

(No Model.)

A. A. PAGE.
SPRING HINGE.

No. 407,606.

Patented July 23, 1889.

Fig 1

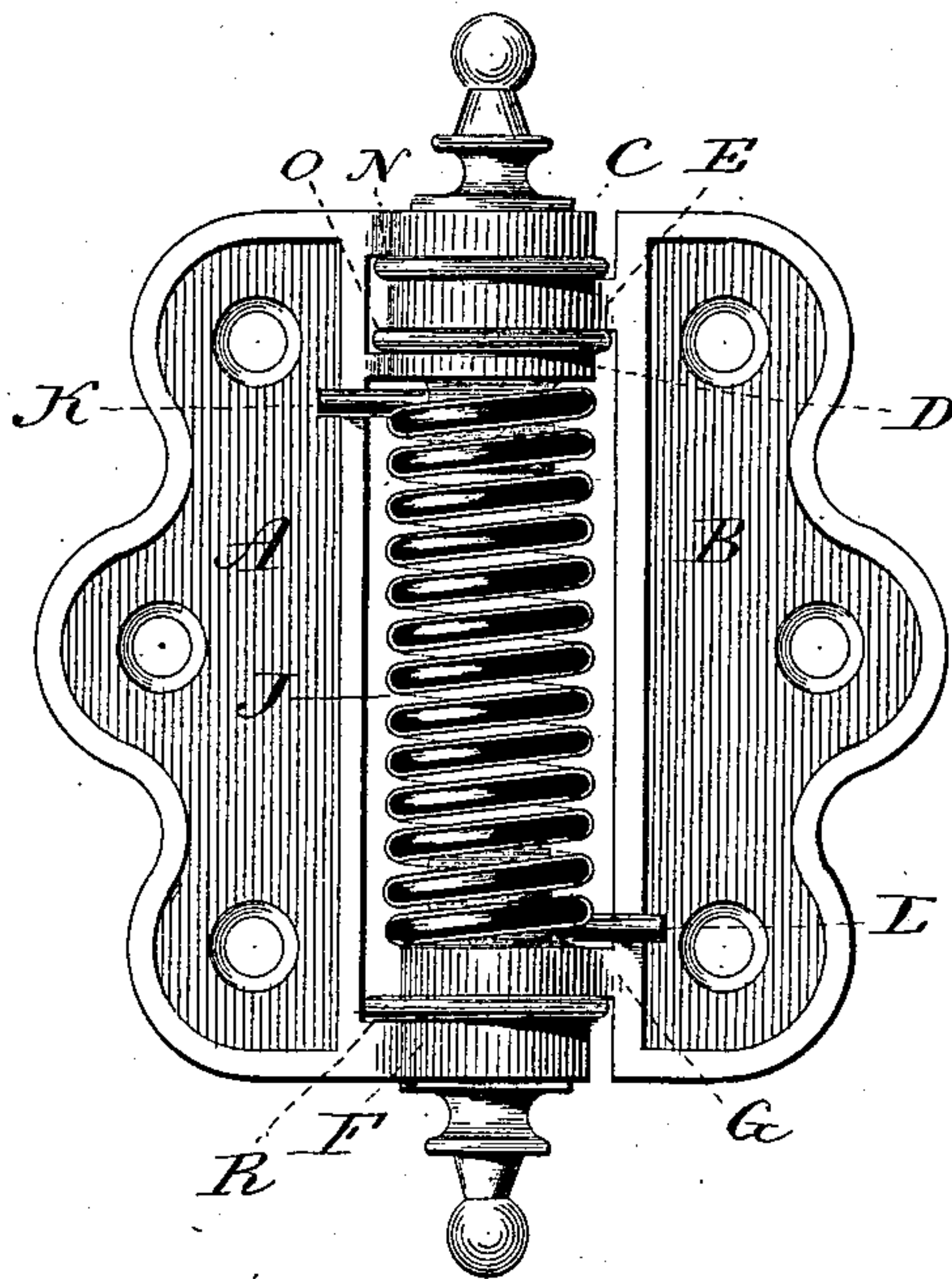


Fig 3

