2 Sheets—Sheet 1.

W. D. GRIMSHAW.

Machine for Printing and Cutting Fabrics.

No. 209,674. **Patented Nov. 5, 1878.**

Fig. 1.

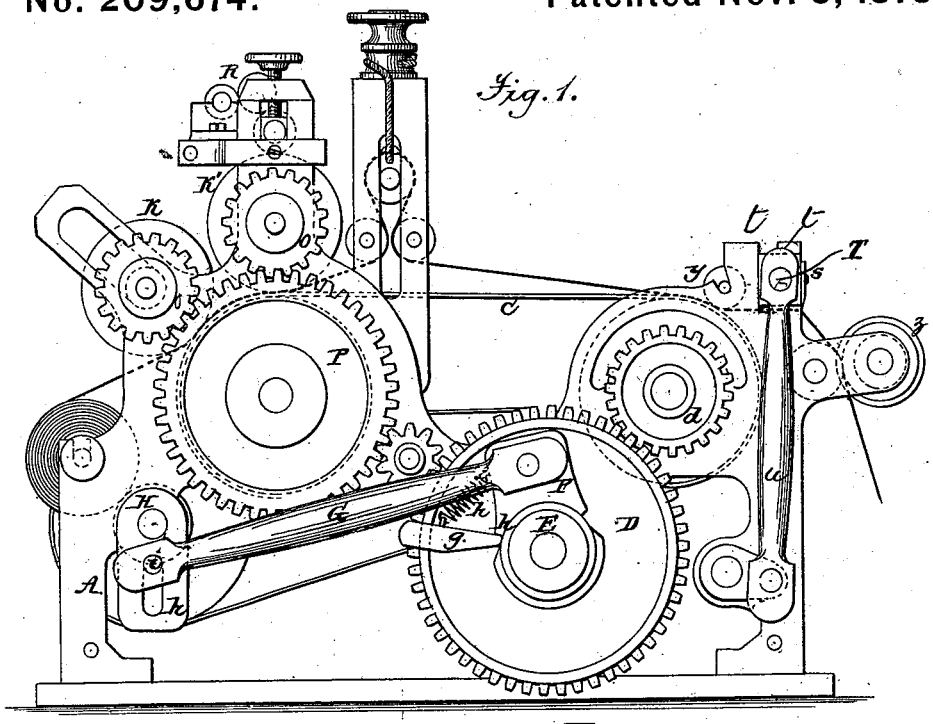
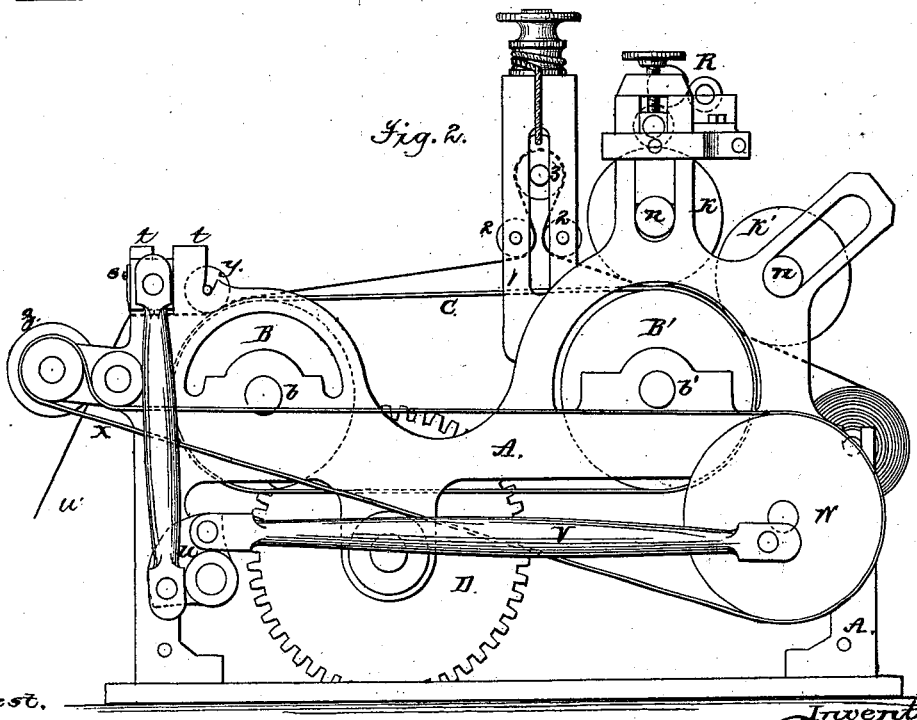


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 5.

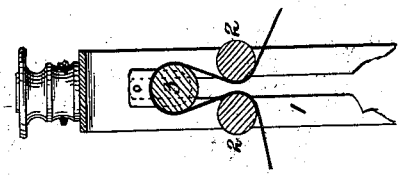


Fig. 4.

