

(No Model.)

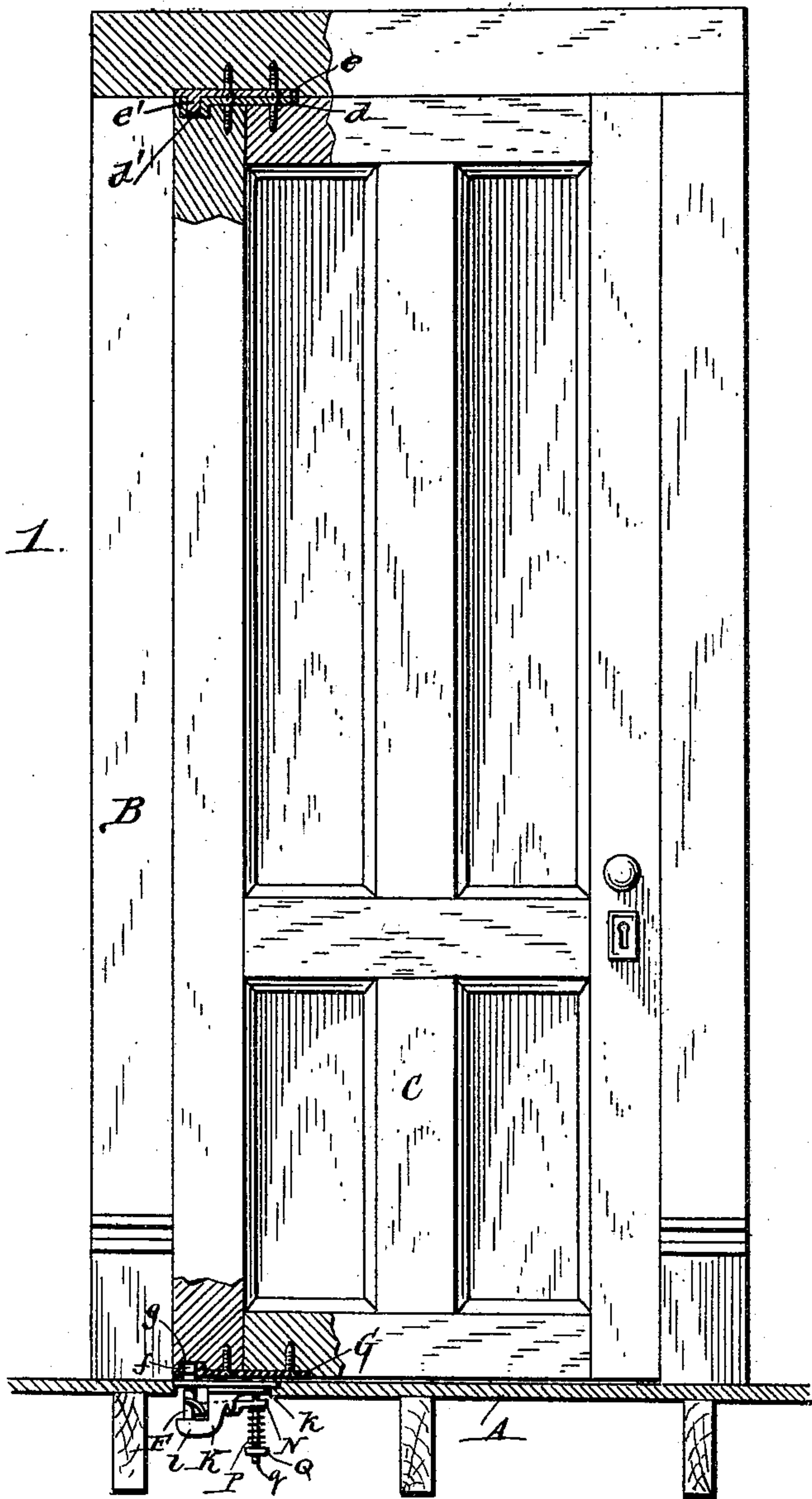
2 Sheets—Sheet 1.

