H. F. Smart.

Color Printing.

No. 84,225. Patented Nov. 17, 1868.

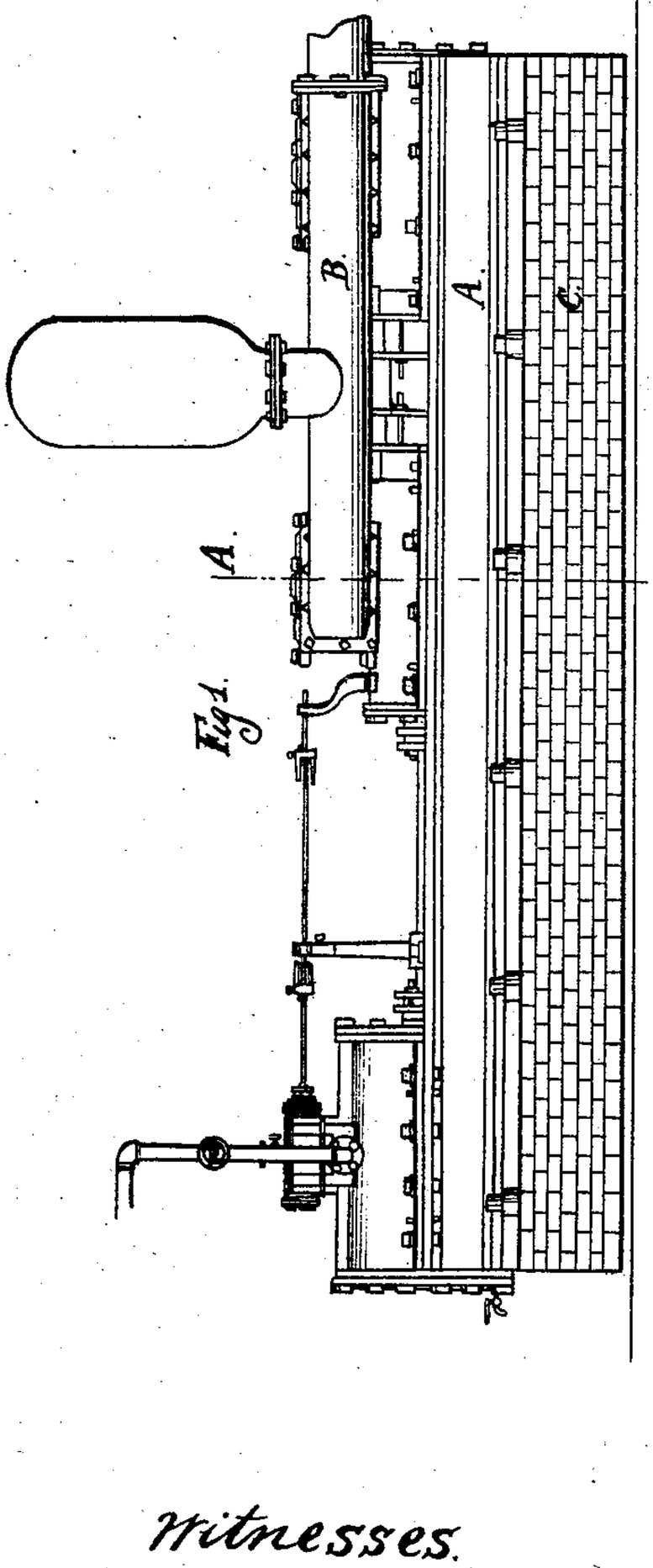

Fig 1.

Fig. 2.

