

(No Model.)

3 Sheets—Sheet 1.

G. PACI.
LACE PAPER MACHINE.

No. 401,054.

Patented Apr. 9, 1889.

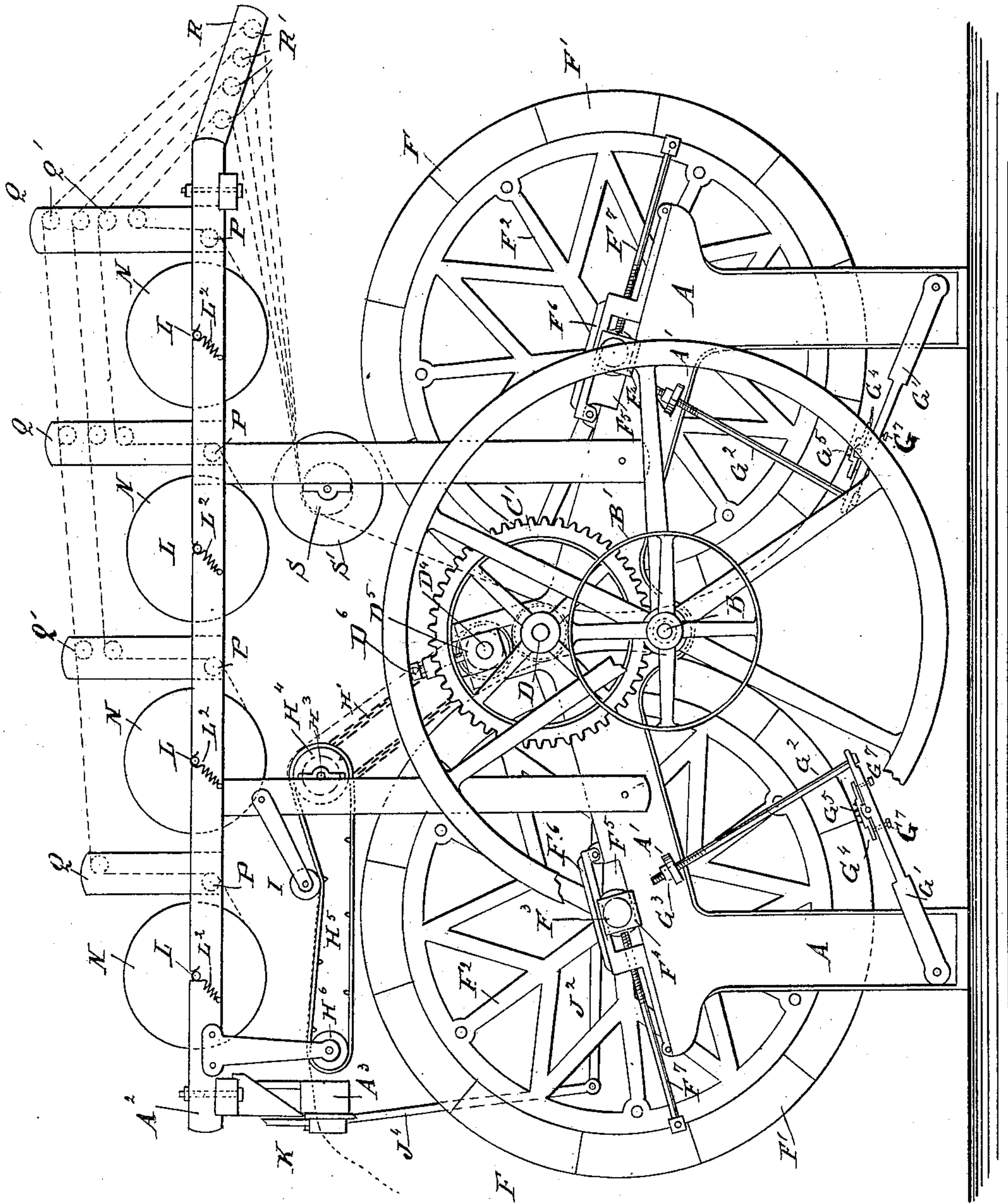


Fig. 1.

