6 Sheets—Sheet 1.

E. CROSSLEY, M. MORLEY & J. THOMAS.

Yarn-Printing Machine.

No. 219,623. Patented Sept. 16, 1879.

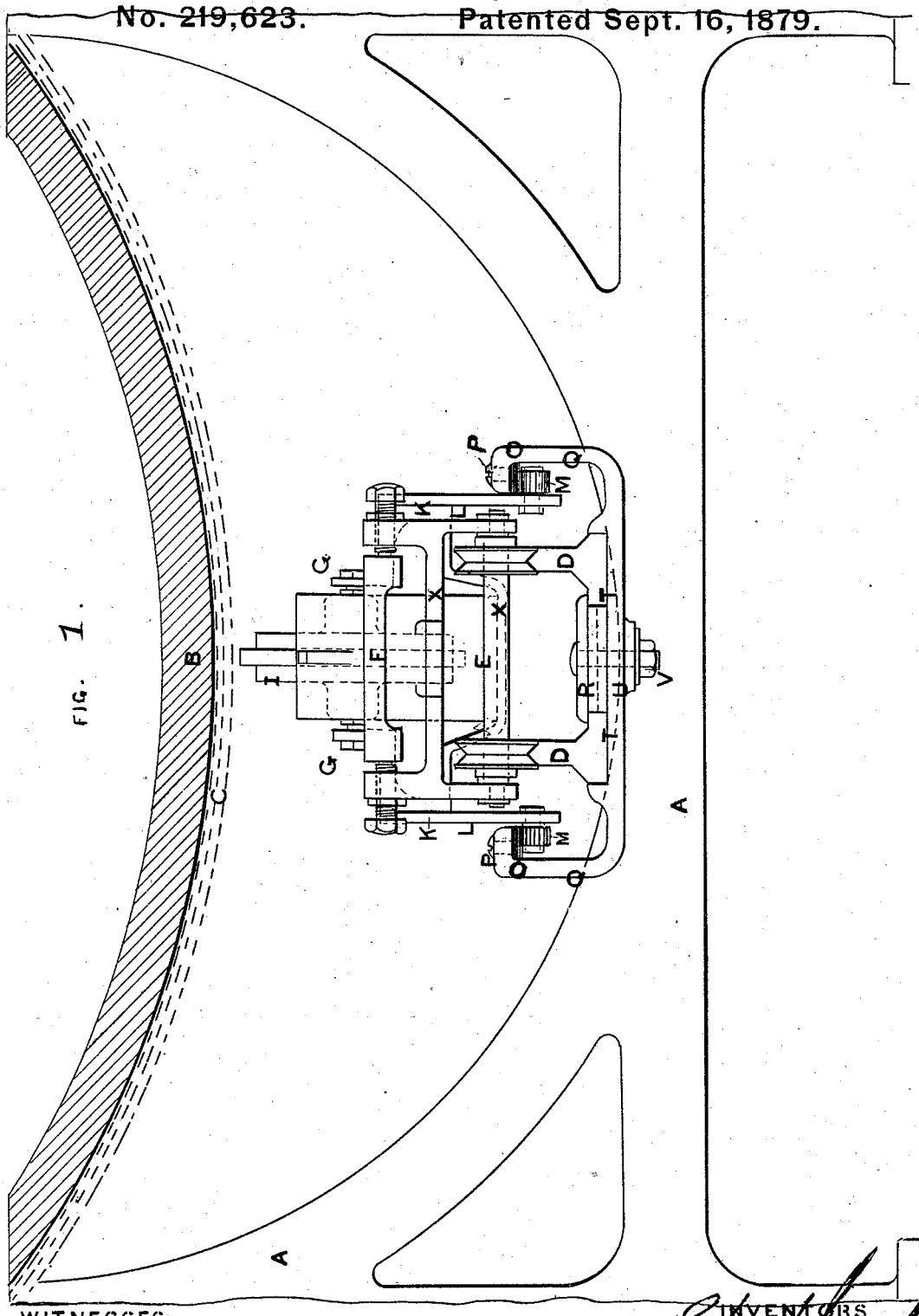

FIG. 1.