O. SEELY.
SPRING HINGE.

No. 496,008.

Patented Apr. 25, 1893.

Fig. 1.



Witnesses:

Theo. L. Popp.

Howard B. Hammond.

Obadiah Seely, Inventor.

By Wilhelm Bonner,
Attorneys

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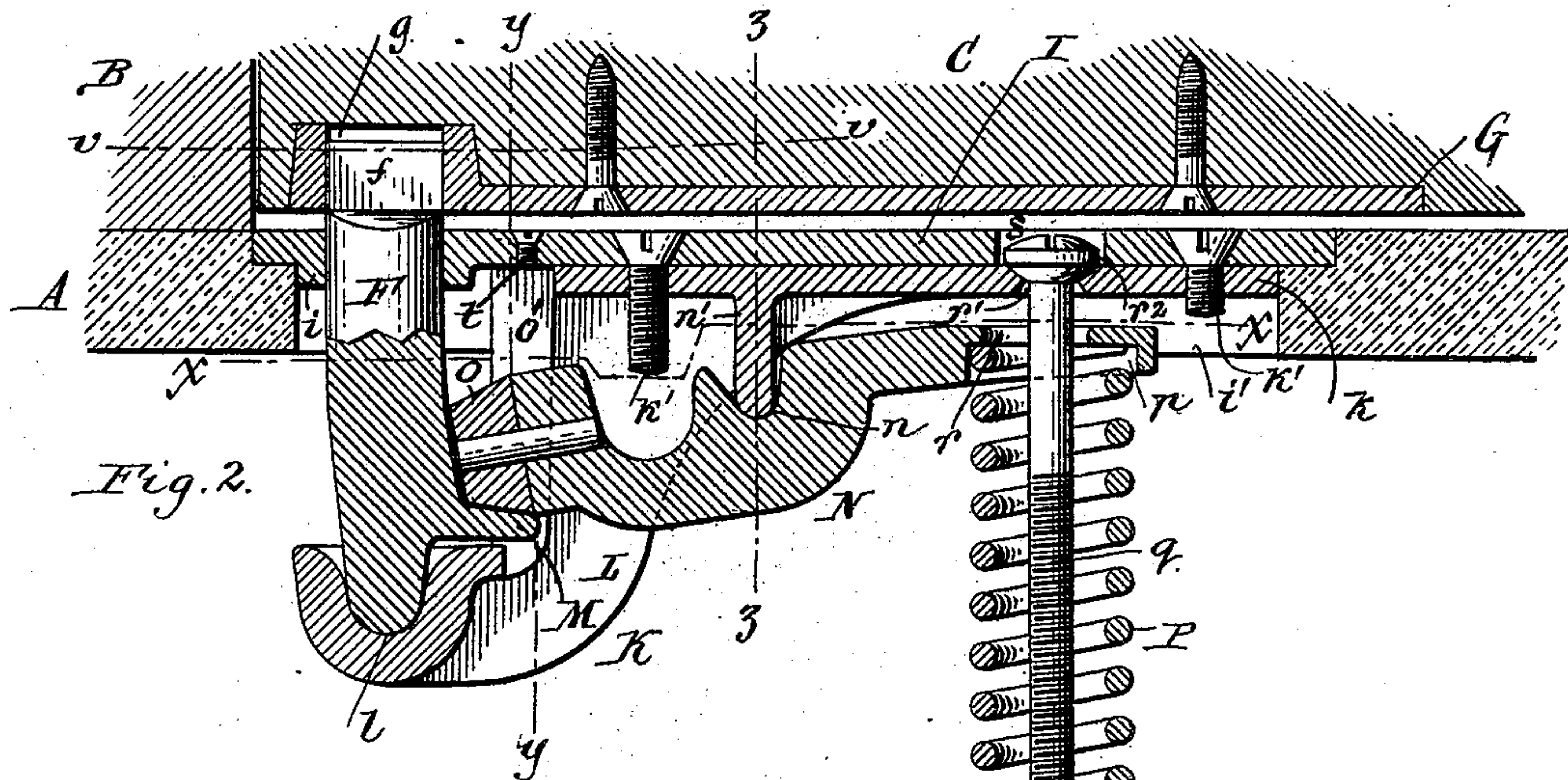


Fig. 2.