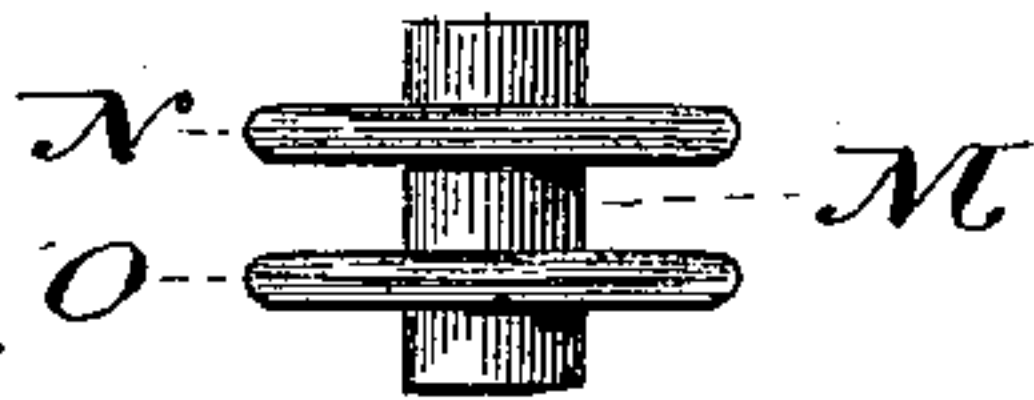


Fig 4



Fig 2

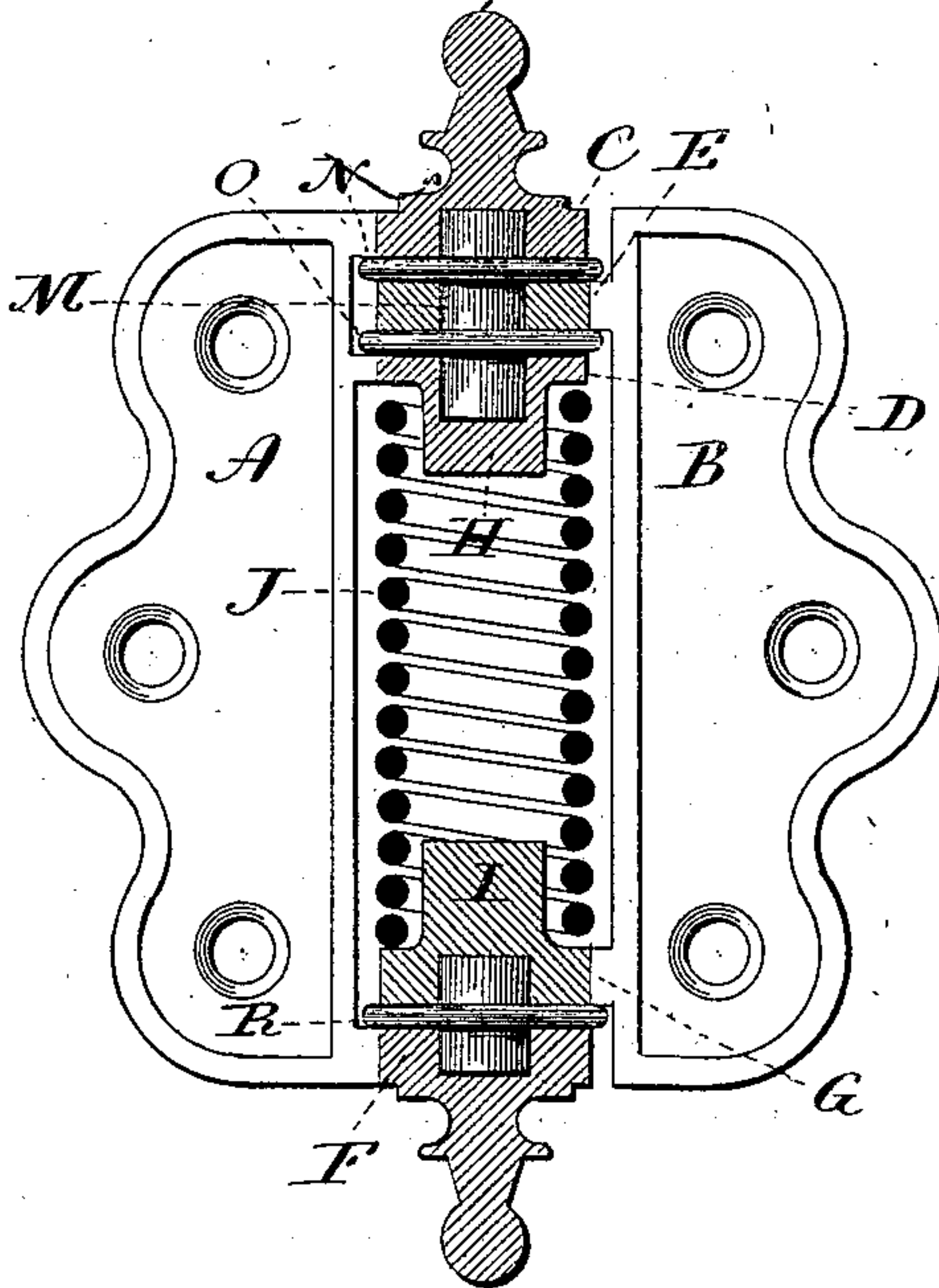
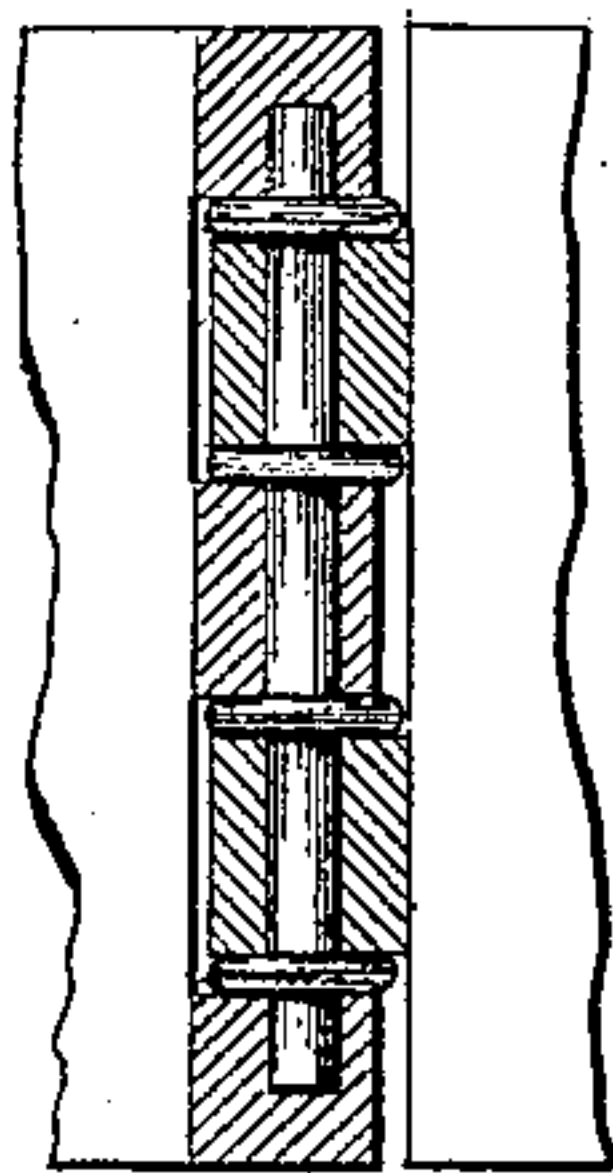


