

(No Model.)

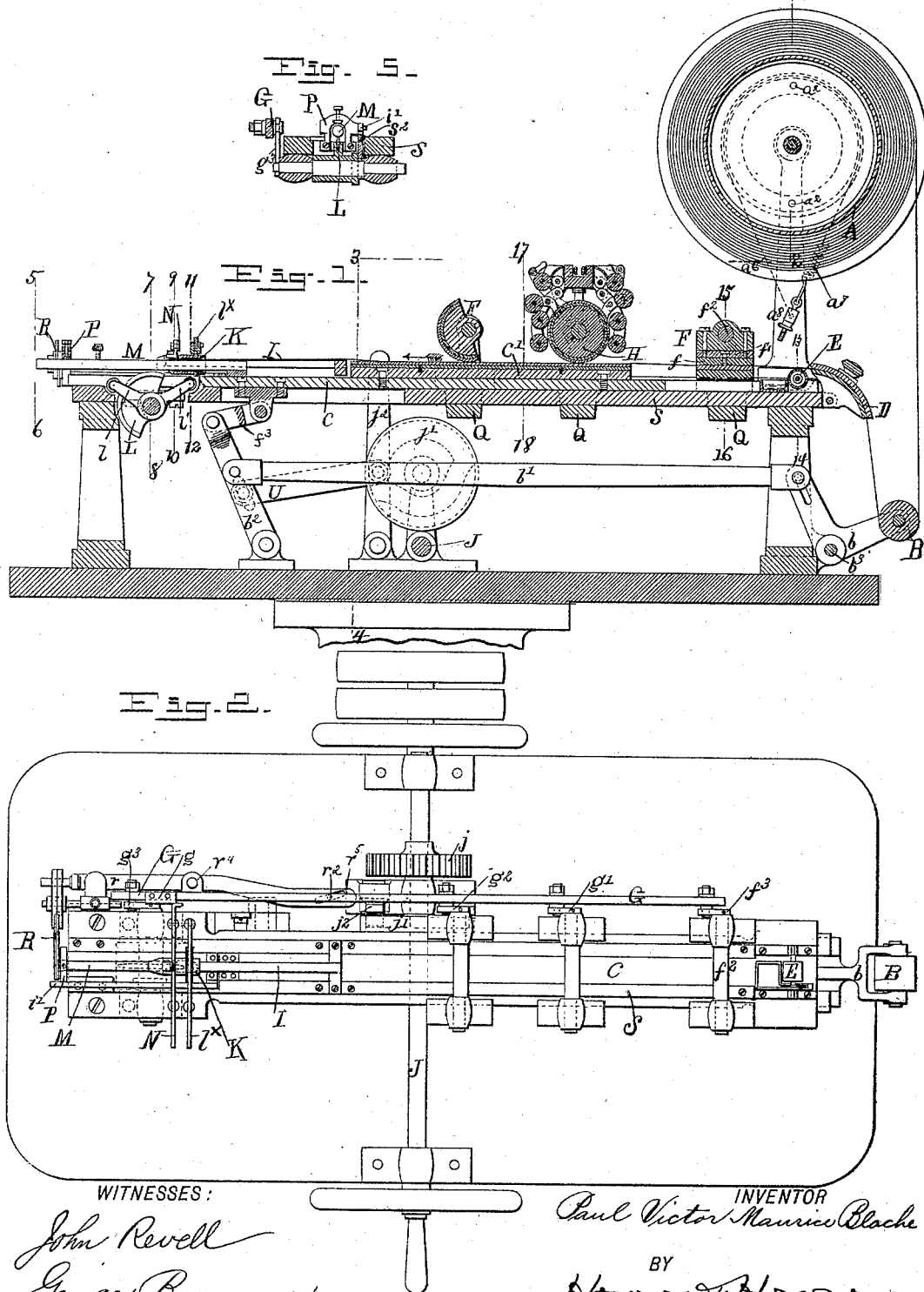
5 Sheets—Sheet 1.

P. V. M. BLACHE.

MACHINE FOR MANUFACTURING TUBES OF CIGARETTE PAPER.

