(No Model.)

C. MACHRIS.

PRINTING MACHINE.

No. 318,383. Patented May 19, 1885.

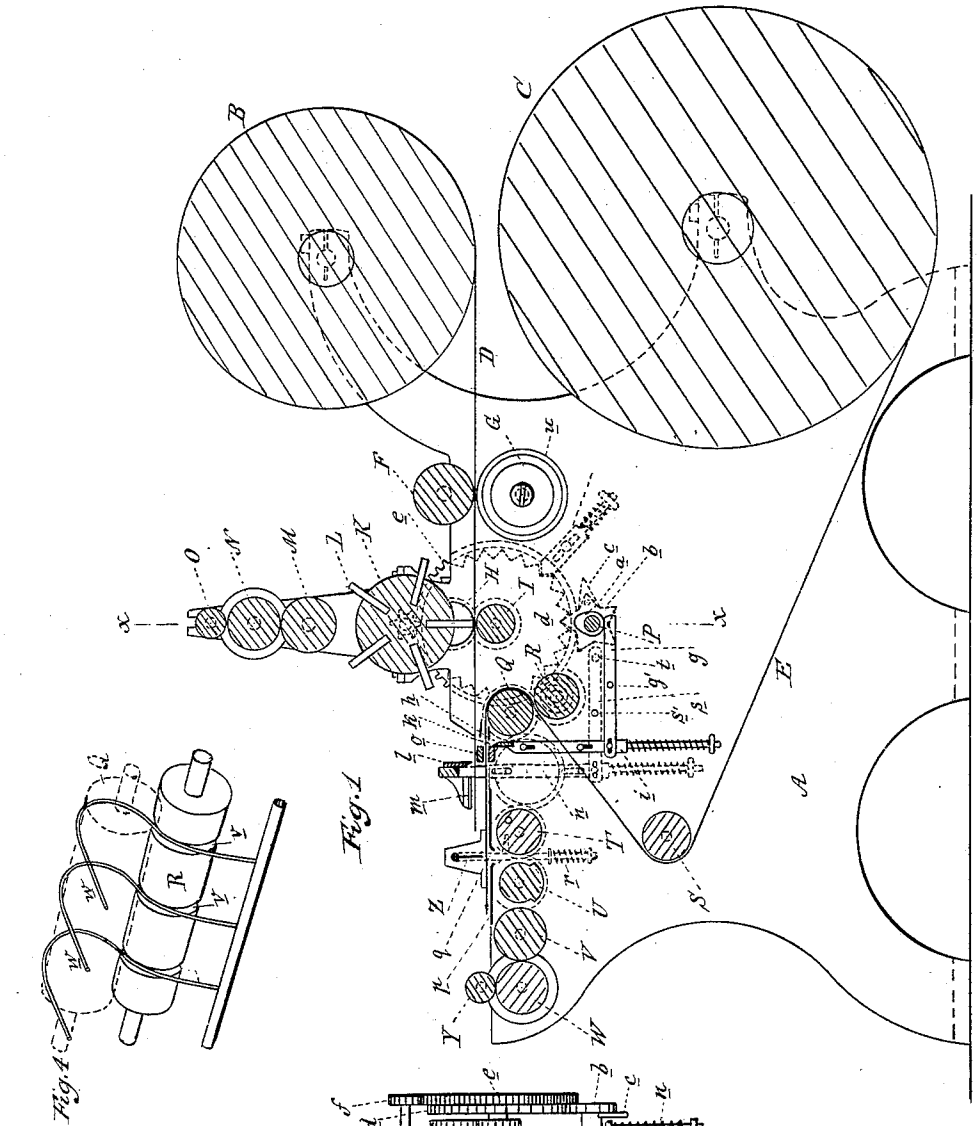


Fig. 1

Fig. 4

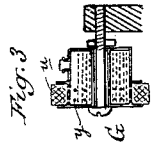


Fig. 3

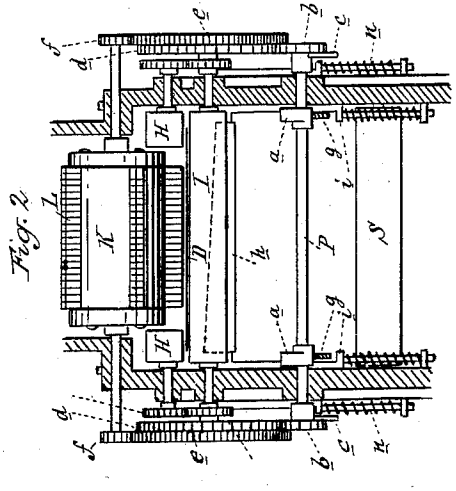


Fig. 2

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UNITED STATES PATENT OFFICE.

