L. A. GILL.

FABRIC PRINTING MACHINE.

APPLICATION FILED DEC. 16, 1915.

1,214,538.

Patented Feb. 6, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

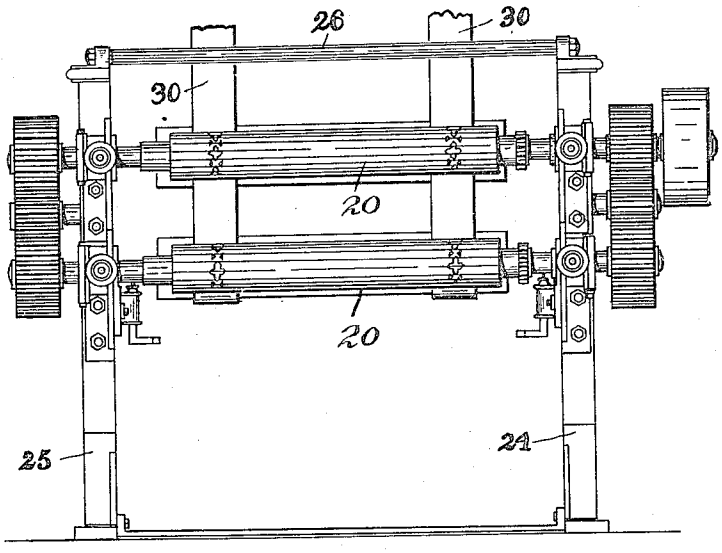


Fig. 2.

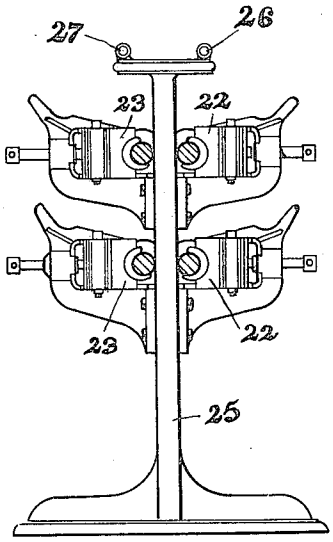
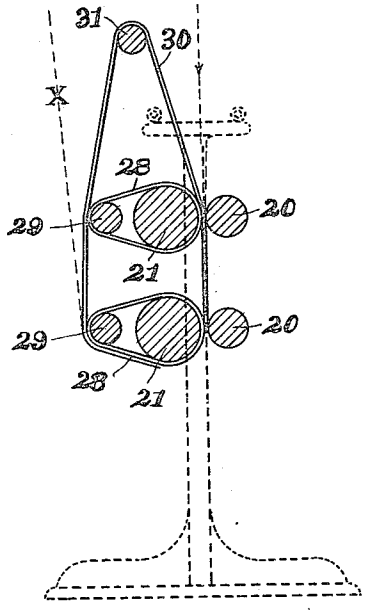


Fig. 3.



WITNESS

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2 SHEETS—SHEET 2.

Fig. 4.

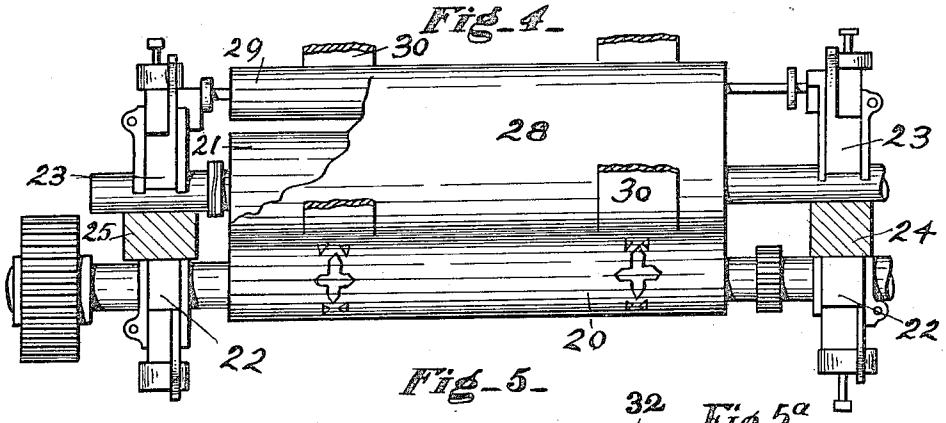


Fig. 5.

