3 Sheets--Sheet 1.

J. KRAFT.

PRESS FOR PRINTING OIL CLOTHS.

No. 106,834. Patented Aug. 30, 1870.

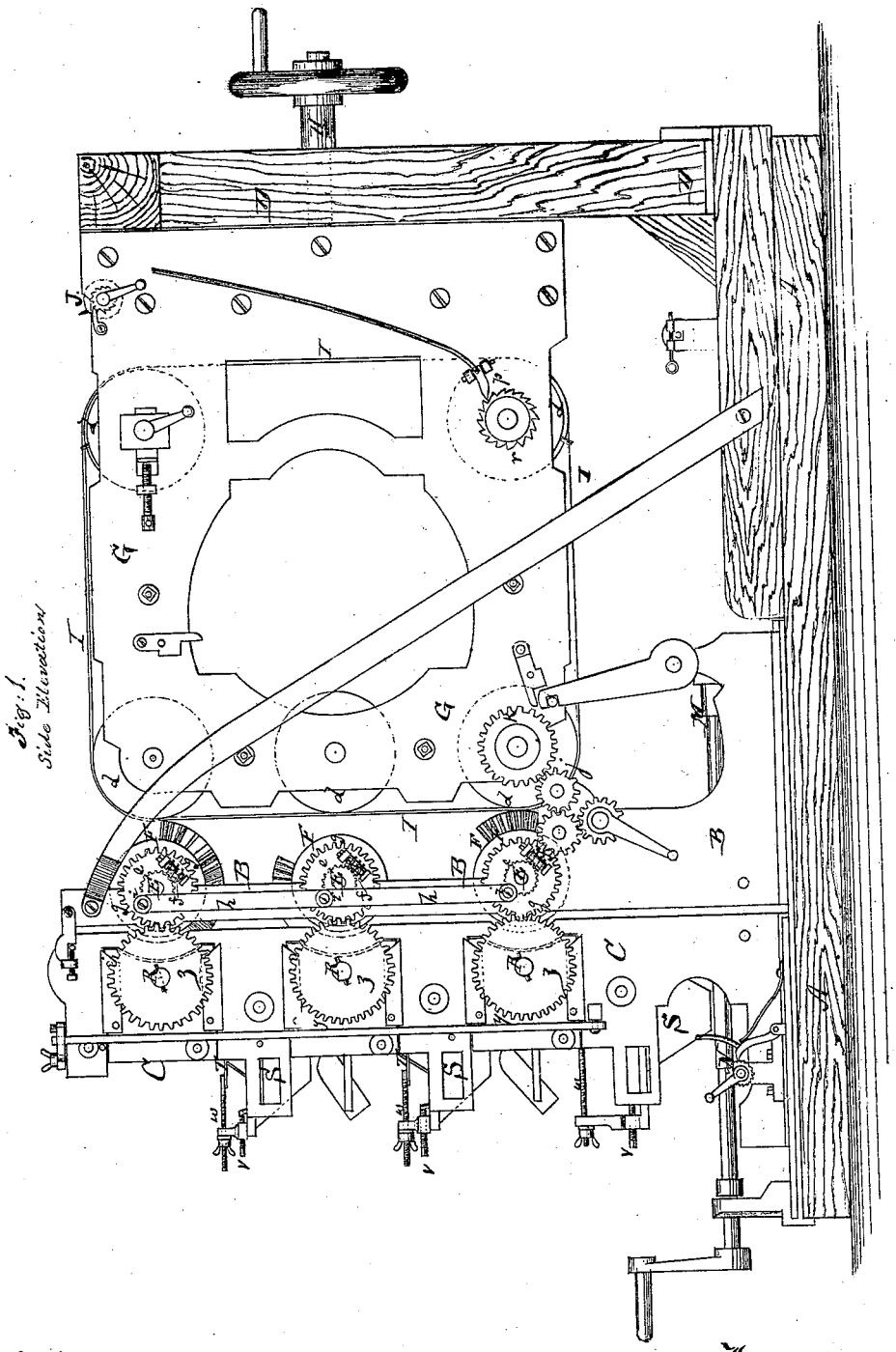

