

(No Model.)

2 Sheets—Sheet 1.

C. F. W. LEHMANN.
MACHINE FOR PRINTING WALL PAPER.

No. 518,324.

Patented Apr. 17, 1894.

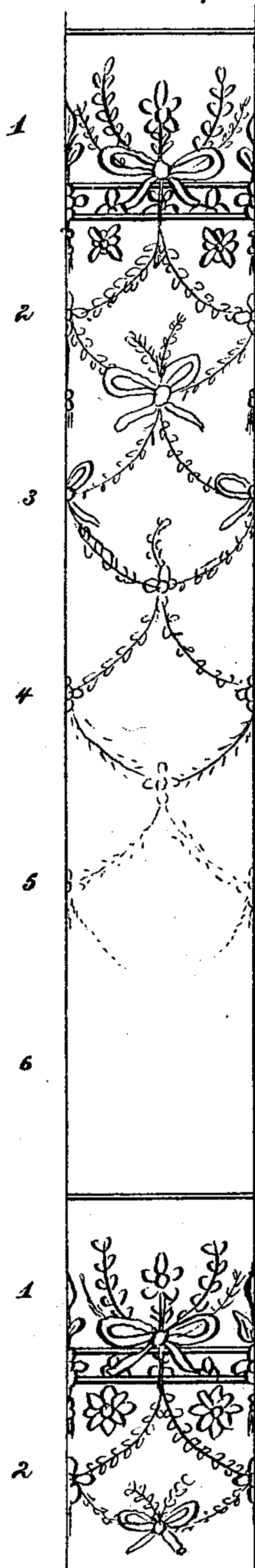


Fig. 1.