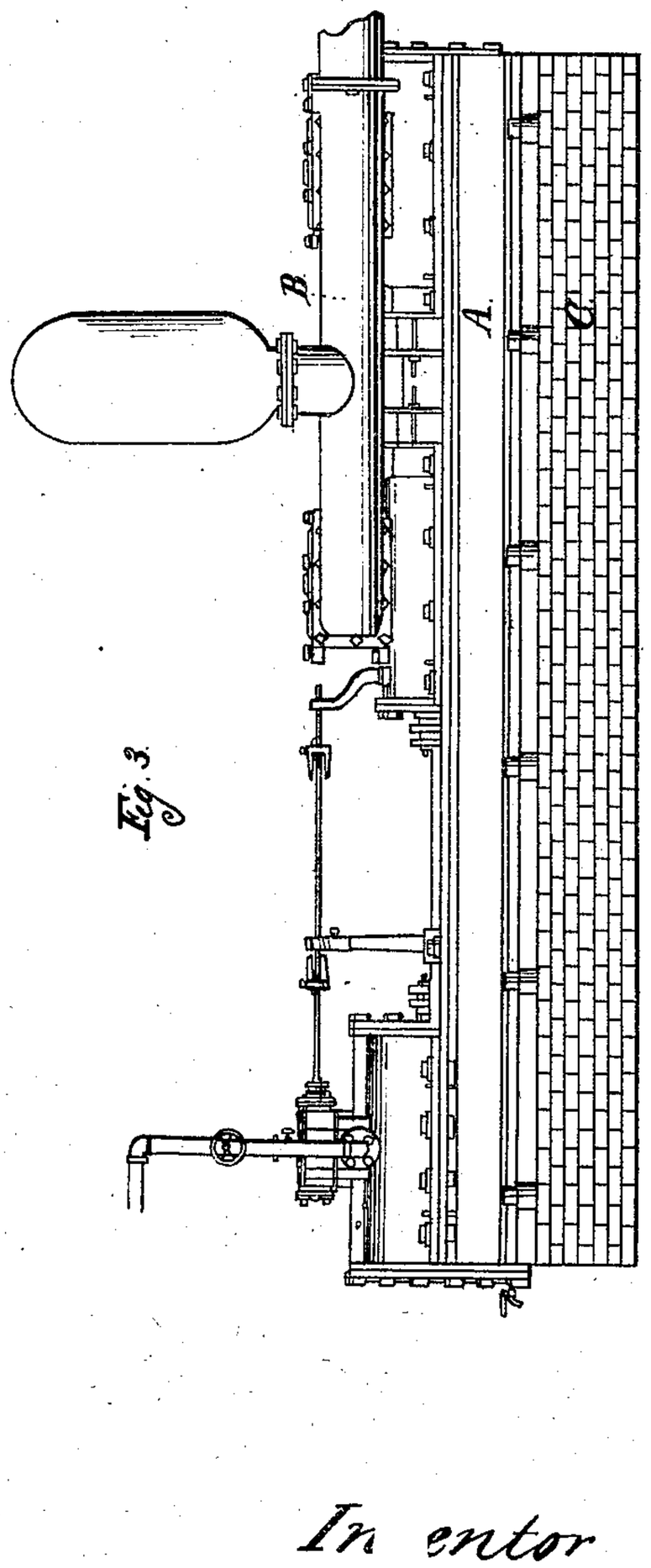

Fig. 3.

Witnesses.

Thos. H. Dodge

D. L. Miller

Inventor

Horace F. Smart.

United States Patent Office.

HIRAM F. SMART, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 84,225, *dated November* 17, 1868.

PROCESS FOR PRINTING IN COLORS.

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

Know all men by these presents:

That I, HIRAM F. SMART, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Printing in Colors from single plates or engravings; and I do hereby declare that the following is 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 represents a side view of a steam-pump and its base or foundation, printed in different colors, from a single cut, according to my invention.

Figure 2 represents a cross-section of the paper and backing or overlaying, showing the mode in which the green colors are applied on a part only of the print; and

Figure 3 represents a side view of the pump and base shown in fig. 1, when printed in a single dark color.

To enable those skilled in the art to which my invention belongs, to make and use the same, I will proceed to describe it more in detail.

Printing in colors, as practised prior to my invention, is attended with great expense, especially when cuts, plates, or engravings are used to print from, since a separate plate or engraving is required for each separate color.