No. 492,264.

Patented Feb. 21, 1893.



WITNESSES:

John Revell
George Baumann

INVENTOR

Paul Victor Maurice Blache
BY
Horson Horson
his ATTORNEYS

(No Model.)

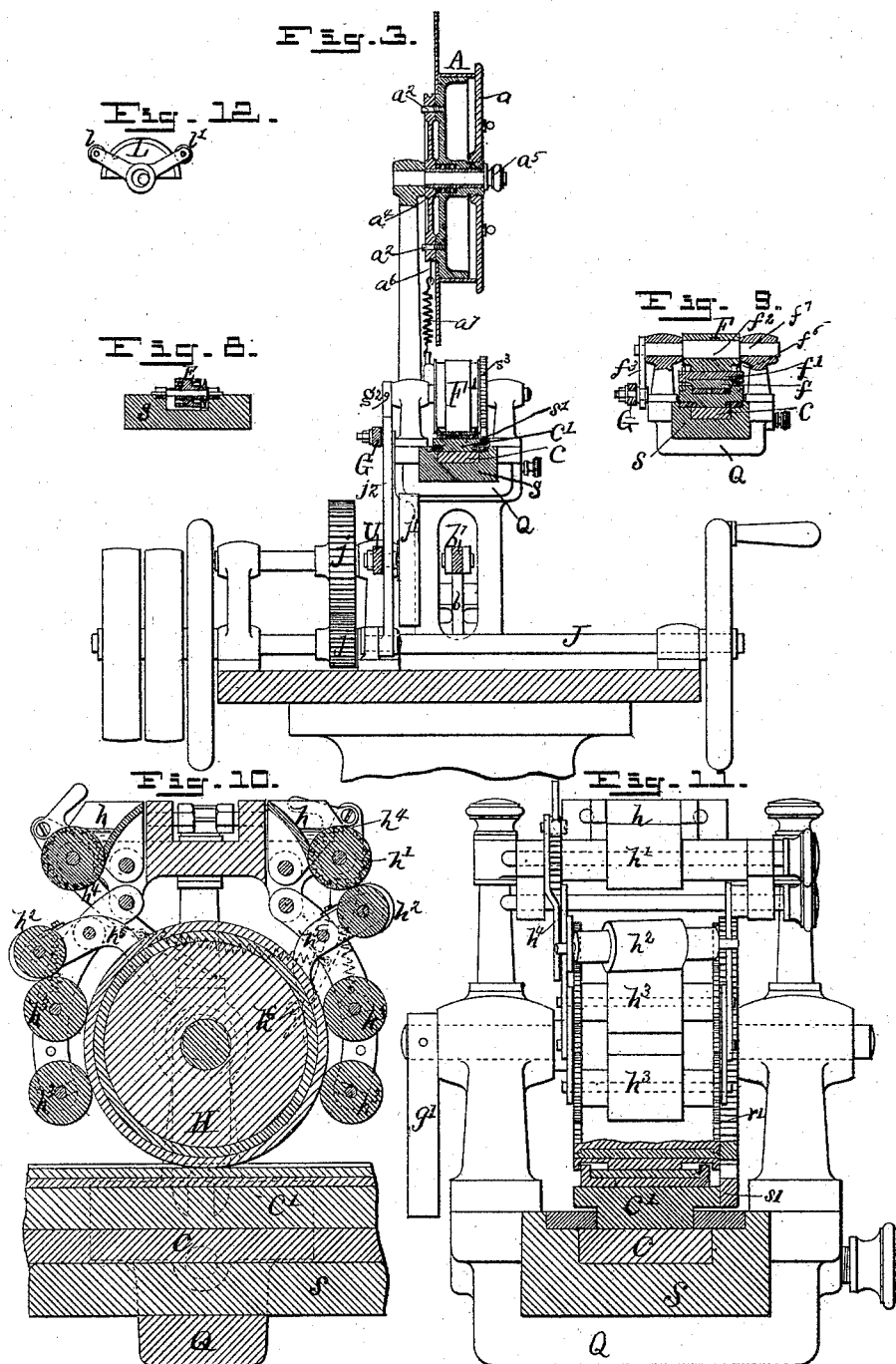
5 Sheets—Sheet 2.

