

(No Model.)

J. SPRUCE & A. M. COMSTOCK.
SPRING HINGE.

No. 401,978.

Patented Apr. 23, 1889.

Fig. 1

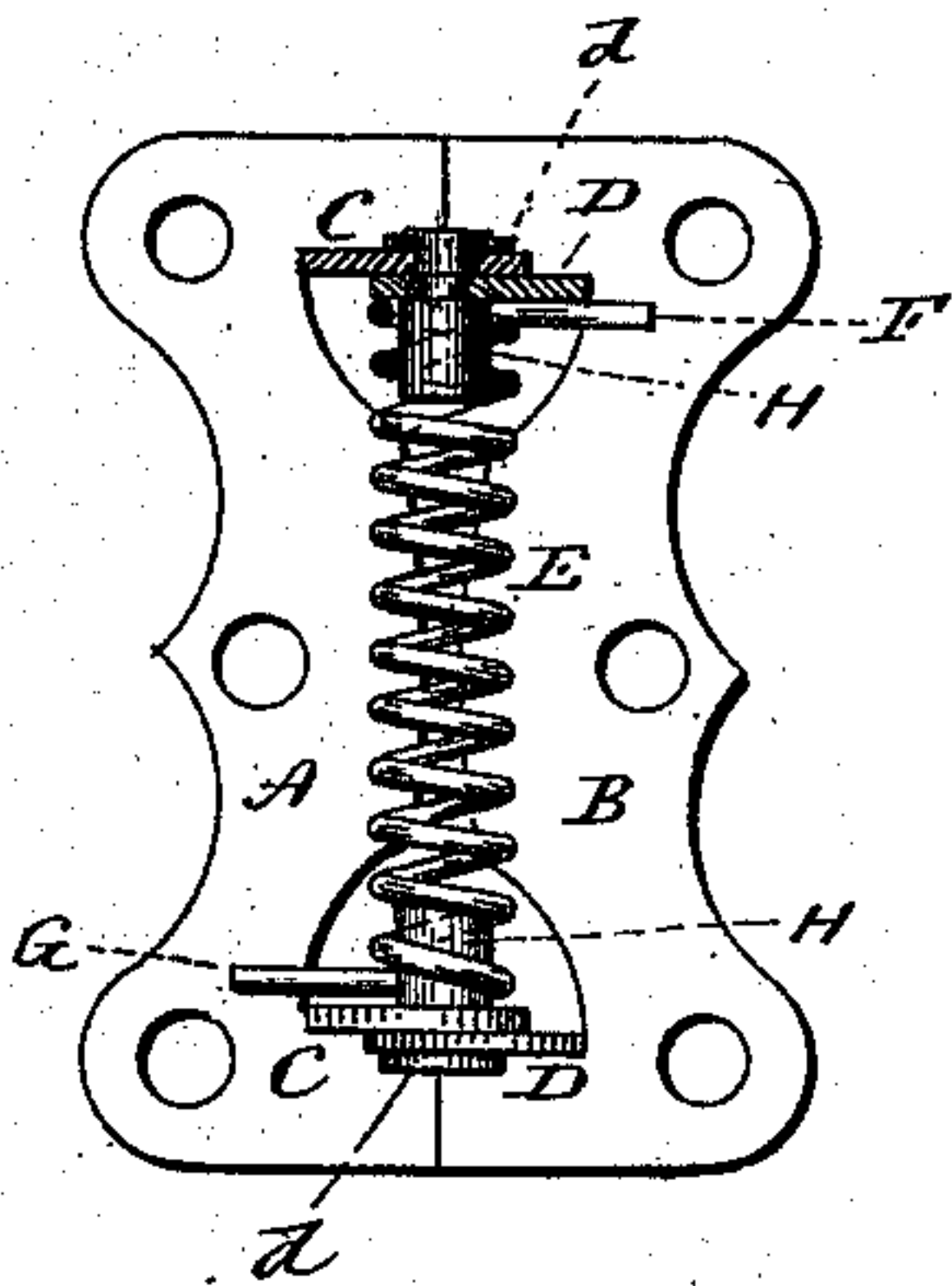


Fig. 2

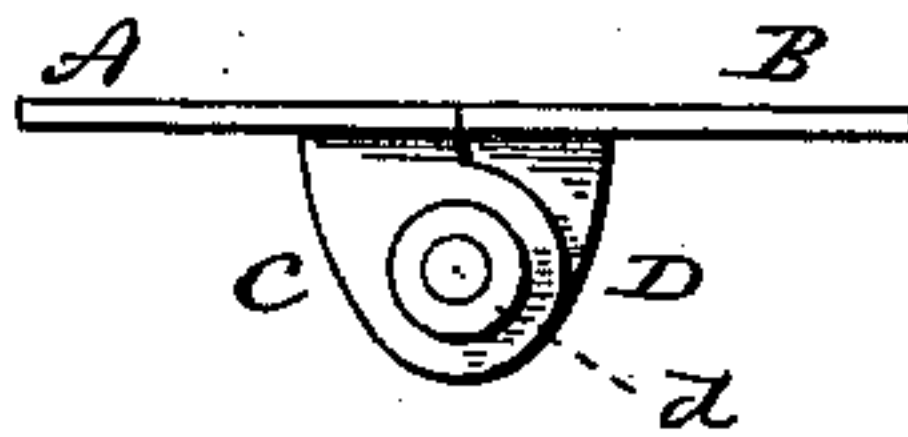


Fig. 3

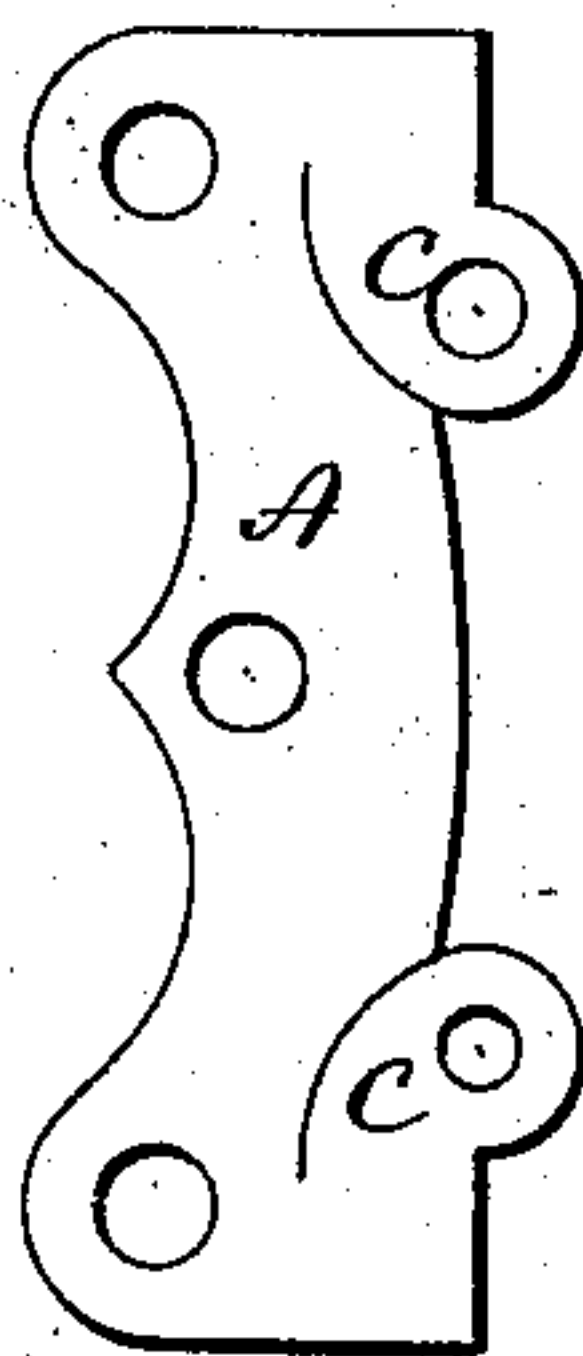


Fig. 4

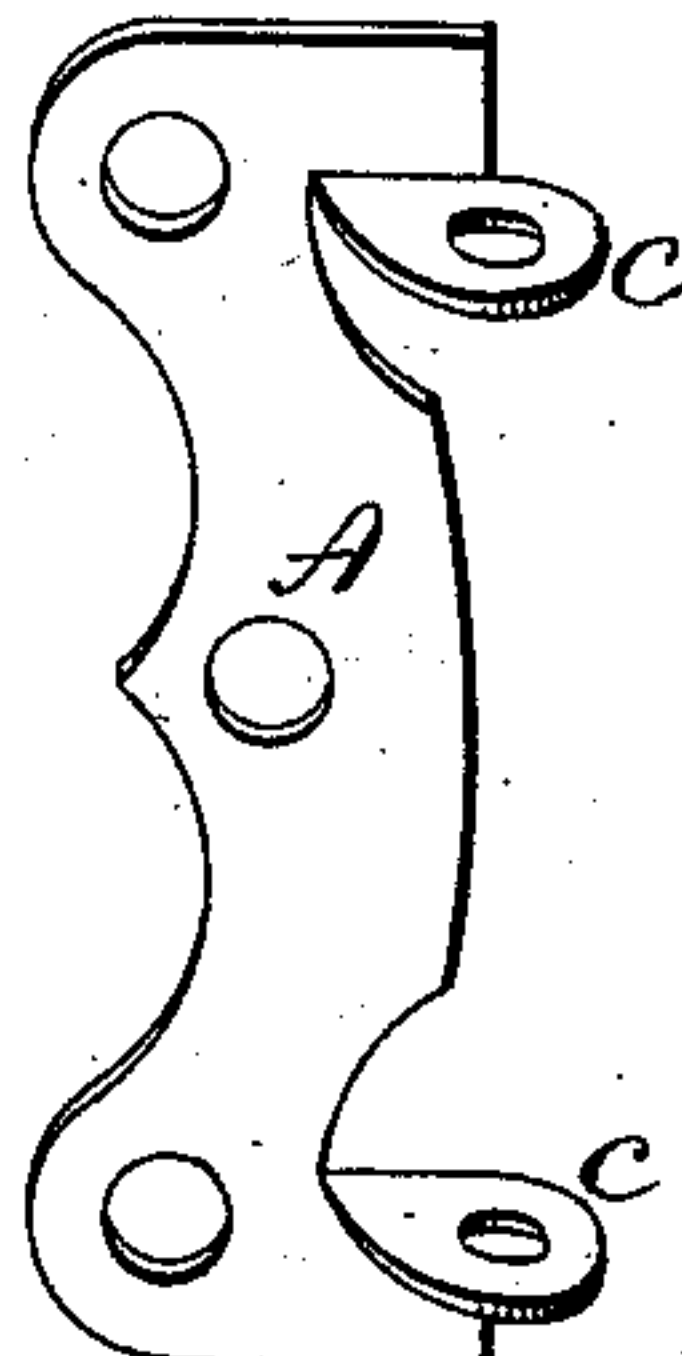


Fig. 5

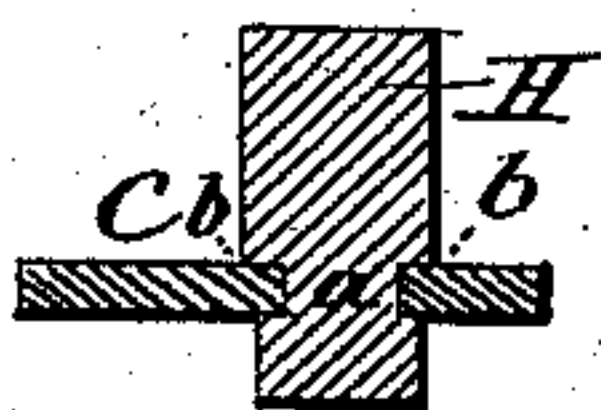


Fig. 6



Fig. 7

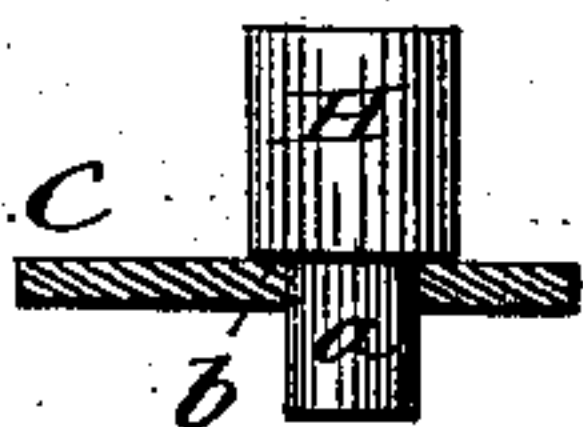


Fig. 8

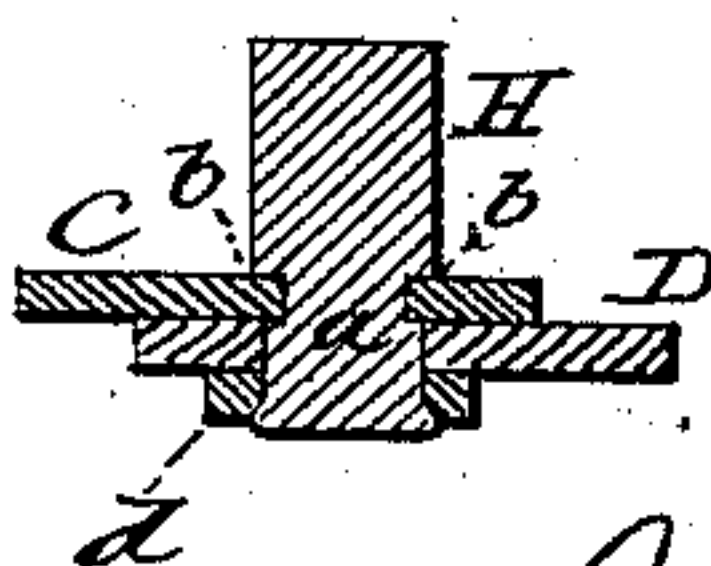
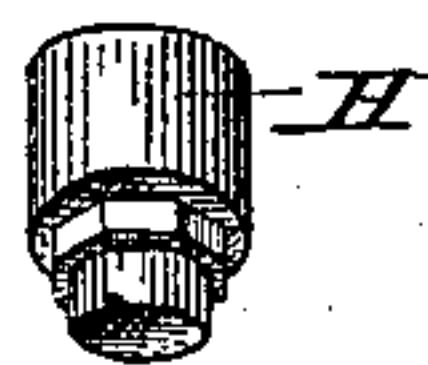


Fig. 9



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UNITED STATES PATENT OFFICE.

JAMES SPRUCE AND ASA M. COMSTOCK, OF WATERBURY, CONNECTICUT.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 401,978, dated April 23, 1889.