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ATTORNEYS.

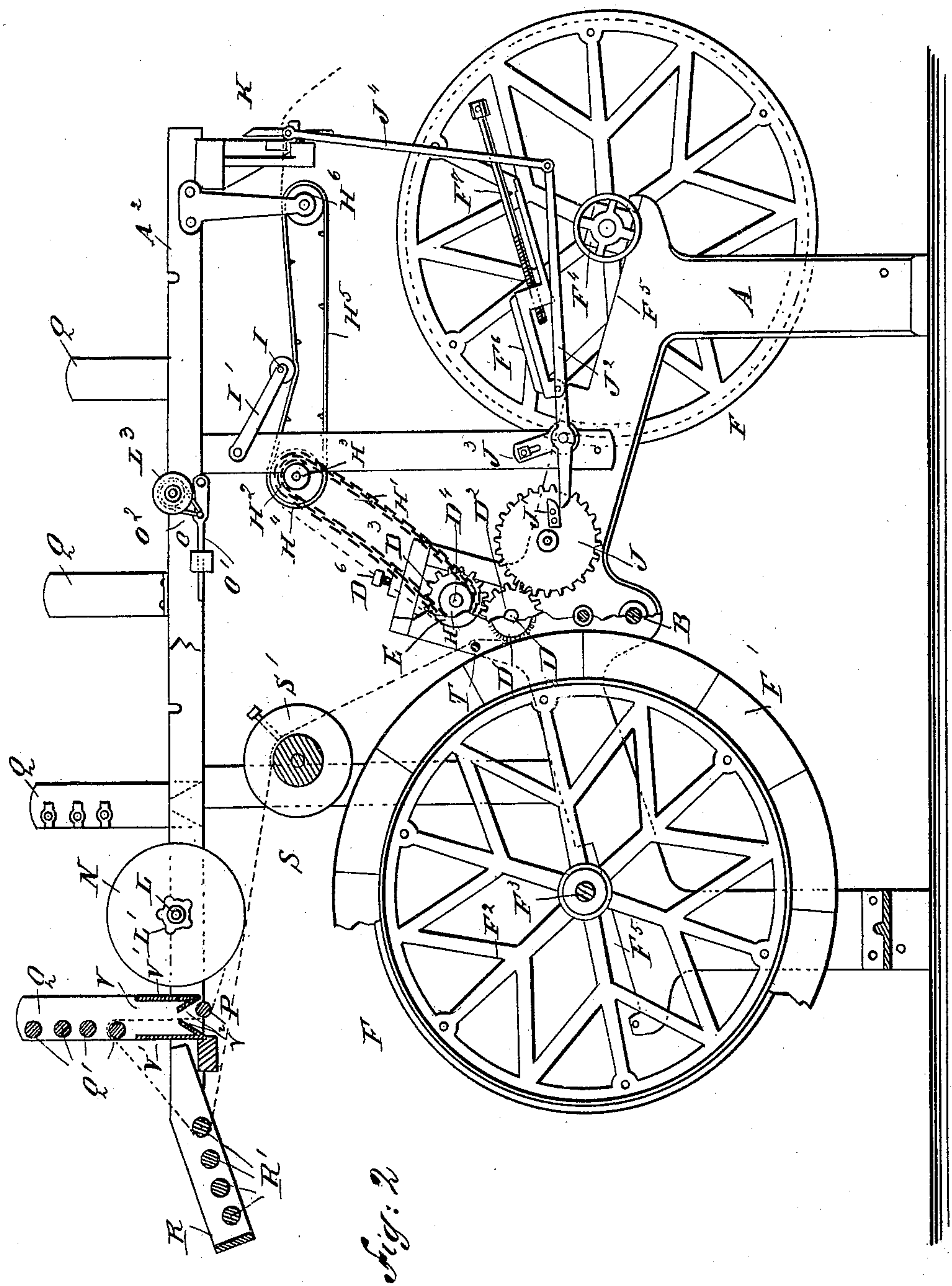
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3 Sheets—Sheet 2.