Fig. 1.
Side Elevation

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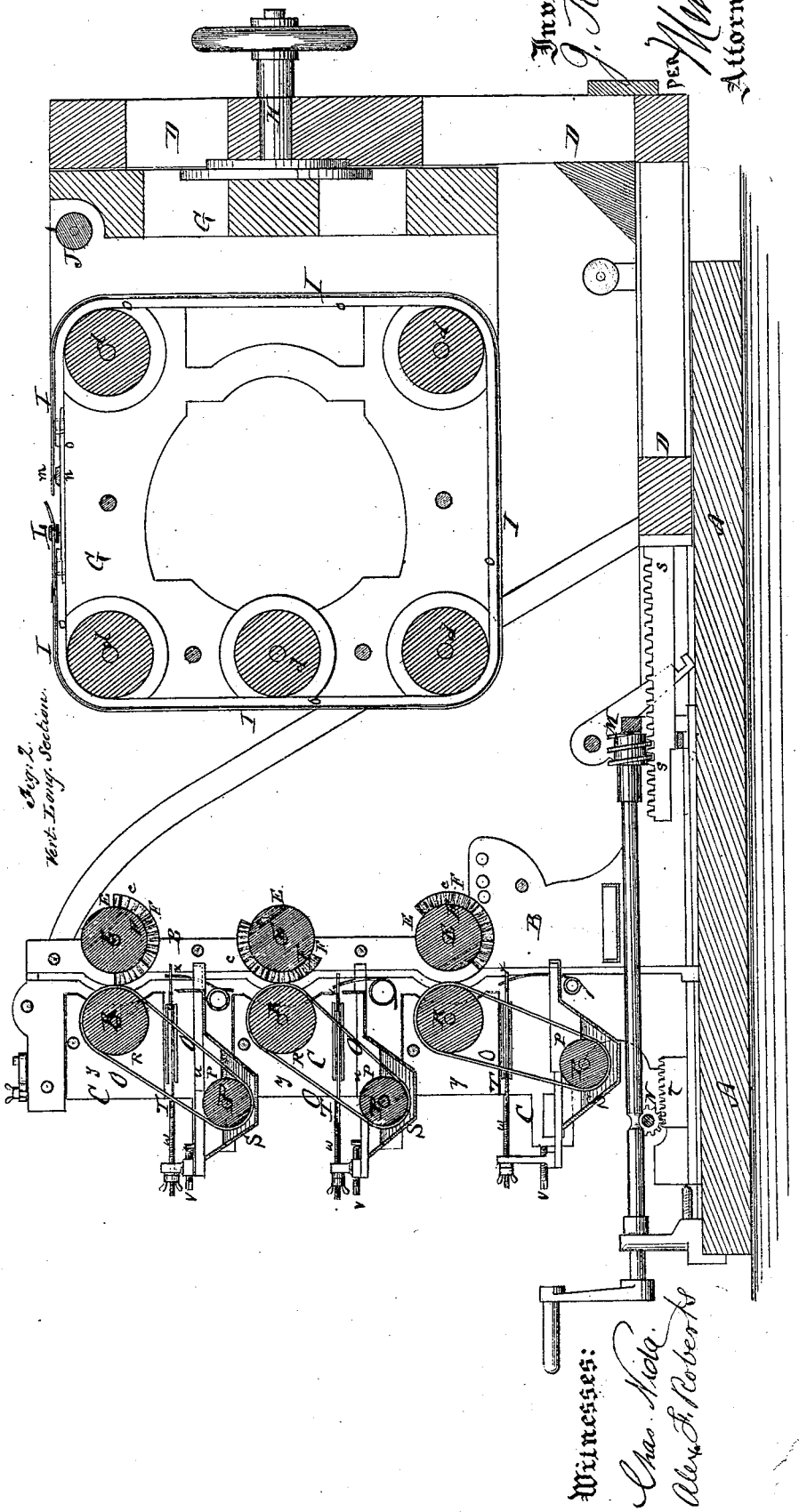

