(No Model.)

A. H. SMITH.

PRINTING PRESS.

No. 605,350. Patented June 7, 1898.

Fig. 1.

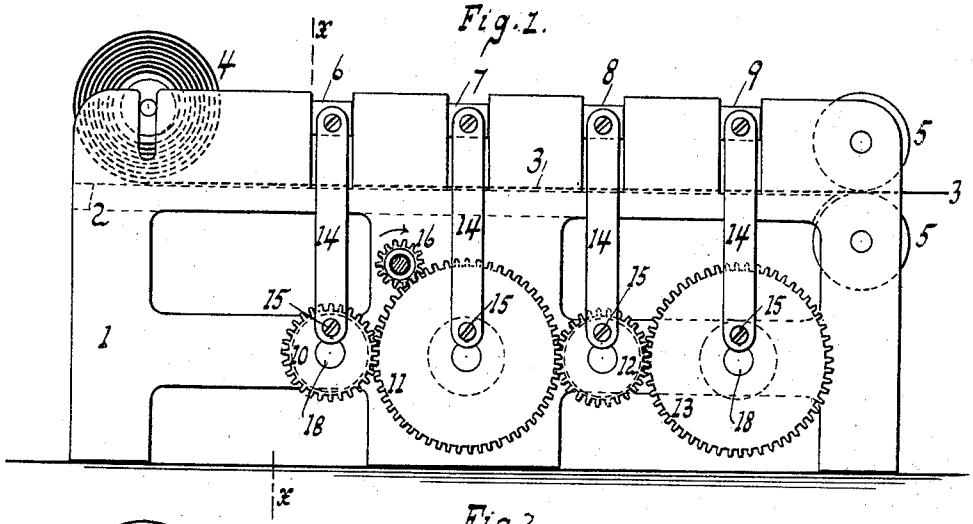


Fig. 2.

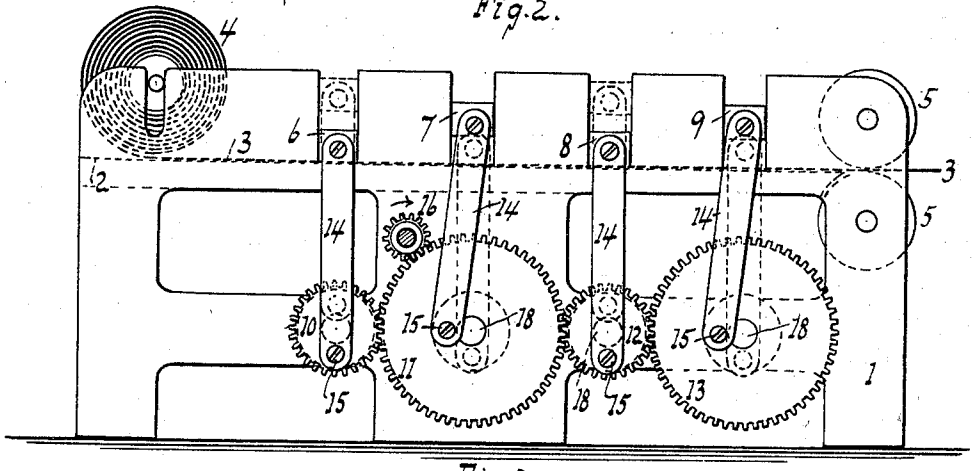


Fig. 3.

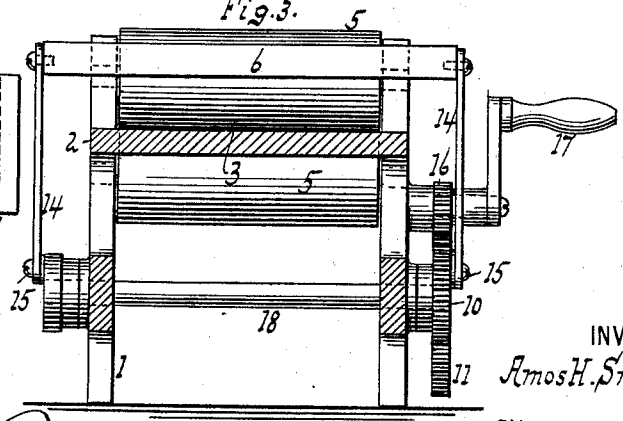
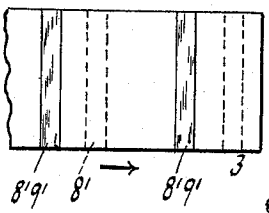


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

AMOS H. SMITH, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO FREDERICK T. VAN HOESEN, OF SAME PLACE.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 605,350, dated June 7, 1898.

Application filed October 14, 1897. Serial No. 655,206. (No model.)

To all whom it may concern:

Be it known that I, AMOS H. SMITH, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Printing-Presses, of which the following is a specification.

