

(No Model.)

J. J. HARRIS.

Dampening Device for Paper Making Machines.
No. 231,038.

Patented Aug. 10, 1880.

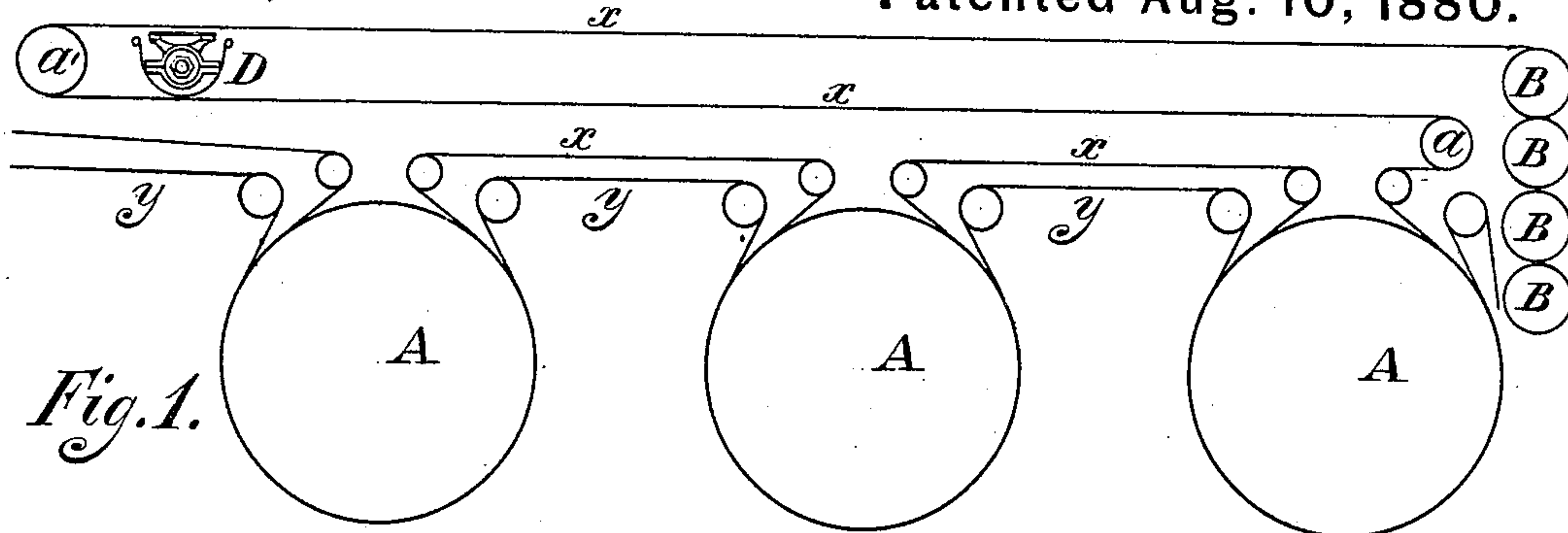


Fig. 1.