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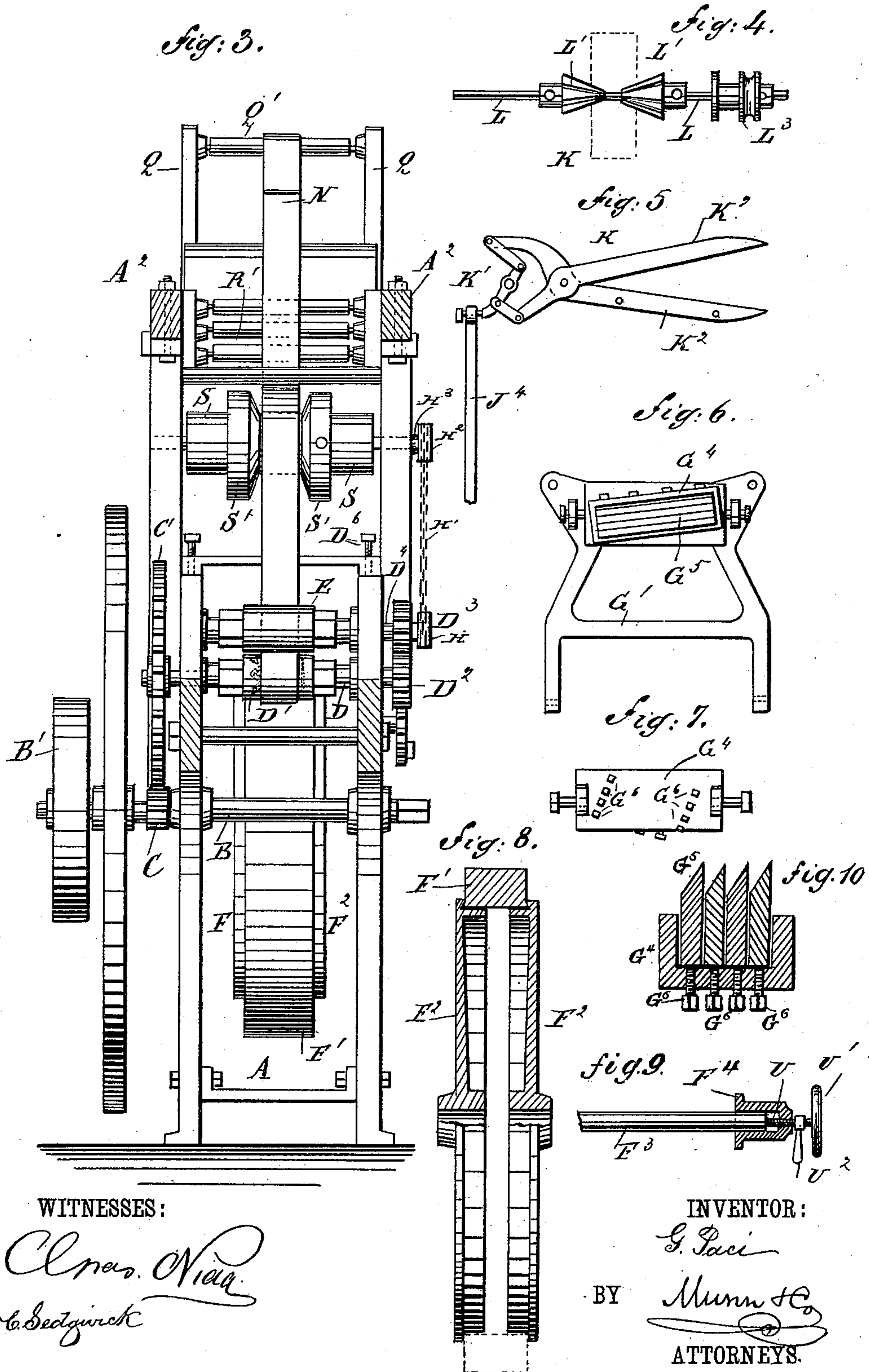
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3 Sheets—Sheet 3.