Fig. 3.

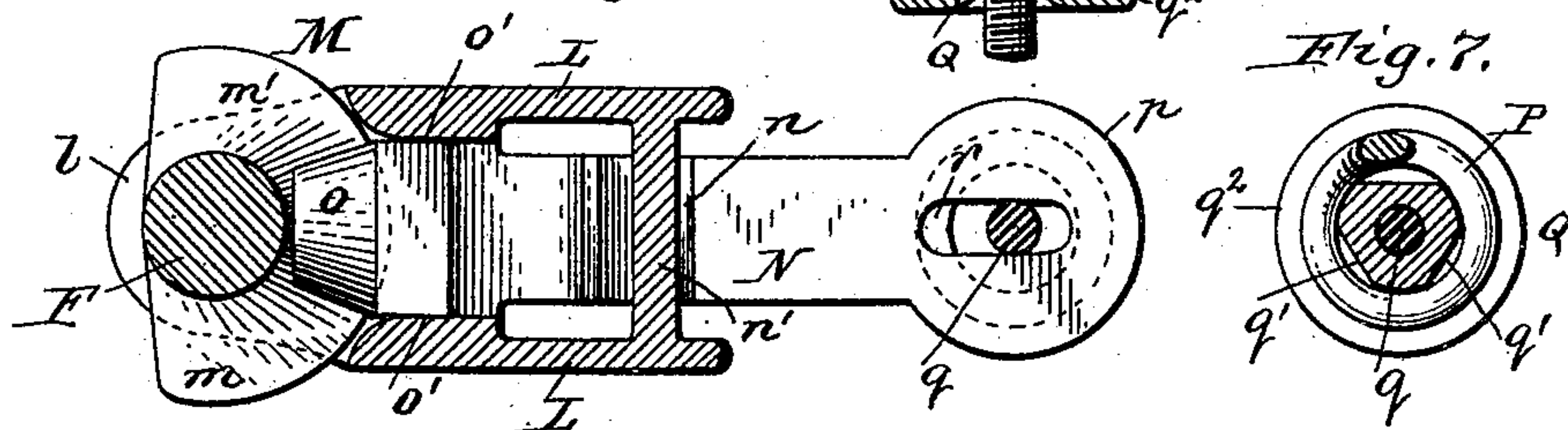


Fig. 7.