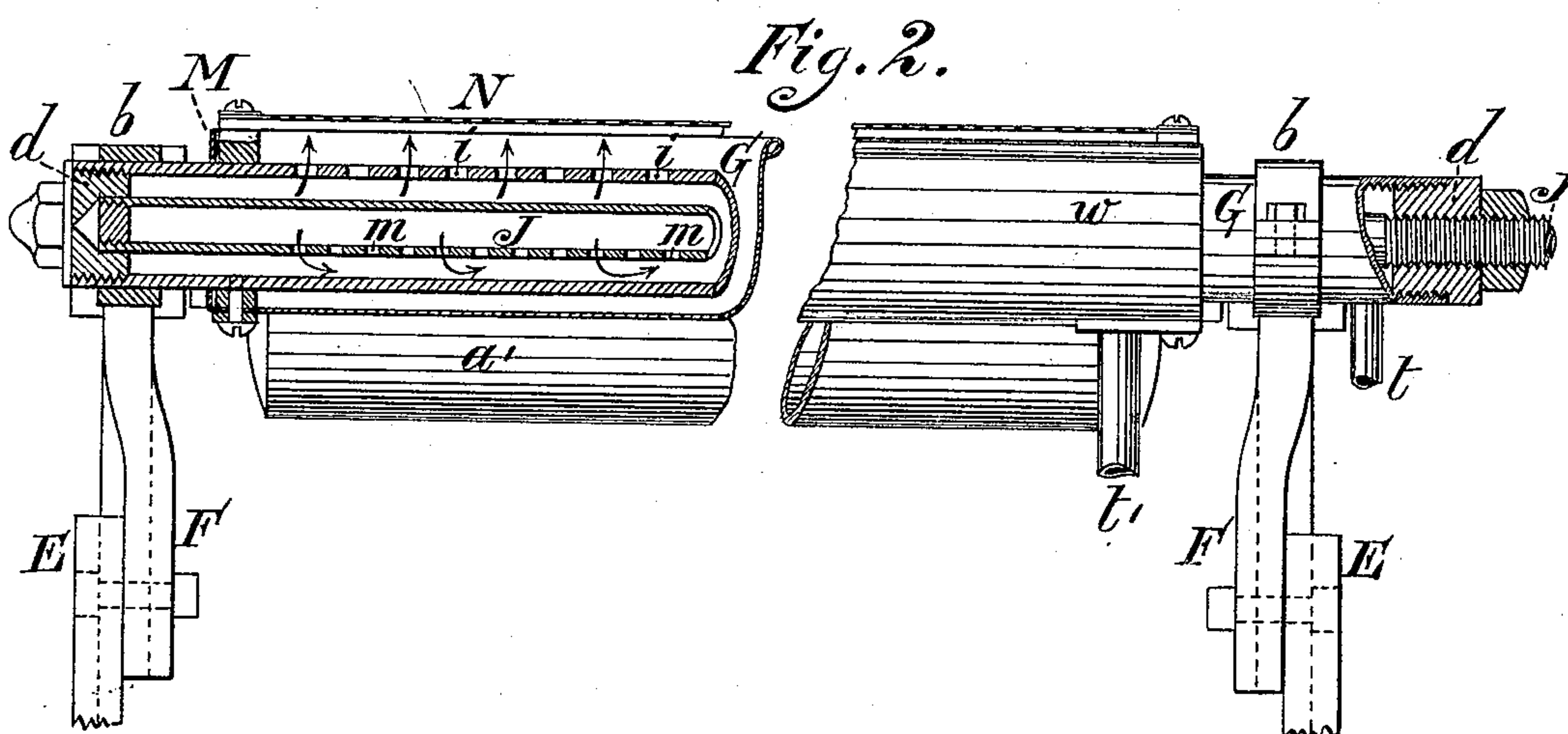


Fig. 2.