P. V. M. BLACHE.

MACHINE FOR MANUFACTURING TUBES OF CIGARETTE PAPER.

No. 492,264.

Patented Feb. 21, 1893.



WITNESSES:

John Revell
George Baumann

INVENTOR

Paul Victor Maurice Blache

BY

Horron Horron
his ATTORNEYS

(No Model.)

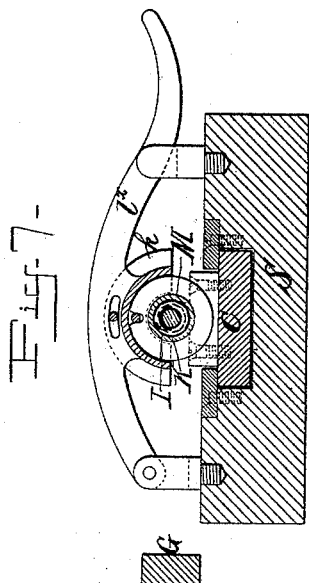
5 Sheets—Sheet 3.

P. V. M. BLACHE.

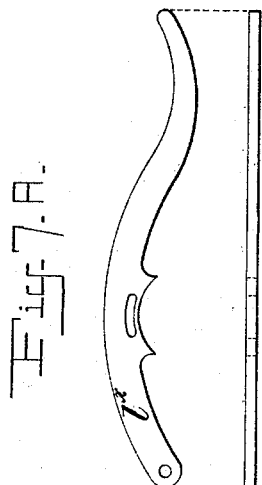
MACHINE FOR MANUFACTURING TUBES OF CIGARETTE PAPER.

No. 492,264.

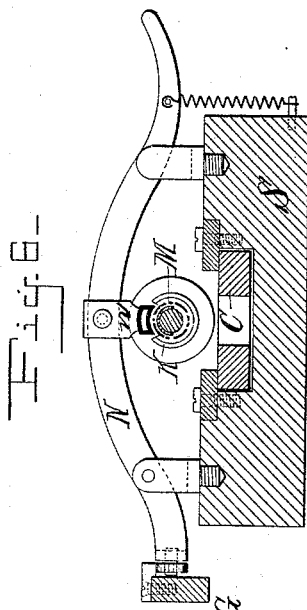
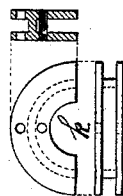
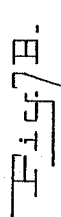
Patented Feb. 21, 1893.



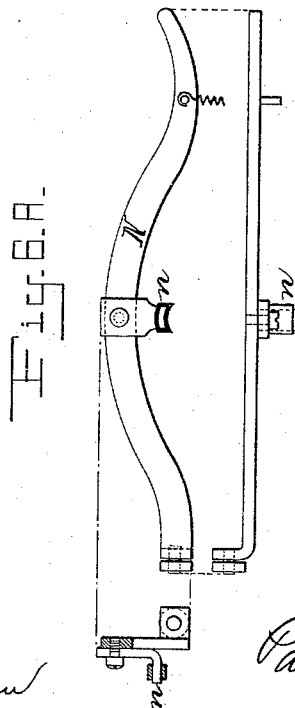
7-1



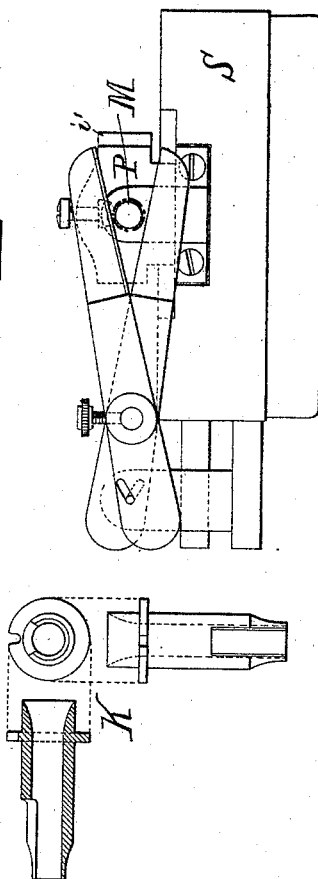
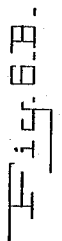
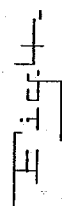
RECEIVED



