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Fig. 2 Vert. longth Section

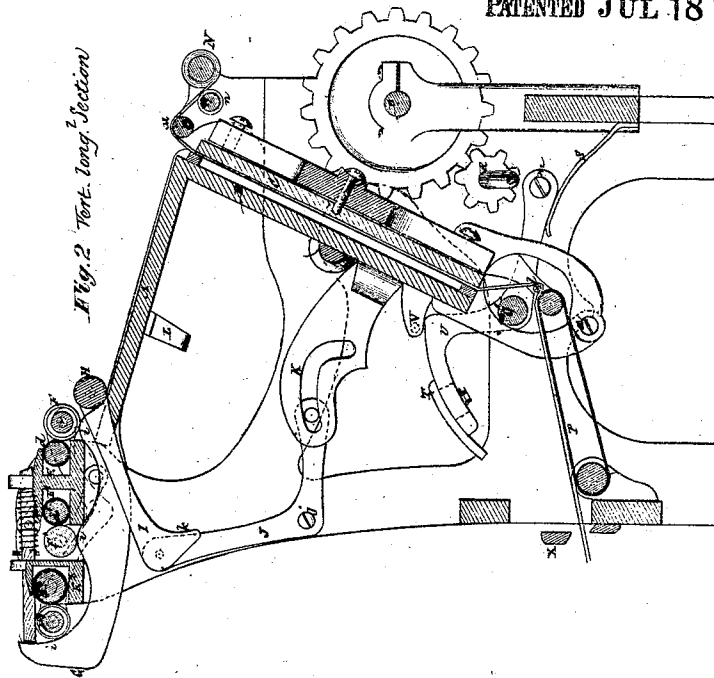
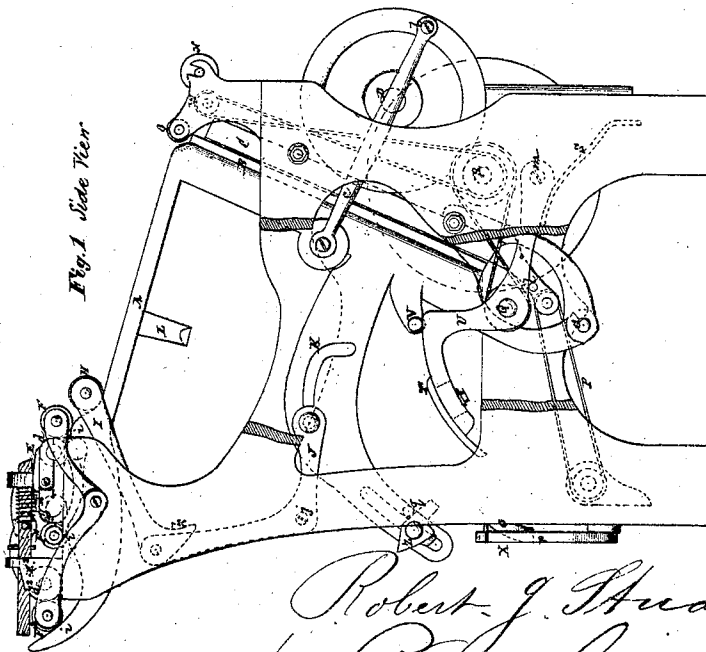