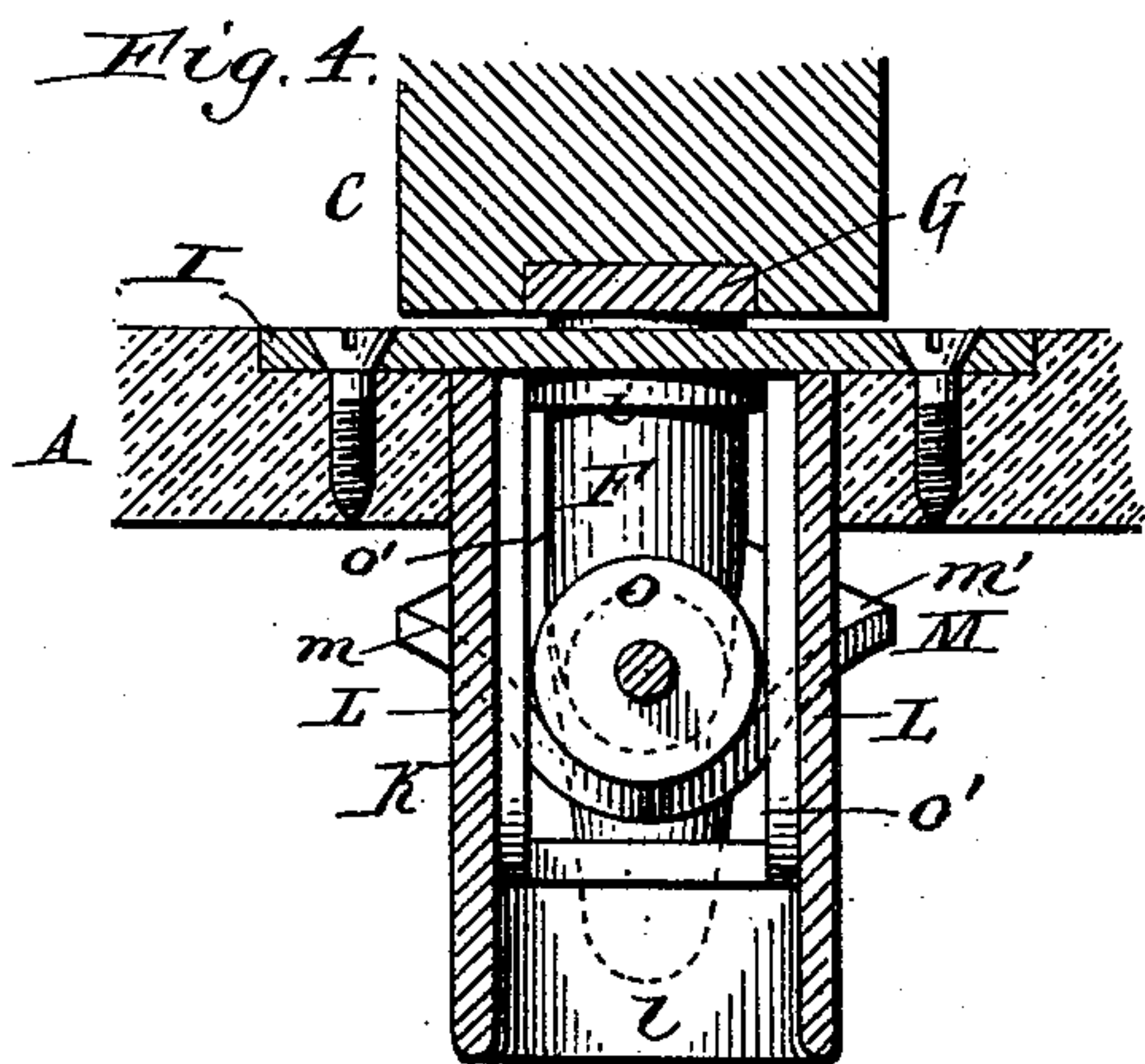


Fig. 4.