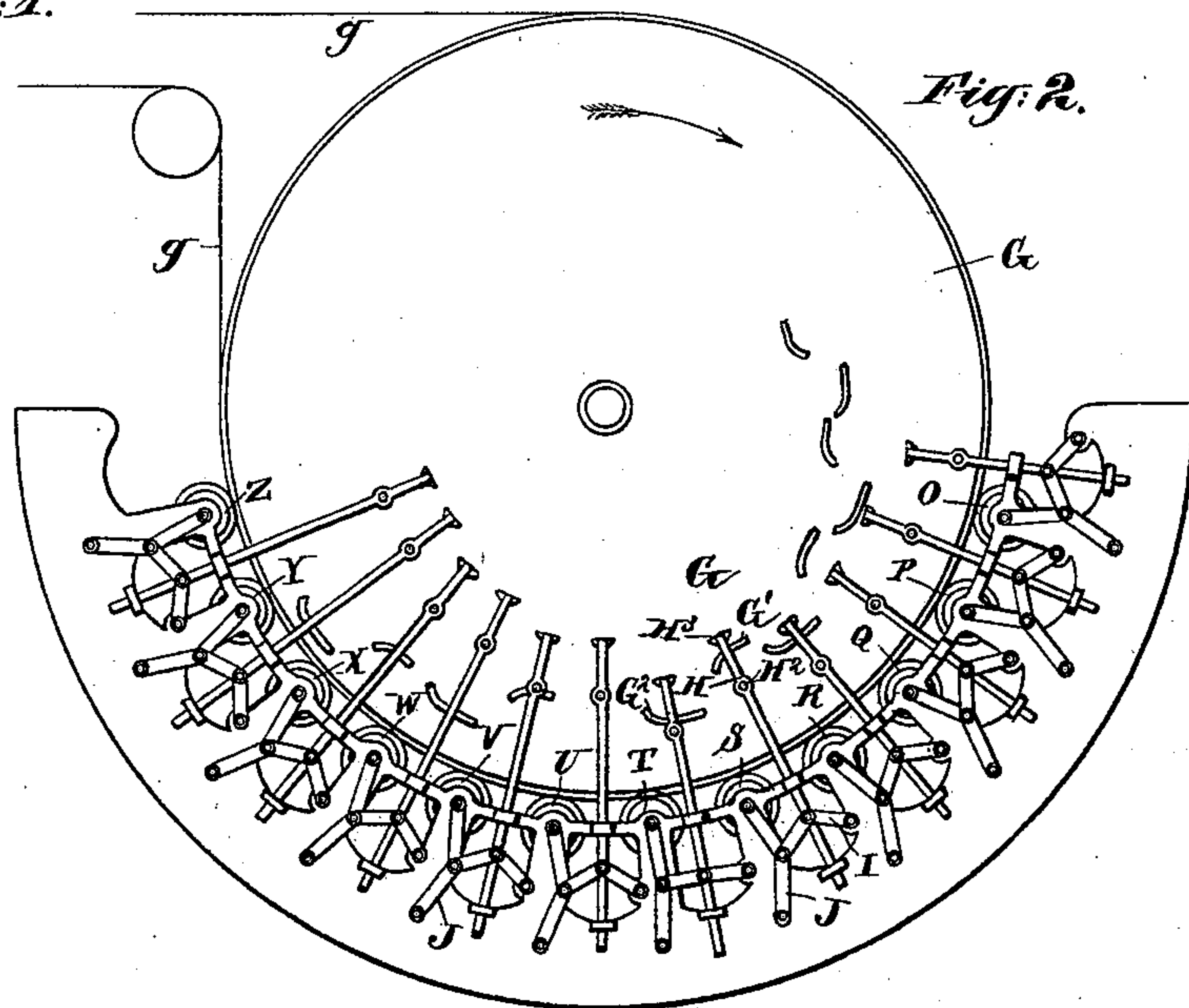


Fig. 2.

