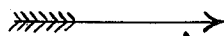
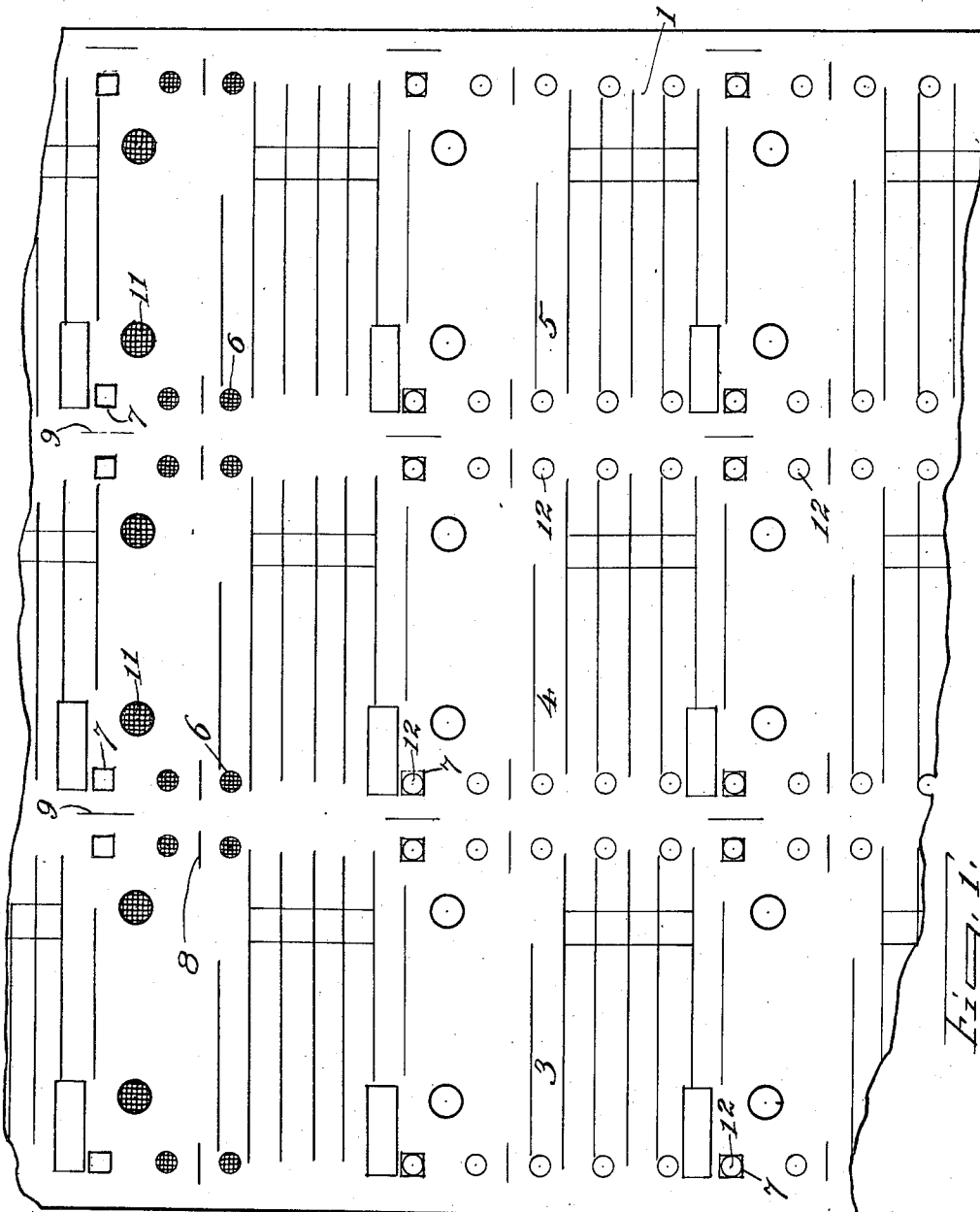


J. Q. SHERMAN.
PRINTING AND PUNCHING MANIFOLDING PAPER.
APPLICATION FILED DEC. 4, 1920.

1,418,481.