By my mode of printing in colors only a single plate is required; and as an illustration of my mode of printing in colors let it be supposed that the parts A and B, shown in fig. 3, are to be printed in green colors, and the brick base C in a reddish color, as shown in fig. 1. In the first place, a sheet of paper, to receive the full impression of the plate or cut, is placed upon the tympan and properly secured, upon which an impression of the entire plate is taken in one color, as shown in fig. 3. A sheet of thick paper, card-board, or similar material, is now placed upon the sheet upon which the first impression was taken, and a second impression is taken, after which the sheet upon which the second impression is taken is removed from the tympan, and the part of the impression representing the brick base is cut out and secured by paste or otherwise to the face of the corresponding part of the first impression. A sheet is now fastened to the frisket-frame, and an impression taken upon that in one color, the same as in the first instance. The frisket-frame is now raised, and the part representing the brick base is cut out of the print on the sheet secured to the frisket, after which a sheet to receive the full and finished impression is placed upon the guides, the frisket-frame lowered, and the desired reddish color being applied to the plate, an impression is taken upon the sheet below the frisket, representing that part of the cut marked C, and which was cut out of the sheet attached to the frisket-frame. The sheet having the impression, it will be noticed, is taken through the opening cut in the frisket, or the sheet attached to the frisket-frame, the sheet of paper below the frisket being supported or forced through the said opening by the overlaying placed on the first impression taken on the sheet secured on the tympan. The sheet having the partially-printed representation is now removed from the guides, and the cut sheet is removed from the frisket-frame, together with the overlay which was placed upon the part C of the first impression. The parts marked A and B are now cut from the second impression which was taken, and secured to the corresponding parts of the impression upon the first sheet, and which remains upon the tympan. Another sheet is now attached to the frisket-frame, and an impression taken from the entire cut or engraving, after which the parts represented by A and B are cut out of the sheet attached to the frisket-frame. The partially-printed sheet is now placed upon the guides again, and the desired color being applied to the plate of engraving, a second impression is taken, representing the parts A and B in green colors, after which a similar operation to those above described is repeated, and the parts represented in dark colors, fig. 1, are printed, when the impression is completed, as shown in fig. 1.

To indicate the mode of operation more fully, the section, fig. 2, is given, which serves to illustrate the relative position of the different sheets when the impression is given to print the parts A and B in green colors, as above described, the line of section through the first sheet, upon which the entire impression was first made, being indicated by the line A B, fig. 1.

In fig. 2 the dark line *a* indicates the sheet upon the tympan, upon which the first impression is made, and the overlaying parts A B are shown in red colors, while the sheet *b*, to receive the impression, is shown in blue colors, and the perforated or cut-out frisket-sheet is shown in yellow color.

As the overlaying parts correspond with the openings or parts cut out of the frisket-sheet, it will be seen that any single impression, when working to form the many-colored print, will constitute only so much of the entire impression as has been overlaid on the sheet on the tympan, with a corresponding opening in the frisket or sheet attached to the frisket-frame.

As the overlaid parts are raised considerably above the sheet supported by the tympan, the engraving or plate presses against that part of the sheet *b* which rests upon the overlaying-material only, the other parts of the sheet *b* being protected from ink or the blurring-action of the plate or engraving while the impression is being given by the frisket-sheet, or sheet attached to the frisket-frame.

It will be seen from the foregoing description that an impression can be taken from an engraving or plate, in as many different colors as desired, by simply extending the mode above described of overlaying the

different parts of the impression or print on the sheet supported by the tympan, and cutting out corresponding parts of the frisket-sheet, or sheet attached to the frisket-frame, substantially as above described.

My invention may be used in printing in colors from a single plate or engraving with most of the various kinds of presses. It may also be applied with good results in the various branches of tinting.

I prefer to take an impression upon thick paper, card-board or other similar material, to be cut up for overlaying the impression, as before explained, since, by so doing, the operation can be performed more conveniently and with greater accuracy, especially if the engraving is somewhat complicated, than it can by measurement or otherwise.

Those skilled in the art to which my invention belongs cannot fail to perceive its great utility and value, and the varied extent of its applicability to the various branches of printing in colors.

Having described my improved mode of printing in colors,

What I claim therein as new, and desire to secure by Letters Patent, is—

The mode of printing in colors from a single plate or engraving, substantially as and for the puposes described.

HIRAM F. SMART.

Witnesses:

THOS. H. DODGE,

D. L. MILLER.