CHARLES MACHRIS, OF DETROIT, MICHIGAN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO ISSAAC M. WELLINGTON, OF SAME PLACE.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 318,383, dated May 19, 1885.

Application filed January 21, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MACHRIS, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

Figure 1 is a vertical longitudinal section; Fig. 2, a vertical section on line *x x*, Fig. 1. Fig. 3 is a vertical section through the wetting-roll, and Fig. 4 is a perspective of the device for guiding the cover-paper.

My invention consists in a machine for printing election-stickers and similar articles, hereinafter more fully pointed out in the claims.

A represents the frame of the machine.

B represents a roller carrying a roll of print-paper, D, which, for stickers, is gummed on one side.

C represents a roller carrying a roll of cover-paper, E.

F represents a guide-roll, and G represents a wetting-roll, journaled in frame A, between which the paper D passes on its way to the feed and printing rolls. The wetting-roll G consists of a hollow cylinder provided with a filling-plug, and having raised flanges around one end, to hold a sponge or cloth, *u*, and having perforations *y* therein.

H H I represent feed-rolls, the rolls H being short, as shown in Fig. 2, and placed at the ends of the type-cylinder K.

K represents the type-cylinder, journaled in frame A above feed-roll I, and having slots therein to receive lines of type, L. Any printer will understand that the type, instead of being set in the slots in cylinder K, may be cast in soft metal and fastened to the cylinder K, in the same manner as forms are now made for and put on the cylinders of rotary printing-presses. When the type are set in slots, as shown, the cylinder K must run faster than feed-rolls I H to make the type strike at proper intervals on paper D.

O, M, and N are inking-rollers for the type, and do not need description, as their construction and operation are familiar to persons acquainted with the operation of printing-presses.

P represents the main driving-shaft of the machine, and is operated by a crank or pulley fastened thereon. *b* represents a star-wheel secured to said shaft, meshing into a large star-wheel, *d*, on the shaft of feed-roll I. *c* represents a prolonged tooth bolted to star-wheel *b* so that it will clear star-wheel *d*. *a* represents a cam on shaft P.

k o represent shearing-bars, one above the other, above which the print-paper passes, and between which the cover-paper passes.

n represents a knife-frame secured to frame A by pins passing through slots in the knife-frame and constantly forced upward by a spring. (Shown in dotted lines in Fig. 1.) On the upper end of the frame *n* is fastened a knife, *l*, reaching across the frame of the machine and having its edge beveled upward toward one end. To the lower part of frame *n* is pivoted one end of a lever, *s*, rocking on pin *s'*. At the other end of the lever *s* is a pin, *t*, so placed that each tooth of star-wheel *b* will strike it, raise the end of the lever, and depress frame *n*. When the prolonged tooth *c* of the star-wheel strikes the pin *t*, the frame *n* is depressed more than by the other teeth.

i represents a knife-frame similar to *n*, but being lower in frame A, and raised by lever *g*, operated by cam *a* on shaft P. *h* represents a knife fastened to frame *i*, having a beveled edge, similar to that of knife *l*, as shown in dotted lines in Fig. 2.

m represents a small presser-foot fastened to frame *n* in line with the wetting-roll G.

S represents a guide-roll, and Q R a pair of feed-rolls for feeding the cover-paper. The roll R has circular grooves *v* therein, in which lie wires *w*, the upper ends of which bend over the roll Q, to guide the cover-paper into the opening between the shearing-bars *k o*.

T U represent a pair of rolls, in one of which, U, are set rows of type, as in cylinder K, for printing the cover. Above these rolls is a folder-knife, Z—such as is used for folding newspapers—operated by a cam and lever in the same manner as knife-frame *i*.

V W Y are inking-rollers for the type on roll U.

Motion is communicated to the whole machine by the driving-shaft P, and thence by

gear-wheels on shaft I to the rolls Q R T U. The main gear-wheel is shown at *e*, Fig. 1. I usually proportion these gears so that the rolls Q R will feed the cover-paper a little more than twice as fast as the rolls I H feed the print-paper; but this speed may be proportioned at will, to suit the kind of work to be done on the machine. The speed of the type-cylinder K is so proportioned to the speed of the rolls I H that the type will strike the paper at proper distances, and will necessarily vary, in a manner familiar to every mechanic, with the size of cylinder K and the number of rows of type, L, thereon.

