No. 632,372. Patented Sept. 5, 1899.

J. A. SACKVILLE & J. H. SWALLOW.

PRINTING MACHINE.

(Application filed Oct. 19, 1897.)

(No Model.) 2 Sheets—Sheet 1.

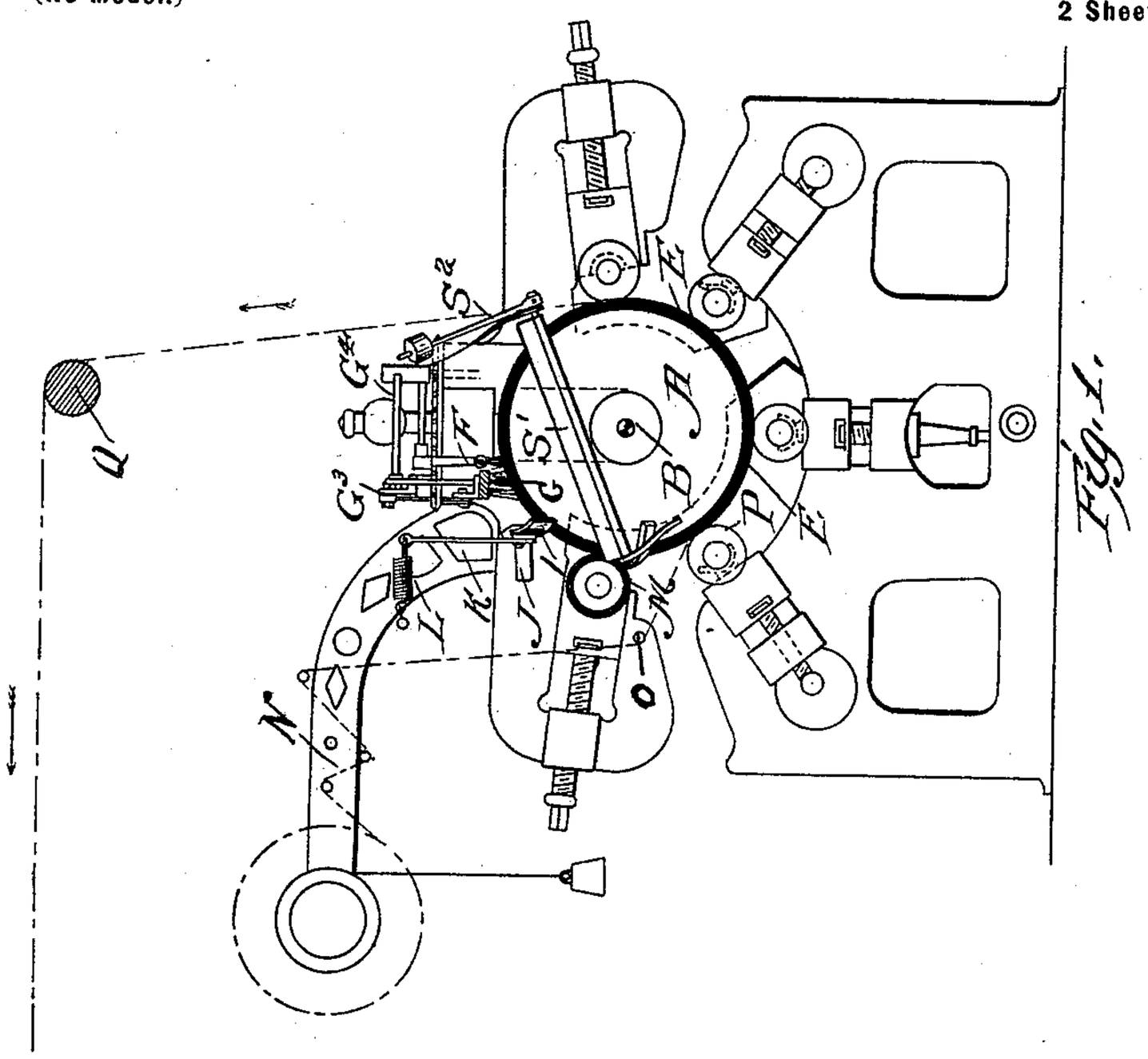


Fig. 1.