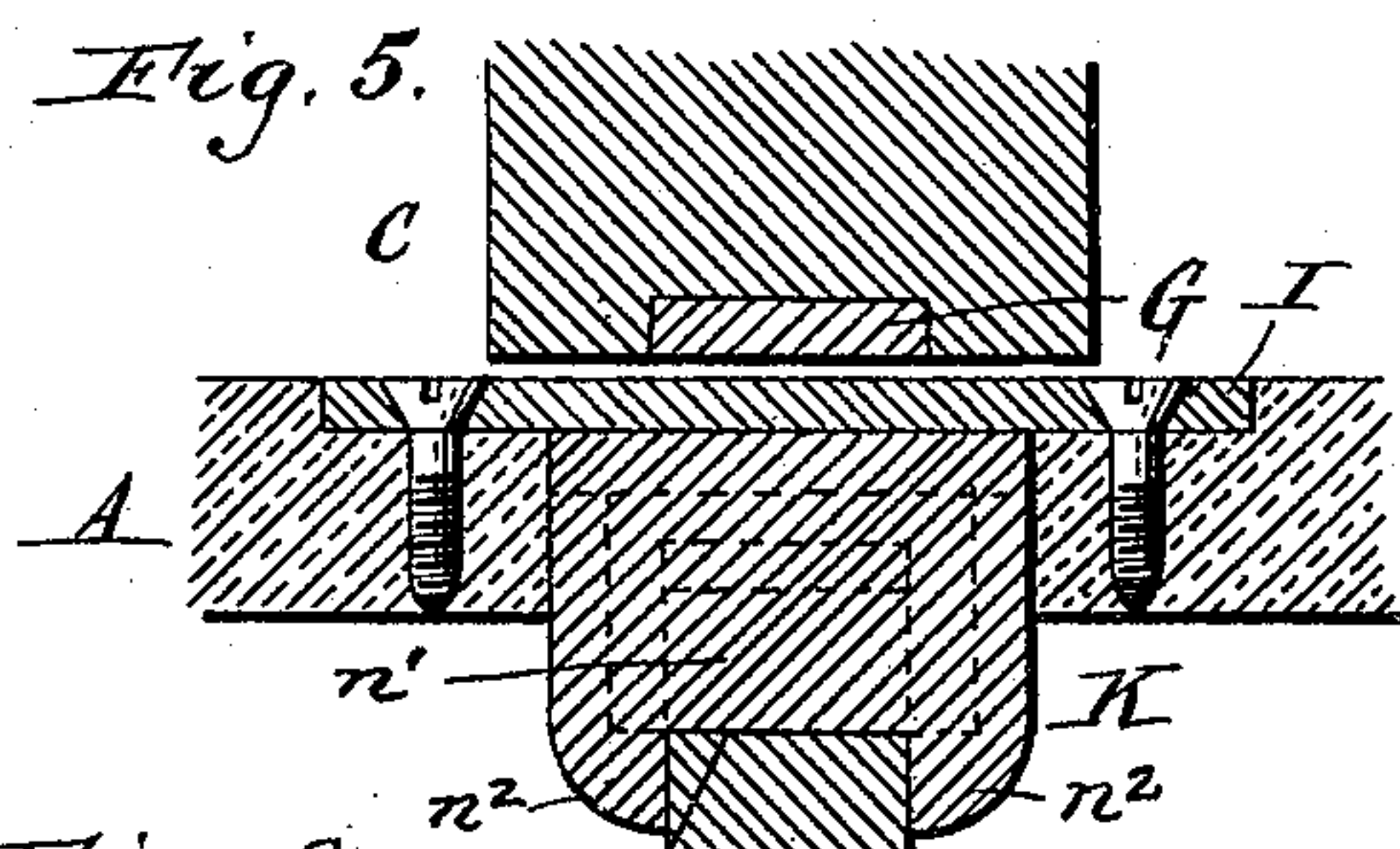


Fig. 5.