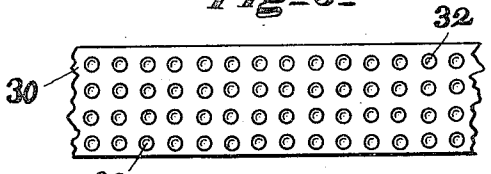


Fig. 5a.

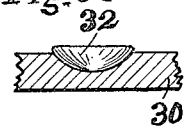
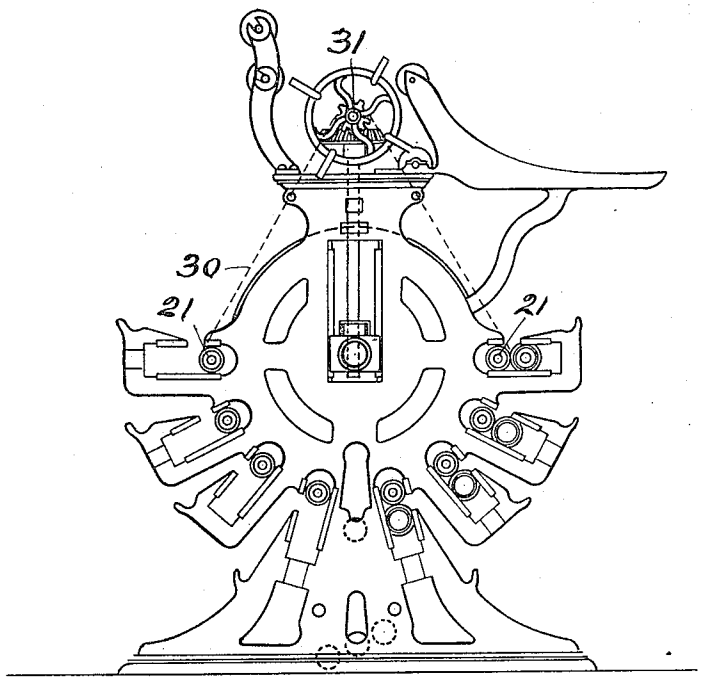


Fig. 6.



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UNITED STATES PATENT OFFICE.

LEWIS A. GILL, OF JEWETT CITY, CONNECTICUT.

FABRIC-PRINTING MACHINE.

1,214,538. Specification of Letters Patent. Patented Feb. 6, 1917.

Application filed December 16, 1915. Serial No. 67,164.

To all whom it may concern:

Be it known that I, LEWIS A. GILL, a citizen of the United States, residing at Jewett City, in the county of New London, in the State of Connecticut, have invented a certain new and useful Improvement in Fabric-Printing Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to so called "calico" printing machinery and one purpose of said invention is to dispense with the use of the expensive blanket or gray cloth now commonly used as a backing for the fabric while the latter is being printed.

A further, and valuable, feature of my invention is in the fact that I am able to spot the fabric with color designs, also to print-and-skip as in printing bordered window shades, flags, and the like, and these desirable results I attain by the use of specially designed belts of rubber or the like material.

My said invention is applicable to the type of printing machines in which each pattern roller is provided with an impression roller, or it may be applied with equal facility to machines in which a plurality of pattern rolls are arranged to co-act with a single, relatively larger, impression cylinder.

In Figure 1 of the annexed drawings I have shown a front side elevation of a machine, embodying my improvement, of the individual impression roller type, and Fig. 2 is an end elevation of the same. Fig. 3 is a vertical transverse sectional view of the printing and impression rolls of such a machine. Fig. 4 is a relatively enlarged elevation of portions of said machine with the upper pattern roll removed. Fig. 5 is a plan of the edge portion of one of the belts used by me, and in Fig. 5ª I have illustrated in transverse section, on an enlarged scale, a piece of said belt and one of the suction cups which form an essential feature of my improvement. Fig. 6 is an end elevation of a printing machine having a plurality of pattern rollers and an impression cylinder for each of said pattern rolls, this view being designed to show how my present improvement can be applied to such a machine.

