

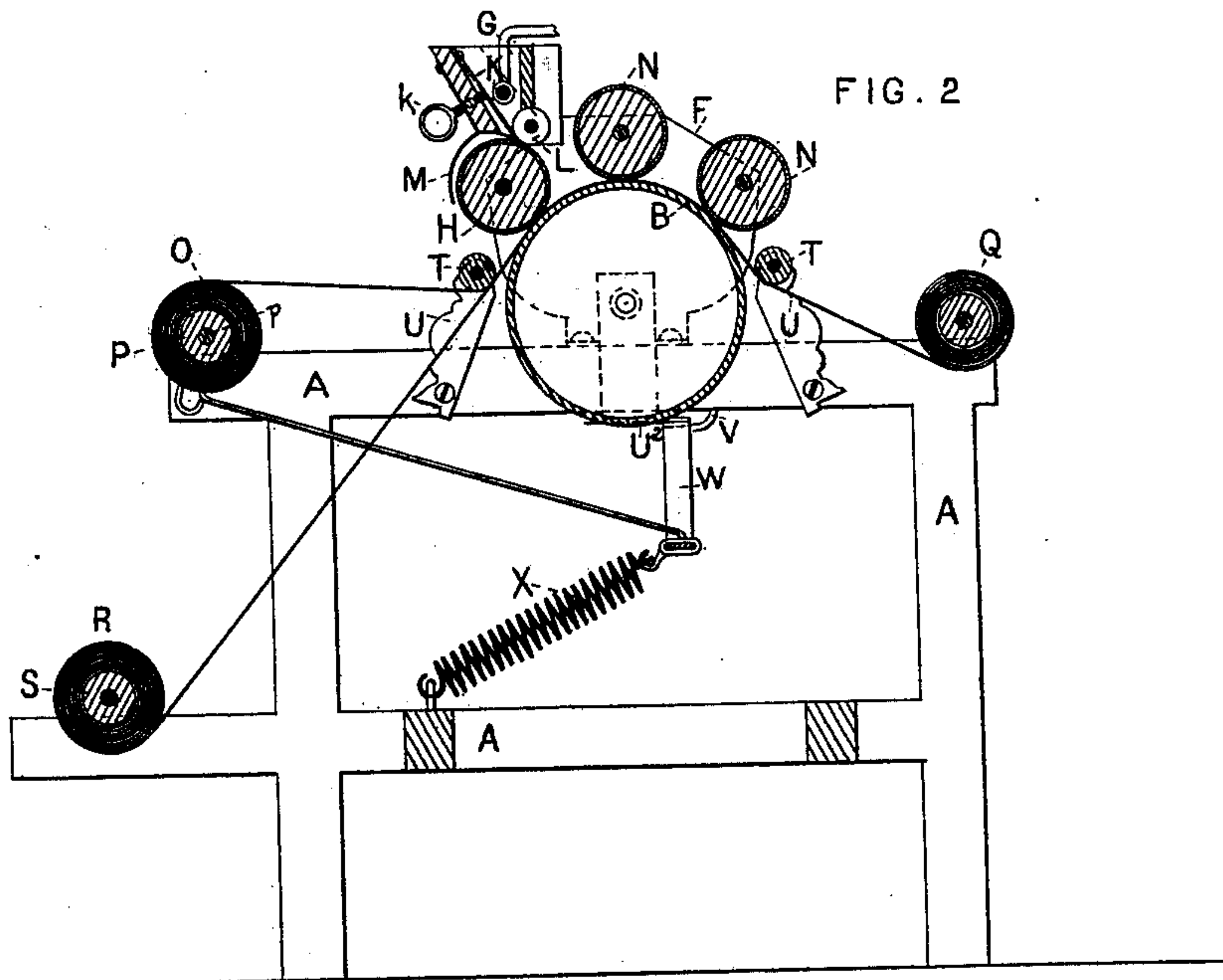