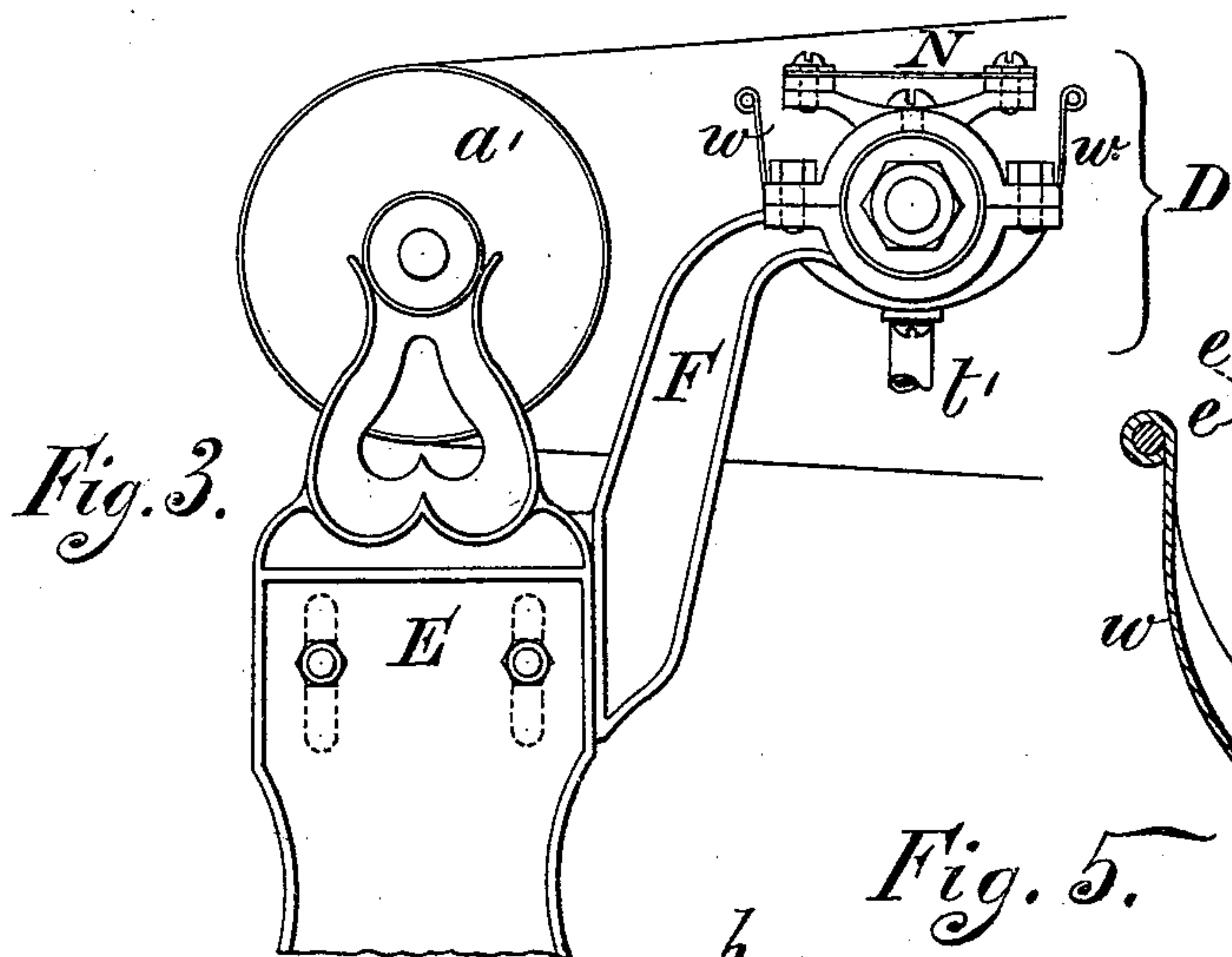


Fig. 3.