Application filed February 11, 1889. Serial No. 299,386. (No model.)

To all whom it may concern:

Be it known that we, JAMES SPRUCE and ASA M. COMSTOCK, of Waterbury, in the county of New Haven and State of Connecticut, have invented new Improvements in Spring-Hinges; and we 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 the hinge complete; Fig. 2, an end view of the same; Fig. 3, the blank from which the leaves are formed; Fig. 4, one leaf complete; Fig. 5, a vertical section through one inside ear, showing the pintle interlocked therewith; Fig. 6, the pintle as prepared for introduction; Fig. 7, the pintle as set through the opening in the ear to which it is to be attached; Fig. 8, a vertical section through the two ears, showing the pintle as interlocked with the inside ear, the outside ear free to turn thereon; Fig. 9, a modification in the interlocking of the pintle.

This invention relates to an improvement in that class of spring-hinges in which the spring is a spiral spring arranged between the ears and concentric with the axis on which the parts of the hinge turn, one end of the spring bearing upon one leaf and the other upon the opposite leaf, and so that the tendency of the spring is to hold the hinge in the open or spread position. The spring necessarily surrounds the pintle, and as the spring turns under the opening and closing movement of the hinge the inside of the spring bearing upon the pintle wears to such an extent that, unless some provision to the contrary is made, the spring soon breaks at the pintle-bearing points. Numerous devices have been employed to prevent this rubbing contact between the pintle and the ends of the spring, but all more or less expensive.

The object of our invention is a simple device adapted to a cheap construction of hinge, yet so effective as to prevent any possible wear between the pintle and the spring; and the invention consists in the construction, as hereinafter described, and particularly recited in the claim.