The rolls F G S need not be driven except by the paper, and the inking-rolls are usually not driven except by friction.

The operation of my invention, when used for printing election slips or stickers, is as follows: A continuous roll of print-paper, gummed on one side, is placed on roller B with the gummed side outward. This paper D is then led from roller B between roll F and wetting-roll G, the latter having been first filled with water, so that the gummed side of paper D rests on the wet sponge *u*, and a narrow line along the length of paper D is moistened by the sponge. Paper D is gripped and fed forward by rolls I H, and is printed by the types on cylinder K as it passes over roll I, which serves as an impression-roll. From these rolls I H paper D passes over shearing-bar *o*, and at intervals corresponding with the width of one line of print, or two lines, if so desired, knife *l* is depressed, as hereinbefore described, and, owing to its beveled edge, cuts paper D partly across, the shearing-bar *o* supporting the paper while being cut. As star-wheel *b* on the driving-shaft has five teeth, as shown in the drawings, one of which is prolonged by a false tooth, *c*, knife *l* will make four cuts partially across paper D, and will then be depressed by tooth *c*, so as entirely to sever said paper. At this time the presser-foot *m* presses the severed part of paper D against the cover-paper below, sticking that part of paper D which has been moistened by sponge *u* to the cover-paper.

A continuous roll of cover-paper is placed on roller C, led over roll S, between rolls Q R, and passes over roll Q, under guiding-wires *w*, under shearing-bar *o*, and along over a bed in the frame of the machine. Being fed faster than print-paper D, the cover-paper runs along under folder-knife Z, and just after paper D is completely severed by the fifth stroke of knife *l* and pasted to the cover-paper by presser-foot *m* the knife *h* is raised, as before described, by cam *a* on shaft P, and completely severs the cover-paper. As soon as the cover-paper is severed, folder-knife Z is depressed and forces the cover-paper through a slot in the bed of the machine until it is gripped by the rolls T U and folded, the folder-knife Z rising as soon as the rolls T U have grasped the paper. While the cover-paper is passing between the rolls T U it is printed by the type on roll U, roll T serving as an impression-roller, and is delivered complete in shape for use.

It is obvious that it is easy so to change the machine that knife *l* will sever the paper D at any other time than every fifth cut, and I have adopted the construction shown because in printing election-slips five are required in each package.

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

1. In combination with a pair of rolls adapted to feed a strip of paper, a type-cylinder which prints the same in slips, a reciprocating knife adapted partially to sever the printed strip between each slip and completely to sever the same at regular intervals, and a presser-foot adapted to press each printed piece, when severed, against a piece of cover-paper, substantially as shown and described.

2. In a machine for printing slips, the combination of the following elements, viz: a pair of rolls adapted to feed a strip of paper, a type-roller adapted to print slips on the paper, a reciprocating knife adapted partially to sever the printed strip between each slip and completely to sever the same at regular intervals, a presser-foot adapted to press each printed piece, as soon as severed, against a piece of cover-paper, a pair of feed-rolls adapted to feed a strip of cover-paper under the printed strip, a reciprocating knife adapted to sever the strip of cover-paper whenever the printed strip is severed, and a folding device, such substantially as described, adapted to fold the severed piece of cover-paper, substantially as shown and described.

3. In combination with the feed-rolls and type-cylinder K, actuated by the star-wheel *b*, having a prolonged tooth, *c*, the knife-frame *n*, carrying the beveled knife *l*, and the lever *s*, pivoted at one end to said knife-frame and having at the other end a pin, *t*, adapted to engage with the teeth of star-wheel *b*, substantially as shown and described.

4. The combination of the folding-rolls T and U, the roll U carrying a form of type secured therein, with the reciprocating folder-knife Z and inking-roll V, substantially as described.

5. The combination of the roller B, carrying the strip of paper D, gummed on one side, the wetting-roll G, the feed-rolls I H, type-cylinder K, knife *l*, and presser-foot *m*, operated substantially as described, with the roller C, carrying the strip of cover-paper E, feed-rolls Q R, geared to feed paper E faster than paper D is fed, knife *k*, operated substantially as described, folder-knife Z, and rolls T U, substantially as and for the purposes described.

CHARLES MACHRIS.

Witnesses:
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GEO. H. LOTHROP.