田子山



四四



WITNESSES:

George Baumann
James Grace

INVENTOR:

INVENTOR:
Paul Victor Maurice Blachy

RY

Howard D. Howard

ATTORNEYS.

(No Model.)

5 Sheets—Sheet 4.

P. V. M. BLACHE.

MACHINE FOR MANUFACTURING TUBES OF CIGARETTE PAPER.

No. 492,264.

Patented Feb. 21, 1893.

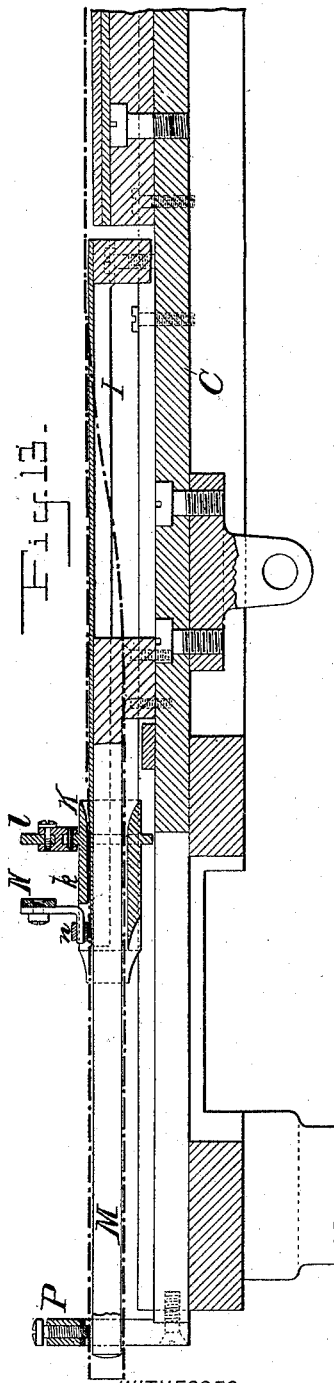


Fig. 13.