Patented June 6, 1922.

3 SHEETS—SHEET 1.



INVENTOR:

John Q. Sherman

BY *Wm. Allen*

ATTORNEYS.

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Fig. 2.

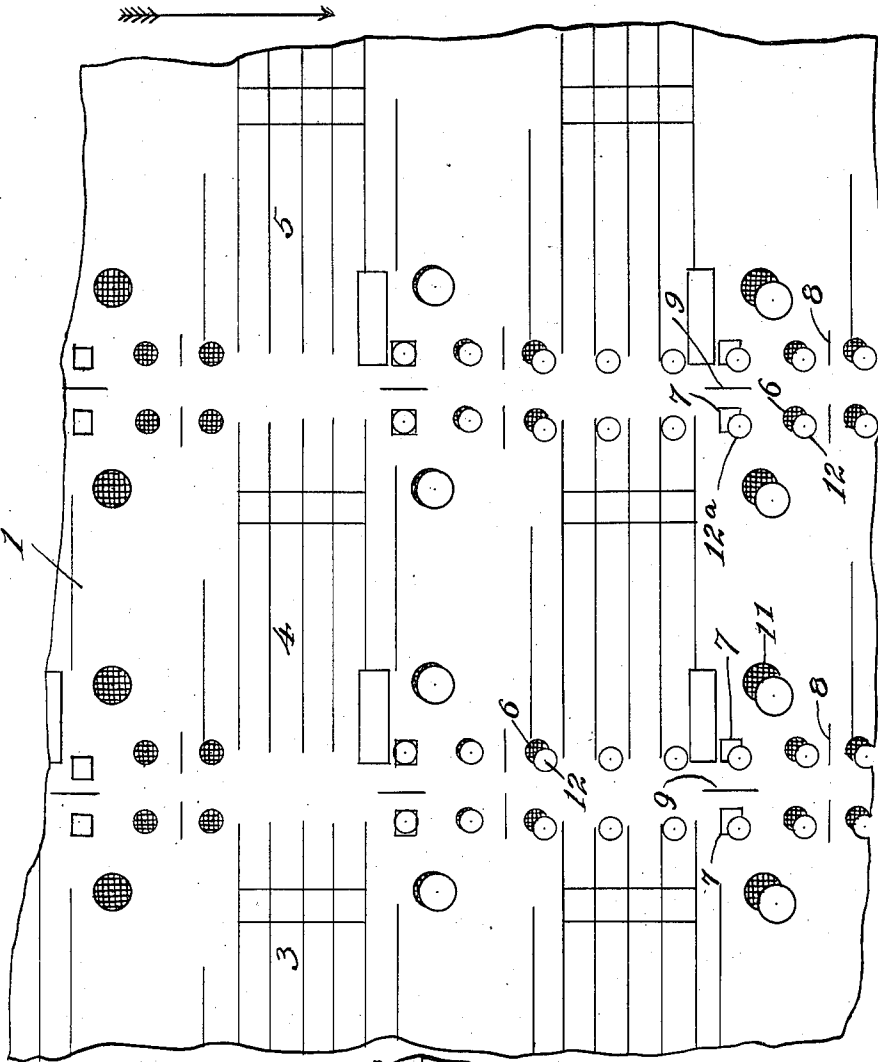
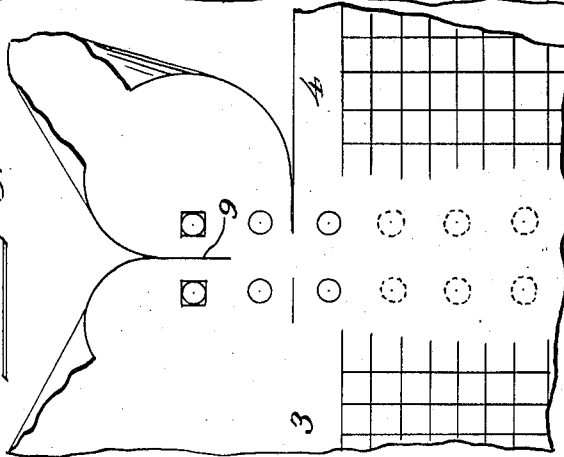


Fig. 3.



