

J. Maxson,
Door Spring.
N^o 5,784. Patented Sep. 19, 1848.

Fig. 1

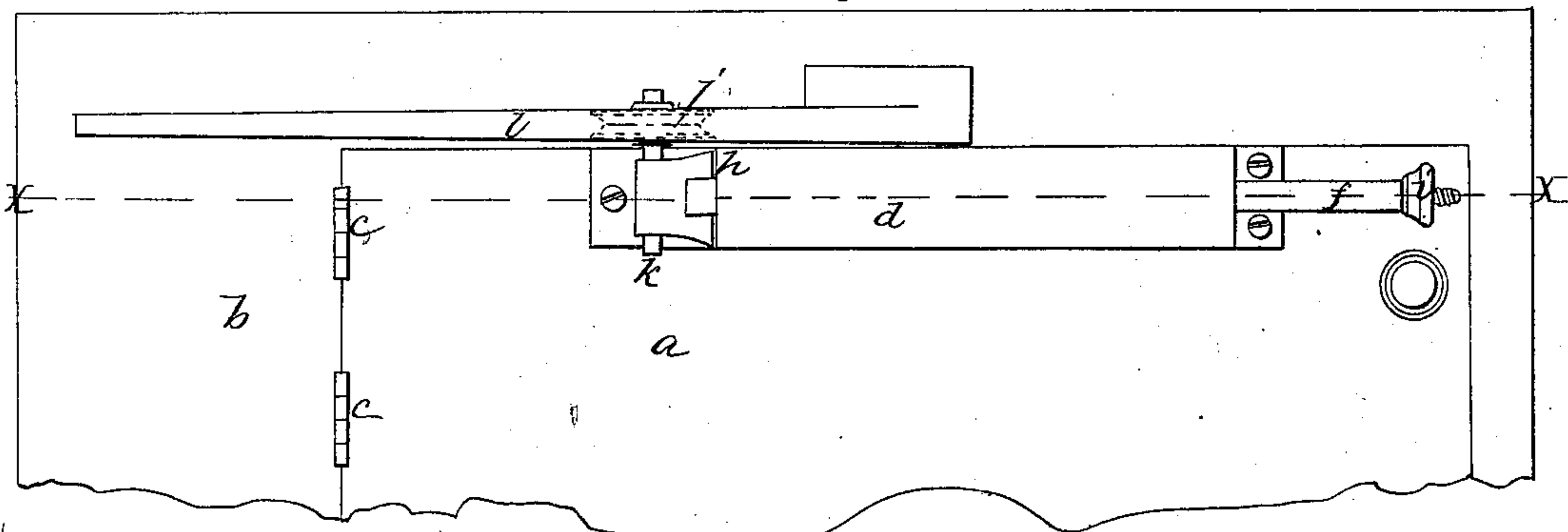
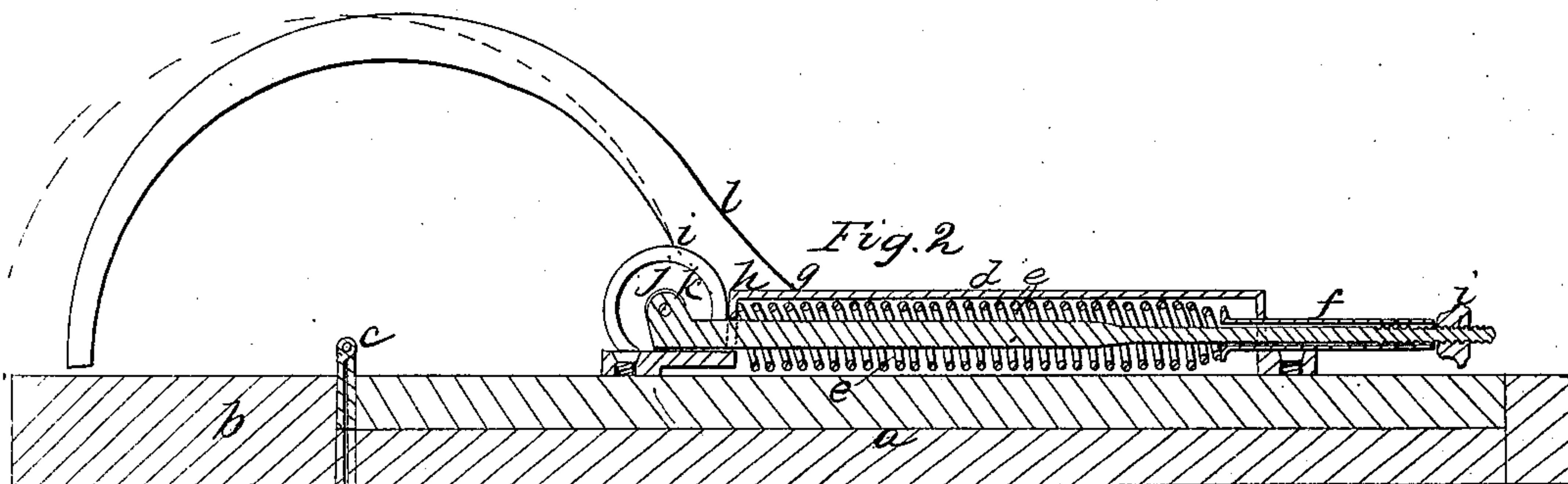