Fig. 1 Side View



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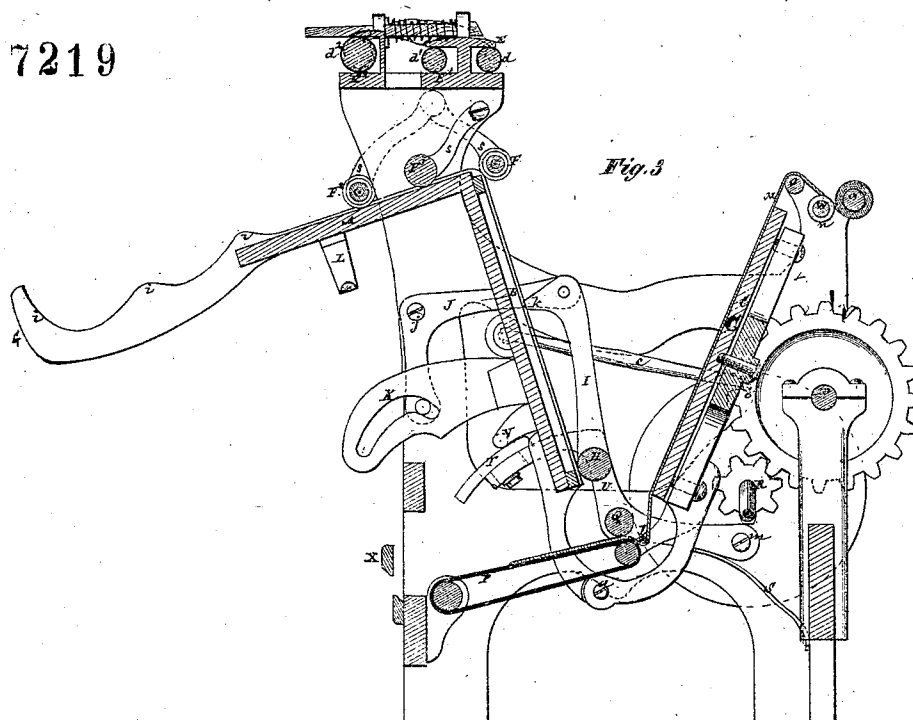
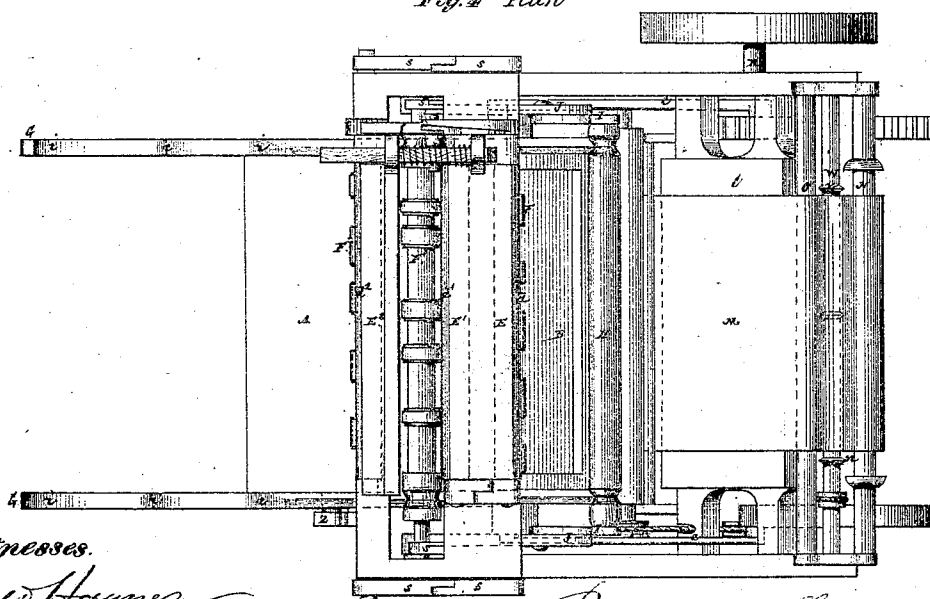


Fig. 3

Fig. 4 Plan



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Fig.5

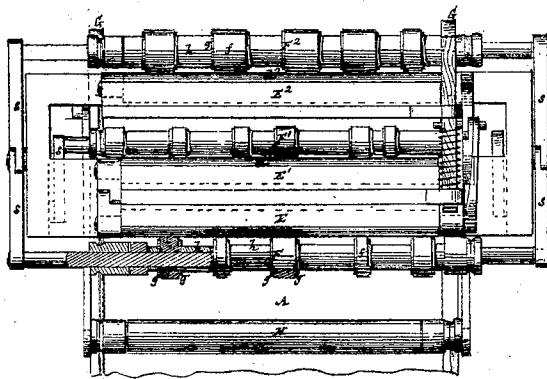
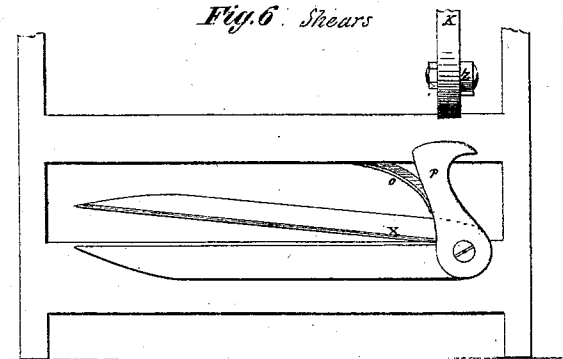


Fig. 6: Shears



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UNITED STATES PATENT OFFICE.