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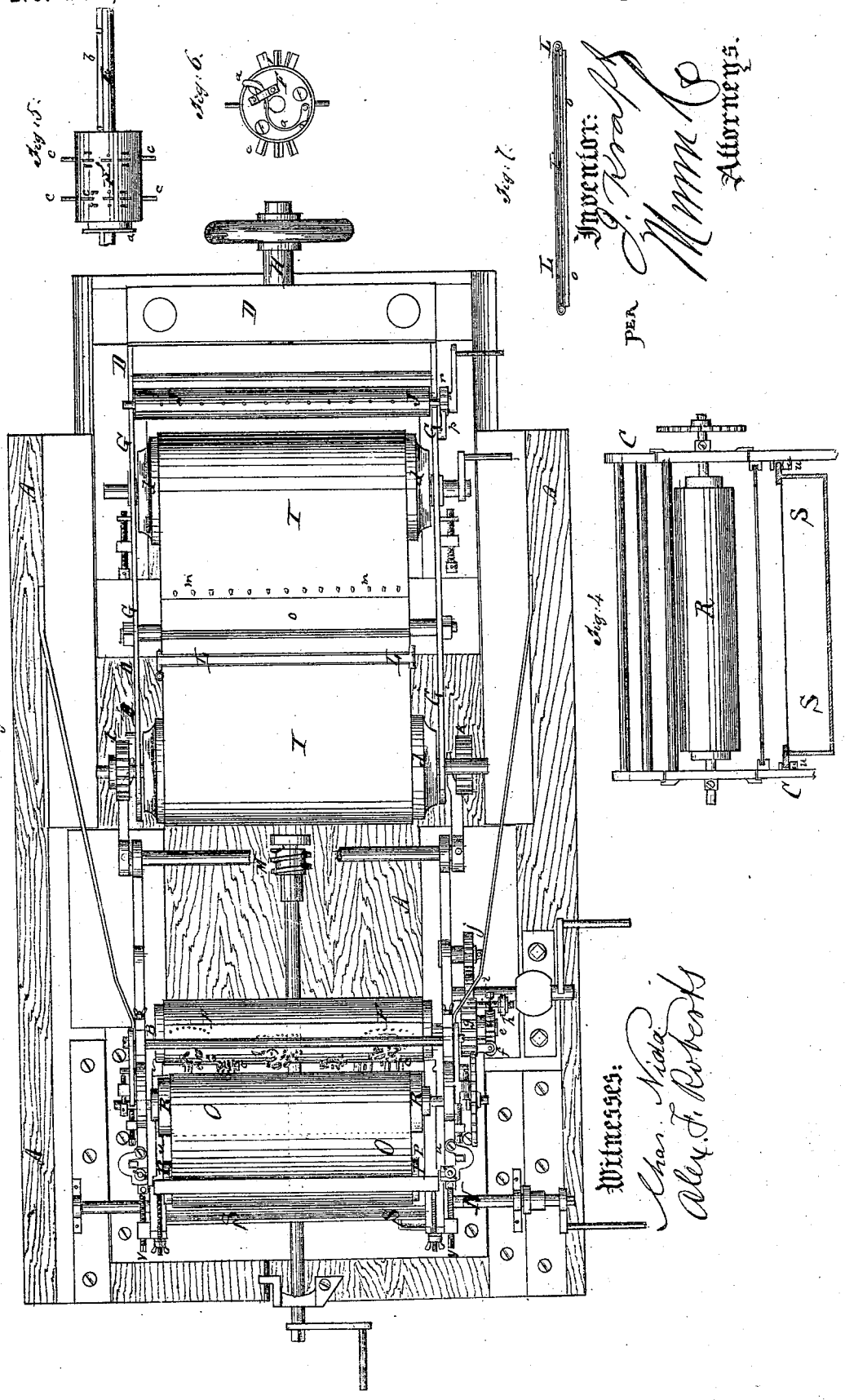

United States Patent Office.

JOSEPH KRAFT, OF NEWARK, NEW JERSEY.

Letters Patent No. 106,834, *dated August* 30, 1870.

IMPROVEMENT IN MACHINERY FOR PRINTING OIL-CLOTH, &c.

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, JOSEPH KRAFT, of Newark, in the county of Essex and State of New Jersey, have invented a new and improved Press for Printing Oil-Cloths, Table-Clothes, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to a printing apparatus for oil-cloths and other fabrics, and consists in certain improvements, which will first be described in connection with all that is necessary to a full understanding thereof, and then clearly specified in the claim.

In the accompanying drawing—

Figure 1 represents a side elevation of my improved oil-cloth-printing machine.

Figure 2 is a vertical longitudinal section of the same.

Figure 3 is a plan or top view of the same.

Figure 4 is a detail vertical transverse section of one of the coloring devices.

Figure 5 is a detail side view of a sectional printing-cylinder.

Figure 6 is an end view of the same.

Figure 7 is a detail longitudinal section of the clamp for holding the fabric.

Similar letters of reference indicate corresponding parts.

A, in the drawing, represents the main supporting bed or floor of my machine. Upon it are supported the three main divisions of the machine. These divisions are—first, the coloring; second, the printing; and third, the cloth-holding machine. Only the printing division is secured upon a stationary frame, B. The other divisions are upon sliding frames C and D respectively.

In the fixed frame B are hung three (more or less) horizontal axles E E E, all vertically above each other.

Upon each axle E is fitted a printing-cylinder, F. When a cylinder, F, has the full length of the axle between the upright bars of the frame B, it is intended to print the full width of the fabric.

The cylinders may, however, as in fig. 5, be made in shorter pieces, to print but one-half or one-third of the width where the design is repeated in a horizontal direction. In this latter case a short cylinder, F', is fitted upon an axle, E, and is locked to either end, or to the middle of the same, by means of a spring-catch, *a*, which is secured to one end of the cylinder, as shown in fig. 6.

The axle E is provided with a feather, *b*, to prevent the cylinder from turning loosely on it. This feather has notches to receive the spring catch, as indicated in fig. 5.