Fig. 2



UNITED STATES PATENT OFFICE.

JOHN MAXSON, OF DE RUYTER, NEW YORK.

DOOR-SPRING.

Specification of Letters Patent No. 5,784, dated September 19, 1848.

To all whom it may concern:

Be it known that I, JOHN MAXSON, of De Ruyter, in the county of Madison and State of New York, have invented new and useful
5 Improvements in Springs for Closing Doors, Gates, and for other Like or Similar Purposes, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from
10 all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

15 Figure 1 is an elevation of a portion of a door with my improvements applied, and Fig. 2, a horizontal section thereof taken at the line (X, X) of Fig. 1, and looking in the direction of the arrow.

20 The same letters indicate like parts in all the figures.

The object long since sought to be attained in door springs has been an increase of power as the door closes, and as the tension
25 of the spring necessarily decreases; but so far I am not aware that any one has attained the desired object with that simplicity of construction that will insure cheapness, and that absence from the liabilities to derange-
30 ment which will adapt them to general domestic use.

The nature of my invention by which I attain this desired end consists in combining with a helical spring provided with a roller
35 or wrist, and connected with the door, a cam attached to the door jamb, against the face of which the roller acts as the door opens and closes, the said cam being so formed that as the door closes the line of the face
40 of the cam shall continue to increase, as the tension of the spring decreases, or in a greater ratio.

In the accompanying drawings (a) represents a portion of a door hinged to the
45 jamb (b) by the hinge (c), the center of motion. Near to the upper edge of the door is secured by screws a metal tube or case (d) in which is placed a helical spring (e) one end of which bears against the end of
50 the case, and the other against the end of a small tube (f) that passes out through the other end of the case; a rod of metal (g) passes through a hole in the end (h) of the case which answers the purpose of a guide,
55 thence through the whole length of the helical spring and then through the tube (f), and provided with a nut (i) at the end by means of which the helical spring can be

contracted at pleasure to increase its tension on the door. The forward end of the
60 rod (g) is provided with a roller (j) that turns on a movable pin (k) so that it can be taken off at pleasure when it is desired not to use the spring, and replaced at any time. The periphery of this roller acts on
65 the inner face of a cam formed rod (l) attached to the jamb of the door by screws or otherwise, and it will be seen by reference to Fig. 2, where the red line is a circle
70 whose center is the axis of the door hinge, that the form of the cam is such that it gradually runs out of the circle that the tension of the spring may cause the roller to
75 act on this cam in manner substantially similar to the descent of a weight on an inclined plane, and that the more the line of
the cam deviates from the line of the circle the greater will be the inclination of the plane, thus decreasing the amount of tension required in the spring to produce a
80 given or desired effect. In this way as the door closes, the spring which gradually decreases in tension, and if desired in a greater ratio, increases the effective force of its action on the door by reason of the change in
85 the curve of the cam.

At the point (i) and from thence to the extremity I make the cam straight, that is, a tangent to the curve that ends at the point
90 (i), that the spring may be suddenly increased in its effective action on the door at the time of closing, that it may be held firmly closed. If desired the cam can be so formed as to hold the door open in any position desired by forming the cam concentric at the
95 parts where it is desired that the door may be held open.

What I claim as my invention and desire to secure by Letters Patent is—

1. The method of closing doors, &c., by
100 means of a spring attached thereto, and acting on, and in combination with a cam attached firmly to the door frame substantially as herein described, whereby the effective force is increased as the tension of the spring
105 decreases, substantially as described.

2. I also claim the method of regulating the tension of the spring by combining therewith the screw rod that carries the roller that acts on the cam, the sliding tube,
110 and the regulating nut, substantially as described.

JOHN MAXSON.

Witnesses:

ALEX PORTER BROWNE,
J. J. GREENOUGH.