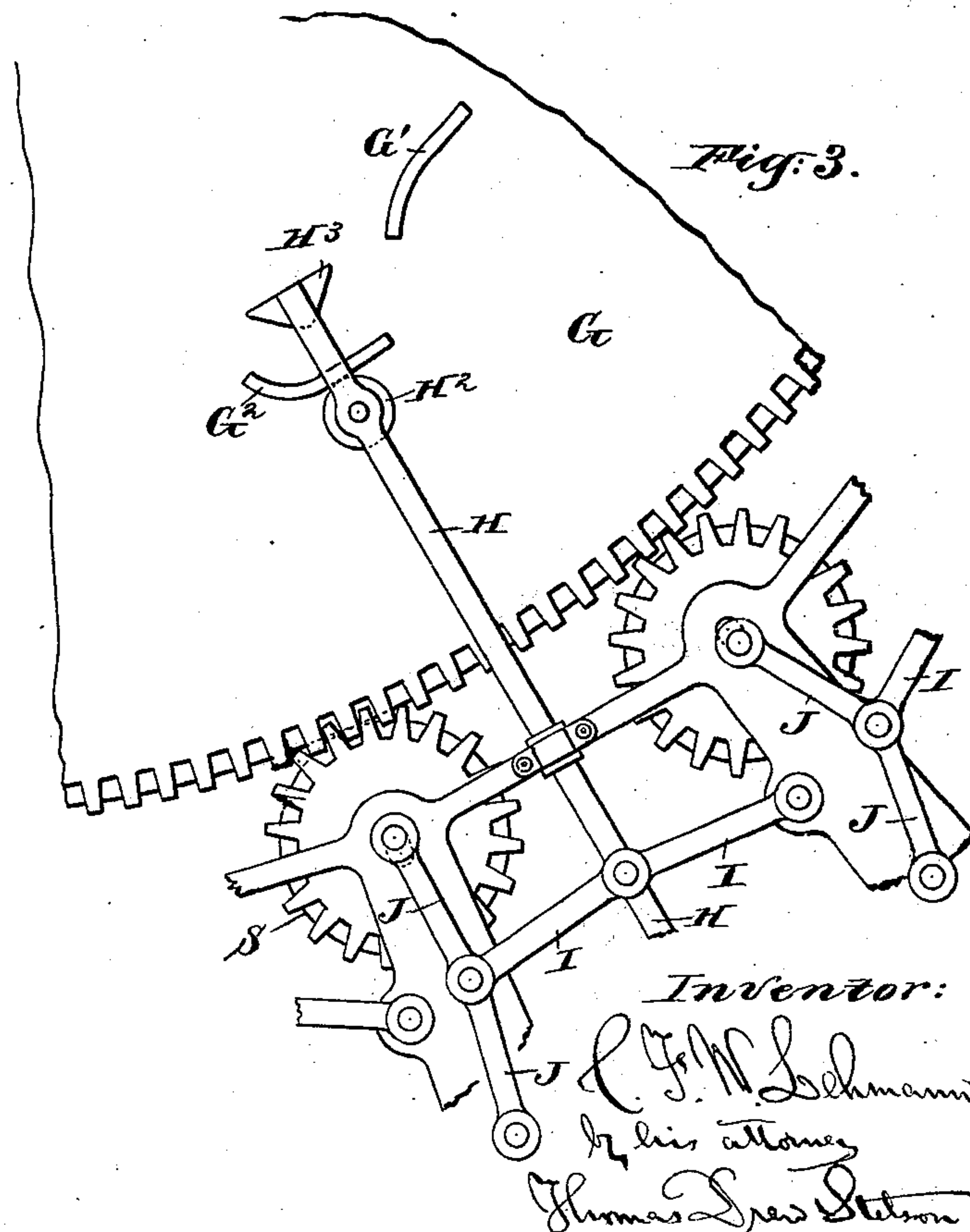


Fig. 3.

Witnesses:
Charles R. Searle,
M. F. Boyle

Inventor:
C. F. W. Lehmann
by his attorney
Thomas D. Stetson