INVENTOR:

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BY

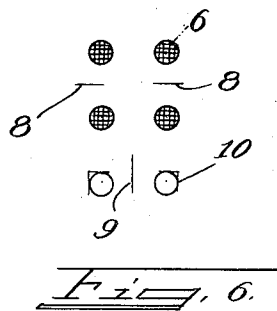
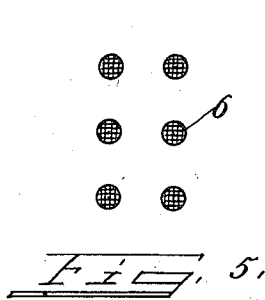
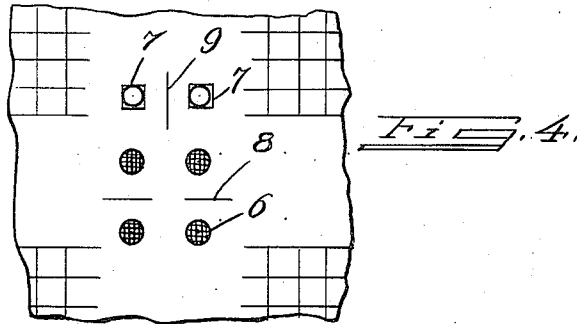
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3 SHEETS—SHEET 3.



INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN Q. SHERMAN, OF DAYTON, OHIO.

PRINTING AND PUNCHING MANIFOLDING PAPER.

1,418,481.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN Q. SHERMAN, a citizen of the United States, and a resident of the city of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Printing and Punching Manifolded Paper, of which the following is a full, clear, and exact description, reference being had to the drawings forming part of this specification.

My invention relates to methods of printing the forms designed for use in a manifolded machine so that accuracy of alignment of holes punched in the forms subsequent or prior to the printing will be definitely ascertainable at a glance.

It will be understood that in manifolded machines employing as a method of aligning or feeding the forms certain pin elements which engage in holes punched in the paper, it is of great importance that the holes be punched in absolute accuracy with relation to the printing. The forms are printed with the same blank spaces to be filled out in all superimposed webs and the ultimate object is to bring the paper to such true alignment by means of engagement with suitable holes, that all notations made will appear on the proper lines or in the proper blank spaces for every form used.

No method has as yet been developed with which I am familiar, in which the holes may be punched in the paper at the same time as the printed impressions are made, and I do not believe that this would ever be practical due to the nature of the printing and punching work.

The presses for printing and punching the webs of paper have adjustments which a competent pressman may employ in maintaining uniform operation throughout. The usual method of printing is to print the various plural forms successively in a single wide web, form the holes in the web and then slit it up into the desired individual strips each comprising repetitions of the same form. The paper will vary in the sheet and due to inaccuracies of the press, which will occur if care is not exercised at all times, the paper webs will shift laterally after they leave the printing press proper, or will feed improperly in other ways. All of these factors tend to result in a lack of uniformity of the holes with relation to the papers.

My invention is illustrated as in use with a type of manifolded web which has marginal rows of equally spaced holes extending longitudinally of the forms, and also terminal holes usually of larger size, suitable for filing purposes and also for use with alignment devices, sometimes called "jogging" devices by me, due to the action of the pin elements which engage in these large terminal holes in certain types of machines.

It is not easy for even the most experienced pressman to detect slight inaccuracies of alignment of punched holes in the printed webs, and even while exercising care the holes begin to run out of accurate location for the various forms constituting one wide web, with a resultant spoiling of considerable paper.