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Patented Apr. 9, 1889



UNITED STATES PATENT OFFICE.

GIUSEPPE PACI, OF NEW YORK, N. Y.

LACE-PAPER MACHINE.

SPECIFICATION forming part of Letters Patent No. 401,054, dated April 9, 1889.

Application filed December 8, 1886. Serial No. 220,978. (No model.)

To all whom it may concern:

Be it known that I, GIUSEPPE PACI, of the city, county, and State of New York, have invented a new and Improved Lace-Paper Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved lace-paper machine which is simple and durable in construction and very effective in operation.

The invention consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improvement with parts broken out. Fig. 2 is a rear side elevation of the same with parts broken out and parts in section. Fig. 3 is a sectional end elevation of the same with one of the large wheels removed. Fig. 4 is a plan view of the paper-roll fastener. Fig. 5 is a side elevation of the paper-cutting device. Fig. 6 is a plan view of the scraping device. Fig. 7 is a bottom view of the box carrying the scrapers. Fig. 8 is a sectional elevation of part of the wood drum, and Fig. 9 is a sectional end elevation of the device for adjusting the wood-drum shaft. Fig. 10 is a detail sectional view of Fig. 7.

On a suitable frame, A, is mounted the main shaft B, provided with the usual fly-wheel and driving-pulley, B', or other means for imparting a rotary motion to the said main shaft B. A pinion, C, secured on the said shaft B, meshes into the gear-wheel C', attached to the shaft D, mounted in suitable bearings on the frame A, and carrying the wheel or roller D', provided with the lace-pattern to be impressed into the paper. The gear-wheel D² on the said shaft D meshes into the gear-wheel D³, secured to the shaft D⁴, mounted in the bearings D⁵, adapted to be adjusted in guideways formed in the frame A by a screw, D⁶, or other means.

The shaft D⁴ carries the leather roller E, held in close contact on top of the pattern wheel or roller D', and on each side of the latter is

placed a larger removable or adjustable wheel, F, also held in frictional contact with the said pattern-roller D', and provided with a wooden rim, F', made in sections, each having on each side of its base a dovetail fitting into a corresponding dovetail formed on the sections F² of the said wheel. The sections F² are mounted on a shaft, F³, held in bearings or boxes F⁴, each fitting into an inclined slot, F⁵, formed by the frame A and by a hinged cover, F⁶, provided with a screw, F⁷, screwing against the said bearing or box F⁴. The pivoted end of the cover F⁶ is fastened in any suitable manner by pins or bolts to the frame A. The screw F⁷ serves to screw the wheel F up against the pattern-wheel D'. The hinged cover F⁶ permits of removing the wheel from the said frame A, and the sectional wheel permits of changing the width of the wooden rim to suit the width of the paper to be treated.

On the periphery of the wooden rim of each wheel F operates a scraping device consisting of the frame G', hinged by one end on the frame A, and provided on its other end with bolts G², the upper threaded ends of which pass through lugs A', formed on the sides of the said frame A. On the upper ends of the said bolts screw the nuts G³, which serve to raise or lower the said frame G'. On the latter is pivoted the box or frame G⁴, containing the scrapers or files G⁵, which are vertically adjustable by means of set-screws G⁶, screwing through the bottom of the said box G⁴, which is held in place by the set-screws G⁷. The scrapers or files are placed across the rims of the wheels F at angles to the axes of the said wheels, as shown in Fig. 6.