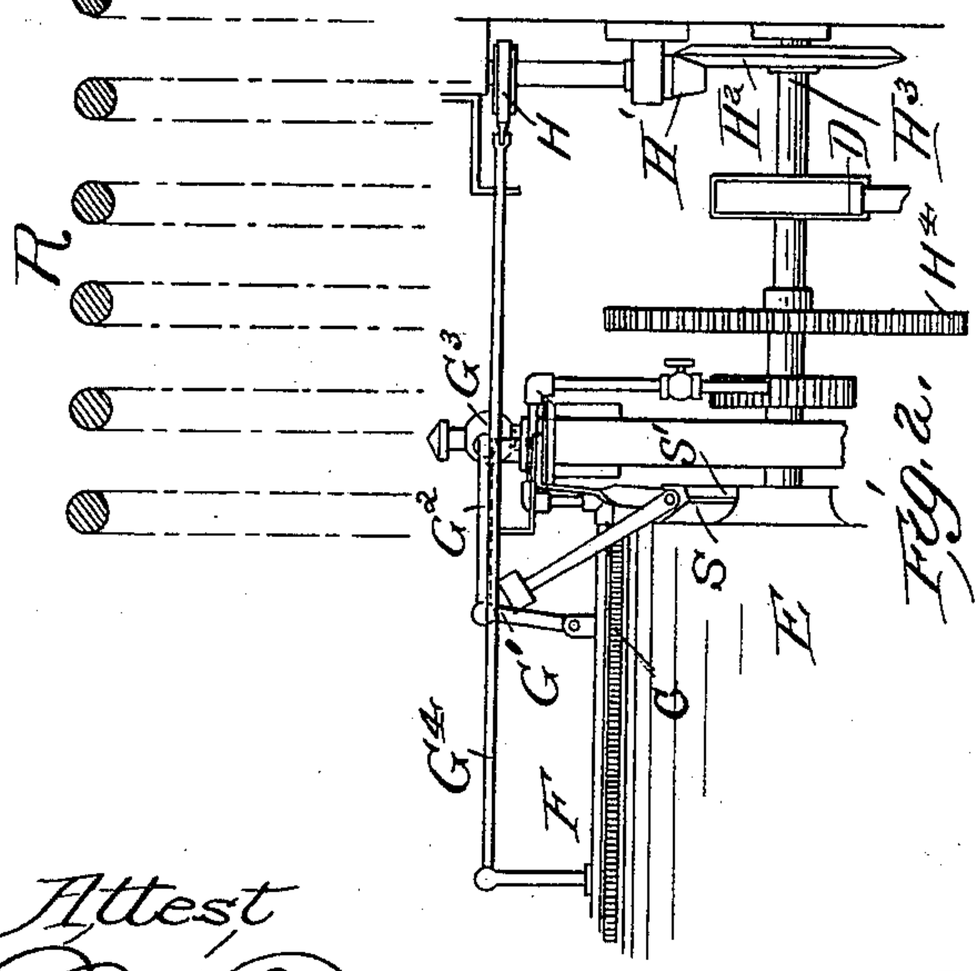


Fig. 2.

