(No Model.)

A. W. JEROME.

PRINTING MACHINE.

No. 326,988. Patented Sept. 29, 1885.

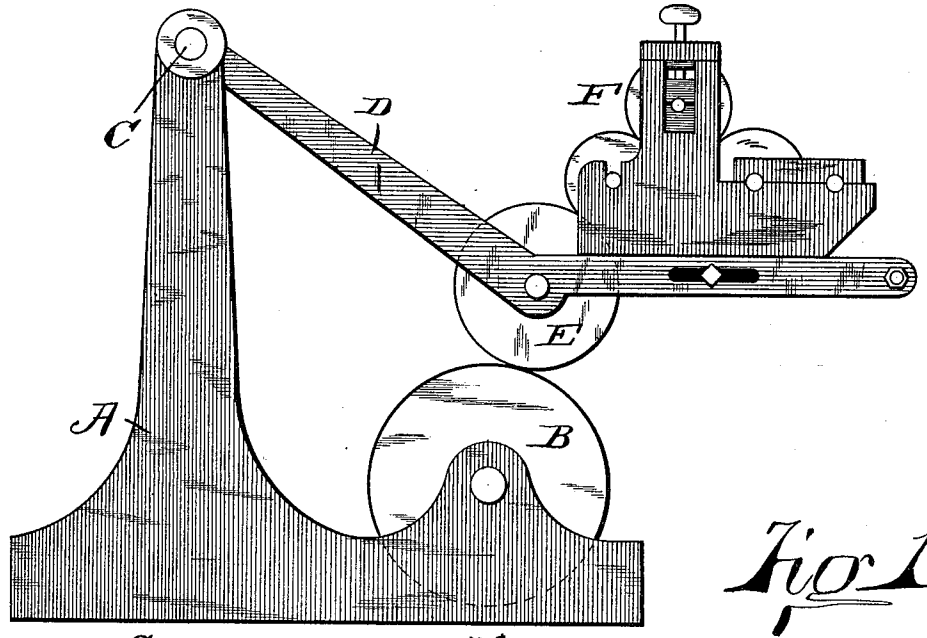

Fig. 1

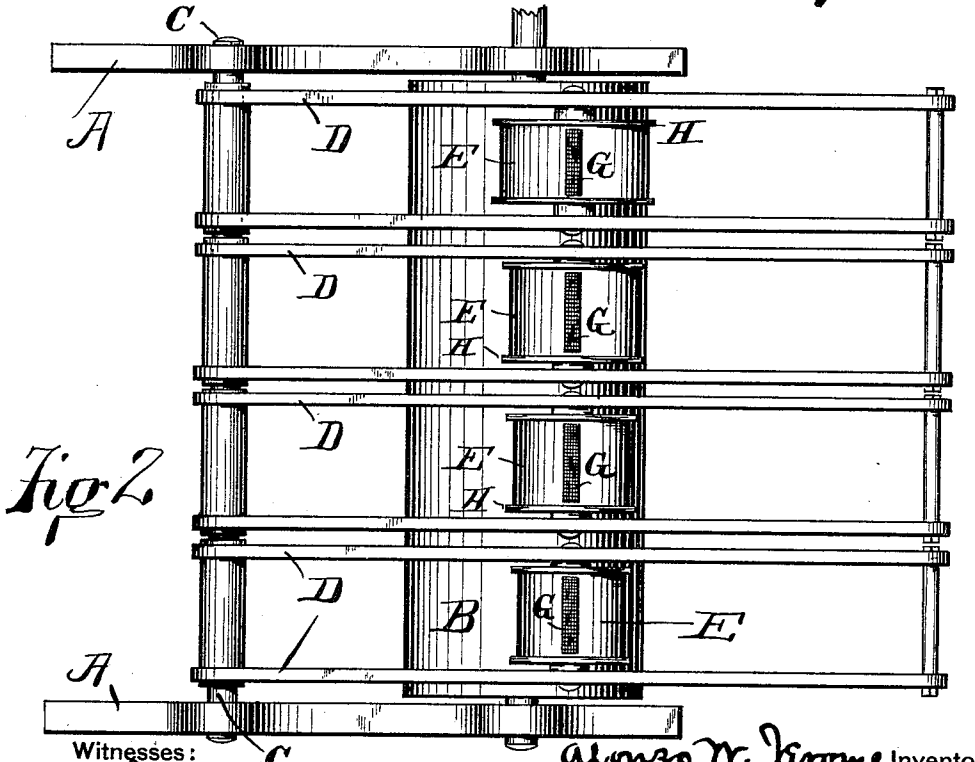

Fig. 2

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UNITED STATES PATENT OFFICE.

ALONZO W. JEROME, OF PAXTON, ILLINOIS.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 326,988, dated September 29, 1885.

Application filed March 4, 1884. (No model.)

To all whom it may concern

Be it known that I, ALONZO W. JEROME, of Paxton, Ford county, Illinois, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

This invention pertains to improvements in printing machinery; and it relates to a novel construction of such machinery, as hereinafter more fully set forth.

The invention is particularly applicable to printing machinery designed for printing upon a continuous web of paper, or upon several continuous webs of paper moving together, several independent series, if I may so term them, of impressions.

To illustrate the last-mentioned matter more plainly: Assume that sheets of wrapping-paper are desired nine inches long with a business card or other matter imprinted upon each sheet, and that these sheets are wanted in immense quantities and at the least possible expense for printing. Such sheets may be cheaply produced by taking a roll of paper of the proper width and running it through a rotating printing-press, which will effect the proper printing at each nine inches of paper, the sheets being cut from the web of paper after the printing.

