J. N. Phelps. Sheet 1, 2 Sheets.

Color Printing Press.

No. 96,480. Patented Nov. 2, 1869.

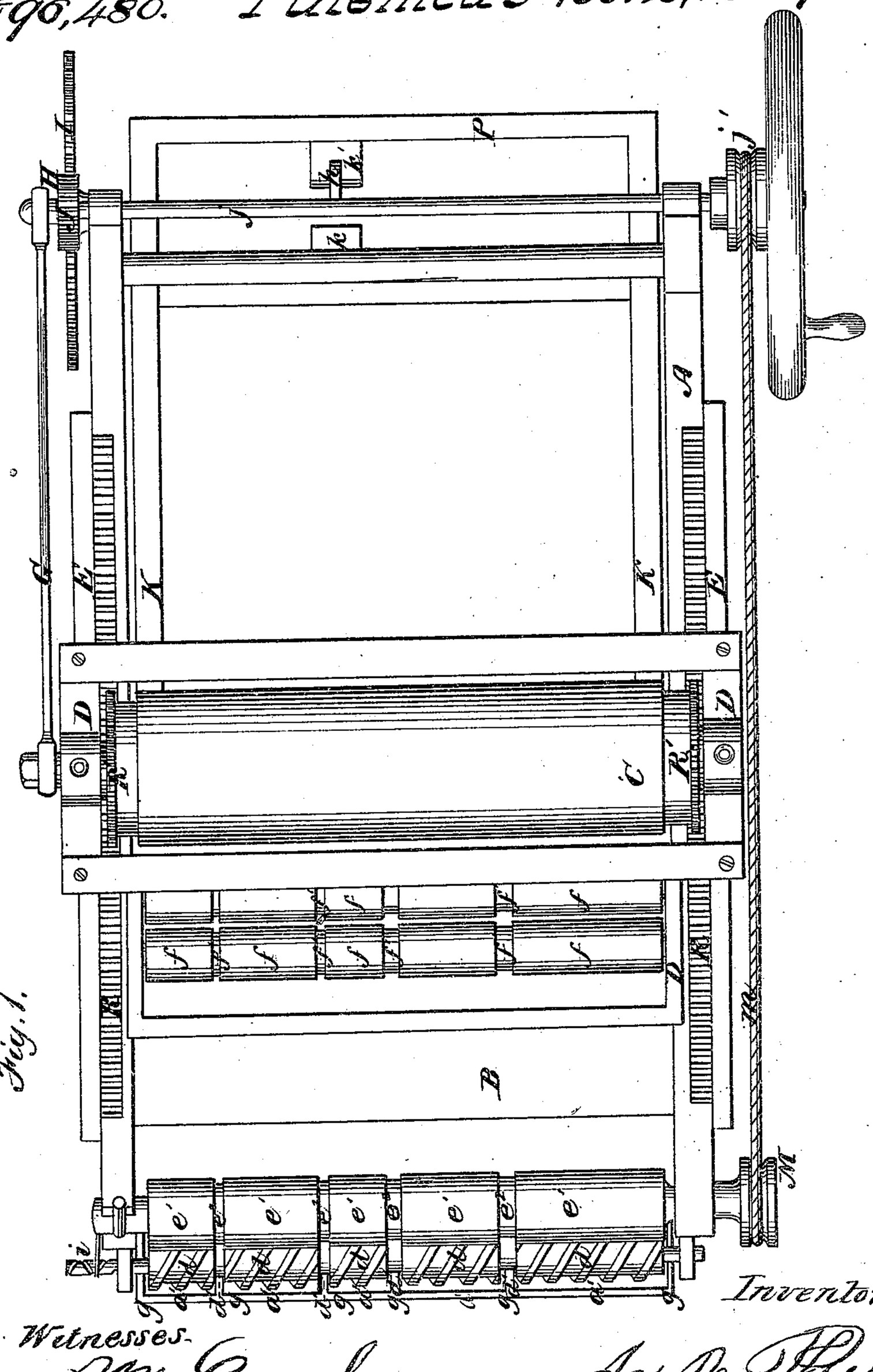
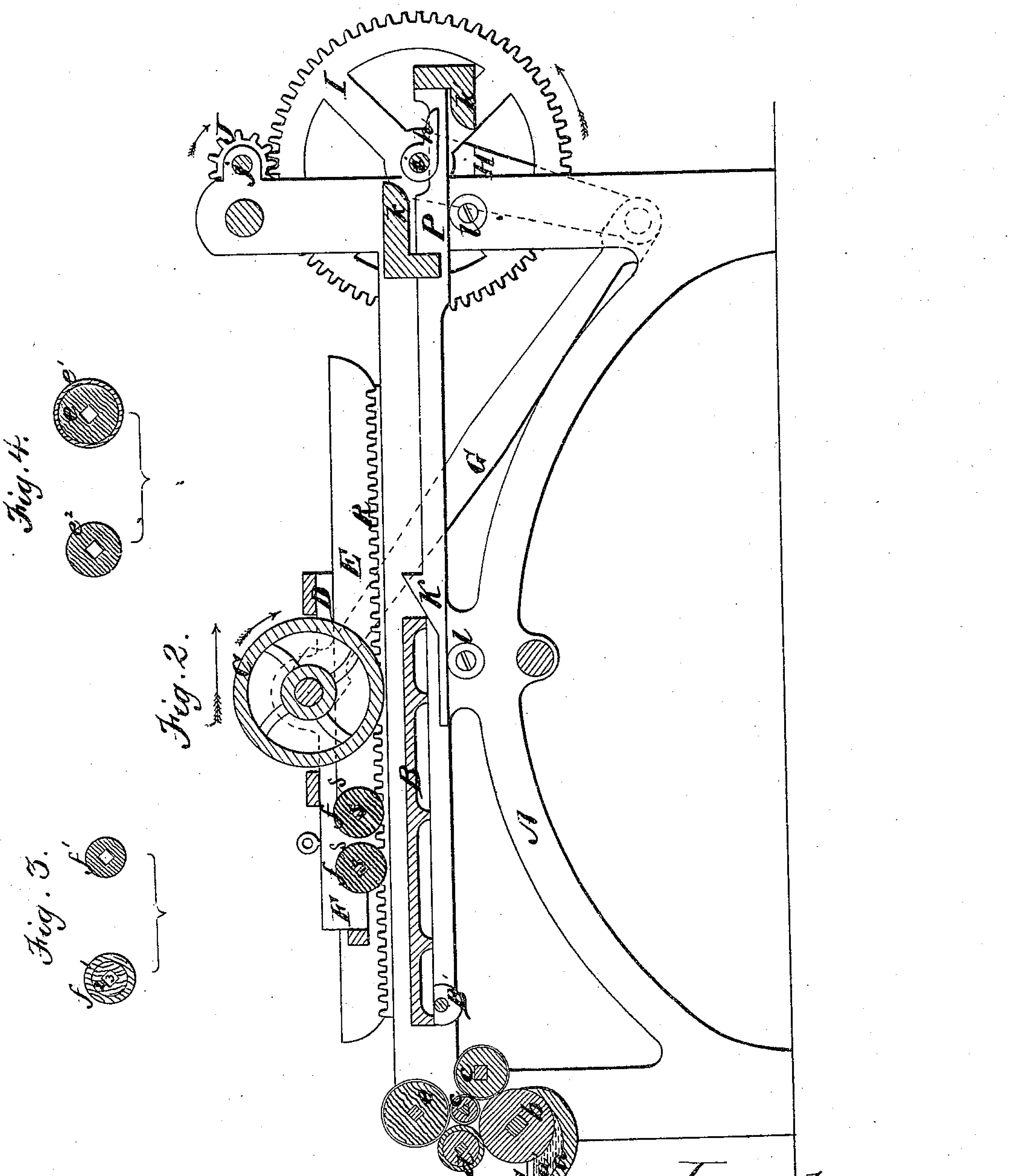