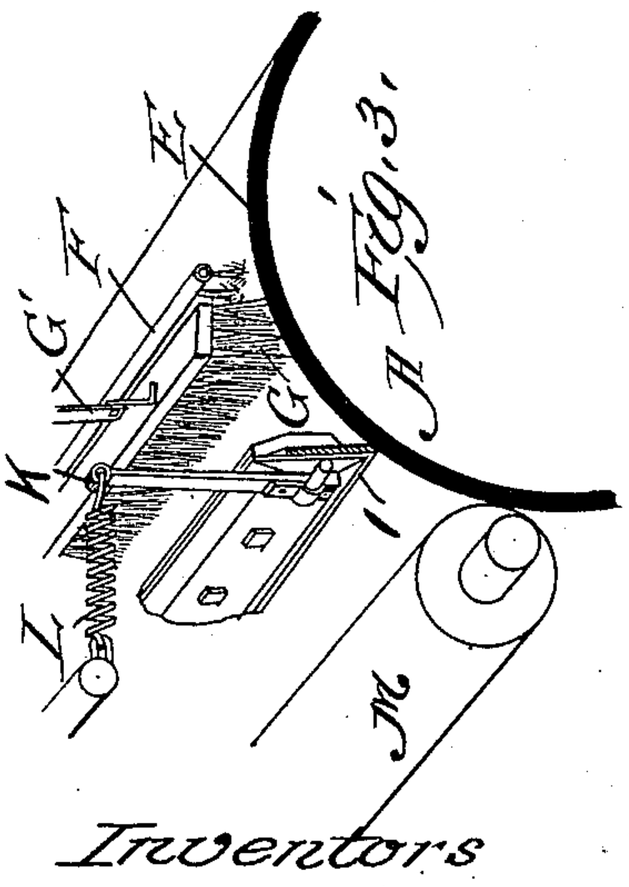


Fig. 3.

Attest,

Miller Dawdson

Middleton

Inventors

James Allan Sackville

John Henry Swallow

by Richards & Co Attys.

No. 632,372. Patented Sept. 5, 1899.

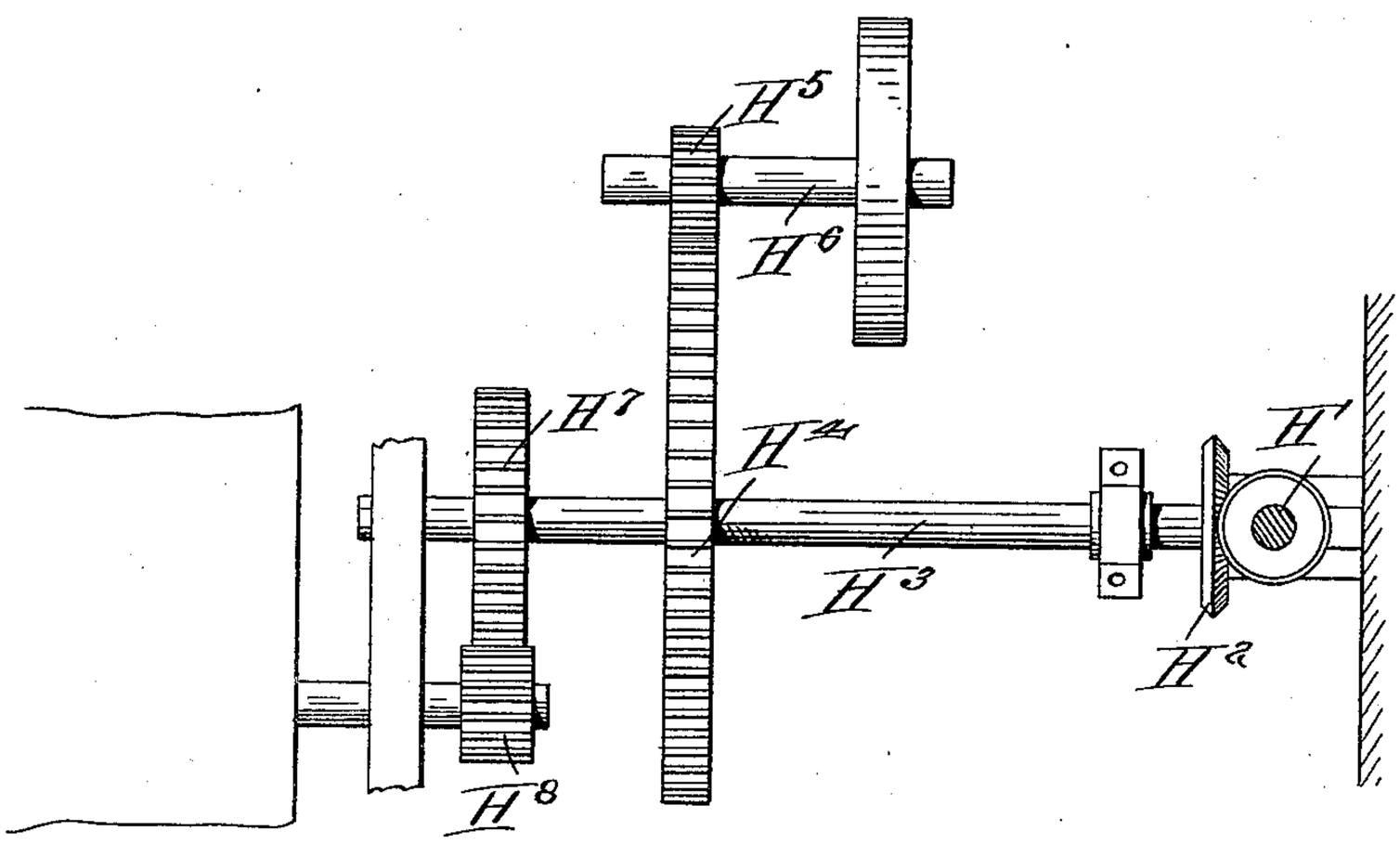
J. A. SACKVILLE & J. H. SWALLOW.