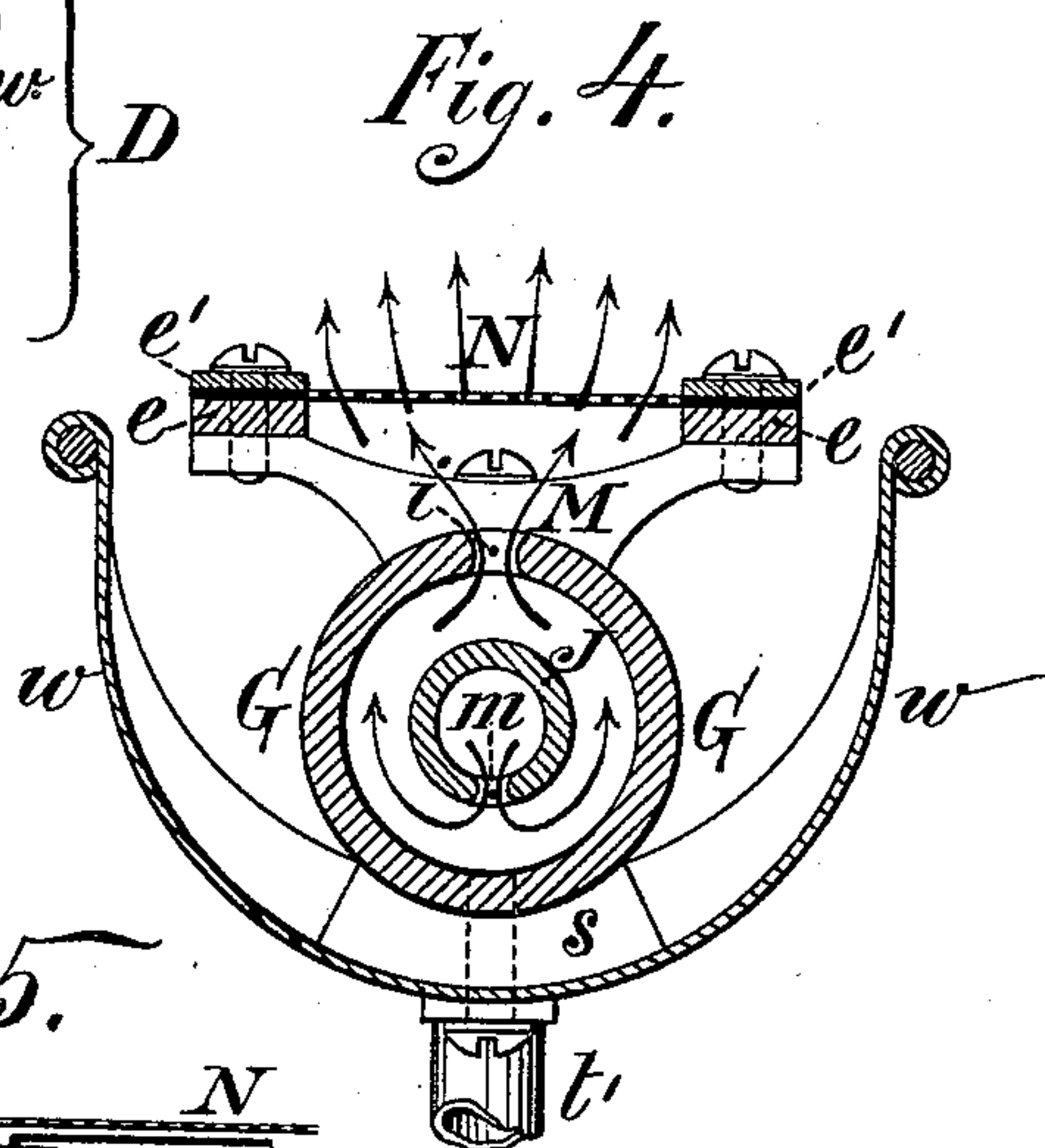


Fig. 4.