The object of my invention concretely stated is to print in connection with the printing mechanisms of a press, certain blocks, spots or squares and certain lines, within which the holes should be punched if the press is working properly, and I have discovered that the moment a hole gets out of the center of one of the blocks it can easily be detected with the eye and corrections can be made to the press feed to cure the error before it results in a serious disalignment. The pressman can always start his punches so that they punch out the paper within the spots, squares or lines, and by maintaining the feed in proper condition can enforce a continuance of the punching in exactly the same relation.

In connection with the printing of the punch hole locating marks, I also print other marks which further facilitate the proper slitting and tearing off of the forms, as will be made evident.

I accomplish the various objects above set forth and other advantages to be noted, by that certain method to be hereinafter described, and illustrations of which will be found in the following drawings.

In the drawings,

Figure 1 is a plan view showing a portion of a completed web with the holes punched and the various locating imprints formed therein.

Figure 2 shows a like view in which the holes have run out of alignment with the location marks.

Figure 3 is a detail view showing the use of the slitting and tearing-off marks.

Figure 4 is a detail view of a simple form of locating imprints showing how it may be employed in the corner of each form.

Figure 5 is a view showing another form, in which the lines and squares are omitted, but which serves my purpose to a practical degree.

Figure 6 is a like view showing a further modified form, in which the small square blocks have been modified into two lines forming an angle.

In Figure 1 is shown a web of paper 1, formed of three forms 3, 4 and 5. The width of the webs and the number of forms printed thereon form no essential part of the invention which relates to the optical detection of variations in the uniform punching of holes with relation to the printing on the forms.

I provide as a convenient method of carrying out my invention a small plate to be locked up with the printing plates in the press, so as to print at the same time that the various lines, headings, notations and the like are formed on the paper webs.

In one form (Figure 4) the small plate carries four round black spots 6, of the size of the holes to be punched, arranged to print in two rows lengthwise of the forms, and also the boxes 7, arranged one in each of the rows of black spots. In this form there are formed the line or lines 8, which will denote the point at the head of each separate form, whereby it is to be torn off from the strip or web in use. Also there is formed a line 9, to indicate the line between the sets of forms printed side by side in the large web.

Another form of plate will form the impression shown in Figure 5 wherein there are six of the black or solid color spots and no squares or lines. Also, as in Figure 6, the boxes or squares may be simplified in form, as by small angle lines 10.

It is evident that the imprints now noted are of use in instances where there are to be several forms printed side by side in a large web, which is the usual and economical manner of printing, but in the instance of a single form being printed on a narrow web, or in case holes on the outside margins of the web were to be made, then the small plates would have but one row of spots or boxes, as will be apparent.

As shown in Figures 1-3, the large webs are printed up with the location imprints formed at the corners thereof, and with a single line of imprints at the outer margins. They are also shown with large solid color spots 11, formed at the sides of the two rows or marks, these being for the purpose of locating the terminal holes in each form.

As shown in Figures 1-3, furthermore there is formed a double row of holes between each set of forms, so that when split

up along the center line, there will be a marginal row of holes for each separate web.

In Figure 3 is noted the splitting up of a wide web, showing how the operator will be guided by the line or lines 9, in exactly dividing the main web up into strips having the same width throughout.

Having printed the locating imprints on the forms, which may be and preferably will be at the corners near the head of the adjoining forms, the operator watches carefully that the punches in his press register exactly with the said marks, so that each hole 12 entirely punches out the solid color dots, and appears in the center of the small boxes.

He then watches the punches carefully, and will be able to note any discrepancy in alignment across the web by black showing around the sides of the holes that take the place of the black spots, and he will also be able to tell the nature of the variation by regarding the squares or boxes.

Thus in Figure 2 at the bottom thereof, the holes have begun to run out of exact location to a large amount and the location of the holes 12^a, with relation to the boxes will show that the misalignment is to the side and that a lagging back of the paper has occurred also.