It will be readily understood that in order to print upon a running web of paper at each nine inches of the web, by means of a continuously-rotating type-cylinder, it will require a type-cylinder having a circumference of nine inches, if it is to make one impression at each revolution, or having a circumference representing even multiples of nine inches, in case the cylinder is to make several impressions at each revolution. In other words, a definite relationship must exist between the circumference of the tpye-cylinder and the spacing of the intended printing.

Practical economy, in producing sheets of the wrapping-paper previously referred to, would suggest that, instead of printing one sheet at a time upon a narrow roll of paper, a wide roll of paper be used, and several impressions printed across the wide sheet at once, which wide sheet may be subsequently slitted to suit the width of the sheets desired, or the wide sheet might be slit previous to the printing, the several narrow webs running side by side through the printing-machine. Assume, further, that while a wide press is printing paper suited for nine-inch sheets it is desirable that a portion of the paper be for ten-inch sheets. Under these conditions we can readily see that the type-cylinder of the printing-machine must have its circumference bear a definite relation to nine inches, and also a definite relation to ten inches—a condition impossible of attainment in a single type-cylinder of any practicable dimensions.

The invention will be fully understood from the following description, taken in connection with the accompanying drawings, in which Figure 1 is a side elevation of a printing device illustrative of my improvement; Fig. 2, a plan of the same.

In the drawings, A represents frame parts of the machine; B, an impression-cylinder journaled in the frame; C, a rod supported by the framing and arranged parallel with the cylinder B; D, arm-frames pivoted upon the rod C; E, type-cylinders journaled in the arm-frames; F, inking apparatus—one for each type-cylinder—supported in the arm-frames of usual construction; G, the type-work or impressing-surface of the type-cylinder; H, side flanges of the type-cylinders.

The paper to be printed passes in a continuous web between the cylinder B and the type-cylinder. The web of paper may be fed by means of drawing-rolls, which pull it forward, or by means of a pair of draw-rolls, of which the cylinder B may form one of the rolls, or the cylinder B may be a solid roll of paper from which the web is unrolled by suitable draw-rolls.

The type-work G in each cylinder may consist of a single line of type, or it may cover the whole circumference of the type-cylinder; but under any circumstances it will impress itself upon the paper once at each revolution of its type-cylinder; hence the circumference of each type-cylinder will be arranged to equal the spacing desired in case the cylinder is to make but one impression at each revolution; and in case the type-cylinder is to make more than one impression at each revolution the type-work is to be duplicated upon its circumference, or triplicated, as the case may be,

and the circumference of the type-cylinder will be arranged to represent twice or thrice the spacing desired.

The flanges H of the type-cylinder rest upon the paper being printed, and the type-cylinder is revolved by the friction upon these flanges and by the face of the type-work. The periphery of the flanges is arranged to suit the level of the type-faces, which latter project above them, and the inking-roll for each type-cylinder is to be of such length as to ink the type, but not the flanges.

The type, or electrotype or stereotype, as the case may be, is to be secured to its type-cylinder in the usual manner. The contact of the type-cylinders with the paper as it runs over the impression-cylinder B is maintained by the gravity of the arm-frames, aided, if necessary, by adding weights or springs.

Each arm-frame, with its type-cylinder and inking apparatus, is independent of the other arm-frame, &c., and consequently the axes of the several type-cylinders may stand at appropriate and different distances from the circumference of the impression-cylinder B, thus permitting the use of several type-cylinders of varying circumferences, as shown in Fig. 2, where the four type-cylinders shown vary greatly in size. The length of the type-cylinder may be varied to suit the width of the printing desired, and the entire machine may be constructed of such width as to receive any desired number of arm-frames, &c., which may be removed or changed at will.

Much wrapping-paper is now marketed in rolls of narrow width of sheet and printed at intervals suited to the length of sheet to be separated from the roll, and in many cases the narrow web is perforated across where the sheets are to be separated. The lines of perforations are subject to the same laws of relative spacing as have been referred to in connection with the lines of printing; and it is obvious that what I have termed the "type-work" upon the type-cylinder, instead of being a simple impressing device, may be a perforating device, and the type-cylinder may be arranged to both print and perforate the passing web.

The type-cylinders need not necessarily be supported in pivoted arm-frames. They may be journaled in fixed housings properly adjusted with reference to the surface of the roll B; or they may be supported in vertically-slotted housings, whereby they are at liberty to adapt themselves vertically and nicely to the paper surface being printed upon.

The flanges on the type-cylinder serve to give a nice motion to the cylinder; but they are not essential. A plain cylinder with a type portion not too much raised from its peripheral surface will be revolved properly by the friction of the paper contacting directly with the cylinder at its plain parts, and with the type portions where they occur, the inking-roll touching the type portion only.

I claim as my invention—

1. In a printing device, the combination of an impression-cylinder and two or more type-cylinders having different diameters, arranged in series along said impression-cylinder, each of said type-cylinders being mounted independent of its fellow type cylinder or cylinders, whereby the several type-cylinders may rotate at different rates of speed, while their several peripheries revolve at the speed of the periphery of the impression-cylinder, substantially as set forth.

2. In a printing device, the combination of an impression-cylinder, independent type-cylinders arranged in series along said impression-cylinder, and an independent series of type-cylinder-supporting arm-frames pivoted upon an axis parallel with the impression-cylinder, substantially as and for the purpose set forth.

3. In a printing device, the combination of frame-work A, impression-cylinder B, rod C, arm-frames D, type-cylinders E, having side flanges, H, and inking apparatus F, substantially as and for the purpose set forth.

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Witnesses:
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