WITNESSES

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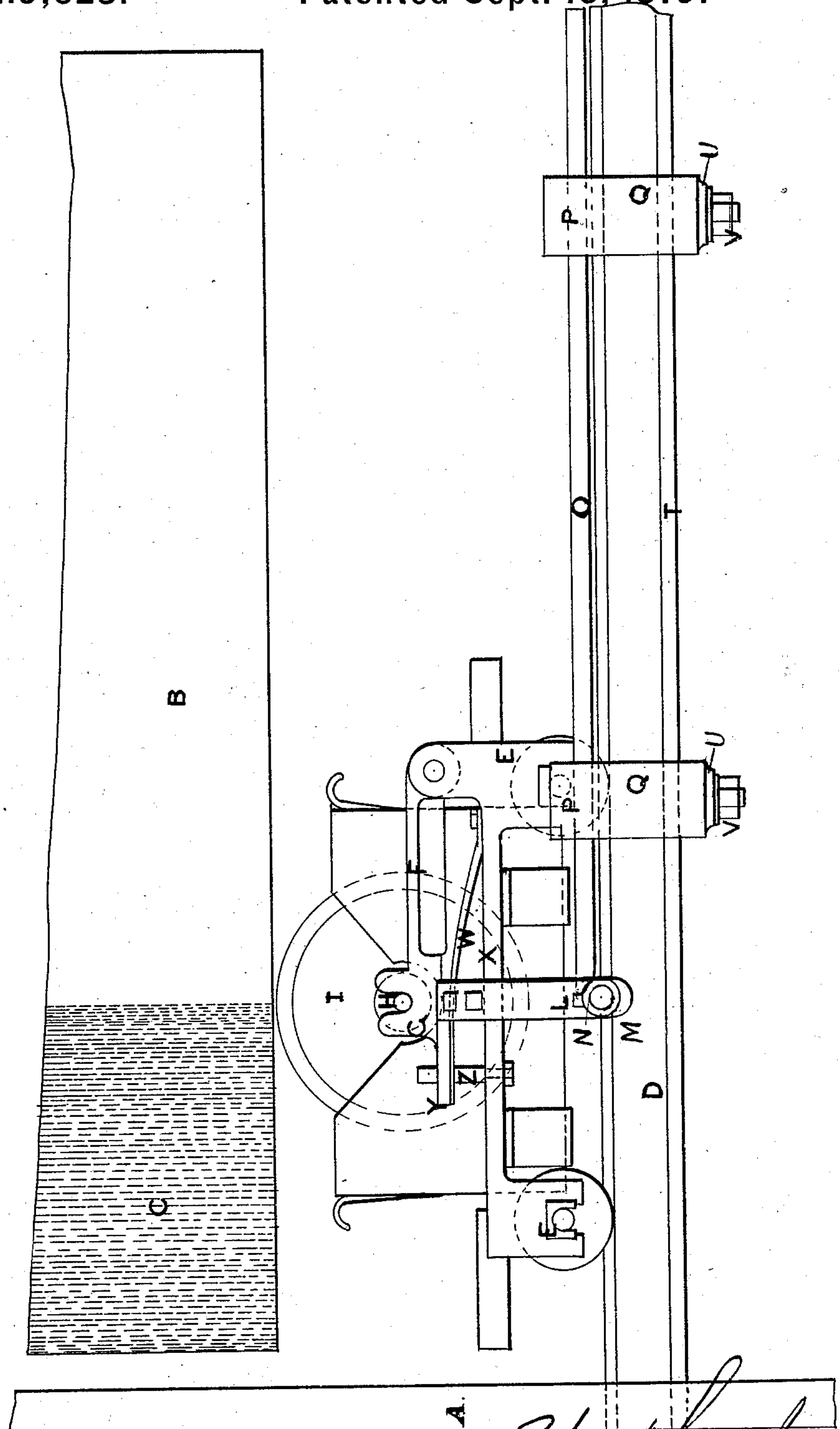
6 Sheets—Sheet 2.