The two leaves A B of the hinge are made from sheet metal, the ears C C of the part A being cut from the blank, as seen in Fig. 3, and then the ears turned from the blank at right angles thereto, as seen in Fig. 4, and so that the said ears come in line at that edge of the leaf, and as common in this class of hinges. The two leaves are made alike, and so that the ears C C on the part A will lap onto the ears D D on the part B, as seen in Fig. 1, the ears of the two parts having such relative position to each other that when set together, as seen in Fig. 1, the ear of one leaf will come outside the corresponding ear of the other leaf, while the other ear of the said one part will come inside the corresponding ear of the other part, as seen in Fig. 1, and as usual in this class of hinges.

E represents the spring, which, as usual, is a spiral spring made from wire arranged between the inside ears of the two parts, and so as to extend from one to the other, one end, F, of the spring arranged to bear, say, on the leaf B, while the other end, G, bears upon the leaf A. These ends of the spring bear upon the leaf from which the ear projects, against which that end of the spring rests—that is to say, the upper ear of the part B being inside of the corresponding ear of the part A that end F of the spring rests upon the leaf B, and under the same arrangement at the other end brings the end G of the spring to bear upon the leaf A, because the inside ear at that end projects from the leaf A; hence the rotative movement which will be imparted to the spring at its respective ends will be received from the leaf on which the end bears. There will therefore be no rotative movement between the ends of the springs and the respective ears against which the spring rests, the ends of the spring turning with the ears. The ears at the respective ends are joined by pintles H, which project into the end of the spring and serve as a bearing to hold the spring in place. If the pintle be made fast to the outside ear, as in the more general construction of this class of hinges, it follows that the pintles will turn with the respective leaves to which they are secured; and as the pintles are secured to the outside ear the turning of either leaf will cause a cor-

responding opposite rotation between the spring and pintles; consequently the wear upon the inside of the spring, which tends to produce breaking, before referred to. To prevent this wear, we secure the pintle H in the ear upon which the spring rests—that is, upon the inside ear and as seen in Fig. 5, the ear here represented being the lower ear, C, of the part A. The pintle is constructed of a diameter corresponding substantially to the internal diameter of the spring, its outer end reduced in diameter, as seen in Fig. 6, and so as to form a shank, *a*, of less diameter than the pintle proper, producing a shoulder, *b*, between the shank and the pintle proper. Through the ear, say C, to which the pintle is to be secured, a hole is punched corresponding to the diameter of the shank *a*, and so that set therein, as seen in Fig. 7, the shank will project to the opposite side of the ear. The length of the shank is little more than twice the thickness of the ear, and it is interlocked with the ear through which it thus extends—say by upsetting the shank, as seen in Fig. 5, so as to close the ear between the shoulder and the upset portion of the pintle. The then projecting portion of the pintle extends through the corresponding ear of the other leaf of the hinge, and may be riveted thereon through a collar, *d*, as seen in Fig. 8. The two pintles being thus applied, each pintle is secured to the inner ear upon which the end of the spring rests, and so that the pintle will turn with the ear and that end of the spring, and therefore there can be no wear between the pintle and the spring. The in-

terlocking between the pintle and the ear may be made in various ways—say by making that portion of the shank which stands in the ear of angular shape, as seen in Fig. 9, and the hole through the ear of corresponding shape, the remainder of the projecting portion of the shank being cylindrical, so that extending through the ear of the other part will permit that other part to turn thereon, it only being essential that there shall be such an interlocking between the pintles and the inside ears that the said pintle will become stationary upon those ears.

We claim—

In a spring-hinge composed of the leaves A B, having corresponding ears projecting therefrom, and so that the ears of the one part will stand, respectively, the one inside and the other outside of the ears of the other part, a pintle through each pair of ears, the pintle interlocked with the inside ear of each part, the pintle extending through the outside ear of the other part and upon which the said outside ear may turn, and a spiral spring arranged axially between the said inside ears, the spring surrounding the respective pintles, and the ends of the spring at the said pintles turned outward to bear upon the leaf with which the pintle is interlocked, substantially as and for the purpose described.

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