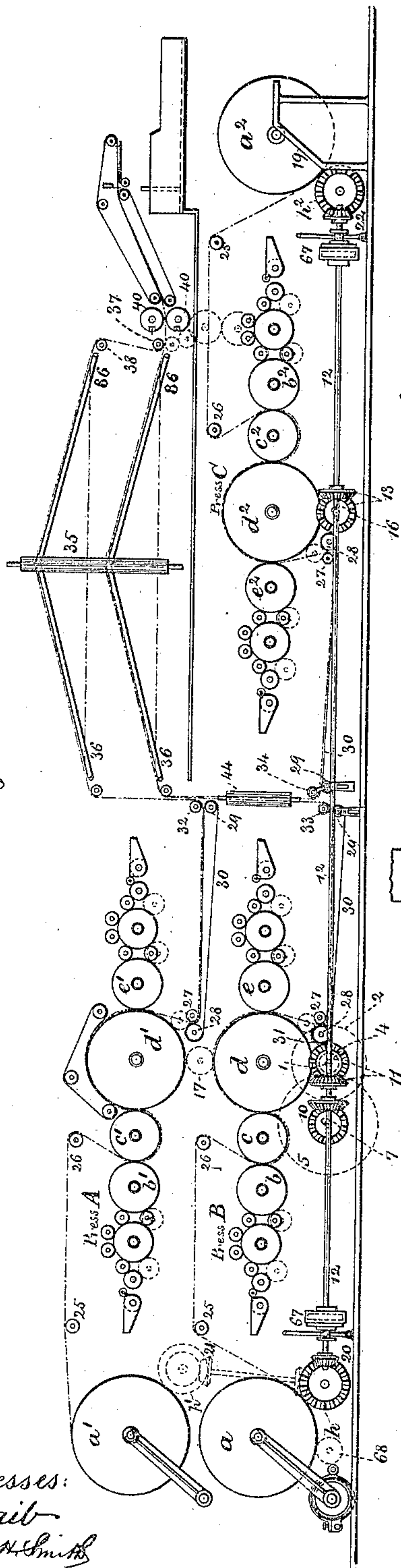
(No. Model.)

W. SCOTT.
WEBB PRINTING PRESS.

No. 446,696.

Patented Feb. 17, 1891.

Fig. 1.



Witnesses:
J. Stair
Charles Smith

Fig. 3.

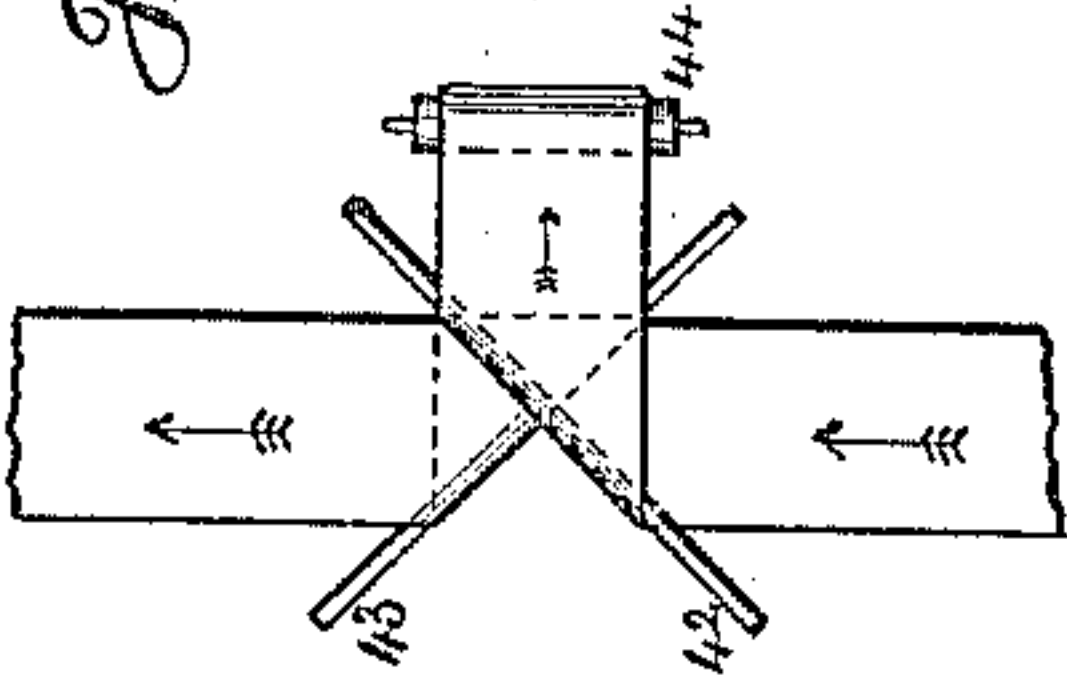


Fig. 4.