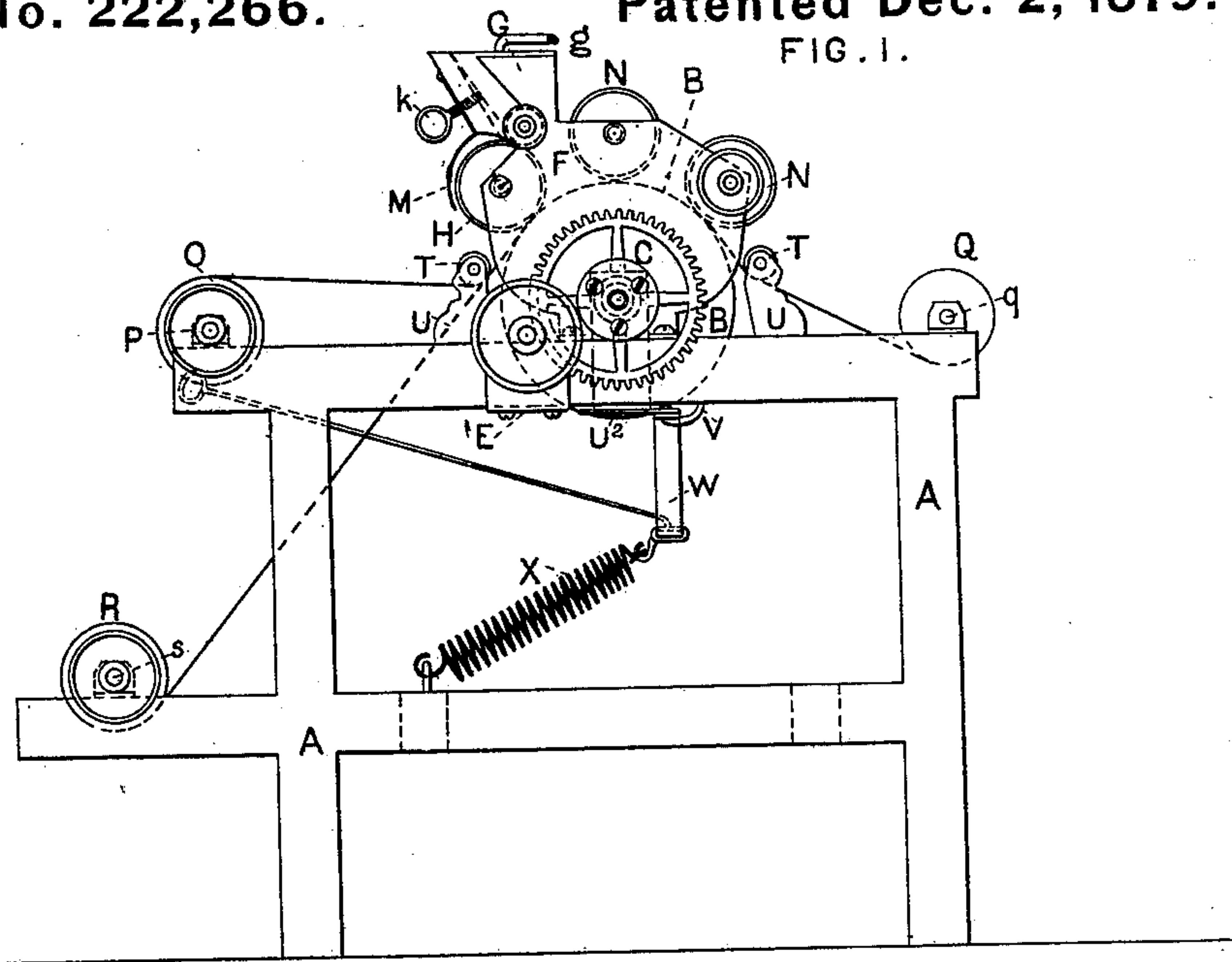
L. FRANCIS & W. BRAIDWOOD.