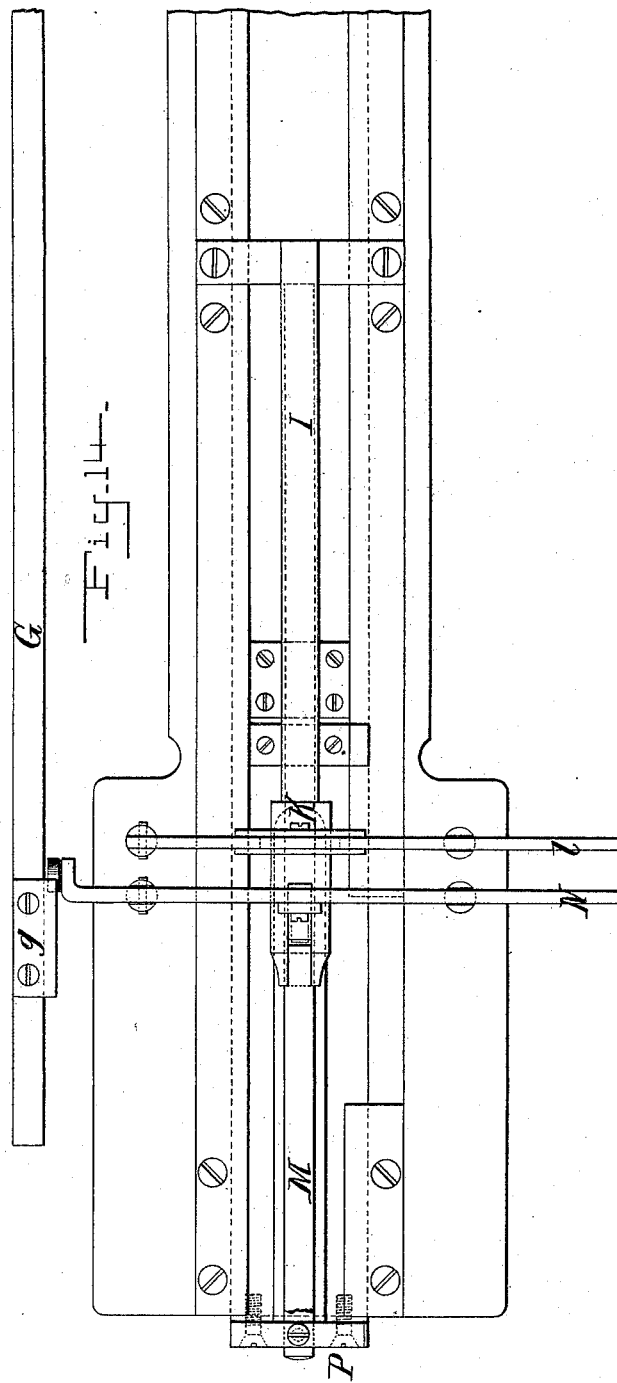


Fig. 14.

WITNESSES:

George Baumann

James Gracie

INVENTOR:
Paul Victor Maurice Blache

BY

Horace W. Brown

- ATTORNEYS.

(No Model.)

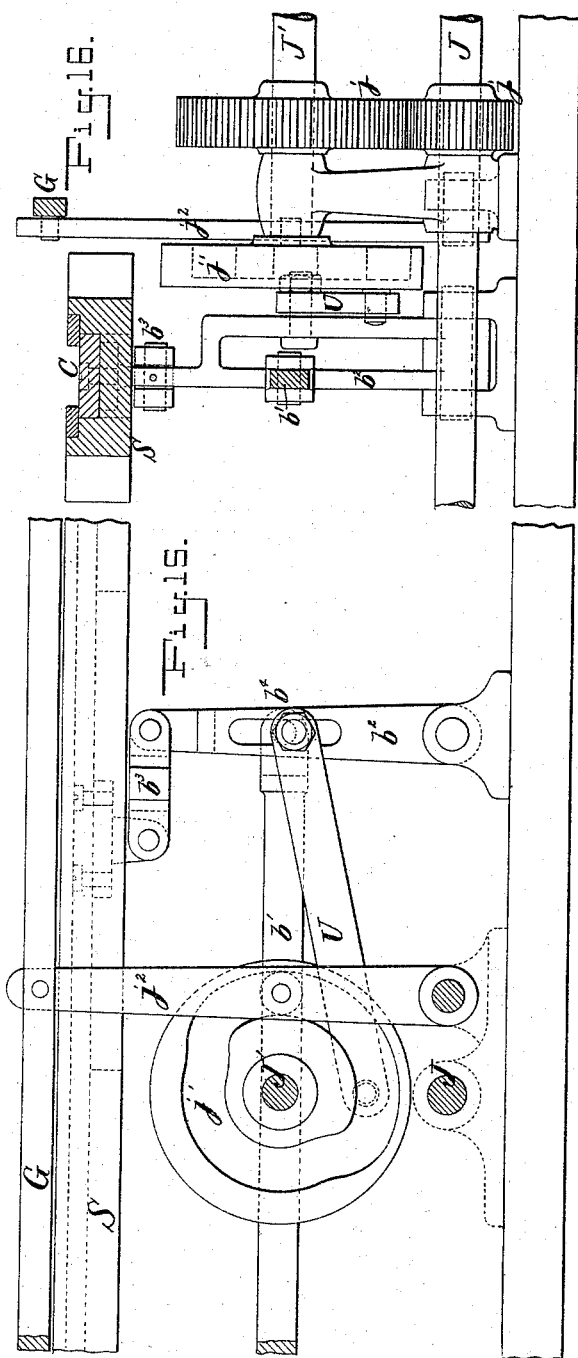
5 Sheets—Sheet 5.