E. CROSSLEY, M. MORLEY & J. THOMAS.

Yarn-Printing Machine.

No. 219,623. **Patented Sept. 16, 1879.**

FIG. 2



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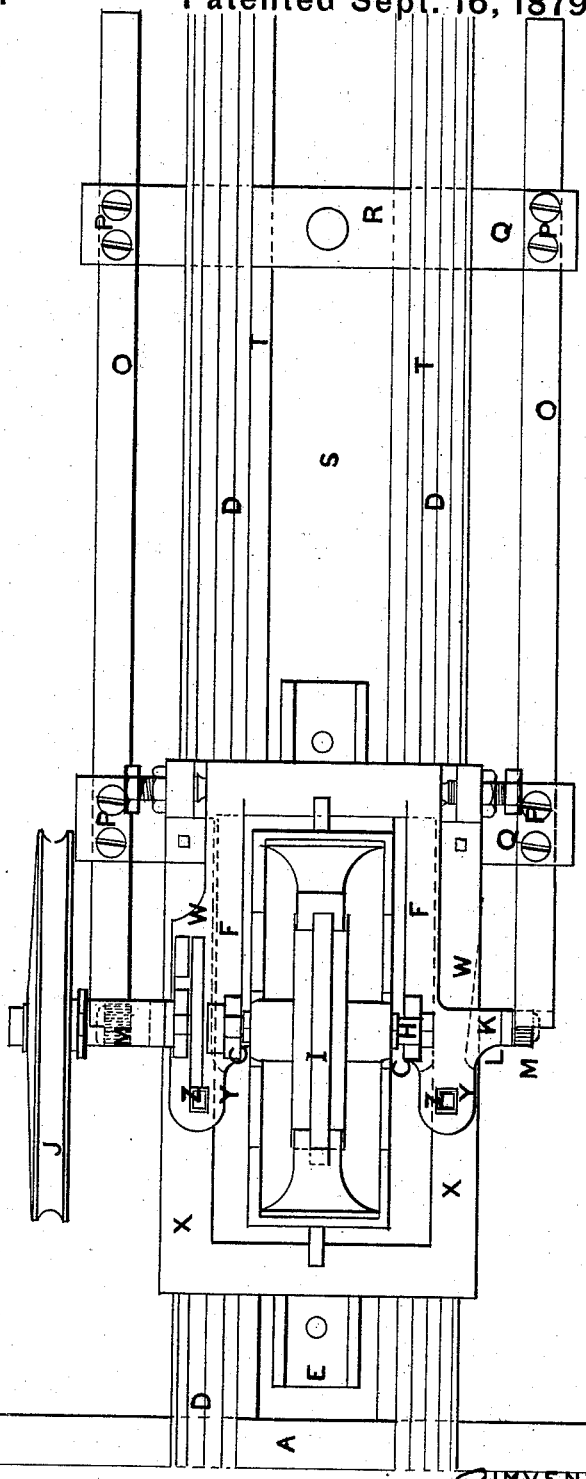
6 Sheets—Sheet 3.

E. CROSSLEY, M. MORLEY & J. THOMAS.

Yarn-Printing Machine.

No. 219,623. Patented Sept. 16, 1879.

FIG. 3.