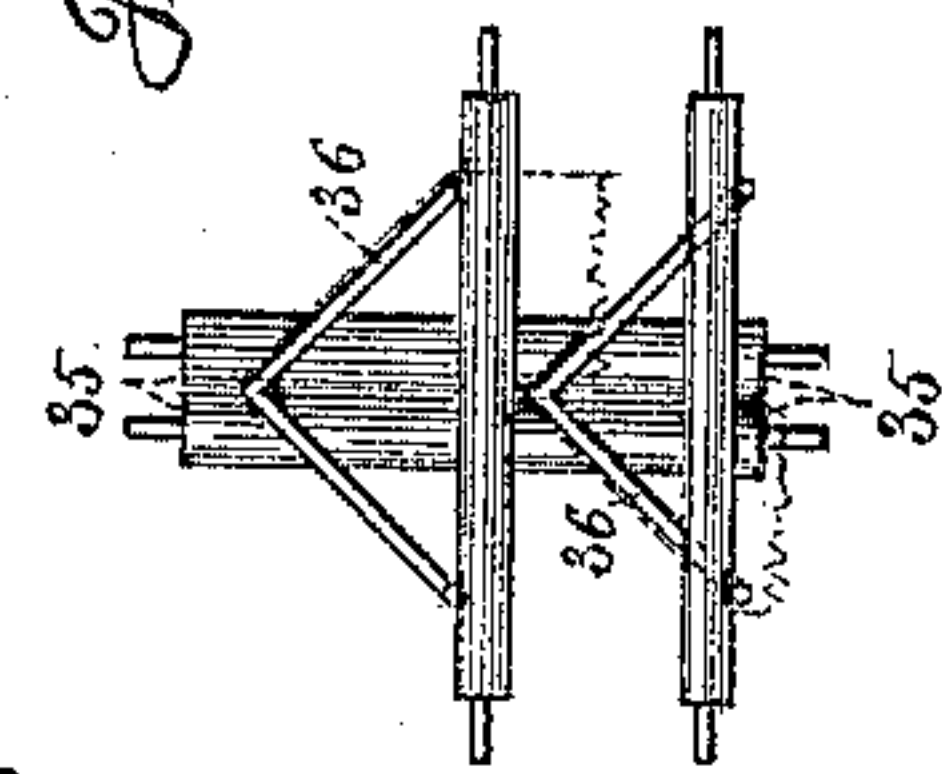


Fig. 5.