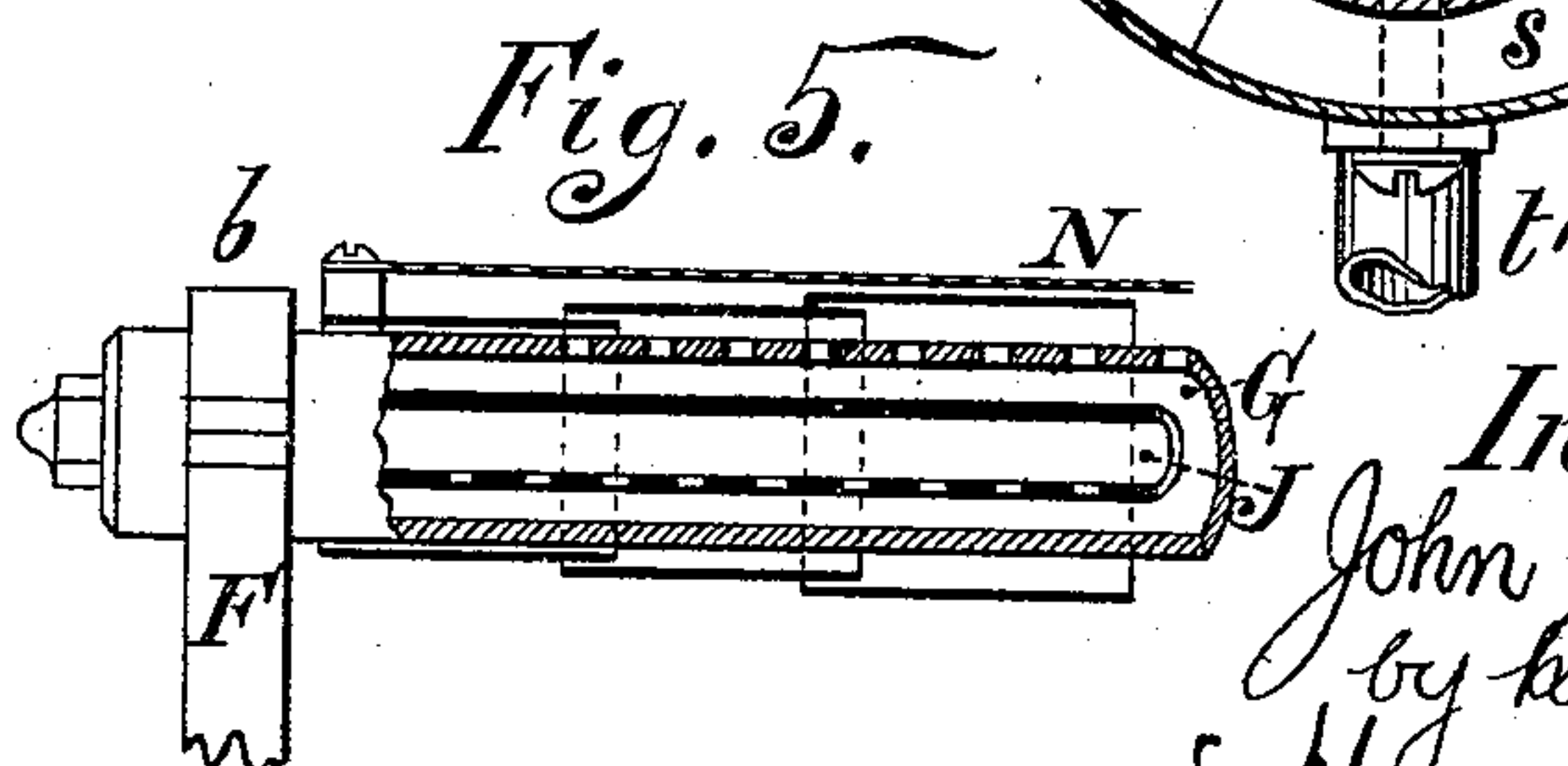


Fig. 5.

Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN J. HARRIS, OF WILMINGTON, DELAWARE.

DAMPENING DEVICE FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 231,038, dated August 10, 1880.

Application filed July 10, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HARRIS, a citizen of the United States, residing in Wilmington, in the county of New Castle and State of Delaware, have invented an Improvement in Dampening Devices for Paper-Making Machines, of which the following is a specification.

My invention relates to certain improvements in devices for dampening paper after it passes from the drying-rolls and before it passes between the calender-rolls, the main objects of my invention being to insure the thorough and uniform impregnation of the paper with moisture and to prevent the formation of spots in the paper, due to the projection of drops of water onto the same, further objects being to provide for regulating the jets of steam whereby the dampening of the paper is effected.

In the accompanying drawings, Figure 1 is a diagram illustrating the manner of using the dampening device; Fig. 2, a side view, partly in section, of the device; Fig. 3, an end view; Fig. 4, a transverse section on an enlarged scale, and Fig. 5 a diagram illustrating a feature of my invention.

In Fig. 1, A A represent the three end drying-cylinders of a series forming part of a paper-making machine, B being part of a set of calendering-rolls, *x* the web of paper, and *y* the web of felt whereby the paper is held in contact with the drying-cylinders. Instead of passing directly from the last cylinder A of the series to the calendering-rolls B, the web of paper passes round a roller, *a*, and then back over the three cylinders to a roll, *a'*, from which it passes to the calendering-rolls, and immediately adjacent to the roll *a'* is a dampening device, D, the construction of which is described hereinafter.