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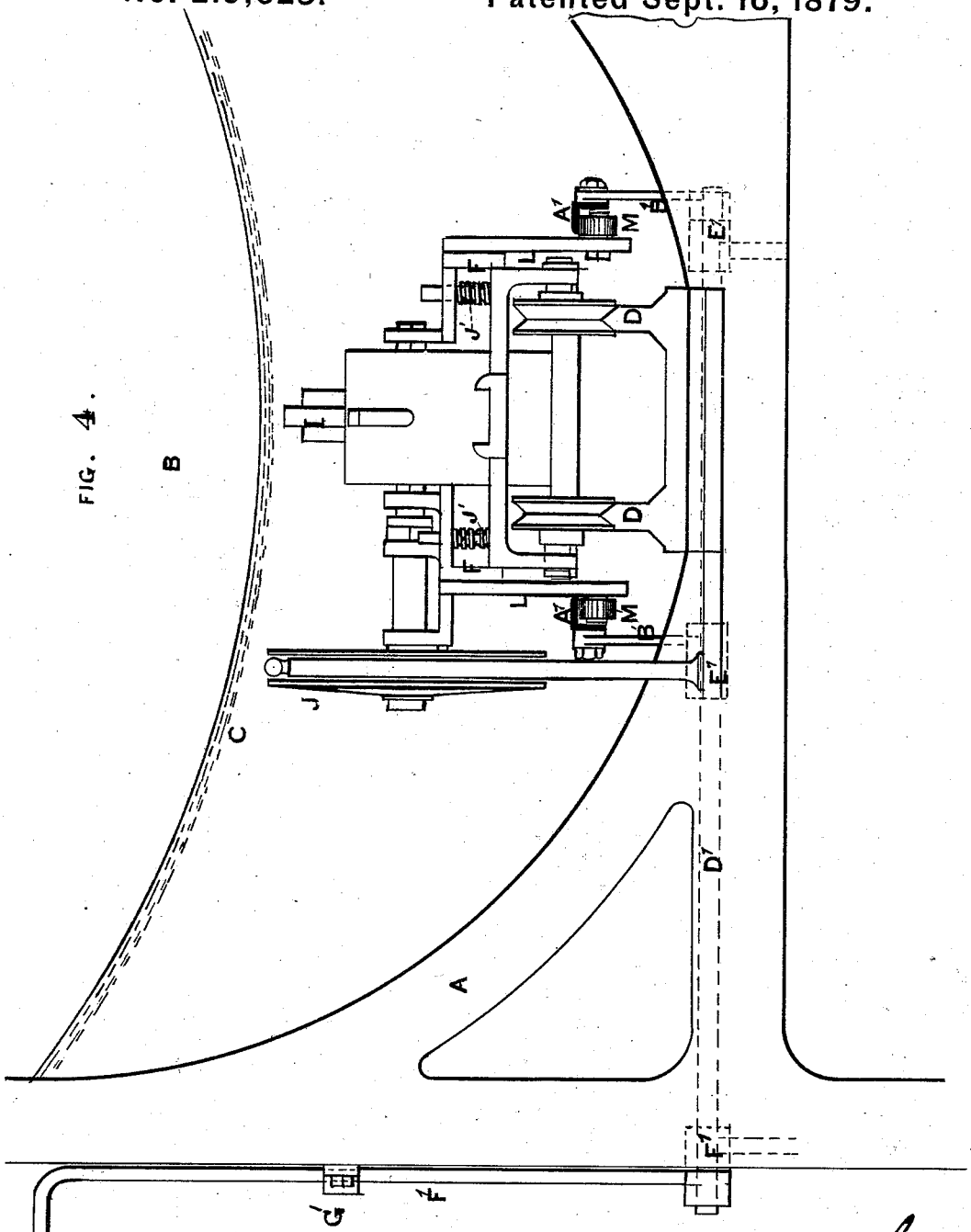
6 Sheets—Sheet 4.

E. CROSSLEY, M. MORLEY & J. THOMAS.

Yarn-Printing Machine.

No. 219,623. Patented Sept. 16, 1879.

FIG. 4.



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6 Sheets—Sheet 5.

E. CROSSLEY, M. MORLEY & J. THOMAS.

Yarn-Printing Machine.

No. 219,623. Patented Sept. 16, 1879.

