

No. 887,112.

PATENTED MAY 12, 1908.

M. H. NABER.

SPRING.

APPLICATION FILED MAR. 28, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

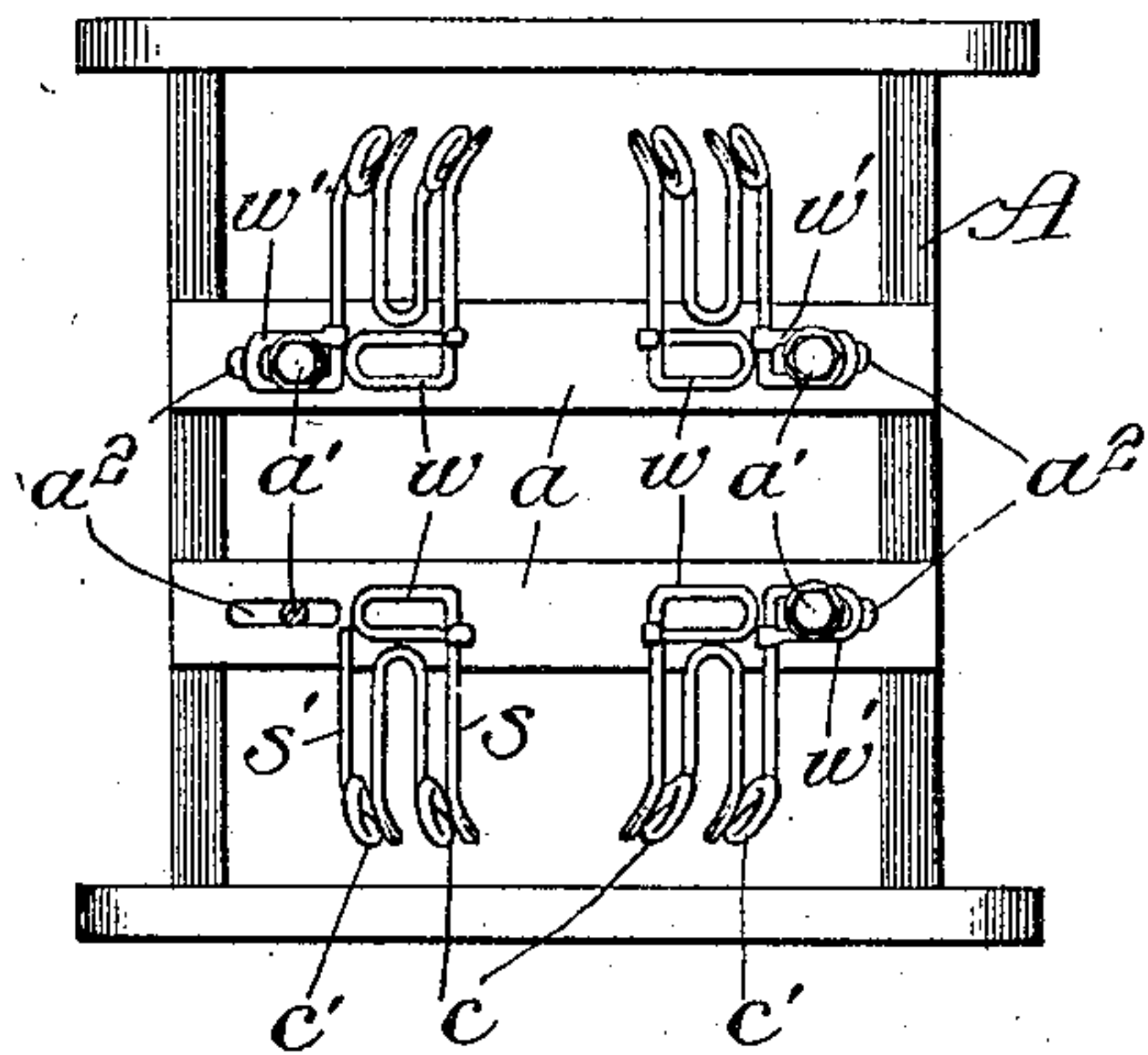


Fig. 2.