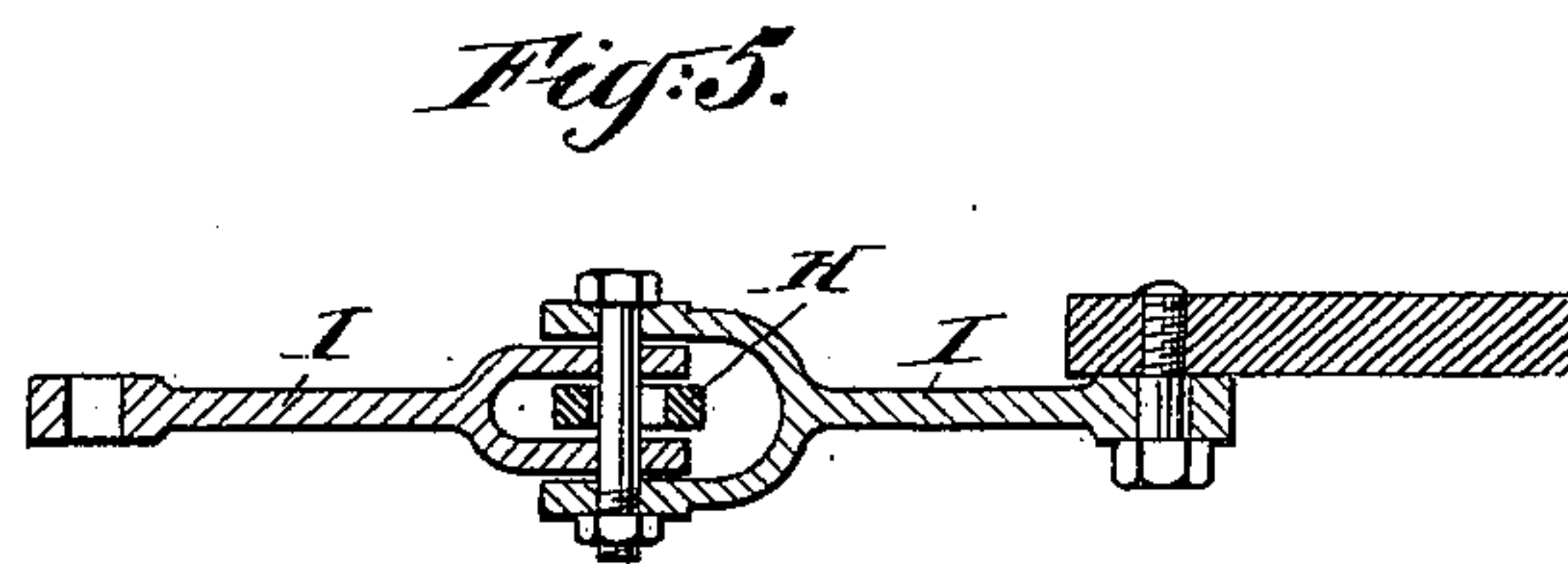
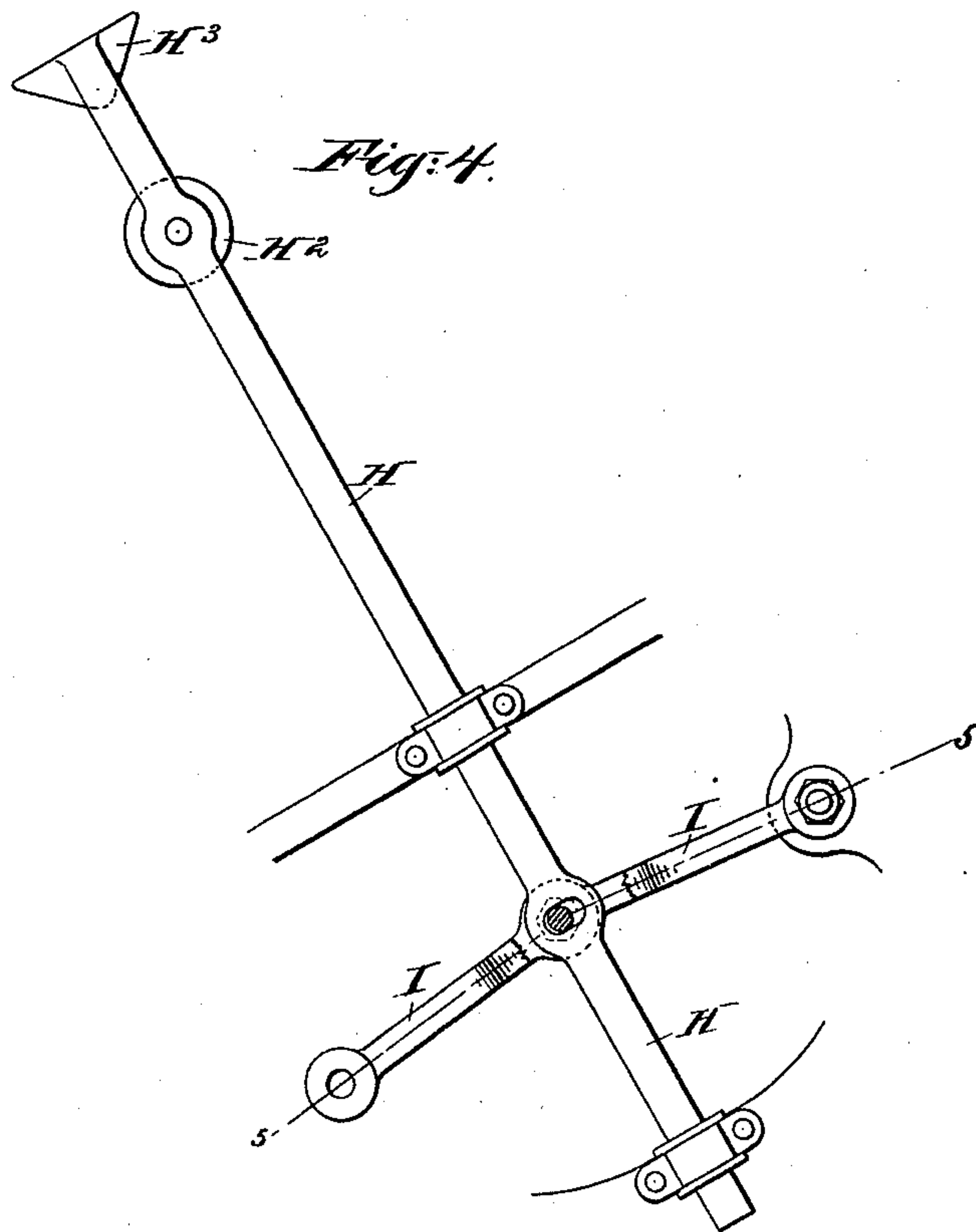
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Thomas S. Searle