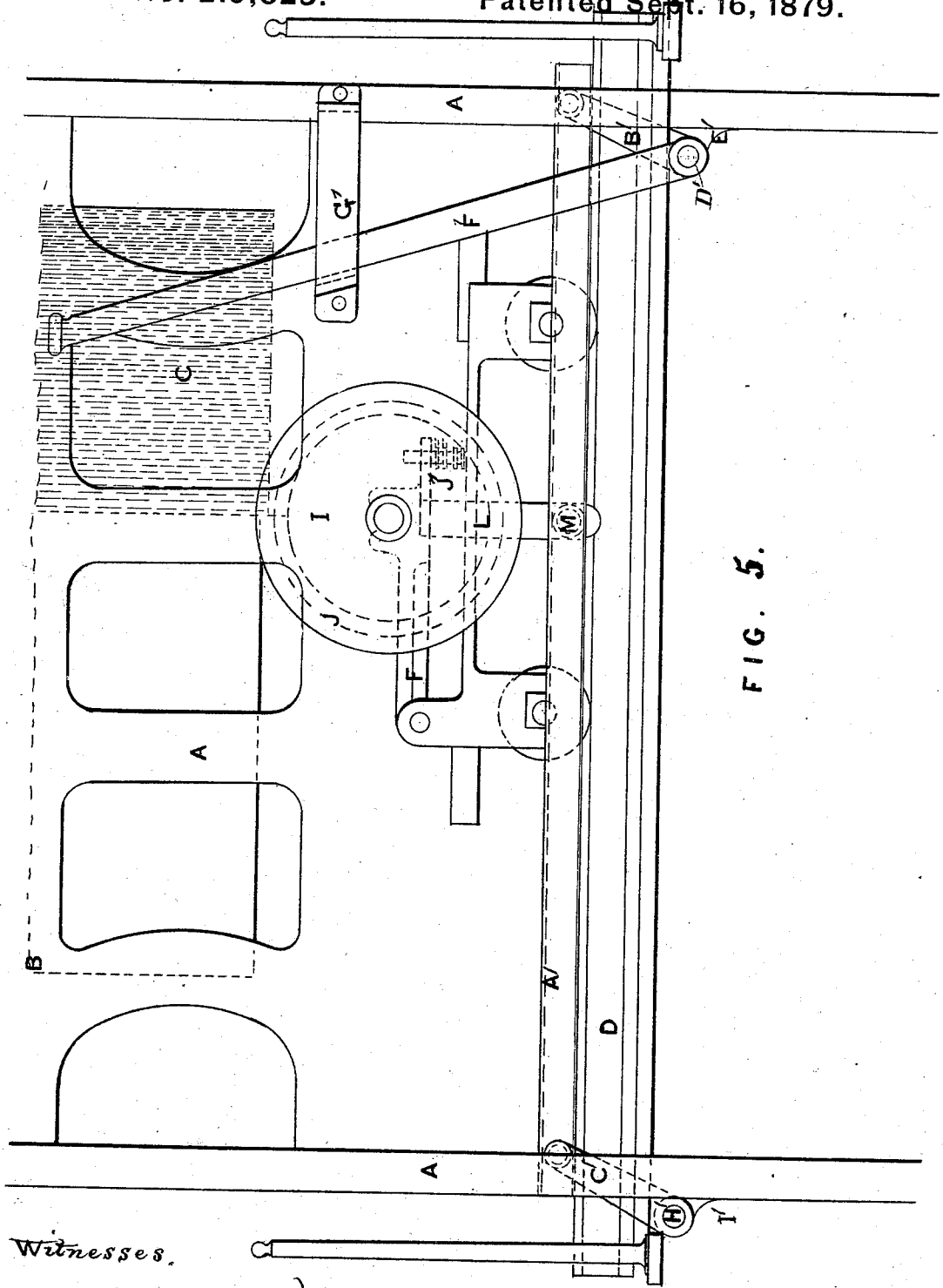

FIG. 5.

Witnesses.

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John Thomas.
By John J. Halsted. Atty

6 Sheets—Sheet 6.

E. CROSSLEY, M. MORLEY & J. THOMAS.

Yarn-Printing Machine.

No. 219,623. Patented Sept. 16, 1879.