M. A., & M. A. FRANCIS, administratrixes of L. FRANCIS, dec'd.

Machine for the Manufacture of Carbon or Manifold Paper.

No. 222,266.

Patented Dec. 2, 1879.



WITNESSES.

*John Cooke*  
*Henry R. Gordon*

*Lewis Francis & William Braidwood by Alfred*  
*Isaacs atty*

INVENTOR.

L. FRANCIS & W. BRAIDWOOD.

M. A., & M. A. FRANCIS, administratrixes of L. FRANCIS, dec'd.

Machine for the Manufacture of Carbon or Manifold Paper.

No. 222,266.

Patented Dec. 2, 1879.

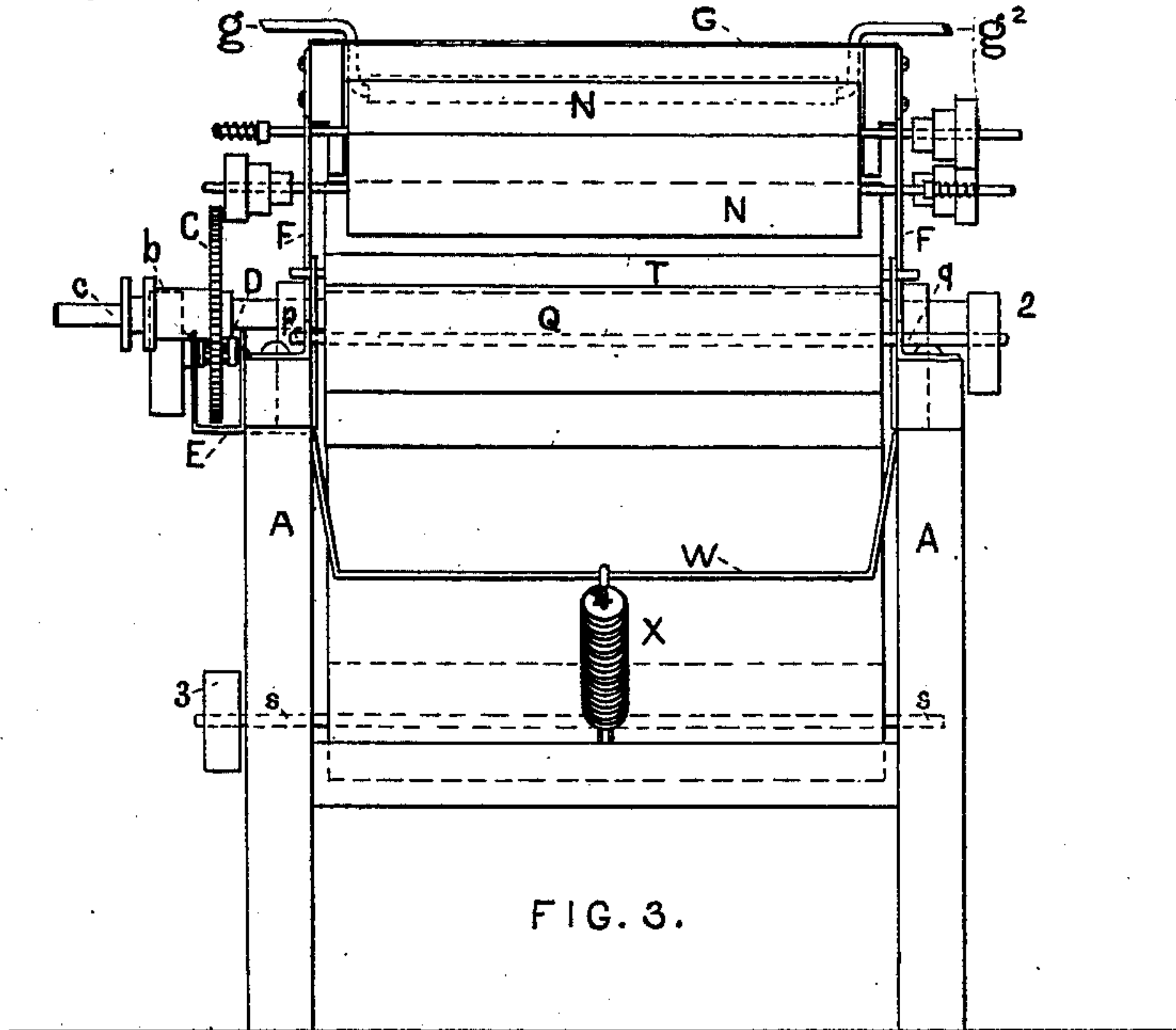


FIG. 3.

FIG. 4.