Fig. 1.

J. N. Phelps. Sheet 2.
2 Sheets.

Color Printing Press.

No. 90,480. Patented Nov. 2, 1869.



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Letters Patent No. 96,480, *dated November* 2, 1869.

IMPROVEMENT IN PRINTING-PRESSES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES N. PHELPS, of the city of Brooklyn, in the county of Kings, and State of New York, have invented certain new and useful Improvements in Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a printing-press, constructed according to my invention.

Figure 2 is a longitudinal vertical section of the same.

Figures 3 and 4 are detail views, hereinafter fully described.

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

This invention relates to the inking-apparatus, and its object is to ink different parts of the length and width of a form of type at one operation, with ink of different colors, for the purpose of producing, by one impression, a printed sheet, different lines or parts of which are printed in such various colors as may be desired.

To accomplish this, the ink-fountain is divided transversely into, or otherwise made to consist of a number of sections or compartments, corresponding with the number of variously-colored lines or parts desired to be produced on the sheet, such compartments being severally of widths corresponding with the different lines of type, or different parts of the length or width of the form, which are to be inked in different colors, and severally filled with ink of the desired colors.

The distributing, carrying, and inking-rollers are made in sections or sets, corresponding in length with the width of the sections of the ink-fountain, and so suitably arranged and operated that while all operate simultaneously, one section of each or one set may operate in connection with one section or compartment of the fountain, to take the ink therefrom and ink the portion or type-line, or any number of type-lines, of the form arranged opposite to that section or compartment of the fountain.

The invention consists in an improved distributer, by which the traversing or vibrating movement of the distributers commonly used is dispensed with.

It further consists in a novel arrangement of the bed and type-cylinder of the press, and mode of operating the impression-cylinder, whereby the construction of the press is simplified.

To enable others skilled in the art to construct and operate my invention, I will proceed to describe it, having reference to the drawings.

A represents the frame, supporting the several stationary and movable parts of the press.

The bed B is supported on one end on a hinge or joint, B′, and on the other end, at each side, by a reciprocating inclined plane, K.