The shaft D⁴ is provided with a sprocket-wheel, H, over which passes a sprocket-chain, H', also passing over the sprocket-wheel H², secured to the shaft H³, mounted in suitable bearings on the frame A, and carrying a roller, H⁴, over which passes an endless belt, H⁵, also passing over the roller H⁶, having its bearings in a bracket on the front end of the beam A² of the frame A. A tension-roller, I, mounted in an arm, I', hinged on the frame A, acts on the upper part of the endless belt H⁵. The gear-wheel D² also meshes into the gear-wheel J, mounted on a stud extending from the said frame A, and provided with a

cam-arm, J' , which operates at every revolution of the said gear-wheel J on a lever, J^2 , fulcrumed on an arm, J^3 , adjustable on the frame A . This lever J^2 operates the cutting mechanism K (shown in detail in Fig. 5) by means of a link or rod, J^4 . The latter is pivotally connected with the said lever J^2 and with the toggle-joint K' , connected with the shears K^2 , pivoted together, one of which is secured on a cross-beam, A^3 , on the front of the beam A^2 of the frame A .

On the beam A^2 are held a number of shafts, L , carrying rolls of paper N , held on cone-shaped supports L' , adjustable on the said shafts L . On one end of each of the said shafts L operates a spring, L^2 , and on the other end of each shaft is a tension device, O , consisting of a weighted lever, O' , pivoted on the beam A^2 , and provided with a band, O^2 , which passes over a pulley, L^3 , secured on the said shaft L .

In front of each shaft L is arranged on the beams A^2 a roller, P , and between the said shafts L is erected a standard, Q , provided with a box, V , consisting of the sides V' , and the bottom consisting of two pieces, V^2 , inclining toward each other and having a central slit, through which passes the paper. Each box is filled with soapstone-powder, so that the paper on passing through the box is coated on both sides with the soapstone-powder. Above each box is a roller, Q' , over which passes the paper from its respective roll. From the rear ends of the beam A^2 extends downward a box, R , provided with a series of rollers, R' . On the frame A is mounted a roller, S , provided with loose flanges S' , adjustable on the said roller S to suit the width of the paper to be treated. A short distance above the pattern-wheel D' is arranged a cross-bar, T , over which passes the paper before it enters upon the pattern-wheel.

The shaft F^3 can be adjusted lengthwise by the screw U , screwing through the journal of the shaft and against the end of the same. The screw U is provided with a hand-wheel, U' , and with a jam-nut, U^2 , for holding the screw U in place after being adjusted, as shown in Fig. 9.

The operation is as follows: The rotary motion of the main shaft B is imparted to the pattern-roller D' and its leather roller E by means of the gear-wheels C C' and D^2 D^3 . The wheels F are rotated by being in frictional contact with the pattern-wheel D' . The paper from the rolls N is drawn through the machine by being passed between the rollers F , the pattern-wheel D' , and the leather roller E , and, according to the capacity of the machine, the respective number of paper strips from the rollers N pass simultaneously and one on top of the other over the roller S and the rod T , upon and around the pattern-wheel D' , and the paper is pressed upon the projections forming the pattern by the wooden rims F' of the wheels F , located one on each side

of the said pattern-wheel D' . The paper strips are roughly pressed against the pattern-wheel by the said wheels F , and the final finishing is given to the paper by the elastic roller or wheel E , located on top of the pattern-wheel. The wooden-rimmed wheels which, for some patterns, are made of a hard wood—such as maple—and for some other patterns are made of a softer wood—such as “white” wood—permit of the embedment therein of the raised figures of the pattern-roller with the interposed paper, and thus effect the sinking of the impression in the paper. These wheels are intended for cutting only and the leather roller for embossing. The elastic surface of the wheel E also presses the paper softly upon the pattern-wheel, thus avoiding all unevenness in completing the impression. The impressed paper is then passed to the endless belt H^5 , and is delivered by the same to the cutting apparatus K , which cuts the strips of paper into equal lengths. The length of the cut paper strips is regulated by the differential speed of the gear-wheels D^2 and J , and by changing the diameter of the latter wheel I am enabled to increase or diminish the length of the paper to be cut.