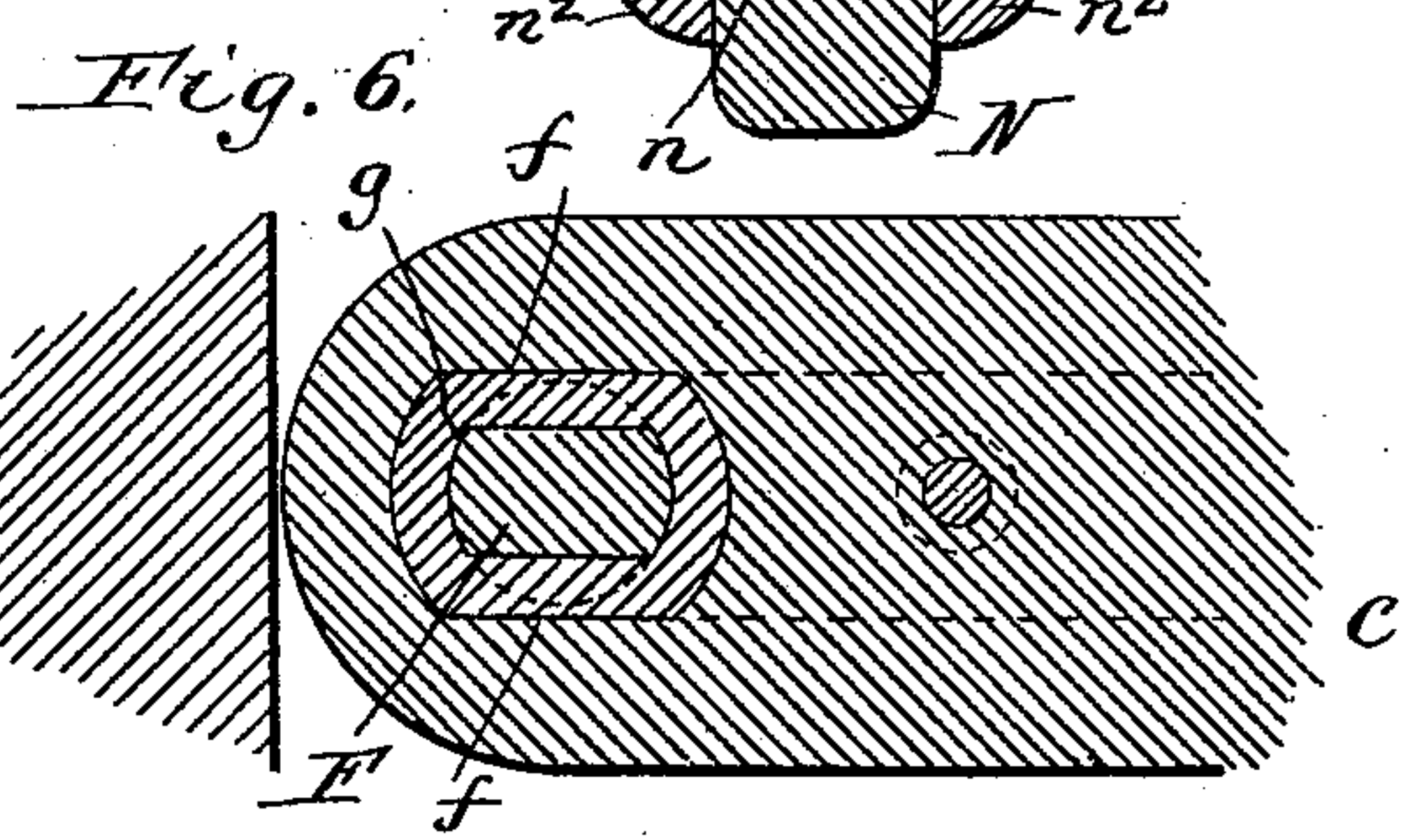


Fig. 6.

Witnesses:

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Ovadia Seely, Inventor.
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UNITED STATES PATENT OFFICE.

OBADIAH SEELY, OF SYRACUSE, NEW YORK, ASSIGNOR TO E. C. STEARNS & CO., OF SAME PLACE.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 496,008, dated April 25, 1893.

Application filed January 11, 1892. Serial No. 417,611. (No model.)

To all whom it may concern:

Be it known that I, OBADIAH SEELY, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Spring-Hinges, of which the following is a specification.

This invention relates mainly to that class of spring hinges which permit the door to swing in either direction.

The object of my invention is to produce a spring hinge which is simple, durable and inexpensive in construction, easily adjusted and concealed from view.