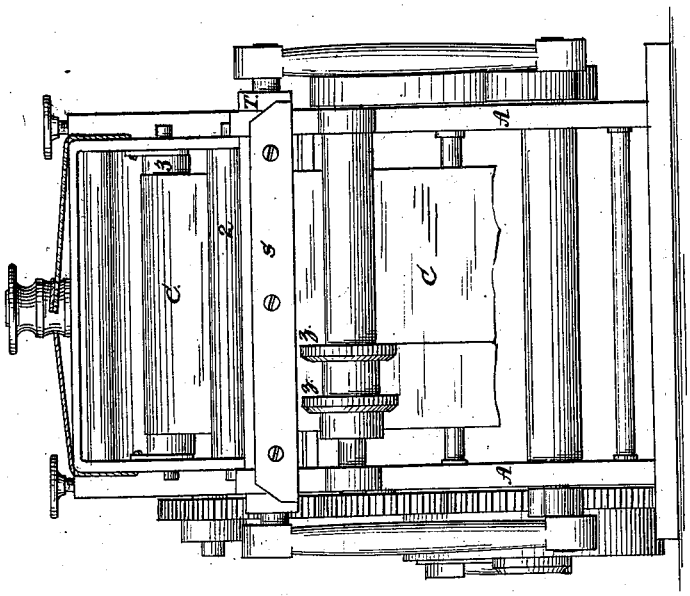
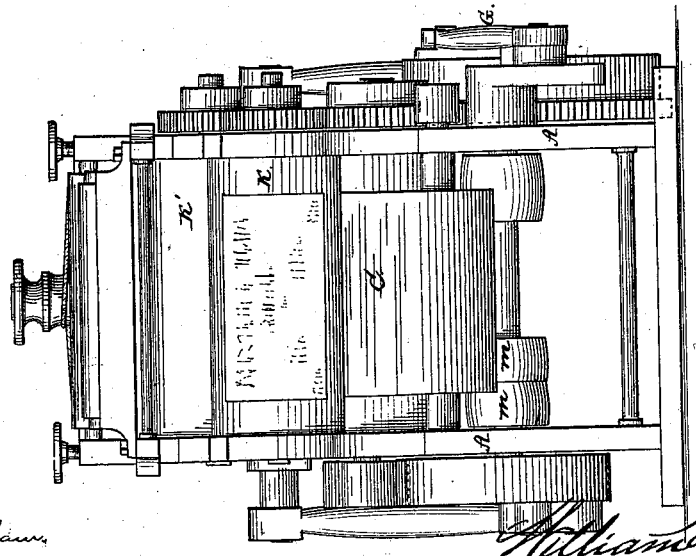


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM D. GRIMSHAW, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR PRINTING AND CUTTING FABRICS.

Specification forming part of Letters Patent No. **209,674**, dated November 5, 1878; application filed December 22, 1877.

To all whom it may concern:

Be it known that I, WILLIAM D. GRIMSHAW, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Printing and Cutting Fabrics; 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—

Figures 1 and 2 are elevations of the opposite sides of a machine embodying my invention; Figs. 3 and 4, end views; and Fig. 5, a detached view of the mechanism for adjusting the lengths of the fabric.

The object of my invention is to provide an organized mechanism through which a fabric is automatically conveyed and subjected to the action of one or more printing-cylinders and cutting devices, whereby one or more words, names, figures, or designs, or adjacent groups of the same, are imprinted thereon in various colors, and the fabric subsequently cut into desired lengths and widths.

In order to enable others to construct and use my invention, I will first proceed to describe its construction and operation, and subsequently to point out its novel features in the claim.

In the drawings, A represents the framework of the machine, for supporting the various operative parts. B B′ are rotating drums, provided with journals, and mounted in suitable bearings *b b′*, as shown. These drums are constructed of about an equal diameter, and arranged to rotate upon the same horizontal plane. C is an endless belt or carrier, passing around and connecting said drums, and serving to support and convey the fabric in its passage through the machine.

Motion is conveyed to the drum B by means of the intermediate spur-wheels D and *d*, the latter being affixed to the shaft of the drum and arranged to mesh or engage with the former to produce a positive movement. The drum B′ is simultaneously rotated by means of the connecting carrier or belt C; or spur-gearing may be interposed between the same and the intermediate wheel D, as shown.

The intermediate wheel D is mounted loosely upon a rock-shaft, E, and is connected therewith by means of the rock-shaft arm F and pivoted spring-clamp *g*. The rock-shaft arm F is vibrated by means of a connecting-rod, G, to which motion is communicated through the slotted crank-web *h*, secured upon the main or driving shaft H. The travel or throw of the rock-shaft arm F, and the consequent forward movement of the carrier C, is regulated by means of the adjustable crank-pin *i* of the crank *h*.