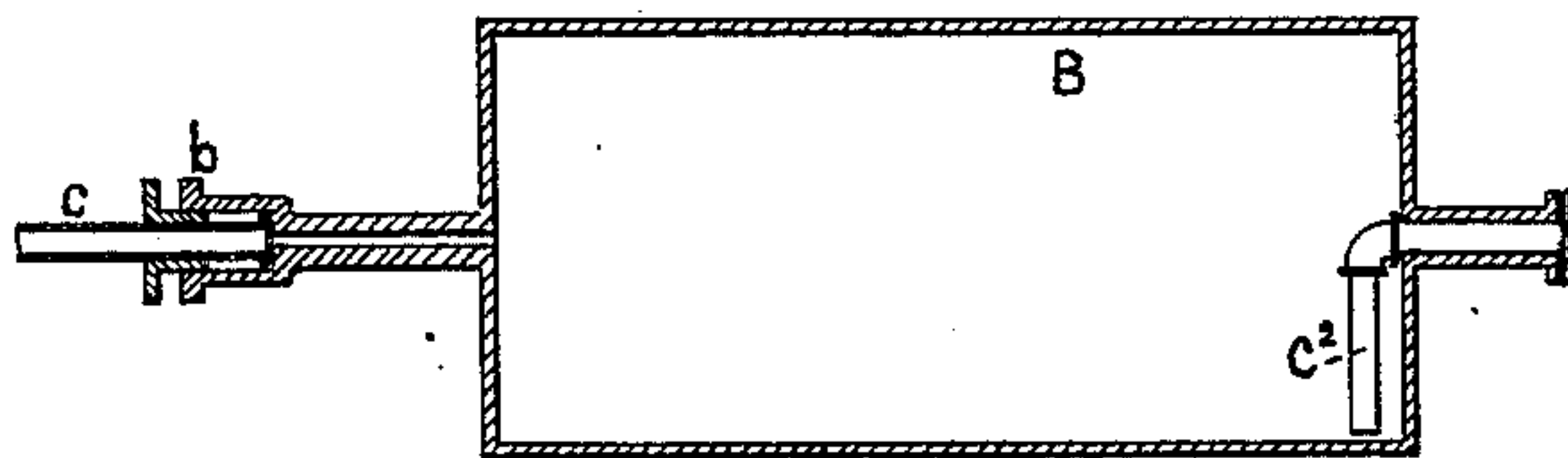
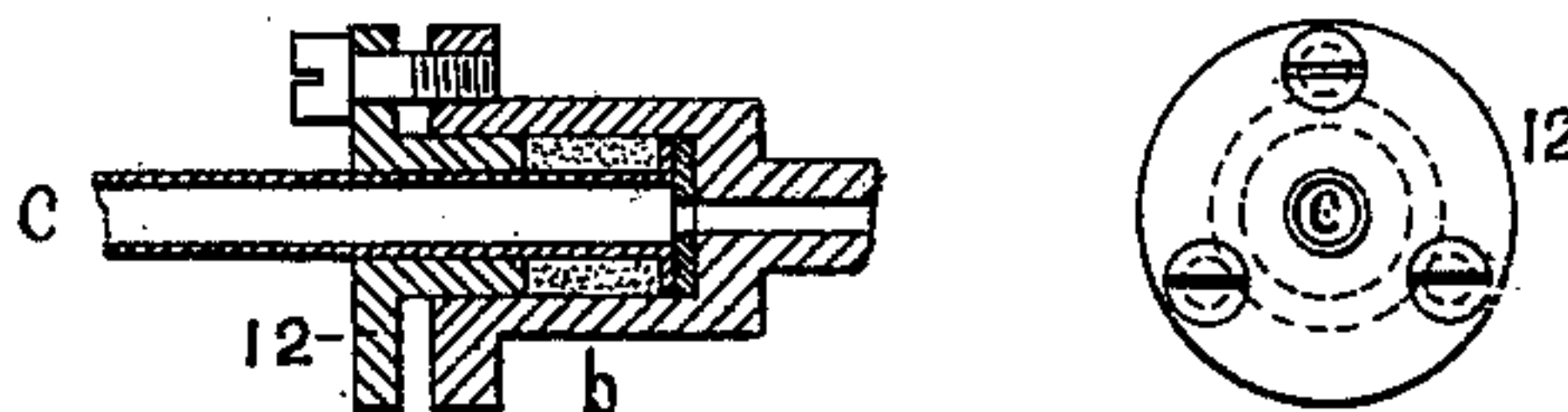


FIG. 5.