In the accompanying drawings consisting of two sheets: Figure 1 is an elevation, partly in section, of my improved spring hinge applied to a door. Fig. 2 is a vertical longitudinal section of the spring hinge and connecting parts on an enlarged scale. Fig. 3 is a horizontal section in line $x-x$ Fig. 2. Figs. 4 and 5 are vertical transverse sections in lines $y-y$ and $z-z$ Fig. 2. Figs. 6 and 7 are horizontal sections in lines $v-v$ and $w-w$, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the floor, B the door frame and C the door. The upper hinge of the door is, for light doors, an ordinary hinge which may consist of a plate d , secured to the top of the door and provided with a socket d' and a plate e secured to the frame and provided with a depending pintle e' . The lower hinge of the door is the spring hinge and is constructed as follows: F represents a pintle which supports the lower end of the door and is arranged axially in line with the pintle of the upper hinge. The lower pintle F is attached to the door so as to turn therewith, preferably by being provided at its upper end with flattened sides f arranged in a correspondingly shaped socket g which is formed in a plate G, secured to the lower edge of the door. The body of the pintle below its flattened top portion is made cylindrical and turns in a boss i formed on a base plate I. This base plate is secured to the upper side of the floor underneath the door and closes an oblong opening i' in the floor through

which the principal parts of the spring hinge extend below the floor.

K represents a supporting frame or bracket upon which the movable parts of the spring hinge are pivoted. This frame is provided with a horizontal top plate k which is secured to the under side of the base plate by screws k' inserted from the top so that the screws can be turned from above. The plate k is provided with two depending arms L L which are connected at their lower ends by a step bearing l in which the lower end of the pintle F is journaled. The pintle is provided above the step bearing with a laterally projecting cam M which actuates a rock lever N upon rotating the pintle. This cam is preferably cast integrally with the pintle and consists of two inclines $m m'$ which are united at their bases or lower ends and diverge upwardly and around the pivot, approximately in the form of a V.

The rock lever is pivoted to the supporting frame, preferably by a transverse notch or groove n formed in its upper side and receiving the lower edge of a transverse rib n' which depends from the top plate of the supporting frame. The groove n is flared sufficiently to permit the lever to rock freely and the rib is provided on opposite sides of the rock lever with depending ears n^2 , as represented in Fig. 5, which prevent lateral movement of the rock lever on the rib. The front end of the rock lever is preferably provided with a conical roller O which rests upon the cam, thereby reducing the friction between the latter and the rock lever. The front portion of the rock lever is arranged between the depending arms L of the supporting frame and the inner vertical sides of these arms are provided with parallel guide faces o' between which the front end of the rock lever fits snugly and whereby the front end of the rock lever is held against lateral movement when moved vertically by the rotation of the pintle and its cam.

P represents a spiral spring which exerts an upward pressure against the rear end of the rock lever and whereby the door is yieldingly held in a closed position. This spring is arranged vertically and rests with its upper end

in a socket p formed in the under side of the rear end of the lever. The lower end of the spring bears against a screw nut Q arranged upon the lower end of a screw rod q which passes through the spring. The screw nut consists of an upwardly tapering body having flattened sides q' and an annular flange q^2 at its lower end, as represented in Fig. 7. The tapering body is wedged into the spiral spring preferably until the lower end of the latter rests upon the flange of the nut, thereby causing the corners of the body to bind against the inner side of the spring which prevents the nut from turning. The screw rod passes with its upper portion through a slot r formed in the rear end of the rock lever and an opening r' formed in the top plate of the supporting frame while its slotted head r^2 rests upon the upperside of the supporting plate. The opening r' in the supporting plate is flared in both directions and the head of the adjusting rod has a convex under side which rests in the upwardly flaring top portion of the opening r' , thereby permitting the rod to swing freely and change its position when the spring is shifted and compressed by the downward movement of the rear end of the rock lever. The base plate is provided with an opening s above the slotted head of the screw rod so as to afford access to the latter when it is desired to turn the same for adjusting the tension of the spring. For convenience in lubricating the anti-friction roller O , the base plate is provided with an oil hole which is closed by a screw plug t .