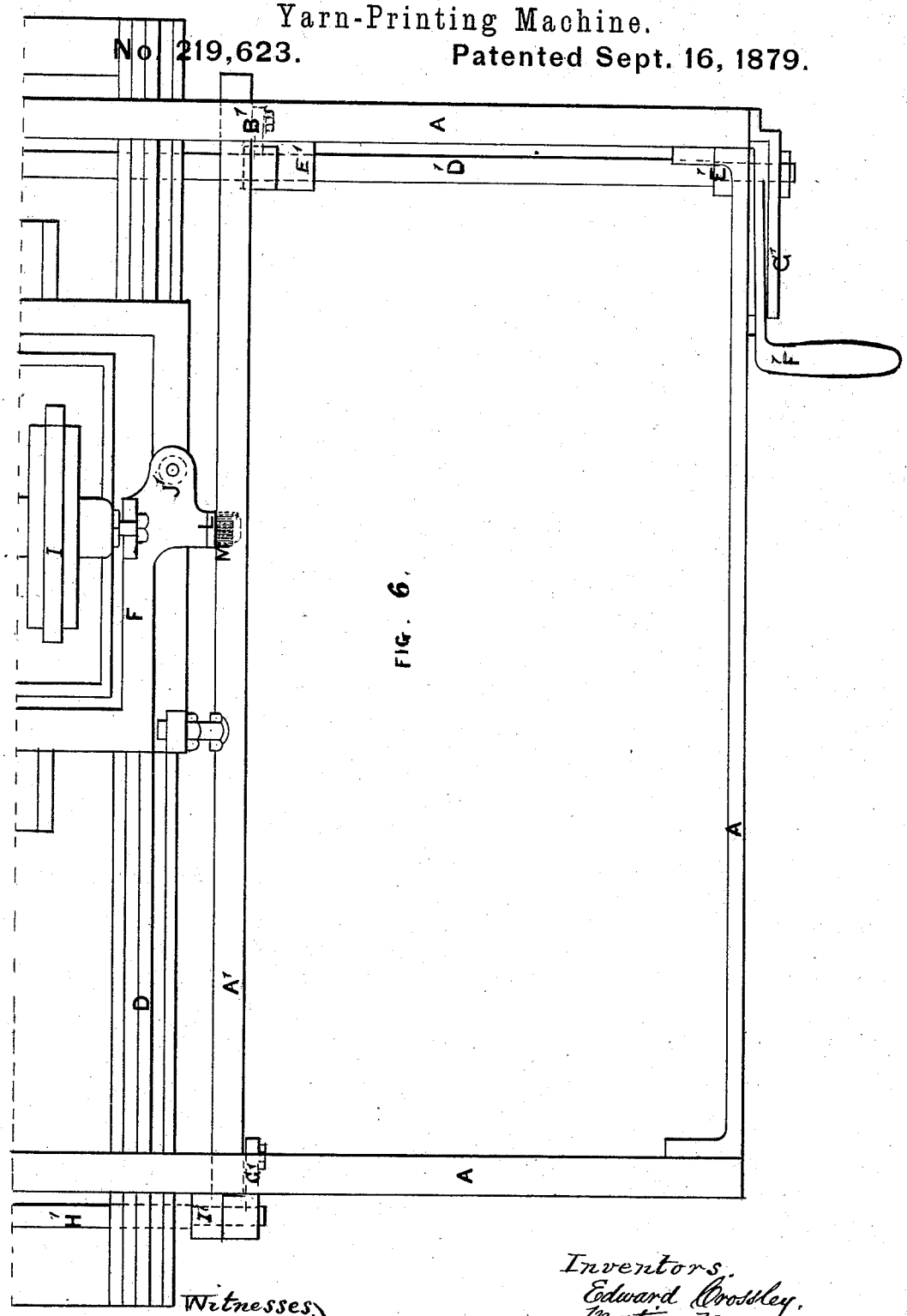

FIG. 6.

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John Thomas.
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Atty.

UNITED STATES PATENT OFFICE.

EDWARD CROSSLEY, MARTIN MORLEY, AND JOHN THOMAS, OF HALIFAX, COUNTY OF YORK, ENGLAND.

IMPROVEMENT IN YARN-PRINTING MACHINES.

Specification forming part of Letters Patent No. **219,623**, dated September 16, 1879; application filed February 6, 1879.

To all whom it may concern:

Be it known that we, EDWARD CROSSLEY, MARTIN MORLEY, and JOHN THOMAS, all of Halifax, in the county of York, England, have invented certain Improvements in Printing Yarns for Weaving Carpets and other Fabrics, of which the following is a specification.