P. V. M. BLACHE.

MACHINE FOR MANUFACTURING TUBES OF CIGARETTE PAPER.

No. 492,264.

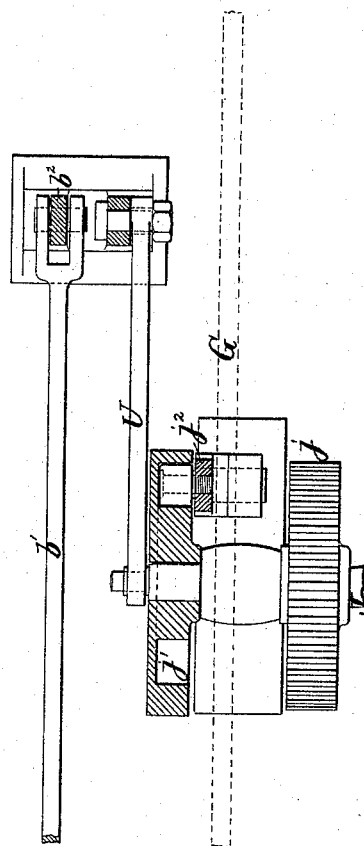
Patented Feb. 21, 1893.



WITNESSES:

George Baumann
James Gracie

Fig. 17.



INVENTOR:

Paul Victor Maurice Blache

BY

Horton D. Horton
ATTORNEYS

UNITED STATES PATENT OFFICE.

PAUL VICTOR MAURICE BLACHE, OF PARIS, FRANCE.

MACHINE FOR MANUFACTURING TUBES OF CIGARETTE-PAPER

SPECIFICATION forming part of Letters Patent No. 492,264, dated February 21, 1893.

Application filed March 5, 1891. Serial No. 383,938. (No model.) Patented in France August 16, 1890, No. 207,658.

To all whom it may concern:

Be it known that I, PAUL VICTOR MAURICE BLACHE, engineer, a citizen of the Republic of France, residing at Paris, France, have invented a Machine for Manufacturing Tubes of Cigarette-Paper, (for which I have obtained a French patent, No. 207,658, dated August 16, 1890,) of which the following is a specification.

This invention relates to the mechanical manufacture of tubes of paper for cigarettes; it presents, relatively to the product obtained, great advantages over the systems heretofore employed. In fact a tube manufactured in this improved machine can be printed on or bronzed in the direction of its length in one or several colors gaufered and ornamented with filigree work, it may also receive an impression in any colors at the overlapping part forming the joint between the two edges of the sheet.

In the accompanying drawings, Figure 1 is a longitudinal section, and Fig. 2 is a plan of the machine, with certain parts removed. Fig. 3 is a sectional elevation taken on line 1—2, 3, 4 of Fig. 1; Figs. 4, 5, 6, 7, 8 and 9 are transverse sections taken on lines 5—6, 7—8, 9—10, 11—12, 13—14 and 15—16 respectively of Fig. 1; Figs. 6^a, 6^b, and 7^a, 7^b are details of parts shown in Figs. 6 and 7 respectively; Fig. 10 is a section of the printing device; Fig. 11 is a face view of the said device, taken on line 17—18 of Fig. 1. Fig. 12 is a detail view; Fig. 13 is a longitudinal section, and Fig. 14 a plan of part of the machine, to an enlarged scale; Fig. 15 is a side elevation, Fig. 16 an end elevation, and Fig. 17 a sectional plan of the actuating mechanism.

In the enlarged views, Figs. 4, 6, 7 and 13, the paper is represented by heavy dotted lines, for the sake of clearness.

Bobbin holder, Figs. 1 and 3.—The strip of cigarette paper wound in the form of a roll or bobbin is placed upon a drum or reel A. This reel is provided with a removable cheek or flange *a* which screws upon the boss and enables the reel to take bobbins of different widths. The reel itself is capable of being displaced or of sliding longitudinally upon its axis under the action of a spring *a*⁴ so that by means of an adjusting nut *a*⁵ bobbins of different widths can be adjusted to coincide

with the working axis of the machine. The reel is also provided with two pins *a*² which connect it to a brake *a*³ rotating with the reel. Around this pulley is passed a steel band *a*⁶ acting as a brake strap controlling the unwinding of the paper. This brake strap is connected by a spring *a*⁷ to a set screw *a*⁸ which enables the retarding action of the brake to be regulated as required.