ROBERT J. STUART, OF YONKERS, NEW YORK.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. 117,219, dated July 18, 1871.

To all whom it may concern:

Be it known that I, ROBERT J. STUART, of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Printing-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a side view of a printing-press constructed in accordance with my invention; Fig. 2, a centrally-sectional elevation of the same in a plane parallel with the side of the machine; Fig. 3, a similar view to Fig. 2, but showing the inking-table, type-bed, and other operating parts in different positions; Fig. 4, a plan, with the parts in the positions represented for them in Fig. 3; Fig. 5, a plan mainly of the inking-table, type-bed, and distributing-rollers in the positions shown for them in Figs. 1 and 2. Fig. 6 is an end view showing the shears for severing in transverse directions the printed sheet as it is delivered from the press.

Similar letters of reference indicate corresponding parts throughout the several figures.

My invention is mainly designed for printing in colors; but it is equally applicable, or certain portions of it, to printing in one and the same color, and for doing different kinds of work. It will suffice here, however, to describe it for printing in parallel rows of different colors on the same sheet, as the latter is fed from a roll through the press, which latter is of a platen description. Said invention includes, among its more prominent features, a series of sectionally-constructed color-rollers, arranged to rise and fall in relation to the reciprocating inking-table and to color-fonts provided with distributing-rollers, said color-rollers taking the ink from the latter and distributing it in stripes on the inking-table; and a reciprocating plain inking-roller for taking the ink thus laid and distributing it over the type. The invention likewise includes certain mechanical devices whereby the inking-roller is operated by the reciprocating action of the type-bed or inking-table and type-bed combined; also, a peculiarly-operating paper-delivery roller.

Referring to the accompanying drawing, A represents the inking-table, and B the type-bed, arranged to occupy fixed positions in relation with each other, but to reciprocate in common

toward and from a stationary platen, C, that is preferably set to have an inclined position, shelving inward in a downward direction. The inking-table A projects in a backward direction from the upper end of the type-bed. Said combined inking-table and type-bed are supported on and rock from a center, *a*, below, and have their reciprocating or swinging action given them by revolving cranks or eccentric-pins *b*, connected with a main operating shaft, D, below, and coupled to opposite sides of the type-bed, as by connecting-rods *c*. Arranged over the inking-table is any number of color-fonts E E¹ E², situated the one behind the other and provided with distributing-rollers *d d¹ d²* along their mouths or fronts. The different-colored inks are taken from these distributing-rollers at or toward the close of the inking-table's advance stroke by sectionally-constructed distributing or color-rollers F F¹ F², hung as by jointed end connections *s*, so as to be capable of rising and falling to bring them into contact with the font-rollers *d d¹ d²*, and with the inking-table A to transfer the inks from the fonts to said table as the latter is reciprocated under the rollers F F¹ F², which, by their sectional construction and with the sections of either one roller arranged to occupy an alternate or intermediate position relatively to the sections of the other rollers, operate to lay the different-colored inks in stripes or rows upon the inking-table A. A similar action would be produced by making the font-rollers *d d¹ d²* sectional and the rollers F F¹ F² plain, but it is preferred to make the latter rollers sectional, and to construct the sections, as shown in Fig. 5, of metal bushes *e*, fitted so as to be slid on or over a central rod, and faced with rubber *f*, which may be cast upon the bushes, and is restrained from spreading by washers *g* inserted between the sections that are separated from each other by loose ferrules or rings *h*. This construction makes a very effective inking or distributing-roller, and when formed in sections, as described, provides for the ready detachment of the sections and substitution of others of different lengths or in different numbers, according to the work to be done. Said rollers F F¹ F² are lifted to take their supply of ink by cam-shaped projections *i* on tail-pieces G, arranged to project from either side of the inking-table A. H is a plain inking-roller, which is made to have a reciprocating action over the

inking-table A and type-bed B, for the purpose of transferring the ink, as laid in stripes on the table, to the type.

