A. Dougherty. Sheet 1. 2 Sheets.

Color Printing.

No. 25000. Patented Aug. 9. 1859.

Fig. 1

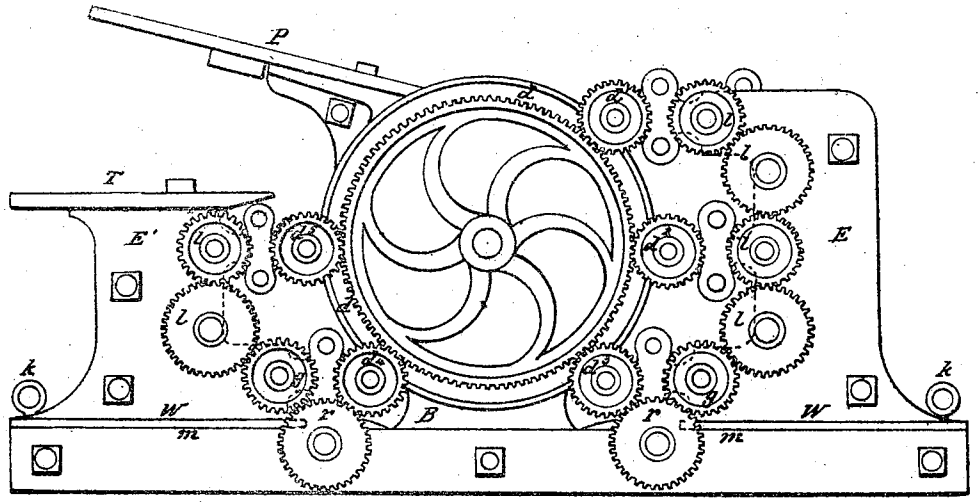
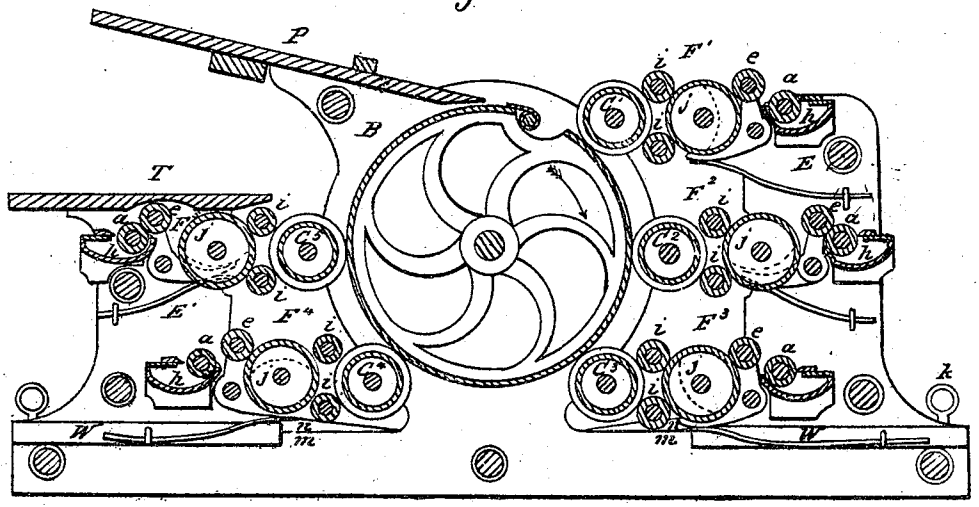


Fig. 2



Witnesses

C. L. Pennick

W. L. Bennem.

Inventor

Andrew Dougherty

A. Dougherty. Sheet 2. 2 Sheets.

Color Printing.

No. 25000. Patented Aug. 9. 1859.

Fig. 3.