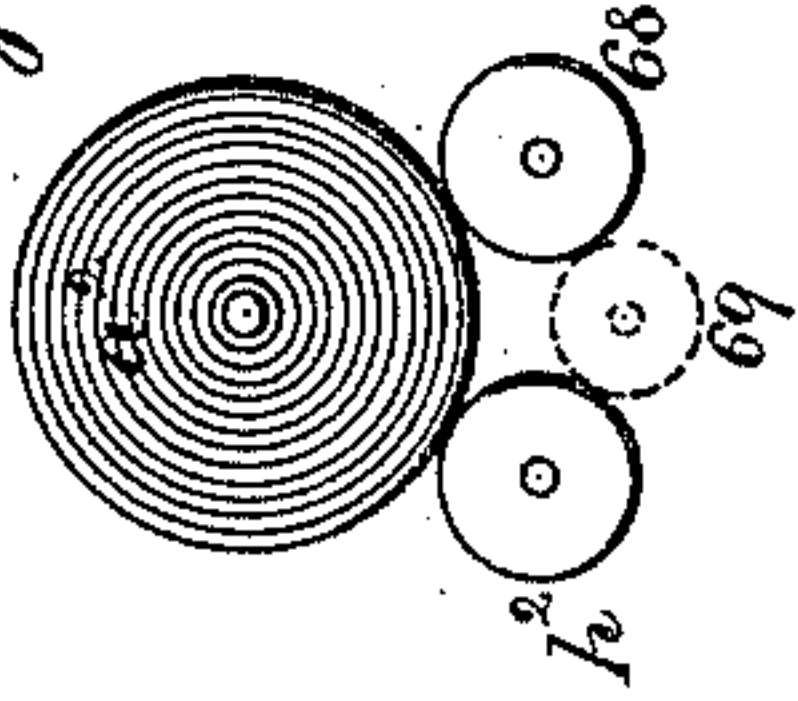
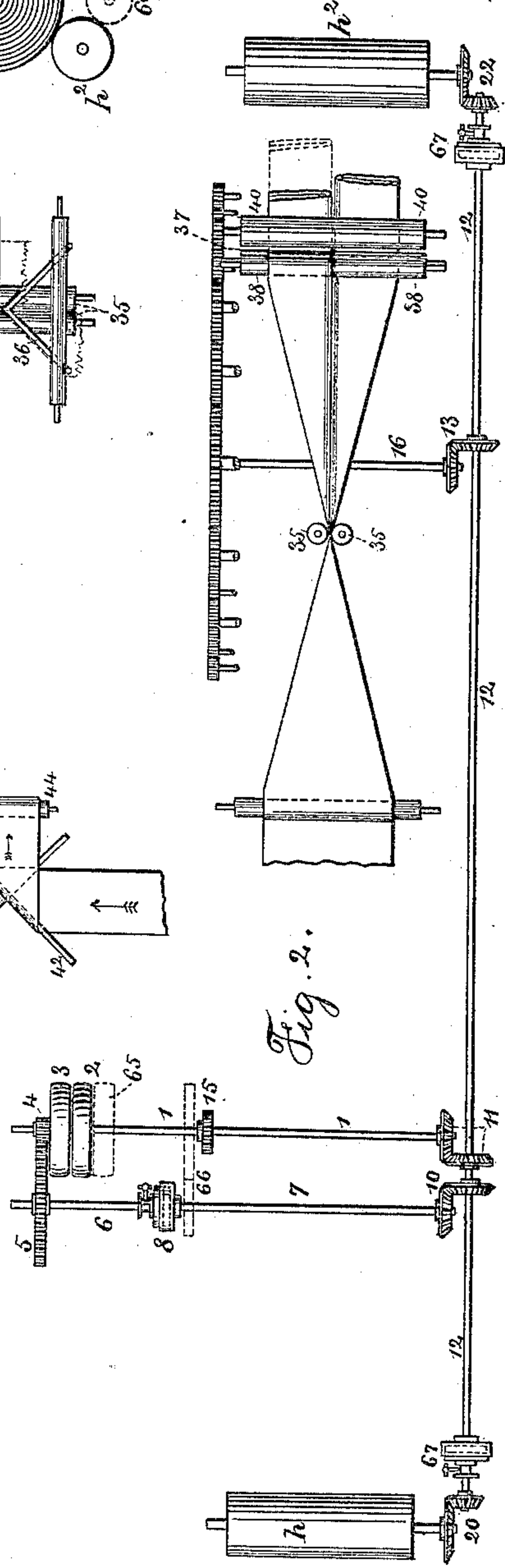


Fig. 2.



Inventor:
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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

WEB-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 446,696, dated February 17, 1891.

Application filed July 16, 1889. Serial No. 317,719. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, of Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Web-Printing Machines, of which the following is a specification.

In web-printing machines, especially where two or more machines are associated together for printing upon the web and bringing the products to a common point of delivery, difficulty has arisen in starting the presses in unison and sufficiently slow for the attendants to guide in the advancing end of a fresh web of paper and bring it correctly to the point of delivery, because the power required for moving the respective parts is usually too much to be exerted by the attendant, and when steam or similar power is connected to the press the movement is too rapid for guiding in the advancing end of the fresh web.

My present improvement relates to the mechanism made use of in driving the combined printing and paper-supplying devices to facilitate the introduction of the paper into a web-printing machine, and where two or more presses are used together the respective webs are brought together to form one or more products that are afterward cut off and delivered with uniformity.

In the drawings, Figure 1 is a diagrammatic elevation of the three presses and the folding and cutting mechanism. Fig. 2 is a diagrammatic plan view representing the gearing employed in driving the presses. In these views the frame-work of the machine is left off for greater clearness. Fig. 3 is a diagrammatic view representing the manner in which the web is turned to transpose the positions of the pages. Fig. 4 is an elevation of the folding bars and rollers made use of in bringing the webs into their proper positions to fold and cut the same; and Fig. 5 illustrates a modification of the rolls for driving the paper-roll.