The object of carrying the web of paper back over the end cylinders A of the series is to insure an extended travel of the paper after it is dampened and before it reaches the calendering-rolls, so that the vapor will have a chance to thoroughly impregnate the paper, and the web will be uniformly moistened when it is subjected to the calendering operation.

The construction of the dampening device is shown in Figs. 2 to 5, in which E E represent

part of the main side frames of the paper-making machine, these frames having suitable bearings for the roll *a'*. To the frames A are secured, so as to be adjustable vertically thereon, standards F F, the upper ends of which are provided with bearings *b*, which clamp and firmly retain a tube, G, the opposite ends of which are closed by suitable plugs *d*. Within the tube G is a smaller tube, J, having a bearing at one end in the plug *d*, which closes one end of the tube G, and passing through the plug which closes the opposite end of said tube, the projecting end of the tube J being adapted for application to a pipe for conveying steam from an adjacent generator.

Near each end of the tube G, just inside the bearings *b*, are saddles M, which rest on and are firmly secured to the said tube, these saddles supporting bars *e e*, between which and similar bars *e' e'* are clamped the edges of a sheet, N, of fine wire-gauze, the saddles M being such that said sheet of gauze is supported some distance above and directly over the tube G, which has in the top a row of openings, *i*, the inner tube, J, having a row of somewhat smaller openings, *m*, which are, however, in the bottom of the tube.

A U-shaped trough, *w*, is secured to the under side of the pipe G near the opposite ends of the latter, blocks or filling-pieces *s* intervening between the pipe and trough, so as to maintain the latter at a proper distance from the pipe, and both the pipe G and trough *w* are furnished with suitable drip or outlet pipes *t t'*.

When the dampener is in position the sheet of gauze N is immediately beneath the web of paper, and should extend from side to side of the same. Steam being admitted to the pipe J escapes therefrom through the openings *m*, and is compelled to pass up around said pipe and within the outer pipe, G, from which it escapes in a number of forcible jets through the openings *i*, the jets striking the gauze plate or screen N, and being thereby subdivided into a fine vapor, which comes into contact with the web of paper, and is absorbed by the same. There are thus two precautions against the projection of drops of water against the web of paper, the steam, owing to the circuitous course it has to take within the

tube G, being drained of its moisture before escaping from the openings *i*, and the steam which thus escapes being finely subdivided and scattered by the screen N before it reaches
5 the paper. The drip is carried off from the pipe G directly through the pipe *t*, and any drip from the screen N or its frame, or from the outside of the pipe G, is collected in the trough *w* and carried off through the pipe *t'*.

10 By elevating or depressing the standards F the distance between the screen N and the web of paper may be varied as desired; and in order to vary the width of the stream of vapor to accord with the varying widths of
15 the webs of paper which have to be dampened I provide each end of the tube G with a telescopic shield, as shown in Fig. 5, this shield being expanded or contracted, so as to cover or uncover the openings *i* of the tube, as cir-
20 cumstances may suggest.

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

25 1. The combination of the drying-cylinders and calendering-rolls of a paper-making machine with a dampening device arranged in respect to said cylinders and rolls as set forth,

whereby the paper after being dampened has an extended movement before reaching the calendering-rolls, as set forth. 30

2. A paper-dampening device comprising the inner perforated pipe, J, outer perforated pipe, G, and screen N, the perforations in the pipe J being in the bottom and those in the pipe G in the top, as set forth. 35

3. The combination of the main frame of the machine and the paper-carrying rolls with standards F, carrying the dampening device and adjustable vertically in respect to the main frame, as set forth. 40

4. The combination of the dampening device, comprising the perforated tube G and screen N, with an adjustable shield or shields for limiting the width of the stream of vapor whereby the dampening is effected, as set forth. 45

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

JOHN J. HARRIS.

Witnesses:

EVANS PENNINGTON,
GEORGE O'NEILL.