WITNESSES

*John Cooke*  
*Henry A. Lindau*

*Louis Francis & William Braidwood by Alfred Brown atty.*  
INVENTOR.



# UNITED STATES PATENT OFFICE.

LEWIS FRANCIS, OF NEW YORK, (MARTHA A. FRANCIS AND MAGGIE A. FRANCIS, ADMINISTRATRIXES OF THE ESTATE OF SAID LEWIS FRANCIS, DECEASED,) AND WILLIAM BRAIDWOOD, OF MOUNT VERNON, N. Y.

## IMPROVEMENT IN MACHINES FOR THE MANUFACTURE OF CARBON OR MANIFOLD PAPER.

Specification forming part of Letters Patent No. **222,266**, dated December 2, 1879; application filed May 24, 1875.

*To all whom it may concern:*

Be it known that we, LEWIS FRANCIS, of the city, county, and State of New York, and WILLIAM BRAIDWOOD, of Mount Vernon, Westchester county, New York, have invented, made, and applied to use a new and useful Machine for the Manufacture of Carbon or Manifold Paper; and that the following is a full, clear, and correct description of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a longitudinal section of the same. Fig. 3 is an end view of the same. Fig. 4 is sectional view of the cylinder. Fig. 5 is a view of the stuffing-box employed by us.

In the drawings like parts of the invention are pointed out by the same letters of reference.

The nature of the present invention consists in the construction, as more fully hereinafter set forth, of a machine for the manufacture of carbon or manifold paper, the object of the invention being the production of a machine which shall expedite the manufacture of carbon or manifold paper and cheapen the cost of the same.

To enable those skilled in the arts to make and use our invention, the following description will be sufficient.

A shows a frame, composed of any suitable material, for supporting the operative parts of the machine. B is a cylinder supported about centrally in the frame A. This cylinder B is provided with the stuffing-boxes *b*, and pipes *c* *c*<sup>2</sup>, one intended to admit steam into the cylinder B, and the other pipe to allow the exhaust-steam to pass from the cylinder, so that the cylinder B is kept heated by a current of steam introduced into the same.

Upon one of the hollow journals supporting the cylinder B is secured a cog-wheel, C, gearing into a pinion, D, supported by a spindle inserted in a standard or upright plate, E, attached to the side of the frame A, and having a pulley secured upon this spindle.

F is a frame-work, formed of the upright

pieces secured to the frame A, and serving to support a fountain, G, a coating-brush, H, and two finishing-brushes, N.

The fountain G is intended to receive the material to be used in coating the paper or other material to be coated.

One side of the fountain is made hollow to admit steam to heat the material to be applied to the paper through the pipe *g*, and at the opposite side of the fountain is placed a pipe, *g*<sup>2</sup>, for the exhaust-steam to escape from the fountain G.

Along the front side of the fountain is placed a knife, K, properly secured to the top of the fountain, and having its lower edge nicely fitted to bear against a roller, L, placed at the bottom of the fountain and intended to supply the material from the fountain to a coating-brush, H, by which the paper is coated. The knife K is regulated by the set-screws *k* having a bearing upon it.

At the rear of the fountain G and over the coating-brush H, is secured a curved plate of metal, M, serving as a distribution-plate or surface for the material supplied by the fountain to the coating-brush H.

Both the distributing-roller and coating-brush are mounted on spindles, to which are attached pulleys, by which they are driven, and upon the opposite end of the spindle of the coating-brush is a worm, so that the coating-brush H has an oscillating as well as a rotary movement.

Directly in front of the fountain G, and supported by the frame-work F, are placed the brushes N, for finishing or polishing the paper or other material after it has been coated with the material supplied from the fountain G. These brushes N are mounted on spindles, and upon the ends of these spindles are secured pulleys and worms, so that the brushes oscillate and rotate.