In hanging the door the screws k' are loosened sufficiently to permit the supporting plate and its attachments to drop until the upper end of the lower pintle F is low enough to permit the socket of the upper hinge to be engaged with the upper pintle and the lower socket to be placed over the lower pintle. The door is then lowered which causes the flattened upper end of the lower pintle, still projecting above the base plate, to enter the lower socket. The door is next swung to one side sufficiently to expose the heads of the screws k' in the base plate. Upon tightening these screws the supporting frame is raised and the pintle is caused to enter the lower socket of the door farther and fully seat itself therein. Upon releasing the door the tension of the spring causes the roller of the rock lever to bear down on the cam and to turn the latter and the door until the lever has reached the base or depressed portion of the cam when the door has reached its normal or closed position. The double inclined cam causes the spring to be compressed upon swinging the door in either direction and returns the door to its closed position when released. The lower portions of the inclines are preferably made steeper than their upper portions so as to offer a greater resistance to the initial opening movement of the door and the upper extremes of both inclines may be made

nearly horizontal so that the door, when fully opened will be held open.

In hanging very heavy doors a spring hinge of the above described construction may also be applied to the upper end of the door.

One of the inclines of the cam is omitted in hinges which are designed for use on doors which open only in one direction.

I claim as my invention—

1. The combination with the revolving pintle provided with a cam arranged concentrically with the spindle and having an inclined face, of a frame supporting the pintle, a lever pivoted to said frame and bearing against the inclined face of the cam, and a spring bearing against the lever and holding the latter against the cam, substantially as set forth.

2. The combination with the revolving pintle provided with a cam arranged concentrically with the pintle and having an inclined upper face, of a frame supporting the pintle, a lever pivoted to said frame and bearing with its inner arm upon the inclined face of the cam, and a spring bearing against the under side of the outer arm of the lever, substantially as set forth.

3. The combination with the revolving pintle provided with a cam, of a frame supporting the pintle and provided with two guide arms, a lever having one end arranged between the guide arms and bearing upon the cam and a spring pressing against the opposite end of the lever, substantially as set forth.

4. The combination with the revolving pintle provided with a concentric cam having an inclined face and a frame supporting the pintle, of a lever pivoted upon the supporting frame and bearing with one end upon said cam, a spring pressing with one end against the opposite end of the lever, and an adjusting rod connecting the opposite end of the spring with the supporting plate, substantially as set forth.

5. The combination with the revolving pintle provided with a concentric cam having an inclined face and a frame supporting the pintle, of a lever pivoted upon said frame and bearing with its front end upon the cam, a spring pressing with its upper end against the rear end of the lever, a screw rod attached with its upper end to the supporting frame and a screw nut arranged upon the lower end of the screw rod and supporting the lower end of the spring, substantially as set forth.

6. The combination with a socket plate adapted to be secured to the door and a base plate adapted to be secured to the floor, of a pintle journaled with its upper portion in the base plate and provided with a flat sided upper end engaging in said socket plate, a cam formed on the pintle, a supporting frame attached to the under side of the base plate and provided with depending guide arms and a step bearing connecting the lower ends of said arms and supporting the lower end of the pintle, a lever pivoted upon said supporting plate

and arranged with its front portion between
said guide arms and resting with its front
end upon said cam, a screw rod attached with
its upper end to the supporting plate, a screw
5 nut arranged on the lower end of said rod,
and a spiral spring surrounding said rod and
bearing with its opposite ends against the
rear end of the lever and the screw nut, sub-
stantially as set forth.

10 7. The combination with the revolving pin-
tle provided with a cam, of a supporting
frame provided with a step bearing in which

the pintle rests and with a depending pivot
rib, a lever which bears with its front end
upon the pintle cam, and has a transverse 15
groove into which the pivot rib enters, and a
spring which bears against the rear end of
the lever, substantially as set forth.

Witness my hand, this 4th day of January,
1892.

OBADIAH SEELY.

Witnesses:

E. PERRY HASBROUCK,
U. T. BOLDRY.