UNITED STATES PATENT OFFICE.

CARL F. W. LEHMANN, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM CAMPBELL, OF SAME PLACE.

MACHINE FOR PRINTING WALL-PAPER.

SPECIFICATION forming part of Letters Patent No. 518,324, dated April 17, 1894.

Application filed May 8, 1893. Serial No. 473,424. (No model.)

To all whom it may concern:

Be it known that I, CARL F. W. LEHMANN, of the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Machines for Printing Wall-Paper, of which the following is a specification.

I use the term paper to designate the flexible material of whatever nature, of considerable length and moderate width, adapted to be cut and pasted or otherwise secured upon walls.

It has long been common to produce devices in colors upon such wall-paper by means of rollers succeeding each other and each applying its proper color and contributing its part to the decorative design. I make the paper as heretofore in long strips in successive quotas, each of a length sufficient for the highest rooms, allowing as much as is required for each less height of room to be cut off from the bottom and rejected. My invention makes it practicable to repeat the patterns exactly from the top to the bottom of a room, as is common with ordinary wall paper, or to make the several sections in each quota entirely different, as may be desired in some cases or, again, as I believe will be preferable in most cases, to make the ornamentation in the several sections in each quota, approximately equal, but with variations, the richness of the ornamentation varying from the top downward. The uppermost section may be made markedly heavier, and of a radically different pattern, corresponding to the frieze or border which has long been employed with fine effect along the upper portions of the walls of rooms.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a face view of a portion something more than a quota of the paper. Fig. 2 is a side view of the machine on a small scale. Fig. 3 is a side view representing a portion of the mechanism on a larger scale. Fig. 4 is a face view of certain parts on a larger scale, and Fig. 5 is a cross-section on the line 5-5 in Fig. 4.

Similar letters and numerals of reference

indicate corresponding parts in all the figures where they appear.

Referring to Fig. 1, the first section is marked 1, and is adapted to serve as the border or frieze. When the paper is cut and fixed upon the wall, this portion will be applied adjacent to the ceiling or to the cornice. 2 is the second section, and should be a richly decorative design. The colors should harmonize with the section above, but the design may be, and ordinarily will be radically different. This section 2, is the uppermost of the body of the paper.

3 is the third section of my paper, the second section of the body. The invention allows for any desired variations in the design between this and the upper section of the body, but I believe it will be generally preferred to preserve a unity of design between all the several sections of the body, with variations in the details, so that the effect shall be approximately similar yet diverse. The general tendency will be toward a reduction of the quantity of floral or other ornamentation.

4 is the third section of the body, which may be similarly diverse from and similarly resembling the section 3 above.

5 is the fourth section of the body. There may be a greater or less number of the sections. Below are one or more spaces 6, of well-grounded paper without decoration. This completes the quota. Then comes a repetition of the several sections, first the heavily decorated section 1, to serve as a frieze in the next length or quota, and then the several sections 2, 3, and 4, for the body, and so on. I produce this paper in a roller machine which may work with the high velocity, great productive capacity and perfection of register due to this widely practiced method of manufacture, introducing into the roller machines mechanism which throws the print rollers into and out of contact with the paper at certain periods. The impression cylinder may be the ordinary large and smooth cylinder. The paper, previously grounded, may be fed to this cylinder and drawn tightly around it, and moved continuously therewith, in the same manner as in the ordinary cylinder-printing. The several print rollers may be

produced or prepared with raised surfaces in the ordinary manner, distributed at the proper distances apart adjacent to the lower half of the cylinder, so as to act in succession, all continuously revolving and supplied each with its proper color, by means of a sieve-roller and color trough, and connecting apron. All these parts are connected by gearing, so that the several print rollers are turned in exact harmony with each other, and with the movement of the paper.

So far as has yet been described, the machine may, be of the ordinary character, but I take care that the gear-teeth shall have forms and length which will maintain their engagement when the print rollers are moved away from the cylinder sufficiently, (it need not be more than an eighth of an inch) to carry them entirely out of contact with the paper. Either single or step gears may be used. I provide for pressing the several print rollers into the requisite firm contact with the main cylinder during the period while that part of the paper is passing on which that roller is required to make an impression. So soon as that section of the paper has passed which any given print-roller is required to treat, the provisions for holding the roller in contact with the paper, are relaxed and the roller is caused to move away from the paper. It will continue to revolve but without effect except to become properly charged with color, until the proper section of the next quota, of the paper approaches the position to be acted on by this roller. It is moved into engagement with the paper at the right period, and its design is impressed on that,—the proper section of the paper, after which it again retreats, and remains ineffective until its proper section in the next quota of paper approaches, and so on.

When, as I have suggested as preferable, there is a degree of resemblance in the designs of the several sections of the body, one feature, for example a figure showing a large surface with a pale and delicate red, may be uniform in some or all the sections. In such case that roller may remain in contact during the printing of two or more sections of the ground, and then may retreat during the passage of the remainder of the ground and of the frieze and then again be brought into contact and remain in contact with the paper, printing its proper figure upon two or more of the upper sections of the body and then again retreating.

Assuming the machine to have the general arrangement of the ordinary twelve-roller machine, one, the first, may be thus worked; the next three operating in succession on that part of the paper which is to come at the head of each quota next the ceiling, apply the proper heavy decoration for the border or frieze. The next two rolls follow each other on the section 1, withdrawing in time and remaining withdrawn so long as to leave untouched all the other sections and the

frieze portion. The next two rolls follow each other on the section 3, correspondingly withdrawing in time and remaining withdrawn so long as to leave untouched all the other sections and the frieze portion. The next two rolls similarly operate on the section 4 and the last two on the section 5. This is as far as it will be generally necessary to carry out the invention, and is as far as the invention can be carried without special further adaptations.