Fig 5



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ALBERT A. PAGE, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SARGENT & COMPANY, OF SAME PLACE.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 407,606, dated July 23, 1889.

Application filed May 3, 1889. Serial No. 309,438. (No model.)

To all whom it may concern:

Be it known that I, ALBERT A. PAGE, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Hinges; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a face view of a spring-hinge embodying the invention; Fig. 2, a central section through the knuckles; Figs. 3 and 4, the pintles detached; Fig. 5, a modification.

This invention relates to an improvement in the construction of cast-metal hinges specially adapted to that class of hinges in which a spiral spring is arranged upon the pintle, one end of the spring bearing upon one leaf and the other upon the opposite leaf, the tendency of the spring being to force the leaves to the wide-open position. The invention, however, is applicable to other classes of knuckle-hinges.

In the more general construction of this class of hinges the pintle is made from a piece of wire introduced sometimes in the process of casting, the knuckles cast around the pintle. In other cases the knuckles are bored and the pintle introduced from one end. In spring-hinges the pintle is usually made separate from the knuckles and introduced through holes formed in the knuckles. When the knuckles are cast upon the pintle, one leaf of the hinge, with its knuckles, is first cast with the pintle therein, then the leaf and the pintle are placed in another mold prepared for casting the second leaf, and then the second leaf is cast, the metal of its knuckles flowing around the pintle and against the knuckles of the other leaf; hence the metal of the knuckles of one leaf works directly against the metal of the other leaf, and these rough surfaces coming together prevent that smooth working of the hinge which is desirable, and the casting of the hinge requires two independent operations.

The object of my invention is to cast both leaves at the same time and prevent the posi-

tive contact between the knuckles of the respective parts; and it consists in the construction hereinafter described, and particularly recited in the claims.