The spring-clamp *g* is constructed and arranged to press upon the circumferential flange *p* of the intermediate wheel D, and to engage at its opposite end with a notch or stop, *k*, in the shaft E. A spiral spring, *h*, is arranged between and connected to the rock-shaft arm F and the clamp *g*, which serves to press said clamp upon the flange *p* of the intermediate wheel D during the backward movement of the rock-shaft arm, and to relieve said clamp upon the return movement of the same.

The main shaft H is provided with ordinary driving-pulleys *m m*, one of which may be loose to accommodate a continuously-running belt from a line of shafting when it is necessary to stop the machine.

K K′ represent the printing-cylinders, to the surface of which any desired number of different and independent arrangements or kinds of type are affixed, so that one or more adjacent impressions may be imprinted upon the fabric during its passage, and whereby, when the fabric is cut and afterward folded or doubled in the form of a bag, the adjacent impressions will appear upon opposite sides thereof. These cylinders are mounted in adjustable bearings *n n*, and may be of any suitable length or diameter and constructed of any suitable material. Rotary motion is imparted to them by means of the spur-wheels *o o*, attached to the respective shafts, and arranged to mesh or engage with the spur-wheel P, connected to the shaft of the drum B′. It is obvious that any equivalent means for conveying a positive or variable motion to these cylinders may be substituted.

An inking apparatus, such as ordinarily employed in printing-machines, or similar to the arrangement shown at R, is connected to the frame of the machine adjacent to the printing-cylinders, and more than one with different

colors may be employed to act upon the various groups of type. Devices for this purpose being well understood, it is not deemed necessary to describe the same in detail.

The devices for cutting the fabric into the desired lengths consist of a knife, S, attached to a cross-bar, T, and of sufficient length to extend across the full width of the fabric. The bar T is arranged to move in vertical guideways *t t* in the frame of the machine. This bar and attached knife receives its motion from the rock-shaft arm *u* by means of the connected rod *u'*, these parts being arranged in duplicate upon each end of the bar and upon the opposite sides of the frame of the machine.

The rock-shaft arm *u* is vibrated by means of the connecting-rod *v* and crank-pulley *w*, attached to the main or driving shaft H, and the motion imparted to the knife S is therefore coincident with the movement of the other parts of the machine which convey the fabric forward through the same.

The devices for cutting the fabric longitudinally and in various widths consist of rotary cutters *z z*, arranged upon spindles or shafts at the delivery end of the machine, as shown, said cutters receiving their rotary motion by means of a connecting-belt, *x*, with the pulley *w* upon the main shaft. One or more pairs of these rotary cutters may be employed, and adjustably arranged to cut the fabric in any number of strips of the same or various widths, as may be required, and when not needed they may be removed from the machine, or the fabric guided to pass clear of the same.

Upon the frame A, and intermediate of the drums B B', is attached a frame, 1, in which guide-rollers 2 2 and a vertically-adjustable "take-up" roller, 3, are arranged. The object of this device is to regulate the travel of the fabric between the printing-cylinders and the cross-cutting device, so that the latter will act upon the fabric and leave the desired margin to the printed impression.

By raising or lowering the roller 3 the fabric is adjusted. Pressure-rollers, as at *y*, may also be provided to retain the fabric in contact with the carrier.

The operation of the machine is as follows: After the machine is adjusted to print one or more impressions and to cut the fabric the desired lengths or widths, it is set in motion.

The fabric is taken from reels or bolts and passed under the printing-cylinders and over the drums upon the carrier. The main or driving shaft H is continuously rotated, and at each revolution thereof the intermediate wheel D, drums B B', and printing-cylinders K K' are moved through a part of a revolution, these parts coming to a full stop at the extreme throw of the rock-shaft arm F, and dwell in this position during the return movement of the same until again set in motion by a similar forward movement of said rock-shaft arm, as before. During this stoppage the crosscut-knife S is brought down and cuts off the measured fabric, which is then delivered from the machine or subjected to the action of the rotating cutters *z z*, which divide it into various widths.

This machine is particularly adapted to the manufacture of bags which require labels to be imprinted upon one or more sides, the fabric being cut into such lengths and widths as to merely require closing together to be ready for filling.

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

In an organized machine for cutting and printing fabrics, the combination of the following instrumentalities: a carrier, C, mounted upon rotating drums B B', having a simultaneous forward movement through a part of their revolution only; one or more printing-cylinders, K K', arranged to operate coincident with said carrier and provided with one or a series of groups of type and adjacent inking devices; a device for cutting the fabric transversely and arranged to operate during the stoppage of the carrier; a device for cutting the fabric longitudinally during the forward movement of the carrier; and an adjustable take-up device for regulating the travel of the fabric between the printing-cylinders and cross-cutting devices, the several parts being arranged to operate automatically by means of a continuously-rotating shaft, substantially as described.

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Witnesses:
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