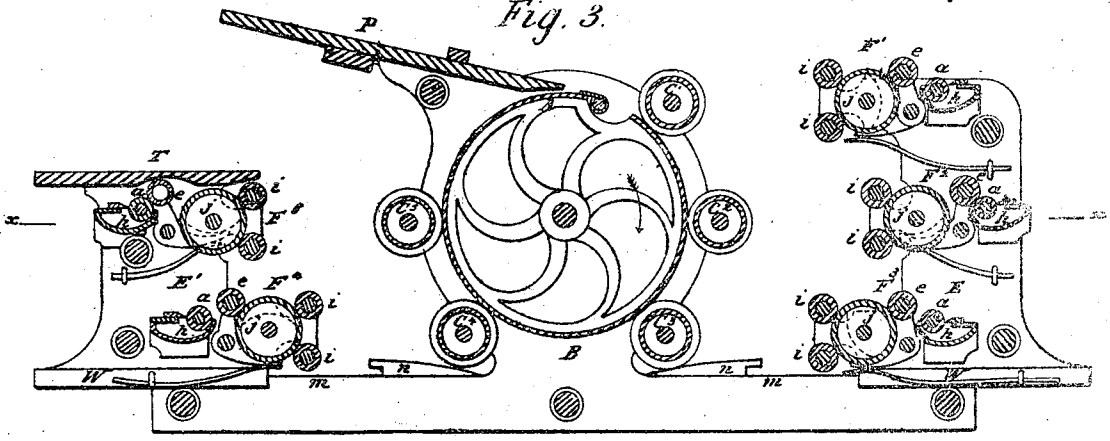
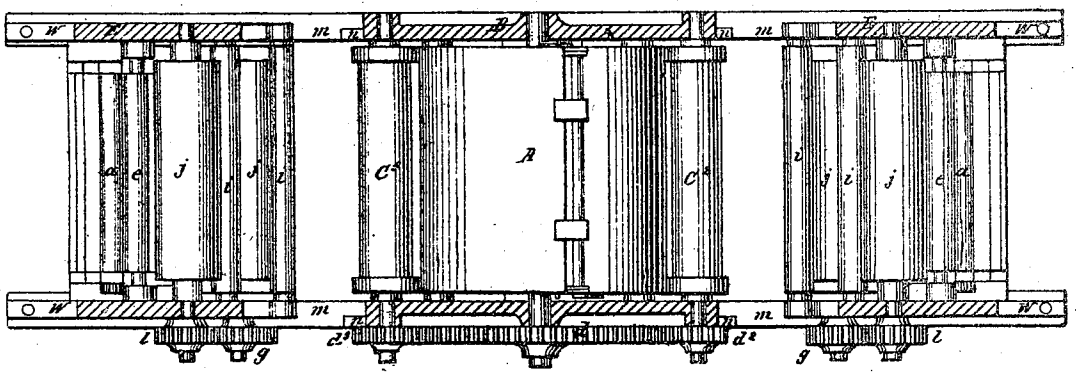


Fig 4



Witnesses

C. J. Renwick
W. L. Benson

Inventor

Andrew Dougherty

UNITED STATES PATENT OFFICE.

ANDREW DOUGHERTY, OF BROOKLYN, NEW YORK.

PRINTING-PRESS.

Specification of Letters Patent No. 25,000, dated August 9, 1859.

To all whom it may concern:

Be it known that I, ANDREW DOUGHERTY, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Printing-Presses; and I declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a printing press with my improvement applied thereto, Fig. 2 is a vertical longitudinal section through the same, Fig. 3 is a vertical longitudinal section of the press with the ink font carriages withdrawn, and Fig. 4 is a horizontal section of the press frame and carriages at the line *x x* of Fig. 3.

My invention applies to that class of printing presses by which articles are printed with a variety of colors, or, in other words, in which the printed figures produced are formed by printing different parts of the material with different type each supplied with ink of a special and distinct color.

The object of my invention is to simplify the construction of such presses, to enable the impression cylinders and the type upon them to be adjusted with facility, and to reduce the space occupied by the mechanism; and it consists in combining the inking apparatus of the various impression cylinders at each side of the main cylinder of the press which carries the sheet to be printed, with a carriage that can be moved upon the bed of the press toward and from the impression cylinders adjacent to it, and whose position is controlled by a stop or equivalent means so that the inking apparatus at one side of the press can be withdrawn by the movement of the carriage so as to afford ample space for the adjustment of the impression cylinders or other parts of the press by the attendant, and that the inking apparatus can again be brought into the proper position to supply ink to the several impression cylinders by replacing the carriage in its position as determined by the stop or other means that control it.

My improvement is embodied in the printing press for printing playing cards represented in the accompanying drawings. The working parts of this press consist mainly of the main cylinder which sustains the paper and presents it in succession to the different series of type, of five impression cylinders each carrying a distinct set of type, of the five sets of inking apparatus each adapted to supply the type of one of the impression cylinders with ink of a particular color, and of the gearing by means of which motion is imparted to the various members of the press. All of these might be described minutely, but as there are many parts of the press which are substantially the same in their operation and construction as the corresponding parts of other cylinder printing presses whose construction is well known, it has been deemed proper, in order to avoid prolixity, to describe minutely only such parts of the press as may be necessary to communicate a clear understanding of the nature of the present invention.

The main cylinder A of the press is supported in a frame B which also sustains the five impression cylinders, C^1, C^2, C^3, C^4, C^5, the journals of all the cylinders being sustained in suitable boxes. The impression cylinders are arranged in two gangs, one at each side of the cylinder. One of these gangs comprises three impression cylinders (C^1, C^2, C^3,); the remaining two cylinders (C^4, C^5,) compose the other gang. The shafts of the main cylinder and of the impression cylinders are connected by cog-wheels d, d^1, d^2, d^3, d^4, d^5, which are of such size that the surface of the paper upon the main cylinder and the surfaces of the types, or the printing surfaces on the impression cylinders, move with the same velocity; and the type are so set upon their respective impression cylinders that the type of each cylinder in succession, following the direction in which the main cylinder turns, as indicated by the arrow applied thereto in the drawing, come in contact with the paper at the parts thereof where successive impressions are required.

