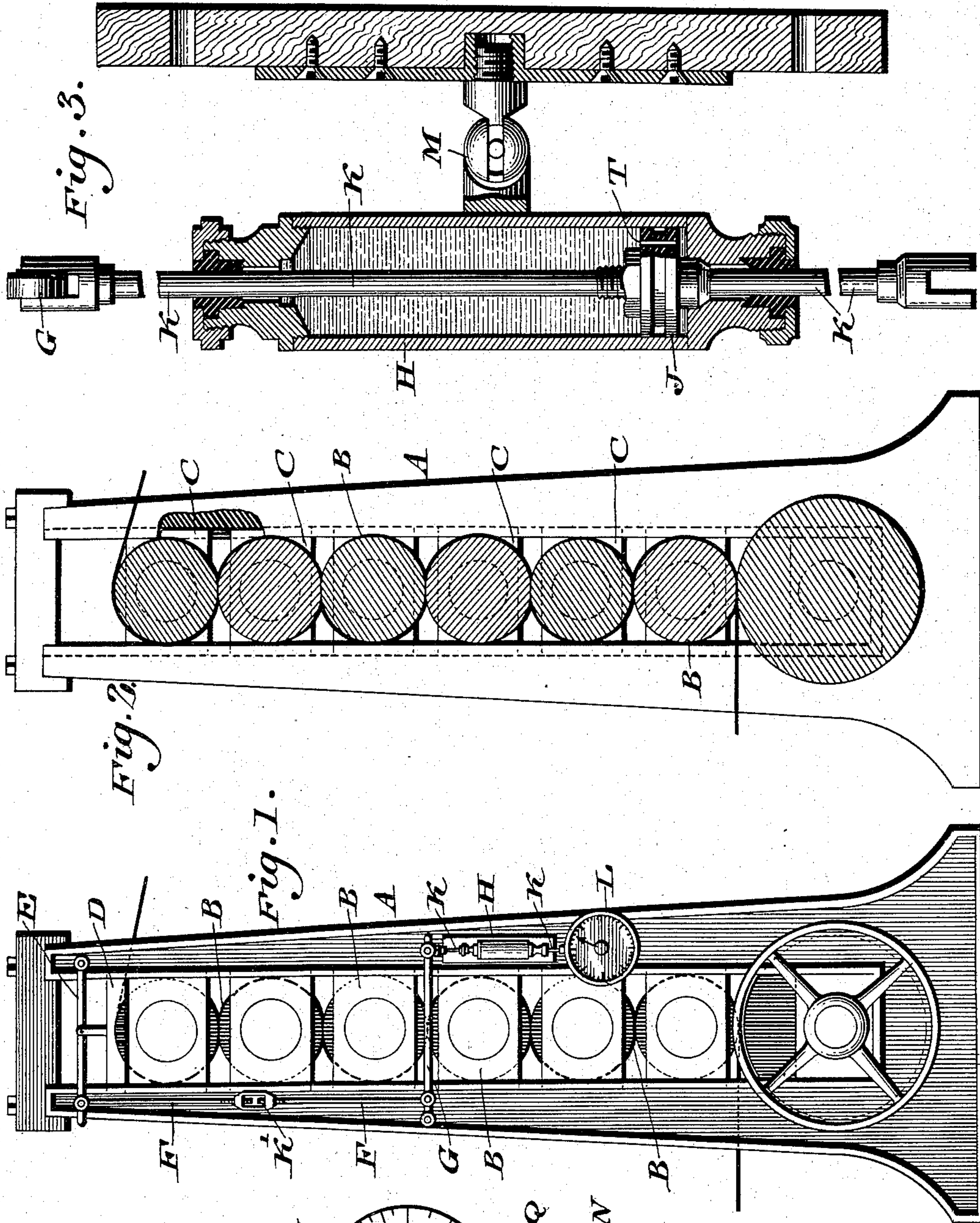


(No Model.)

T. CHALMERS.  
PAPER MAKER'S GAGE.

No. 565,723.

Patented Aug. 11, 1896.



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# UNITED STATES PATENT OFFICE.

THOMAS CHALMERS, OF CAMDEN, NEW JERSEY.

## PAPER-MAKER'S GAGE.

SPECIFICATION forming part of Letters Patent No. 565,723, dated August 11, 1896.

Application filed March 27, 1895. Serial No. 543,333. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS CHALMERS, a citizen of the United States, residing in the city and county of Camden, State of New Jersey, have invented a new and useful Improvement in Paper-Makers' Gages, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a paper-maker's gage formed of rollers which are adapted to be moved in their bearings by the varying thickness of paper and thereby operate a gage or register and a governor for preventing the trembling or vibrations of the frame from affecting the index-finger of said gage or register. Between the register and rollers is a system of levers so constructed, arranged, and combined that the device is simplified, it operates delicately, and springs are avoided, excepting such as may exist in the register, all as will be hereinafter described.

It also consists of the interposition between the governor and the support therefor of a knuckle or universal joint, so that said governor is caused to yield when subjected to lateral pressure, thus preventing strain on the parts.