PRINTING MACHINE.

(Application filed Oct. 19, 1897.

(No Model.) 2 Sheets—Sheet 2.

Fig. 4.



Attest
Fuller Donaldson
Commissioner

Inventors
James Allan Sackville
John Henry Swallow
by Richards & Co
Attys.

UNITED STATES PATENT OFFICE.

JAMES ALLAN SACKVILLE, OF SWINTON, AND JOHN HENRY SWALLOW, OF PENDLEBURY, ENGLAND.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,372, dated September 5, 1899.

Application filed October 19, 1897. Serial No. 655,728. (No model.)

To all whom it may concern:

Be it known that we, JAMES ALLAN SACKVILLE, residing at Swinton, and JOHN HENRY SWALLOW, a resident of Pendlebury, England, subjects of the Queen of Great Britain and Ireland, have invented certain new and useful Improvements in Calico and Like Printing Machines, of which the following is a specification.

Our invention relates to calico and like printing machines, and has for its object to entirely dispense with the usual endless blanket used in such machines and by the substitution of the means hereinafter described to effect a great saving in the cost of working such machines.

In carrying out our invention we provide an impression-bowl A, covered with india-rubber or equivalent covering, which is either an exact fit or is of such a size as to also extend around one or more side rollers in close proximity and so forming an endless apron or band. We next arrange a perforated pipe or water-jet across the said cylinder or band and by preference at or toward the rear side of the machine. Behind this jet we mount a brush or equivalent device which is in touching contact with the surface of the cylinder or band and which is mounted in suitable supports and connected to suitable devices which when set in motion impart a to-and-fro sliding or scrubbing motion to such brush upon the surface of the cylinder or band. Behind or beyond this brush or "scrubber" we mount a revolving india-rubber or similarly-covered roller or a fixed scraper or "doctor," also in contact with the said impression-cylinder. The usual engraved printing-rollers are mounted in the usual bearings and lie in contact with the cylinder.

With fabrics of thin texture the printing-color penetrates through, or with fabrics of a narrow width or owing to the engraved rollers always being of a greater width than the fabrics the surplus color on the ends of the roller or rollers will sometimes get onto the bowl A. With our invention, therefore, the surplus color is allowed to reach the cylinder or band; but before it is possible for the cylinder to make a further complete revolution such surplus color is acted upon by the aforesaid brush or scrubber and by the jet of water, which conjointly work the said color into a curd or "puddle," in which state it is then readily removed from the cylinder or band by the rubber-covered roller, scraper, or doctor aforesaid and before it can possibly touch the rear face of the fabric or come in contact with the engraved rollers again.

In order that our said invention may be more readily understood and carried into practical effect, we have hereunto annexed a sheet of drawings and will now proceed to describe the same, with the letters of reference marked thereon.