The pins *c c*, which imprint the required design upon the fabric, are set upon the faces of the printing-cylinders F or F'. On the cylinder F, which extends throughout the entire width of the frame, these pins are set so as to produce but one-half the design for each color, as the reverse of it can be printed by the same pins, by reversing the position of the fabric.

The fabric to be printed is held on a frame, G, which is, by a pin, H, pivoted to the sliding frame D. Four (more or less) horizontal rollers, *d d*, are hung in the frame G, and over them the fabric I is drawn in such manner that it is properly stretched in a straight line, directly in front of the printing-cylinders.

It is very important that the cylinders F should be so set that their respective designs are applied to the fabric in the desired succession. For this purpose I apply to the end of each axle E a worm-wheel, *e*, firmly keyed to the axle.

This worm-wheel gears into a worm, *f*, which is affixed to a wheel, *g*, hung loose upon the axle. The wheels *g g* of the several axles are connected with each other by means of a connecting-rod, *h*, which is attached to crank-pins, *i i*, that project from said wheels, as shown. The cylinders will thus all revolve simultaneously.

In order to set the printing position of each cylinder with reference to that of all others, it will only be necessary to turn the worm *f* of such cylinder, and to thereby turn the axle E within the wheel *g*, without disturbing the latter.

When the fabric has been printed with one-half design, the frame G is turned on the pin H to reverse the position of the fabric. The motion of the fabric is, at the same time, also reversed, and thereby the half of the design is produced.

Motion is imparted to one of the rollers, *d*, by means of a gear-wheel, *j*, on the frame B, the said gear-wheel meshing into a similar wheel, K, that is on the end of the roller *d*. On the opposite end of another roller, *d*, is mounted another toothed wheel, *z*, which, when the frame G is reversed, is brought into contact with the wheel *j*, to provide for the further but reversed motion of the fabric.

The fabric to be printed is, from below, brought to the frame G, and secured to pointed pins *m m* that project from a bar, *n*, the said bar being secured to a belt, *o*, which passes around the roller *d*. The fabric is then laid around the said belt *o*, and is then secured to a toothed roller, J, which is hung in the frame G, as shown. By turning the said roller J the fabric will be stretched, and can then be clamped, with its other

end, to the belt *o*, by a toothed hinged clamp, L. It is then cut off or separated from the roller J, and in position for printing. A pawl, *p*, meshing into a ratchet-wheel, *r*, on one of the rollers *d*, prevents the fabric from getting loose from the pins *m*, while it is being stretched by the roller J.

Some or all of the rollers *d* are hung in slots and adjustable therein, to keep the belt *o* properly stretched.

The frame D is, with all of its appendages, made to slide on the bed A, and is, by a rack, *s*, united with a worm, M, by means of which it can be carried away from the printing apparatus, as in fig. 2, to allow the same to be reached.

The coloring part of the machine is all arranged in the sliding frame C, which is, by a rack, *t*, and toothed wheel, N, made adjustable toward or away from the printing frame; also, for the purpose of allowing access to all the parts.

The coloring apparatus for each printing-roller consists of an endless apron, O, hung upon two rollers, P and R, of which the lower one, P, turns in a reservoir or vat, S, that contains the color. Each reservoir is made to slide into its place by being suspended from rails, *u u*, that are formed on the frame C. By means of screws, *v v*, which are arranged in ears at the ends of each reservoir, the position of each reservoir can be adjusted to be more or less oblique. Thus, if the apron should happen to be slightly thicker on one side than at the other, so that it might tend to run off the rollers, it will be necessary to shift the lower roller with the reservoir, for counteracting this effect.

A sliding scraper, T, is arranged on each apron O, for the purpose of scraping the superfluous color from the same. It can be adjusted for greater or lesser pressure by means of screws *w*, and is drawn against the apron by springs *x*.

The upper rollers R are at their ends provided with toothed wheels, 3, which mesh into the wheels *g* on the corresponding axles E, as shown in fig. 1.

Each roller R is hung in slides, *y y*, that are fitted into the frame C, as indicated in fig. 4.

Having thus described my invention—

I claim as new and desire to secure by Letters Patent—

1. The fast worm-wheel *e*, worms *f*, loose wheels *g*, rods *h*, and crank-pins *i*, all relatively arranged to revolve a series of axles, E E, simultaneously, and for the purpose described.

2. The swiveled frame G secured to a sliding frame, D, substantially as and for the purposes herein shown and described.

3. The combination of the roller J, with the pins *m*, clamp L, and rollers *d*, all arranged to hold and stretch the fabric to be printed, as set forth.

4. The axles E E, notched to receive and hold the sectional printing-rollers F F, which have spring-catches *a*, as set forth.

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