Feeding device, Figs. 1 and 2.—The paper is taken round the roller B which rotates between the forks of the lever *b*. This lever rocks on the axis *b*³ and is caused to move simultaneously with the carriage C by means of a connecting rod *b*¹ and lever *b*². Consequently the quantity of paper which has to be drawn on in the forward motion of the carriage is unwound from the bobbin A when the carriage moves back.

Gumming device, Figs. 1 and 8.—The paper drawn over the guide D passes over a roller or cylinder E. This cylinder is provided on one side with a small wheel *e*, or enlargement, with or without teeth rotating in a trough containing cementing material, see Fig. 8. By these means a narrow streak of adhesive matter is deposited on the edge of the strip of paper. When the wheel is toothed a series of spots are formed in place of the streak, the object of such arrangement being simply to reduce the quantity of adhesive matter employed.

Gaufering device or clamp, Figs. 1 and 9.—The strip of paper then passes under the gaufering device F. This device consists of a block *f*⁵ to which is secured the part *f*¹ carrying the engraved part *f*. The block *f*⁵ is supported by a shaft *f*⁷ held in bearings *f*⁶. The shaft *f*⁷ is provided with an eccentric part *f*² which works in a hole through the block *f*⁵ to give pressure to the engraved part. This shaft is actuated by means of the connecting rod G and the forked lever *f*³, Figs. 2 and 9. This gaufering device also acts as a clamping device serving to prevent the paper from moving back when the bobbin is being unwound. The paper then passes to a table C' placed upon the carriage C. At the proper moment and during the forward motion of the carriage a sector F' presses upon this table, the said sector partaking very accurately of the movement of the carriage by

means of a toothed sector or quadrant s^3 and a rack s' , Fig. 3. The under surface of the sector F' is engraved and at the same time as it draws forward the paper it imprints the engraved design thereon. This sector F' is carried by an eccentric shaft to give the pressure, the said shaft being actuated by means of the crank G and forked lever g^2 , see Fig. 2. It is evident that by providing the machine with a series of small tables and sectors similar to those above described and by covering the engraved parts of such sectors with bronze powder or a variety of inks the paper may be printed or bronzed with as many colors as required.

Printing device, Figs. 1, 10 and 11.—For the purpose of printing on the paper the cylinder H is used, and the inking apparatus is placed above this engraved cylinder H . The ink contained in the ink troughs h is taken from cylinders h' by rollers h^2 and transferred to cylinders h^3 which distribute it over the inking tables and over the engravings. The movement of the cylinders h' and rollers h^2 is obtained by means of levers h^4 and h^5 operated by a pin or stud h^6 attached to the cylinder H , see Fig. 10. This cylinder H is mounted on an eccentric axis controlled by the crank G , by means of the forked lever g' to give the pressure, see Figs. 2, 10 and 11. The rotation of this cylinder is determined by the movement of the carriage C , by means of the wheel r' and the rack s' . After receiving these several impressions the strip of paper is rolled longitudinally upon a fixed sheath or mandrel I and enters a ring K , Figs. 1, 2, 6, 6^a, 7 and 13, which supports the paper and bends it into the form of a tube. The ring K is maintained by the lever l^x which prevents its longitudinal displacement. On leaving the ring a sector L , Figs. 1 and 5, moving very accurately with the carriage is caused, in the course of the forward movement to press upon a rod M attached to the carriage and sliding in the fixed sheath or hollow mandrel I or rather upon the two overlapping edges of the paper. This sector L is provided, like the sector F' , with an engraved part which prints by pressure upon the joint of the tube in precisely the same way as that hereinbefore described. The rotation of this sector L is produced by the wheel s^2 and the rack i' mounted on the bridge P . The pressure is given by an eccentric axis controlled by the crank G , by means of the forked lever g^3 . The deposit of ink upon the characters or printing surface of the sector L is effected by means of small rollers l and l' , Fig. 12, carried on fixed axes so that the contact of these rollers with the engraved part of the sector is obtained by the movement of the sector itself. The sector L produces by mere pressure sufficient adhesion to insure a perfect union. In order that the paper may not partake of the backward movement of the carriage, a gripper N , Figs. 1, 2, 6 and 13, is used. Attached to the gripper N is a piece