Figure 1 illustrates a calico-printing machine with one of the sides removed in order to show our invention clearly. Fig. 2 illustrates a part front view of the same machine. Fig. 3 shows an enlarged perspective detail view, and Fig. 4 is a detail plan view of the operating-gearing.

In accordance with our invention we employ an impression cylinder or bowl A, rotated by shaft B, gearing, and belt-pulley D. This roller or bowl is covered or surrounded by a covering of vulcanized india-rubber or other similar and suitable elastic material E, as shown by the black sectioning in Figs. 1 and 3. Above by preference or at any suitable part of the periphery of this rubber-covered bowl and parallel therewith we arrange the perforated water-pipe F for conveying and spraying water in fine jets upon the surface of the bowl. Immediately behind such pipe and in touching contact with the bowl we arrange the brush or scrubber *g*, which is carried by lever-arms G′ and links G^2 from brackets G^3 on the machine-frames, and by means of a rod G^4 or equivalent device, also connected to such brush at one end and coupled up to an eccentric H of short throw at the other, such brush is given a rapid to-and-fro movement across the face of the bowl. Only the arm G′, link G^2, and bracket G^3 at one side of the machine are shown; but it will be understood that these are duplicated on the other side. The eccentric H is driven by bevel gear-wheels H′ H^2, the latter being mounted on shaft H^3, driven by interposed gearing H^4 H^5 from belt-pulley shaft H^6. Motion of shaft H^3 is transmitted to the bowl

by gears H^7 H^8. Immediately behind the brush we arrange a "squeegee" or doctor I, by preference of india-rubber, mounted pivotally on brackets J and provided with an arm or rod K, to the top end of which is attached a tension-spring L for holding the working edge of the squeegee in intimate contact with the surface of the bowl. Behind this squeegee is a stripping or clearing roller M, which rotates by frictional contact with the bowl.

The fabric to be printed passes through the usual tension devices at N, under bar O, between the several engraved color or printing rollers P and bowl A, which impart to it the definite pattern, and finally onto or over the roller Q in any desired direction, but according to our preferred mode of treatment over the rollers R, forming part of a "festooning" arrangement, whereby the fabric may be quickly dried by contact with the atmosphere only in lieu of passing over or around the usual steam drying chambers or cylinder.

If the fabric is of a thin texture, a portion of the color will penetrate the pores and get onto the bowl. If also the fabric is narrower than the bowl A or the printing-rollers P are wider than the fabric, the color on the ends of the rollers will get onto the bowl, and thus in order to prevent the bowl getting dirty or the rear side of the fabric smeared with the excess color it is necessary to wash the bowl or to adopt such means as will continually clean and dry the bowl. It is for this purpose that we provide the cleaning apparatus hereinbefore described, which removes the thin liquid body or puddle from the surface of the bowl and delivers it at either end into a trough or onto the ends of the bowl, where in turn it is removed by the end squeegees or scrapers S. These end squeegees form one side of an inclined trough S′, which is pivotally mounted at either end, and by the action of weighted rod S^2 the squeegee side of such trough is constantly passed against the end of the bowl, and thereby insures of the color being constantly and effectually removed. In lieu of a weighted rod the troughs may be drawn together by a spring or other suitable device.

Lastly, we would have it understood that as our invention consists, essentially, in moistening the color and then working the color into a puddle or curd we do not confine ourselves to the precise means adopted for operating the brush or of applying the several parts for effecting such operation.

Although more particularly described in connection with calico-printing machines, our invention may apply to wall-paper, mackintosh, baze, and like printing machines.

Having thus particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we wish it to be understood that what we claim, and desire to secure by Letters Patent, is—

In combination, the bowl, the printing-rollers, means for feeding the strip to be printed between the same, the pipe for spraying water upon the exposed portion of the bowl, the laterally-movable brush with means for reciprocating the same to scrub the moistened surface, the spring-pressed scraper contacting with the bowl, and the cylinder M also contacting with the bowl, substantially as described.

In testimony whereof we have signed our names in the presence of two witnesses.

JAMES ALLAN SACKVILLE.
JOHN HENRY SWALLOW.

Witnesses:
ARTHUR GRESTY,
WALTER GUNN.