The said invention relates to improvements in apparatus to print yarns with the several colors at intervals, and at such distances apart as the particular pattern may require, preventing the carriage of the color trough or box and color roller or pulley traversing the drum or cylinder onto which the yarns are wound through the whole width of the drum, when the drum is only partly wound with yarns; also preventing, when an odd number of traverses are required, the waste of colors and imperfect work.

For the purpose of preventing the carriage of the color trough or box, with the color roller or pulley, traversing the drum or cylinder the whole width, when the drum is only partly wound with yarns, we lower the color trough or box, and by these means remove the color roller or pulley from contact with the yarns at any required point of the traverse, so as to cease printing when required, which allows the printing of any portion of the drum.

The color-carriage is fitted with wheels and works on rails, in the usual manner. The color trough, roller, or pulley is supported on brackets fitted on a shaft, which is fixed in supports cast on the carriage end. To the brackets are fitted vertical bars or levers, having at the ends small friction-rollers, which travel with the carriage on rails. These rails are curved or inclined at the end, and the rails are so constructed that they can be fixed at any required point by set-screws, so as to bring the friction-rollers in contact with the curves or inclines at any required point for printing. The friction-rollers, traveling on the under side of the curves or inclines, lower the trough or box at any required point, removing from contact with the yarns the color roller or pulley, so as to cease printing, allowing by these means the printing of any portion of the yarns on the drum or cylinder. Springs are fitted under the brackets to lift up and keep the color roller or pulley pressed on the yarns when printing; or we employ an inclined catch, working on a stud which is fitted to the carriage. The bottom part of the catch from the fulcrum is made with a lever, which comes in contact with a stud fitted on a bar which works in lugs fixed to the rails. This bar can be moved forward or backward, according to the required point to cease printing. The catch falls and presses on a projecting end of the bracket supporting the color trough or pulley, lowering the trough and pulley and bringing the color roller or pulley from contact with the yarns, thus stopping the printing. By these means we do away with the present plan of only employing a drum or cylinder wound full of yarns the whole width when printing, as no part of a drum could be used heretofore without great waste of color, unless the color trough or box, roller, or pulley were worked by hand, which is sometimes done.

The color troughs or boxes are put in and taken out on one side of the drum or cylinder only, which requires the carriage, trough or box, and roller or pulley to make an even number of scrolls or prints on the yarns before being taken out; but when an odd number of traverses are required the color roller or pulley presses on the yarns through each traverse, causing a loss of color and imperfect work through having to print one of the colors twice over. We prevent such waste and imperfect work by bringing back the color roller or pulley through its last traverse without the roller or pulley touching the yarns. For this purpose we raise and lower the rails on which the carriage travels by means of eccentrics, levers, cams, or tappets, or by an additional rail for raising or lowering the trough or box, printing roller or pulley, such rail being under the control of the printer; or we lower the trough or box, roller, or pulley by inclined catches, as hereinbefore described.

But in order to enable our improvements to be better understood, we will proceed to describe the same by reference to the accompanying drawings, in which—

Figure 1, Sheet 1, represents a front view

of a carriage color trough or box, with color or printing roller or pulley, to which is fitted our improved apparatus, so as to cease printing when required; Fig. 2, Sheet 2, side view, and Fig. 3, Sheet 3, plan, of the same. Fig. 4, Sheet 4, represents a front view of a carriage color-box with printing roller or pulley, and part of frame-work of the printing apparatus, for raising and lowering the color or printing roller or pulley by means of additional rails, for giving an odd number of scrolls or prints on the yarns. Fig. 5, Sheet 5, is a side view, and Fig. 6, Sheet 6, a plan, of the same.

Similar letters of reference are used to represent similar parts.

A shows the frame-work of the printing apparatus; B, the drum or cylinder, on which the yarn C is shown partly wound.

On the frames are supported the rails D, on which travels the carriage E, which is constructed with a movable frame, F, having brackets G, in which works the shaft H of the printing color roller or pulley I, and also the driving-pulley J of the color roller or pulley.