This inking-roller is operated by the type-bed, or inking-table and type-bed combined, as follows: Said roller is hung at its ends to turn in rods I, which are pivoted at their rear ends to bell-cranked levers J that work on fulcrums, as at *j*. The lower arms of these levers are operated by cams or slotted extensions K, arranged to project from the rear of the type-bed; and attached to the under surface of the inking-table, at its opposite sides, are lifters L, which operate against toes or projections *k* on the rods I. Supposing the inking-roller H to be in the position represented for it in Figs. 1 and 2, then, as the type-bed is moved back from the platen the cams K first serve to move the roller H toward the front of the inking-table simultaneously with the back movement of the latter, and afterward, by the downward bend or crook in said cams, to allow of said roller dropping over the face of the type to the position shown in Fig. 3. When the combined inking-table and type-bed again advance the cams K operate first to partially pass the roller H up over the type, and then the lifters L act upon the toes *k* to complete, in a rapid manner, its elevation, and pass it up over the front edge of the inking-table, after which the cams K serve to work it backward over said table to the position from which it originally started in Figs. 1 and 2. The paper M to be printed is supplied to the press from a roll, N, in front, and is arranged to pass over a roller, O, and from thence down over the face of the platen, from whence it is turned under a fixed rod, *l*, to and over an endless apron, P, and under a feed or delivery-roller, Q, but not in contact with said roller, except when the feed is being effected. This roller Q, which is rotated when feeding by belt and pulley from the driving-shaft R, as shown in Fig. 1, is made to move toward and from the paper at intervals by the combined action of springs S and cams T, preferably on both or opposite sides of the machine. These cams T are arranged on or made to form part of levers U, having their fulcrums, as at *m*, and serve to carry the roller Q at a given distance from said fulcrums. The springs S operate to throw the levers U up to relieve the roller Q of pressure on the paper, while the type-bed, toward the completion of its back stroke and early portion of its forward travel, operates to depress said levers, and causes the roller Q to bear upon and feed or deliver the paper, as required. This action of the type-bed is effected by or through toes or projections V on the back of it, as the same pass over the cams T, which latter should be made adjustable toward and from the type-bed to vary the time or length of the travel of the projections V over it, and whereby the length of the paper's feed each stroke will be determined. Between the roll N and roller O may be arranged a rotary cutting-roller, W, having any desired number of

circular cutters *n* on it, and being driven, as represented in Fig. 1, by belt and pulley, or otherwise. The diameter of these cutters *n* is such that the paper M, in being drawn from the roll N over the roller O, is severed longitudinally by them, which serves to cut the sheet as it passes from the roll into strips of any desired width. Arranged in rear of the press are shears X, for dividing the printed sheet transversely as it is delivered from the machine, for the purpose of cutting up the sheet or strips into pieces or sheets of a uniform length. Only one of the blades of the shears is here shown as being operated and as being thrown up or open by a spring, *o*, acting against an arm, *p*, to allow of the passage of the paper between it and the lower blade. The operating-blade is shut or has its cutting-action given it in timely relation with the feed of the paper by a tripping-toe, *z*, adjustable along a slotted extension of the one cam or rear projection K of the type-bed, to vary its action in relation to the feed of the paper, and whereby it is made to cut the paper into different but uniform lengths. This tripping-toe, of which there may be any number, arranged the one in rear of the other to make a succession of cuts each impression, acts, when descending, on a lip of the arm *p* to close the operating-blade of the shears, it being then held by a stop, *q*. This takes place during the back stroke of the type-bed. In the forward stroke of the latter and ascent of the toe *z* the latter turns on its pivot, or is tripped by, and in order to pass, the operating-lip of the arm *p*.

A press constructed to operate upon the general principles herein described requires but little power to drive it and performs its work effectually.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination, with a reciprocating inking-table, A, of a series of sectionally-constructed color-rollers, F F¹ F², arranged to rise and fall in relation to said bed and to color-fonts E E¹ E², arranged above the latter and provided with distributing-rollers, substantially as specified.

2. The sectionally-constructed color-rollers F F¹ F², composed of detachable bushes of any desired length or lengths, and faced with rubber, in combination with washers inserted between the sections to hold the rubber from spreading, essentially as specified.

3. The combination of the cams *k* and lifters L with the inking-table A, type-bed B, and inking-roller H, whereby the latter is operated by the reciprocating action of the type-bed combined, substantially as specified.

4. The combination of the adjustable tripping-toe *z* and slotted arm of cam K, substantially as specified.

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