n having a horizontal arm enveloped in india rubber, which, at the proper moment, rests upon the rod M to retain the tube, and prevent it from returning with the sheath I carried away by the carriage C , Figs. 6, 6^a and 13. The lever N is pressed against the rod M by a coiled spring; and is lifted up by a small inclined plane on the shaft G , which acts, at the proper time, on the roller which terminates the lever N , to overcome the spring. The piece n works in a notch in the piece K (Figs. 6 and 6^b). This piece K is retained longitudinally between the cheeks of a semi-circle k (Figs. 7 and 7^b), jointed to the lever l^x free in its supports. To diminish the tendency of the rod M to bend under the pressure of the sector L , I plane on the end of the carriage C a bridge piece P which at the same time serves for drawing forward the paper which is held between the bridge piece and the rod and partakes of their motion. This bridge-piece P is a sort of arcade, the branches of which are screwed to the end of the carriage C ; and it is provided with a regulating screw p , see Figs. 4 and 13.

Shears or cutting device, Figs. 1, 2 and 4.—The tube thus formed is cut into equal lengths by shears R , at the end of the machine. Movement is imparted to these shears by means of a lever r , pivoted at r^4 (Fig. 2) and provided at one end with a slot r^5 , while the other end is adapted to work in two slots r^6 r^7 in the outer ends of the pivoted shears R , see Fig. 4. A pin r^2 on the shaft G works in the slot r^5 , (which slot is inclined relatively to the movement of the shaft G) to oscillate the lever r on its pivot r^4 , and consequently move the other end in the slots r^6 r^7 to open and close the shears R .

The printing and gauffering devices are mounted in adjustable brackets Q which are clamped to the table S .

In order to enable the machine to make tubes of cigarette paper of different lengths the movement or stroke of the carriage is regulated by adjusting the connecting pin of the reciprocating rod or piston at b^4 , Fig. 15.

Referring to Fig. 15, 16 and 17, the general operation of the machine is given by the shaft J which transmits, by means of the gear wheels j j its movement to a second shaft J' on which is wedged a cam j' in the groove of which is engaged the roller end of a lever j^2 attached to the rod G which extends the whole length of the machine, and which by its alternative rectilinear movement operates the different working mechanisms situated on the table S . The cam j' serves also as a crank-plate for the connecting rod U which connects it to the lever b^2 on which are yoked the carriage C by the intervening band b^3 , and the roller B by the rod b' .

I claim as my invention—

1. The machine for manufacturing tubes of cigarette paper comprising a bobbin holder A for the continuous paper, a feeding device B , a gumming device E , a clamping device F

serving to gauffer the paper, a reciprocating table, a printing sector, a sheath I and a ring K for forming the tube, a cylinder H and a rod M, and cutting device R for cutting it

5 into lengths, as and for the purpose described.

2. In a machine for making tubes of cigarette paper, the combination of the bobbin holder A and an adjustable spring brake a^6 a^7 , with a carriage C, a feeding device B, lever b^3 actuated by a crank-shaft and connected to both the table and the feeding device, a guide D and an eccentric clamping device F, all substantially as and for the purposes set forth.

15 3. In a machine for making paper tubes for

cigarettes, the combination of a movable carriage C, a hollow mandrel I and a ring K, with a rod M and gripper N, substantially as set forth.

4. In a machine for making cigarette tubes, 20 the combination of the engraved sector L and inking rollers l' , with the rod M, and bridge-piece P, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of 25 two subscribing witnesses.

PAUL VICTOR MAURICE BLACHE.

Witnesses:

LEON CRAMKEN.

LOUIS CHAMBON.