The operator cures the defective feed at once by the manipulation of the adjustments of the press same being made obvious to him by the locating method now fully described.

It is also evident that when it comes to slitting up the forms, (Figure 3) the operator can tell at a glance if his slitter is getting off of the middle line, by the appearance of the indicating or locating line to one side or the other of his cut.

I do not believe it to be necessary to describe the various modifications of my invention which would accomplish like results and wish such equivalent methods and structures to be included within the scope of the claims that follow where their wording does not specifically exclude the application of the doctrine of equivalents.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. That method of printing and punching manifolded paper and the like, which consists in first printing upon the paper a series of forms to be used in making entries on the paper, at the same time printing upon the paper marks positioned where desired punchings are to be removed from the paper, and by a further operation feeding and punching the paper with holes designed to be located exactly with reference to said marks.

2. That method of printing and punching manifolded paper and the like, which consists in first printing upon the paper a se-

ries of forms to be used in making entries on the paper, at the same time printing upon the paper marks positioned where desired punchings are to be removed from the paper, and by a further operation feeding and punching the paper with holes designed to be located exactly with reference to said marks, said marks comprising spots of substantially the size of the punchings.

3. That method of printing and punching manifolding paper and the like, which consists in feeding a continuous web of paper through a machine, and in first printing by said machine upon the paper a series of forms to be used in making entries on the paper, at the same time printing upon the paper marks positioned where desired punchings are to be removed from the paper, and by a further operation punching by said machine, the paper with holes designed to be located exactly with reference to said marks.

4. That method of printing and punching manifolding paper and the like, which consists in feeding a continuous web of paper through a machine, and in first printing by said machine upon the paper a series of forms to be used in making entries on the paper, at the same time printing upon the paper marks positioned where desired punchings are to be removed from the paper, and by a further operation punching by said machine, the paper with holes designed to be located exactly with reference to said marks, said marks having a dimension approximately that of the punchings, whereby deviations in any direction of the punchings may be readily observed.

5. That method of printing and punching manifolding paper and the like, which consists in first printing upon the paper a series of forms to be used in making entries on the paper, at the same time printing upon the paper marks positioned where desired punchings are to be removed from the paper, and by a further operation feeding and punching the paper with holes designed to be located exactly with reference to said marks, said marks comprising in part spots of solid color of substantially the shape and size of the punchings and in part marks hav-

ing two dimensions of the punchings, but not the shape thereof.

6. That method of printing and punching manifolding paper, which consists in feeding a continuous web of paper having a width of at least two finished forms, imprinting rows of suitable forms on said paper side by side, simultaneously printing marks on the paper at the corners of four adjacent forms resulting from said printing side by side as noted, by a further operation punching out fragments from said paper at the four corners, said marks being located to receive the punching operation, and designed to indicate slight deviations from a perfect registry of the punched holes with the marks.

7. That method of printing and punching manifolding paper, which consists in feeding a continuous web of paper having a width of at least two finished forms, imprinting rows of suitable forms on said paper side by side, simultaneously printing marks on the paper at the corners of four adjacent forms resulting from said printing side by side as noted, by a further operation punching out fragments from said paper at the four corners, said marks being located to receive the punching operation, and designed to indicate slight deviations from a perfect registry of the punched holes with the marks, said marks also including a guide line for slitting the side by side forms apart.

8. That method of printing and punching manifolding paper, which consists in feeding a continuous web of paper having a width of at least two finished forms, imprinting rows of suitable forms on said paper side by side, simultaneously printing marks on the paper at the corners of four adjacent forms resulting from said printing side by side as noted, by a further operation punching out fragments from said paper at the four corners, and designed to indicate slight deviations from a perfect registry of the punched holes with the marks, said marks also including a guide line for slitting the side by side forms apart, and a guide line for separating forms in the rows into individual tickets after use.

JOHN Q. SHERMAN.