I have represented three presses, designated as presses A B C, the press A being above the press B, and the press C in the same plane as the press B and at one end thereof, and the presses are so placed that the roll of paper a' for the press A is above the roll of paper a for the press B, and the roll of paper a^2 for the press C is at the distant end from

the press B, so that the webs of paper from the presses B and C come toward each other and are delivered centrally, and preferably upwardly, as hereinafter set forth.

I have represented type-cylinders b b' b^2 for the respective presses: first impression-cylinders c c' c^2 , second impression-cylinders d d' d^2 , and second type-cylinders e e' e^2 ; and I remark that the inking devices for the respective type-cylinders are to be of any desired character, such, for instance, as those illustrated in the drawings, Fig. 1.

The driving-shaft 1 is provided with a fast pulley 2 and a loose pulley 3, and connected with this loose pulley 3 is a pinion 4, gearing to a wheel 5 upon a shaft 6. Hence when the press is stopped by shifting the belt upon the loose pulley 3 the pinion 4, gear-wheel 5, and short shaft 6 will be continuously rotated.

In line with the shaft 6 is a secondary shaft 7, and there is a friction-clutch at 8 between the shafts 6 and 7, which friction-clutch is operated by a suitable lever, so that the power can be applied from the shaft 6 to rotate the shaft 7 at the desired slow speed. This shaft 7 is made use of for moving the whole of the presses in the same direction, but at a slow speed whenever it is desired to enter the end of a fresh web of paper or to make any tests in the printing of the web or the adjustments to bring the sheets to the proper register, and after this has been done the belt is to be shifted from the loose pulley 3 to the fast pulley 2 and the power applied directly to the driving-shaft of the printing-presses. This driving mechanism is preferable to the devices before used, where there is a friction-clutch on the main driving-shaft, because in this improvement the clutch is running slowly and the speed is limited thereby, whereas in devices before known the friction-clutch may bind and the speed increase to the normal speed of the press.

In order to connect the respective presses B and C, I make use of a longitudinal shaft 12, connected by the bevel-gears 11 and 10, respectively, with the shafts 1 and 7, and by the bevel-gears 13 with the driving-shaft 16 of the press C, and I connect the gear-wheels upon the shafts of the second impression-cylinders d d' of presses A B by the gear-wheel 17, (shown by dotted lines in Fig. 1,) so that

the presses A B C will move together, whether receiving a fast or slow motion through the gearing, shafts, and friction-clutch before described; and I remark that when the belt is upon the fast pulley 2 the friction-clutch 8 is to be liberated, because the shaft 7 will be revolved by the shaft 1 and bevel-gears 10 and 11, and it is preferable, for the shaft 6, gears 4 and 5, and loose pulley 3 to remain stationary while the press is run in its normal condition. If desired, a thin pulley (shown by dotted lines at 65) may be used, such pulley being tight on the shaft 1 and the pulley 2 being loose, so as to simply receive the belt, when all the other parts of the press are stopped. If straight gears are used, as shown by dotted lines at 66, the bevel-gears 10 may be dispensed with.

The rolls of paper a a' a^2 are upon axes or shafts, as usual, and such axes may be supported upon crank-arms shown in connection with the presses A and B, and similar to the devices set forth in my patent No. 404,505, or the shaft of either one or more of the rolls of paper may rest upon inclined planes 19, as shown in connection with the press C. In either instance the weight of the roll of paper rests to a considerable extent upon its driving-roll, and these driving-rolls are represented at h h' h^2 , and they are to be driven at the proper speed by suitable gearing, such as the bevel-gears 20 21 22, for rendering the supply of paper uniform to each press and for lessening the tension upon the webs of paper; and I remark that in order to prevent the paper being supplied too fast it is advantageous to have the surface speed of these driving-rolls slightly less than that of the type-cylinders, in order that there may be a slight tension on the paper by its contact with its feed-roll h , h' , or h^2 .

Friction-clutches should be applied between the driving-shafts and the respective rolls h h^2 , as seen at 67, in order to allow the roll of paper to be rotated in either direction when entering a fresh web, so that the paper can be drawn sufficiently tight in starting the press, and the friction-clutches allow for any inequalities of speed between the parts of the press that draw the web of paper along and the surface speed of the respective rolls h h^2 .