In order that the type of each impression cylinder may be suitably inked, each of these cylinders is provided with a special inking apparatus consisting of an ink font and suitable inking rollers. The inking apparatus for the press is divided into two gangs one for each gang of impression cylinders, and each gang is combined with a carriage which carries all the inking apparatus appertaining to a gang. The carriage E for one side of the press carries three sets of ink-

ing apparatus F^1, F^2, F^3, for the three impression cylinders C^1, C^2, C^3. The carriage E^1 for the other side of the press carries two sets of inking apparatus F^4, F^5, for the two impression cylinders C^4, C^5. Each inking apparatus consists of an ink font *h* with its roll *a* and scraper, of a distribution cylinder *j*, of a pair of ink rollers *i*, *i*, which receive the ink from the distribution cylinder and apply it to the type, and of a vibrating roll *e* which takes ink at each revolution of the press from the ink font roller *a* and delivers it to the distribution cylinder *j*. There may also be two or more traversing rollers between the vibrating roll *e* and the distribution cylinder *j*, for the purpose of equalizing the spread of the ink, but as the construction and operation of such rollers is well known and as their representation would only add to the complexity of the drawings I have not deemed it necessary to represent them; and for the same reasons it has not been deemed necessary to represent the mechanism for imparting motion to the ink font rolls from the frame that carries the vibrating roll. Each carriage E and E^1, is constructed to slide toward and from the main cylinder upon ways *m m* secured to the bed frame of the press; and the sets of ways are provided with stops *n*, which limit the distance to which the carriage can be moved toward the cylinder. Each carriage moreover is provided with a pair of removable pins, *k*, *k*, which can be passed through corresponding holes in the runners *w* of the carriages and the ways upon which they slide to maintain the carriages firmly in contact with their respective stops. The several inking apparatus of each carriage are so arranged with reference to each other, and the stops are so adjusted, that when each carriage is in contact with the stops all of its inking rollers are in the proper positions to supply ink to their respective impression cylinders. The shafts of the distribution cylinders of each carriage are combined by cog wheels *g*, *l*, and the cog wheel of the lowermost distribution cylinder of each carriage is combined by an intermediate wheel *r* with the cog wheel of the adjacent impression cylinder; the intermediate wheels *r r* being pivoted to the main frame of the press. The press is fitted with a feed board P, and fly board T; it is also provided with nippers to seize the paper, and with the usual appliances for holding the paper upon the main cylinder and delivering it upon the fly board.

When the press is in operation the carriages are in their innermost positions, as represented at Figs. 1 and 2, and the sheet of paper fed from the feed board is gripped by the nippers of the main cylinder, is carried around therewith, presented in succession to the different impression cylinders, and is finally delivered upon the fly board. If any one of the impression cylinders, or any part of the inking apparatus adjacent thereto, requires adjustment or repair, the carriage at that side of the press is loosened by removing the pins *k k*, and is then slid back, as represented at Figs. 3 and 4 thus affording ample space for the entrance of an operative between the inking apparatus and the impression cylinders. The withdrawal of the carriage draws the teeth of the cogwheels *g* and *r* out of gear, but as the separated parts retain their respective positions, the replacement of the carriage puts them again into gear so that no readjustment of these are necessary; moreover as the stops control the position of the carriage, and the several inking apparatus are maintained on the carriage in their proper relative positions, each inking apparatus is brought by the replacement of the carriage into its proper position with reference to the impression cylinder to which it supplies ink.

Now in order to convey a clear understanding of the utility of my invention it is necessary to advert to the fact that in presses previously constructed for printing with a variety of colors, the inking apparatus has been secured to the same frame that sustains the main cylinder; hence it has been necessary to construct the press so large that an operative can insert himself between the members of the press in order to get at the impression cylinders, and if any of these have to be removed and replaced by others it is necessary to dismount a considerable part of the press in order to permit these operations. The replacement of the parts dismounted not only occupies much time but requires much skill on the part of the superintendent of the press to readjust the parts in their proper positions; besides, there is a loss of stock in trying the press during the process of adjustment. All these difficulties are avoided by my improvement, as it is not necessary to have space enough between the members of the press to permit an operative to insert himself between them, the parts may be located close together, and the machine is rendered much more compact and less costly, and as the simple withdrawal of the carriage affords easy access to the impression cylinders any one of these or of the inking rollers may be removed and replaced without dismounting any other part of the press.

The invention I have described is not confined to any particular kind or description of inking apparatus, carriage or means for controlling the position of the same. Nor is it confined to a press for printing playing cards, as my invention may be applied to

printing apparatus for printing letter press, paper hangings, calico, and other fabrics which are to be printed with two or more colors.

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

The combination of the inking apparatus at the side of the main cylinder of a press with a carriage, that can be moved from and toward the main cylinder, and with a stop, that controls the position of the carriage, the combination as a whole operating substantially as above set forth.

In testimony whereof I have hereunto subscribed my name.

ANDREW DOUGHERTY.

Witnesses:

JAMES M. BEATTIE,

WASHINGTON MURRAY.