Referring to Fig. 2 of the drawings, G is the main cylinder, continuously revolving, and *g* the web of paper tightly drawn around the same, and moving therewith. O is the roll which prints on two or more of the sections. The rolls P, Q and R, print successively on one section of the paper, that which, when the paper is applied to the wall is to come next to the ceiling. The rolls S and T print successively on the section 2 of the paper, the upper section of the body. The rolls U and V print successively on the section 3 of the body. The rolls W and X print successively on the section 4, and the rolls Y and Z print successively on the section 5, the last which is printed in that quota. Allowing a sufficient length of paper to pass unprinted, so that rooms of different heights can be served with the same paper by cutting off more or less at the bottom of each quota, the work is again resumed and the several print-rollers again treat their respective portions of the paper, and so the operation may be repeated indefinitely. The means for bringing the several print-rollers into and out of contact with the paper may be substantially similar for all the rollers.

I will describe the provisions for operating the rollers which effect the first printing on the part which is to serve as the body of the paper.

Each roll is supported in bearings which are free to be moved to a sufficient extent toward and away from the center of the cylinder G. I provide at each end oblique acting links J J, constituting what are sometimes termed a toggle-lever. I I are links correspondingly related, to operate the same. These toggles act on each other to effect the forcing of the print-roller S into contact with the paper *g*, and to relax it at will. G', G² are cams carried on each end of the cylinder G.

H is a rod mounted in fixed bearings, with capacity to move endwise toward and from the center of the main cylinder G. It is loosely connected by a short transverse slot *h* to the center of the toggle I. The extreme inner end of the rod H carries a transverse pin H³ which is of triangular section as shown, and at the proper time is acted on by the cam G' to draw the rod H inward and relax the toggles. A roll H² pivoted on the rod H receives the action of cam G², and serves to straighten the toggles. The function of the cam G' is to draw inward the rod H and throw the print roll out of contact. The function of

the other cam G^2 is to force the rod H outward and induce the impression. There is a similar provision for each section at each end of the cylinder. Directing our attention to the single roll S, during the long period while this roll is not required to print, the rod H at each end of this roll remains in its upper and inward position having been carried there by the outer cam G' , and the toggles I and J being both bent, the roll S is out of contact with the paper g , and consequently does not produce any impression thereon. When the section 2 of the paper approaches the roll S, the inner cam G^2 becomes effective, and forces the roll H^2 outward, carrying with it the rod H, and this movement straightens the toggles I and J, and presses the print-roller S strongly into contact with the paper g and the roll commences to print. So soon as the section of the paper has passed, the cam G^2 again releases the rod H, and cam surface G' acts on the pin H^3 , to draw it inward. This bends the toggles I and J and the print-roll S now moves out and remains out of contact with the paper until the proper period in the next quota arrives, when the operation is repeated. The same cams G' , G^2 , serve for the associate roller T. There are other cams corresponding to G' , G^2 , but farther inward or outward on each end of the cylinder, which serve for the other sections.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The designs for these several sections may be varied indefinitely. The number of the sections may be diminished; or the number may be increased in

each quota, by providing an increased number of print-rollers and accompanying parts. The colors may of course, be varied without limit.

Other means than the short transverse slot in the rod H may be used for giving the proper looseness to the connection to allow for the sweep of the pin which forms the center of the toggle levers I I.

Instead of having the pins H^3 of triangular section they may be round, and may each carry a small anti-friction roller to receive the action of the cams G' . These cams may be extended even to such length as to extend quite around leaving the spaces between them each a cam groove.

I claim as my invention—

In a machine for printing wall paper in successive quotas, the combination with the main cylinder G and means for supplying and taking away the paper in a continuous web, a series of printing rolls capable of being moved toward and from the cylinder, and geared continuously therewith and carrying raised printing surfaces the toggle levers I I and J J, and means G' G^2 and the rod H for operating such toggle and thereby moving such rolls positively into and out of contact with the web at the proper times, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

CARL F. W. LEHMANN.

Witnesses:

CHARLES R. SEARLE,
M. F. BOYLE.