It will be seen that each wheel F can be easily and quickly moved from the main frame A by raising the cover F^6 , as shown at the right of Fig. 2, so as to replace the wooden rims F' in case they are worn out by their contact with the pattern on the pattern-wheel D' . This replacing of the wooden rims is easily accomplished by unscrewing the bolts holding the sections F' together, and the latter being then slightly moved apart permit of removing the dovetailed sections of the wooden rim. The wooden rims of the wheels are kept as smooth as possible by the files G^5 acting on the peripheries of the said rims. The frictional contact of the wheels F with the pattern-wheel D' can be regulated—that is, increased or diminished—by screwing on the rods F^7 , and the contact of the leather roller or wheel E with the pattern-wheel D' can be adjusted by the screw D^6 . Any desired pattern can be placed on the shaft D and impressed into the paper.

The soapstone-powder permits of taking the cut strips of paper apart easily.

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

1. In a lace-paper machine, the combination of a pattern-wheel with two wheels having wooden rims, means, as described, for holding the said wheels in frictional contact with the said pattern-wheel, and a roller having an elastic rim and held on top of the said pattern-wheel, substantially as shown and described.

2. In a lace-paper machine, the combination, with the gearing of the pattern-wheel, of an endless belt driven from said gearing, a paper-cutting device located at the end of the

said endless belt, and means, as described, for operating the said cutting device from the said gearing, substantially as set forth.

3. In a lace-paper machine, the combination, 5 with the pattern-wheel D and wheel F, having a wooden periphery and working in contact with said pattern-wheel, of a scraper having a series of blades arranged obliquely to the axis of said wheel F, as and for the purpose 10 specified.

4. In a lace-paper machine, the combination, with the wheels F, having wooden rims, of the files or scrapers G⁵, held in contact with the periphery of the said wooden rims, the 15 pivoted box G⁴, supporting the said scrapers or files G⁵, the hinged frame G', supporting the said box G⁴, the screw-rod G², supporting the free end of the said hinged frame G', and the nuts G³, for adjusting the said rods G², 20 substantially as shown and described.

5. In a lace-paper machine, the combination, with the pattern-wheel D', of the wheel F, having a wooden rim, the shaft F³, supporting the said wheel F, the box F⁴, in which the said 25 shaft F³ is mounted, the main frame A, forming, in connection with the hinged covers F⁶, inclined slots F⁵, the said covers F⁶, hinged on the said frame A, and the screw-rods F⁷, screw-

ing in the said hinged covers F⁶ and against the boxes F⁴, so as to adjust the said wheel F 30 in relation to the pattern-wheel D', substantially as shown and described.

6. In a lace-paper machine, the combination, with the wheel F, having a wooden rim, of the scrapers G⁵, acting on the periphery of the 35 said wooden rim, the box G⁴, supporting the said scrapers G⁵, and the set-screws G⁶, for adjusting the said scrapers vertically in the said box G⁴, substantially as shown and described.

7. In a lace-paper machine, the combination, 40 with a wheel, F, having a wooden rim, of the scrapers G⁵, acting on the periphery of the said wooden rim, the box G⁴, supporting the said scrapers G⁵, the set-screws G⁶, for adjusting the said scrapers G⁵ in the said box G⁴, 45 the pivoted frame G', supporting the said box G⁴, the set-screws G⁷, for adjusting the said box G⁴ on said frame G', the rods G², connected with the said frame G', and the nuts G³, for adjusting the said rods G² on the main frame 50 in relation to the wooden rim of the said wheel, substantially as shown and described.

GIUSEPPE PACI.

Witnesses:

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EDGAR TATE.