On the projecting lugs K of the movable frame F are fitted vertical bars or levers L, to which are fitted studs, and on which work friction rollers or bowls M. These rollers M, when the required point is reached for ceasing to print, come in contact with the curved or inclined ends N of the rails O, and which, as the carriage travels on, cause the rollers or bowls M to work on the under side of the rails O, bringing down or lowering the printing roller or pulley I from contact with the yarn C, and keeping the roller or pulley from contact with the drum or cylinder B during the remainder of the travel, and until brought back to the return printing-point.

The rails O are fixed on projecting flanges P, cast on brackets Q. The rails O and brackets are fixed to the required position, according to the width of the yarn wound on the drum or cylinder, by caps R, which fit in an opening, S, made nearly the length of the bottom plate, T, of the rails D.

Through the caps and through the bottom plates, U, of the brackets Q are passed bolts having screwed ends, over which screw nuts V, to secure firmly the rails O and brackets Q in position.

When the carriage is brought back, and when the friction rollers or bowls M pass the curved ends N of the rails O, the movable frame F and printing roller or pulley I are forced up into printing position by springs W pressing on the under side of the frame F, and secured on the top of the carriage-frame X. Studs Z are also fitted in this frame, on which pass the springs and lugs Y, cast on the movable frame F, guiding in position the frame F.

We by these means cease printing at any required point, and allow the printing of the yarns on any portion of the drum or cylinder.

To print an odd number of scrolls, we employ an apparatus represented in Sheets 4, 5, and 6 of the drawings, and we employ a carriage color trough or box having a printing roller or pulley, as hereinbefore described; also with a movable frame, F, fitted with vertical bars or levers L, having studs, on which work rollers or bowls M. These rollers or bowls are pressed down by movable rails A′, which are, by preference, made of angle-iron.

The rails are fitted to levers B′ and C′. The levers B′ are fitted on a shaft, D′, which works in bearers E′, fixed to the frame-work of the printing apparatus.

The shaft D′ passes beyond one of the ends of the frame-work A, on the end of which shaft D′ is fitted a lever, F′, which works in a guide, G′, fixed to the frame-work.

The levers C′ are fitted on a short shaft, H′, extending across and under the rails D. This shaft works in bearings I′, also fixed to the frame-work.

Spiral springs J′ are fitted under the movable frame F, instead of the springs W. (Shown in Sheet 1 of the drawings.)

To lower the rails A′ to bring back the printing roller or pulley I through its last traverse without the roller or pulley touching the yarns, when an odd number of traverses are required, the lever F′ is pressed down, which actuates the levers B′ and C′, lowering the levers and rails A′, bringing from contact with the yarns C the printing roller or pulley I. The operator, when the last traverse is accomplished, reverses his lever and raises up the rails A′, and brings the printing roller or pulley in contact with the yarns for printing.

Having thus described our improvements, and the best means we are acquainted with for carrying the same into effect, we would have it understood that we do not confine ourselves to the precise details shown and described, as these may be varied without departing from the peculiar character of the invention; nor do we lay any claim to the construction and employment of the carriage trough or box, printing roller or pulley, as they form part of former patents; but

What we do claim is—

1. In combination with the carriage of a yarn-printing machine, an adjustable rail or rails or guides, serving, when adjusted, to withdraw the printing roller or pulley from contact with the yarn at any desired point or stage of its traverse.

2. The mechanism described for ceasing to print yarns when required at any portion of the drum or cylinder of a yarn-printing apparatus, preventing the color roller or pulley from traversing the whole length of the drum or cylinder with such roller or pulley in printing contact, when the drum or cylinder is partly

wound with yarn, said mechanism consisting substantially of the adjustable rail or rails O, roller or rollers M, and the yielding supports of the printing color-roller.

3. The mechanism, substantially as described, for lowering the printing color roller or pulley of a yarn-printing apparatus, to bring back said roller or pulley through its last traverse without its touching the yarns when an odd number of traverses are required, the same consisting of the vertically-adjustable rail or rails A′, levers B′ C′, shaft D′, lever F′, and color-roller.

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