Tapes or belts may be made use of in carrying the webs of paper into and through the printing-machines, or these may be dispensed with and a second roll might be provided under each roll of paper, if desired, as indicated at 68, in which case the arms or rests may be dispensed with. In Fig. 5 this roll 68 is represented as geared to the roll h^2 by the gear 69.

I have shown guide-rolls 25 26 for the webs of paper to pass over in reaching the first impression-cylinders, and rolls 27 for the paper to pass around as the web leaves the second impression-cylinder of each press, and I have shown rolls 28 29 and ranges of belts 30 for conveying the webs to the places where they are brought together; and I remark that

when either one or more of the webs is to be split longitudinally it is preferable to apply a rotary cutter or slitter 31 to the roll 28 at the proper place for cutting up such web, either in the center or at more than one place widthwise of the web. The webs after they are printed are brought together and folded.

I have represented rolls 32 33 34 for the webs to pass around and at 35 rollers between which the webs are passed, and at 36 folding inclines and turning inclines 86 for the paper and rolls 37 38, against which the folded paper passes, and cutters at 40 for separating the webs after they have been folded, and bars 42 43 and a roller 44 for turning the sheet, but these parts form the subject of a patent granted to me September 9, 1890, No. 436,155, and do not require further description herein.

It will be understood that the mechanism hereinbefore described for giving a slow motion by power to the press to facilitate the introduction of a fresh web of paper or the adjustment of the parts may be used where only one press is employed, as well as where a number of presses are associated together, and I have represented in Fig. 2 a train of gearing that may be made use of for communicating motion from the driving-shaft 16 of the press C to the respective cylinders of such press C. A similar train of gears is to be provided in the press B to receive its motion from the gear-wheel 15 upon the shaft 1 to drive the respective rolls and cylinders in the press B, and a similar train of gearing is to be provided in the press A for the respective rolls and cylinders to receive motion from the gear 17. (Shown by dotted lines in Fig. 1.)

I have represented bevel-gears and the shaft 12 as the means for connecting the respective presses, but do not limit myself in this particular, as any ordinary gears may be made use of.

In consequence of each roll of paper being upon an axis supported by arms pivoted upon a cross-shaft at the end of and parallel to the driving-roll, the pressure of such roll upon its driving-roller is nearly uniform, regardless of its size, because less of the weight is taken upon the arms as the roll diminishes in size.

I claim as my invention—

1. The combination, with the printing mechanism and its main driving-shaft, of a pulley fast on said shaft, a second pulley loose on such shaft and gearing, and a second shaft connected with and driven by such second pulley for driving the press in the same direction but at a slower speed when the belt is shifted to the second pulley, and a clutch to disconnect the mechanism for the second pulley, substantially as set forth.

2. The combination, with the printing-presses B and C in the same plane, or nearly so, with each other, of the connecting-shaft 12 and gearing 11 and 13 for connecting the driving-shafts of the respective presses, the

rolls h h^2 , against which the respective rolls a a^2 of paper rest, and the gearings 20 and 22 for connecting the shaft 12 to the respective rollers h h^2 and driving such rolls at a less surface speed than that of the printing-cylinders, substantially as set forth.

3. The printing-presses A B C, the press A being above the press B and the press C in the same plane as the press B, the roll of paper a' for the press A being above the roll of paper a for the press B, and the roll of paper a^2 for the press C being at the end of the press distant from the press B, so that the webs from the presses B and C pass toward each other and are delivered together or along with the web from the press A, in combination with the gear 17 for connecting the presses A and B, the shaft 12 and gearing for connecting the presses B and C, a folder that is common to all three presses and folds the web or webs longitudinally, and a cutter for separating the folded web or webs, substantially as set forth.

4. The combination, with the printing mechanism, of a driving-roller upon which the roll of paper rests, mechanism for driving such roller at a slightly-less surface speed than the speed of the printing-cylinder to insure a proper tension on the web as it passes through the press, arms for the axis of the roll of paper, and a cross-shaft for such arms at one side of and parallel to the driving-roll, substantially as specified.

5. The combination, with the driving-shaft in the printing-press, of two pulleys on such driving-shaft, one of which is fast thereon, the other is loose, a pinion connected with the loose pulley and gearing, and a friction-clutch between the pinion and the press for driving the press at a slower speed, substantially as specified.

Signed by me this 12th day of July, 1889.

WALTER SCOTT.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.