The two inclined planes K K are attached to a frame, P, having two pallets *k k′*, arranged opposite each other, and in such relation to a revolving tappet or cam, *h*, on the shaft *i*, that when the impression-cylinder is about to move over the bed of the press, the cam *h* strikes the pallet *k*, and moves forward the frame P, and with it the inclined planes K, which raise the bed of the press to a proper level, to receive the impression on the sheet which may be on the cylinder.

In order to prevent too great friction in the movement of the frame, four rollers *l l*, two on each side, are placed under the frame, to support its weight and lessen the rubbing-surface.

The impression-cylinder C has bearings in a frame, D, which slides back and forth on parallel ways E E, situated longitudinally, one on each side of the press.

This cylinder receives a reciprocating motion by means of a pitman, G, attached to its axis, and connected to a crank, H, on the shaft *i*.

This shaft is caused to make about one revolution to four of the driving-shaft *j*, by a pinion, J, on the driving-shaft and spur-wheel I, on the secondary shaft *i*.

The cylinder C has a spur-wheel on each end of it, and each of these spur-wheels gears into one of two stationary racks R R, one on the inside of each of the parallel guides E.

This device is necessary to insure a perfect registering of the form and cylinder, and prevent what is termed, in printers' nomenclature, "slurring" or sliding of the cylinder off the end of the form, so as to drag or extend the impression beyond the proper distance.

The form which is laid on the bed B is inked by means of two delivering or inking-rollers *f f*, which have bearings for their axes in the frame D, attached to the bearings supporting cylinder C.

These rollers are arranged in sections or parts, on a polygonal or feathered shaft, as clearly shown in transverse section in figs. 2, 3, and 4, and the composition 1, fig. 3, is made in the ordinary manner, and cast on a wooden or metallic cylindrical core, 2.

This core has a central aperture, 3, to fit the shaft or spindle *s*.

When a "job" or form is imposed upon the bed of the press, and the colors are agreed upon by the pressman, these rollers are put together on the shaft *s*, in sections and spaces corresponding to the lines and spaces of type which the said sections are intended to ink or leave blank, the section of roller answering to a line or collection of lines of type, and the space or spaces between two sections ranging with a space in the form.

The distributing-rollers *e d c c* and fountain-roller *b* are put together in similar sections *c*, *d*, and *c*, and spaces d^1 e^2.

The distributing-rollers *e d c c* revolve in bearings

in the opposite end of the press-frame A from that on which is situated the driving shaft *j*, and the delivering-rollers *f f* receive ink at each time the cylinder *c* advances toward the distributers *e*, *d*, and *c*, when the rollers *f f* rest for a short time in contact with the roller *e*, and receive their apportionment of ink for the inking of the form, preparatory to the succeeding impression.

The fountain *a* is divided transversely into separate compartments *a'*, to hold separately the several colors of ink desired, and of sufficient capacity to hold enough ink for a "job," and these compartments correspond in length to the length of the cylindrical section of the rollers which are arranged in line therewith.

These compartments of the fountain are kept separate by means of movable or adjustable partition-plates *g*, or the different compartments of the fountain may be made in separate lengths or box-like pieces, and the fountain-roller is similarly divided by spaces corresponding with the other rollers, but the spaces of the fountain-roller should be of a much less diameter than those of the other rollers, in order that the divisions in the fountain may be sufficiently high to prevent the ink from flowing from one apartment to another.

The distributers *c c e*, an end view of a section and space of the latter one of which is shown in fig. 4, may be constructed of wooden cylinders *e*, covered with a felt or leather exterior, e^1, as shown in fig. 4, and the intervening space or separator e^2 may be conveniently constructed of wood.

The distributer *d* has its inking-surface of spiral form or construction, or is made like a screw of rapid pitch, either single or double-threaded, and carries the ink along the whole length of the distributers *c c d e*, and obviates the necessity of a vibrating or traversing distributer, such as is commonly used, and which is operated by a double or cross-threaded screw, as represented at *i*, on the end of the axis of the distributer *d*, having a traverser, *n*, resting in said screw, by which the reciprocating motion is usually communicated; and like the other distributers, this one, *d*, is divided into sections or lengths *d* and spaces *d'*, each corresponding with a similar space or section, arranged in line with them on the other rollers.

The entire series of distributers receives a rotary motion by means of a band-pulley, M, on the shaft of the distributer and endless band *m*, which passes over a pulley, *j'*, on the driving-shaft *j*, and by the friction this distributer imparts motion to the rest of them.

Instead of having the inking-apparatus arranged transversely to the length of the press, it may be placed at right angles to the position shown in the annexed drawings, or at either side of the press, and made to operate in a similar manner, but transversely over the bed.

This inking-apparatus may with equal facility be applied to a printing-press with a reciprocating bed and a revolving cylinder moving on a fixed centre.

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

1. The construction of distributing-rollers *d d* with spiral surfaces, substantially as and for the purpose herein set forth.

2. The combination of the hinged type-bed B, the reciprocating impression-roller C, and the detached reciprocating frame P, furnished with inclined planes K K, the whole operating substantially as and for the purpose herein specified.

JAS. N. PHELPS.

Witnesses:
J. W. COOMBS,
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