It also consists in providing the gage or register with a dial having different sets of graduations thereon relatively to different grades of paper to be gaged.

Figure 1 represents a side elevation of a paper-maker's gage embodying my invention. Fig. 2 represents a transverse vertical section thereof. Fig. 3 represents a vertical section of the governor and adjacent parts on an enlarged scale. Fig. 4 represents a partial side elevation and partial section of the register. Fig. 5 represents a face view of the dial thereof.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a vertical frame, and B designates a number of parallel rollers, whose journals are mounted in boxes C, which are loosely fitted in the sides of said frame, so as to be capable of sliding or moving therein. Bearing upon the journal-box or side of the upper roller is a head D, which is pivotally connected with the horizontal lever E, the latter having one of its ends pivoted to the frame A and the

other end pivotally connected with the vertical and depending rod F, which is attached to one end of the horizontal lever G, mounted on the frame A parallel or approximately parallel with said lever E.

H designates a governor consisting of a cylinder or body containing the piston J, whose stem K passes freely through stuffing-boxes on the upper and lower ends of said body, both of said ends being open for the passage of said piston stem or rod K. The upper end of said stem is attached to the lever G, and the lower end thereof is attached to the operating mechanism of the register L, which is secured to the frame A in any suitable manner, and having on its dial graduations for indicating the thickness of paper.

The governor is attached to the frame A by means of the universal or knuckle joint M, whereby the body of the same may yield to any strain that may be imparted to the stem K due to its connection with the lever G and the register L when said lever is operated.

The rod F is formed in sections connected by the buckle K', whereby the device may be adjusted in order to set the hand of the register true to the proper gage of the paper, and a uniform relation may be maintained between the levers at all times.

The operation is as follows: A web of paper is passed around the rollers, and when the thickness of the same is normal the index-finger of the register will remain at the relative graduation. Should, however, the thickness of the paper increase, the rollers will be raised, the effect of which is the elevation of the head D, and the consequent operation of the lever G and of the register J, whereby the index of the latter will indicate said increase, the same being true in reverse order in the case of a decrease in the thickness, so that under either circumstance the paper-maker will be advised that the flow of pulp requires regulation or adjustment. The register or gage L has its dial N rotatable on or around the shaft P of the index Q, and is provided with sets of different graduations, as at S, for gaging paper of different grades or thickness, so that as the paper is changed the dial will be rotated or adjusted so as to bring the proper set of graduations behind the index Q, the effect of which is evident.



The governor H consists of a cylinder with the piston J therein, and the stem K connected with said piston and having its opposite portions passing through the ends of the cylinder, as has been stated.

The cylinder is filled with oil or other fluid in which the piston J has its play, and said piston has a port T vertically through the same, so that the oil or fluid above and below the piston is in communication, it being noticed that the oil forms a cushion for the piston or plunger and thus serves to steady the piston in the cylinder without, however, preventing said piston to be properly raised by the elevation of the lever G, the return motion of said piston being accomplished by the spring of the register.

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

1. In a paper-maker's gage, a number of parallel rollers, sliding boxes for said rollers, a frame on which said boxes are mounted, and a head resting on the upper roller, in combination with the horizontal lever E, which is mounted on said frame and connected with said head, the vertical lever F which is connected at top with said lever E, the horizontal lever G, which is mounted on said frame, connected with the bottom of said lever F, and a register connected with said lever G, a governor intermediate of said register and said lever G, and connected therewith, and a universal joint supporting said governor, substantially as described.

2. In a paper-maker's gage, a number of parallel rollers sliding boxes for said rollers, a frame on which said boxes are mounted, and a head resting on the upper roller, in combination with the horizontal lever E, which is mounted on said frame and connected with

said head, the vertical lever F, which is connected at top with said lever E, the horizontal lever G, which is mounted on said frame, and connected with the bottom of said lever F, a fluid-receiving cylinder on said frame, a piston with a port in said cylinder, a piston-rod passing through the upper and lower ends of said cylinder and connected at top with the lever G, and a register whose operating part is connected with the bottom of said piston-rod, substantially as described.

3. In a paper-maker's gage, a roller, a sliding journal-box therefor, a register adapted to be operated by mechanism controlled by said roller, a governor intermediate of said register, and mechanism, and a universal joint connecting said governor with the frame of the gage, said parts being combined substantially as described.

4. In a paper-maker's gage, a number of parallel rollers, sliding boxes for said rollers, a frame in which said boxes are mounted, and a head resting on the upper roller, in combination with the horizontal lever E, which is mounted on said frame and connected with said head, the vertical lever F, which is connected at top with said lever E, the horizontal lever G, which is mounted on said frame, and connected with the bottom of said lever F, a fluid-receiving cylinder on said frame, a piston with a port in said cylinder, a piston-rod passing through the upper and lower ends of said cylinder and connected at top with the lever G, and a universal joint connecting the governor with the support thereof, substantially as described.

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