In illustrating the invention I represent it as applied to the construction of spring-hinges.

A represents one leaf, and B the other. As represented at the upper end, the part A is constructed with two knuckles C and D, and the part B with a single knuckle E between the knuckles C and D. At the opposite end the part A is constructed with a single knuckle F and the part B with a corresponding single knuckle G, so that the knuckle D of one leaf A faces the knuckle G of the other leaf B, and the knuckle D is constructed with a concentric stud H upon its lower face, and the knuckle G is constructed with a like concentric stud I upon its upper face, the studs H and I being in line with and projecting toward each other to form supports for the spiral spring J. The end of the spring at the stud H bears upon the leaf A, as at K, and at the other end the end of the spring bears upon the leaf B, as at L. These studs turn with their respective leaves, as usual in this class of hinges, so as to prevent any substantial rotation of the spring-supports within the spring.

Broadly considered, the hinge thus far described is of common construction; but instead of introducing a removable pintle between the ears I construct the leaves with their knuckles so that when set together the adjacent faces of the knuckles of the two parts will be distant from each other, as seen in Fig. 2; but before forming the leaves and knuckles I prepare a pintle for the knuckles C, D, and E, as seen in Fig. 3. This pintle consists of a cylindrical body M, with two annular collars N O, the collars preferably being of a diameter a little greater than that of the knuckles. The pintle projects above and below the collars. The distance between the two collars corresponds to the thickness required for the knuckle E, and the distance between the outer surfaces of the two collars N O is equal to the distance required between the two knuckles C D. A similar pintle P

(see Fig. 4) is prepared for the other end of the hinge. Under the construction represented in Fig. 4 this pintle consists of a cylindrical body P, with an annular collar R midway of the length of the pintle, corresponding to the collars N O of the other pintle M. The thickness of the collars corresponds to the distance required between the adjacent faces of the respective knuckles.

A mold is prepared for the hinge as a whole, including both leaves, the knuckles of both leaves, and the pintle. The pintles, being first prepared and properly coated, are laid in their place in the mold in similar manner to the placing of cores in molds, the annular collars giving them the requisite support. Then the metal is poured into the flask and flows into the cavities prepared for both leaves and all the knuckles, around the pintle, and onto the surface of the collars, as represented in Fig. 2. This completes the hinge. Removed from the flask, the parts of the hinge readily turn upon the pintle, the pintle and collars serving to prevent contact between the adjacent faces of the knuckles, each knuckle taking its bearing upon the collars of the pintle, so as to attain substantially a smooth bearing, it being understood that in the preparation of the pintle its surfaces are made substantially smooth.

The pintle is coated in the usual manner for coating metal upon which the castings are to be made, so that the coating will prevent actual contact between the two metals, and so that a certain amount of freedom will be permitted between the parts. This leaves the pintle substantially free in the knuckles of both leaves, which adds materially to the freedom with which the parts swing.

The pintle may be cast complete with its collars, or it may be otherwise produced. By this construction I am enabled to cast both parts of the hinge at the same time and so as to insure a proper and smooth working of the two parts. The result of this is not only a better hinge than the usual construction, but one which may be produced at much less cost than such usual construction.

In case of a spring-hinge the spring is introduced in the usual manner.

As I have before stated, this construction of hinge is applicable to other than spring-hinges, and for illustration I represent such construction in Fig. 5. The pintle is prepared in the same manner as before described, with collars distant from each other according to the length required for the knuckles, and so that placed in the mold the metal forming each knuckle will flow against its own collar without contact with the metal of the knuckle of the other leaf.

I claim—

1. The herein-described improvement in hinges, consisting of a pintle constructed with annular collars, the two parts of the hinge having their knuckles cast around the said pintle and upon the respective collars, but without contact between the knuckles of the two parts, whereby the said pintle inseparably joins the two parts together in the process of casting said parts, substantially as described.

2. A hinge composed of two leaves A B, the one leaf A constructed with two knuckles C D near one end and with a single knuckle F at the opposite end, the knuckle D constructed with an axial projection H, the other leaf B constructed with a knuckle E corresponding to but less in thickness than the space between the knuckles C D, with a knuckle G corresponding to the knuckle F of the other part, the said knuckle G constructed with an axial projection I corresponding to the projection H of the knuckle D, pintles between the knuckles of the respective parts and constructed with annular collars between the adjacent faces of the knuckles of the two parts, the said pintles being inclosed and held within the knuckles of the respective parts, substantially as described.

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Witnesses:

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