By means of this invention varying effects can be produced by the printing of certain impressions, upon some of which are superposed other impressions, as set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of a printing press or apparatus serviceable in carrying out the invention. Fig. 2 is a view like Fig. 1 with parts in a different position than in Fig. 1. Fig. 3 is a section along *x x*, Fig. 1. Fig. 4 shows a series of impressions.

A printing press or apparatus is shown with frame or support 1, having a table or carrier 2 for a web or sheet 3, coming from a roll or suitable supply 4 and fed by rollers 5. The rollers 5 can be rotated by hand or in any suitable way or any suitable feed mechanism can be employed.

A series of forms is shown at 6 7 8 9. These forms are suitably actuated, as by gear-wheels 10 11 12 13. The forms are suitably connected to the actuators 10 to 13. Links 14 and crank-pins 15 are shown transferring motion from the gear-wheels to the forms. The gear-wheels meshing into one another can be suitably driven, as by gear 16 and handle or crank 17.

The gear-wheels 10 and 12, it is noticed, are one-half the size or diameter of the gear-wheels 11 and 13, or said gear-wheels 10 and 12 rotate twice to every one revolution of the wheels 11 and 13.

Starting from the position shown in Fig. 1, or with all the forms 6 to 9 out of action, the gear-wheels 10 and 12 upon completing a half-revolution, as shown by full lines in Fig. 2, have actuated forms 6 and 8, so that the latter print or produce an impression. The gears 11 and 13 having now made only a quarter of a revolution, as seen by full lines, Fig. 2, the forms 7 and 9 do not yet print. On the gears 11 and 13 completing a half-revolution the forms 7 and 9 print, while the gears 10 and 12, having now completed a full revolution, have carried forms 6 and 8 out of action, as seen by broken lines in Fig. 2. Another half-revolution of gears 11 and 13 will return or carry forms 7 and 9 back to the position shown in Fig. 1, and such half-revolution of gears 11 and 13 being accomplished by a full revolution of the gears 10 and 12 the forms 6 and 8 will produce another impression by the time the forms 7 and 9, with forms 6 and 8, have returned to the position shown in Fig. 1. In other words, the alternate forms 7 and 9 print half as fast as or with varying frequency from the adjacent forms 6 and 8. The alternate forms 7 and 9 can thus be made to successively print or impress upon and clear the impressions successively produced by the adjacent forms 6 and 8.

Supposing, for example, the form 8 to have made one impression or print on sheet 3, such impression being fed under form 9 and said form 9 being made to print and return, the print from form 9 will be superposed on the print from form 8. At the same time the form 8, as seen, produces a second print and returns during the first print and return of the form 9. This second print from form 8 can be allowed to clear or pass by form 9 without being impressed thereby, while the third print from form 8 again has a print superposed thereon by the form 9. Suitable alternations can thus be effected, as indicated by Fig. 4, where the alternate prints 8′ 9′ are intended to show the result of the superposed prints from forms 8 and 9, and the adjacent prints 8′ are intended to show the result of the prints from form 8 which have been cleared by form 9. In speaking of forms 8 and 9 it is understood that these forms alone suffice for the alternate printing described; but the addition of forms 6 and 7 enables greater variety or completeness or the printing of more complicated designs to be effected. Four forms 6 to 9 are shown in the drawings; but this number of forms can be varied. The forms can be colored for color-printing, or black ink can be used on all the forms if seen fit. The inking or coloring of the forms can be effected in any suitable way, as by hand inker or roller.

The forms 6 and 8 in place of printing twice

as frequently as the alternate forms 7 and 9 might be differently timed—as, for example, to print three times as frequently.

By having the crank-pins 15 each equally distant form the center or shaft of its respective cog-wheel 10 to 13 the throw or extent of movement of links 14 and forms 6 to 8 will be respectively equal. By having each cog-wheel 10 to 13 secured to a shaft, as seen at 18, Fig. 3, crank-pins 15 can be applied at each side of the machine.

In various kinds of printing—as, for example, oil-cloth, certain kinds of railroad-tickets, wall-papers, and other objects—it is desirable to have certain printing-faces act more frequently than others, either because they carry thinner colors, requiring more frequent application to secure the desired tint, or to effect certain designs. For such purposes this invention will be found useful.

The crank-pins 15 being each placed equidistant from the centers or shafts of their respective gears, the play or degree of motion of the respective printing faces or forms 6 to 8 will be equal, and in the construction shown when the crank-pins 15 are either in their highest or lowest positions the forms 6 to 8 are on a level with one another.

What I claim as new, and desire to secure by Letters Patent, is—

1. A printing-press having a succession of forms, actuating-gears of varying diameters for the forms, and crank-pins and links for connecting the forms and gears, said crank-pins being placed equidistant from the centers or shafts of their respective gears substantially as described.

2. A printing-press having a succession of forms, a gear for each form, and crank-pins and links for connecting each form to its respective gear, said gears being made differential or variously speeded, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

AMOS H. SMITH.

Witnesses:
W. C. HAUFF,
E. F. KASTENHUBER.