Referring to Figs. 1 to 4 of the drawings, the numeral 20 indicates the pattern roller, upon which the design to be printed is engraved, and 21 the companion impression roll suitably driven preferably by an endless belt, as is apparent may be done by references to Fig. 6, from a pulley receiving motion through the gearing of the machine as a calico printing machine such as disclosed by the said figure. As illustrated in said figures two pairs of rolls 20—21 are shown in super-posed relation to each other. The pattern rollers are journaled in adjustable bearings 22 and the impression rolls are journaled in adjustable bearings 23, the said bearings being mounted on the machine frames 24 and 25 which frames are connected, and held in proper relation to each other at the top, by tie-rods 26—27. The course followed by the fabric as it is being printed is indicated by the dotted line x in Fig. 3. The customary color boxes and "doctor blades" are provided but, inasmuch as they form no part of my present improvement, I have thought it unnecessary to illustrate them.

The numerals 28 denote endless belts or aprons that are equal in width to, or slightly greater than, the fabric to be printed. Each belt 28 is stretched around the impression roller and an idle roll 29, the arrangement being such that the said belt runs between the impression roller and the pattern roll and thus serves as a yielding backing or blanket for the fabric during the printing operation; the roller 21 being, however, normally under such slight tension, or resistance, that the fabric may pass between the blanket 28 and the pattern roll 20 without being imprinted. In order therefore to effect the printing, I provide one or more supplemental, endless, rubber aprons 30 which encircle the described impression and pattern rolls as well as an idle (take-up) roller 31 located, as here shown, at the upper portion of the machine. When it is desired to print the entire face of the fabric, an apron 30, that is as wide as the fabric, is used, but when it is desired to print certain portions only of the fabric as for example, a border along the edges of the fabric, a plurality of narrow aprons 30 are used as seen in Figs. 1 and 4 of the drawings. Should it be desired to print cross-bars or headers between the borders it is only necessary to connect the narrow aprons with transverse sections of rubber; the essential feature of novelty of my described invention being in the fact that I introduce between the pattern and impression rolls an extra thickness of rubber apron at those points

only where sufficient pressure is necessary to perform the desired printing. Thus by suitably forming the supplemental apron 30, I am able to spot the fabric with printed designs at any desired points, or to print the entire face of the fabric.

In carrying my invention into practical effect I have found it necessary, when spotting certain parts of the fabric, to prevent the crawling of the aprons 30 on their supporting rolls as, in such an event, the transverse connecting portions of the apron would soon move out of registering relation to the engraved parts of the pattern roll so, in order to prevent such crawling, I provide along the edge of the apron 30 (and the apron 28 if desired) suction cups 32, also of rubber, which adhere to the several rollers as they engage said rollers and the air is forced out of said cups. These suction cups I find, by actual use, effectually overcome all tendency on the part of the apron to crawl as it moves forward.

In Fig. 3 I have illustrated the manner of supporting the supplemental apron or aprons, said apron or aprons being carried around the single impression cylinder 21 and thence upward over an idle roller 31.

By the use of my described duplex arrangement of rubber aprons it is possible to dispense with the back or gray cloth now so commonly used, and it is also perfectly feasible to print upon any predetermined portions of the fabric without imprinting or smearing the other portions of said fabric, and these desirable results may be attained by making very slight and inexpensive alterations in calico printing machines as now most commonly constructed.

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

1. In combination with, and located between, the pattern and impression rolls of a calico printing machine, a plurality of aprons of yielding material, one of said aprons being formed to register with the engraved portions of the pattern roll, and means for preventing the crawling of the said aprons with respect to the said pattern roll.

2. In combination with, and located between, the pattern and impression rolls of a calico-printing machine, an apron of yielding material formed to register with the engraved portions of the pattern roll, and means consisting of suction cups for preventing the crawling of said apron with respect to the said pattern roll.

LEWIS A. GILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington D. C."