O is the roll of paper to be coated, which is unwound from a roller, P, held upon the spindles *p* and placed at one end of the machine, and Q is a roller, held upon the spindles *q* and placed at the opposite end of the machine upon which the roll of paper, after being coated, is wound.



R is a roll of paper wound upon a roller, S, provided with the spindles *s*, and held at one end of the machine, the purpose of which will be explained hereinafter.

The spindle *p* is provided with a pulley, 2, over which a graduated weight may be hung. The spindle *s* of the roller S is provided with a pulley, 3, over which a graduated weight may be hung.

These weights serve as brakes upon the rollers P and S, and govern the speed at which the paper will be fed out to the machine.

T are rollers placed in the uprights U upon each side of the cylinder B and bearing upon the paper to be coated, and preventing any wrinkling of the same and holding it close upon the cylinder during the coating process.

U<sup>2</sup> shows a knife or scraper supported by the arms V hung upon a cross-piece, W, to which is attached one end of a spiral spring, X, the opposite end of which is attached to the frame A. This knife or scraper U<sup>2</sup> has a bearing upon the under side of the cylinder when the machine is in motion, and is intended to remove any of the coating material that may offset from the paper upon the surface of the cylinder. The spring X is employed to hold it to its work.

The stuffing-box *b* is constructed as follows: The pipe *c*, which is enlarged at its lower end, to form a circular plate or collar, against which a rubber washer, inserted in the bottom of the box *b* bears, is inserted in the box *b*, and the box is stuffed with rubber or any suitable material, against which a collar, 12, passed over the pipe and forming a tight joint at the end of the pipe *c*, bears, and forms a cap or cover for the same, being screwed to the box *b*. This allows the box to revolve with the cylinder B and prevents the escape of steam.

Such being the construction, the operation is as follows: The material to be used for coating the paper or other substance is introduced into the fountain G, and steam is introduced into the same through the pipe *g*, the exhaust-steam escaping through the pipe *g*<sup>2</sup>. Steam is also introduced into the cylinder B through the pipe *c*, the exhaust-steam escaping through the pipe *c*<sup>2</sup>. When the material placed in the fountain G and the cylinder have been suitably heated the machine may be connected with any suitable motor by means of a belt passed over the pulley upon the spindle supporting the pinion D and attached to a pulley upon the motor. As motion is communicated to the

pinion D the cylinder B gearing into the same and the roller H, and rollers P and Q connected to the motor by means of belts, are set in motion and the paper to be coated is unwound from the roller P, conducted over the heated cylinder B, being coated as it passes over the cylinder B by material supplied from the fountain G to the brush H, which revolves and oscillates, and is wound up upon the roller Q.

After the paper or other material has been coated upon one side and has been wound upon the roller Q, this roller Q may be substituted in the machine for the roller P, which will occupy the place formerly filled by it in the machine, and the paper being fed out from this roll, as already described, and the machine being set in motion, the opposite or other side of the paper may be coated with material supplied to the brush H from the fountain G. During this operation of coating the second side of the paper the paper R is unwound from the roller S and interposed between the cylinder B and the coated side of the paper to prevent offset from the cylinder B to the paper, and is wound upon the same roller that the coated paper is wound upon. The paper having now been coated upon both sides the steam may be shut off from the fountain G and the cylinder B, and the product may be run through the machine twice, as in the coating process, that it may be submitted to the action of the finishing-brushes N, connected to the motor and revolving and oscillating over the coated sides of the paper as it is passed beneath them, and evening and polishing, so to speak, the coatings previously applied.

Manifold or carbon paper thus made is more rapidly and economically made and will be found more uniform in character than that made in the ordinary way by hand.

Having now set forth our invention, what we claim as new is—

1. The combination of a heated cylinder, B, a fountain, G, provided with a hollow chamber for the introduction of steam, and a coating-brush, H, constructed and operating substantially as and for the purpose set forth.

2. The product substantially as and for the purpose specified.

LEWIS FRANCIS. [L. S.]  
WM. BRAIDWOOD. [L. S.]

In presence of—

VINCENT D. BOGART,  
H. J. RICHARDSON.