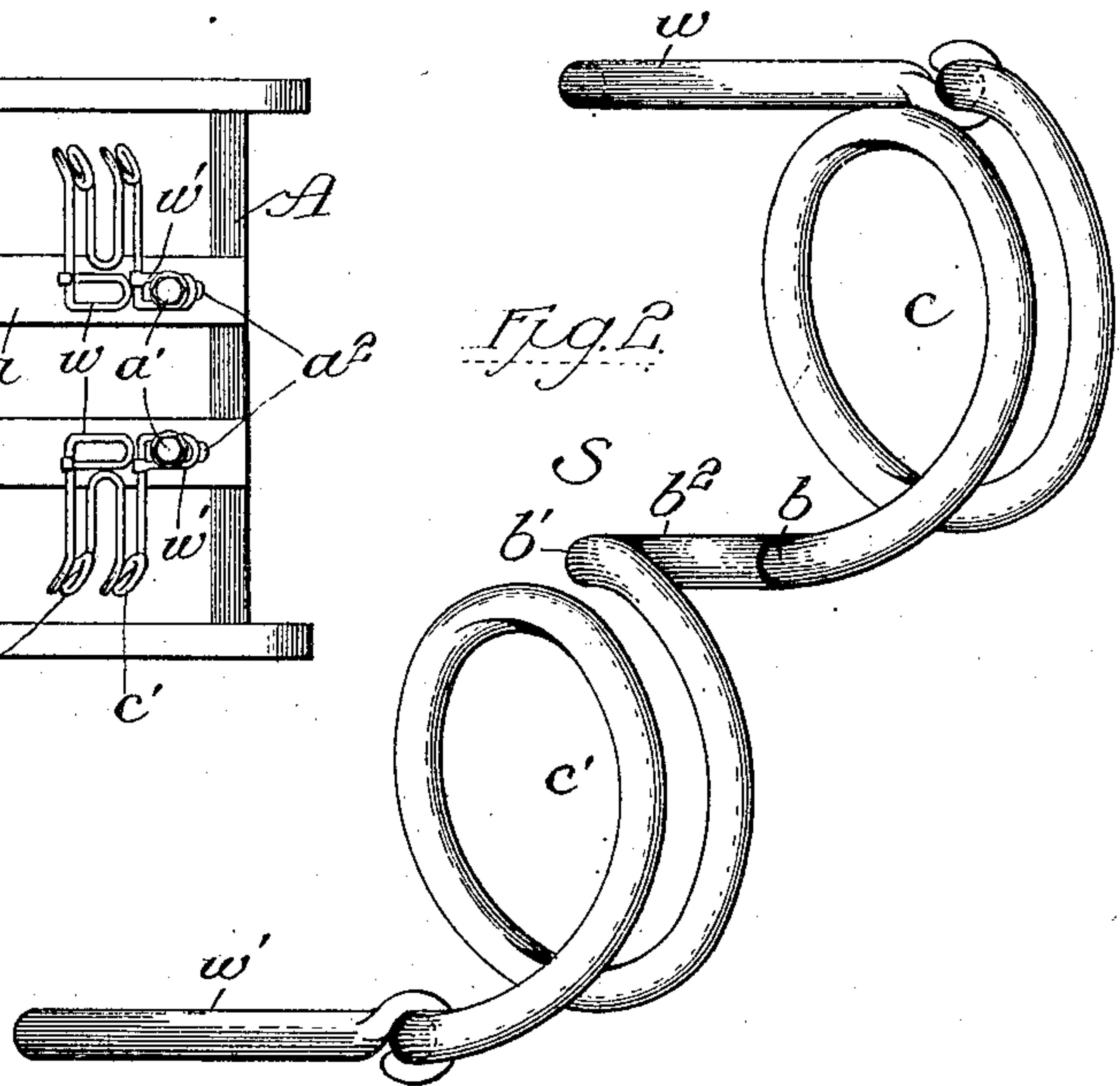
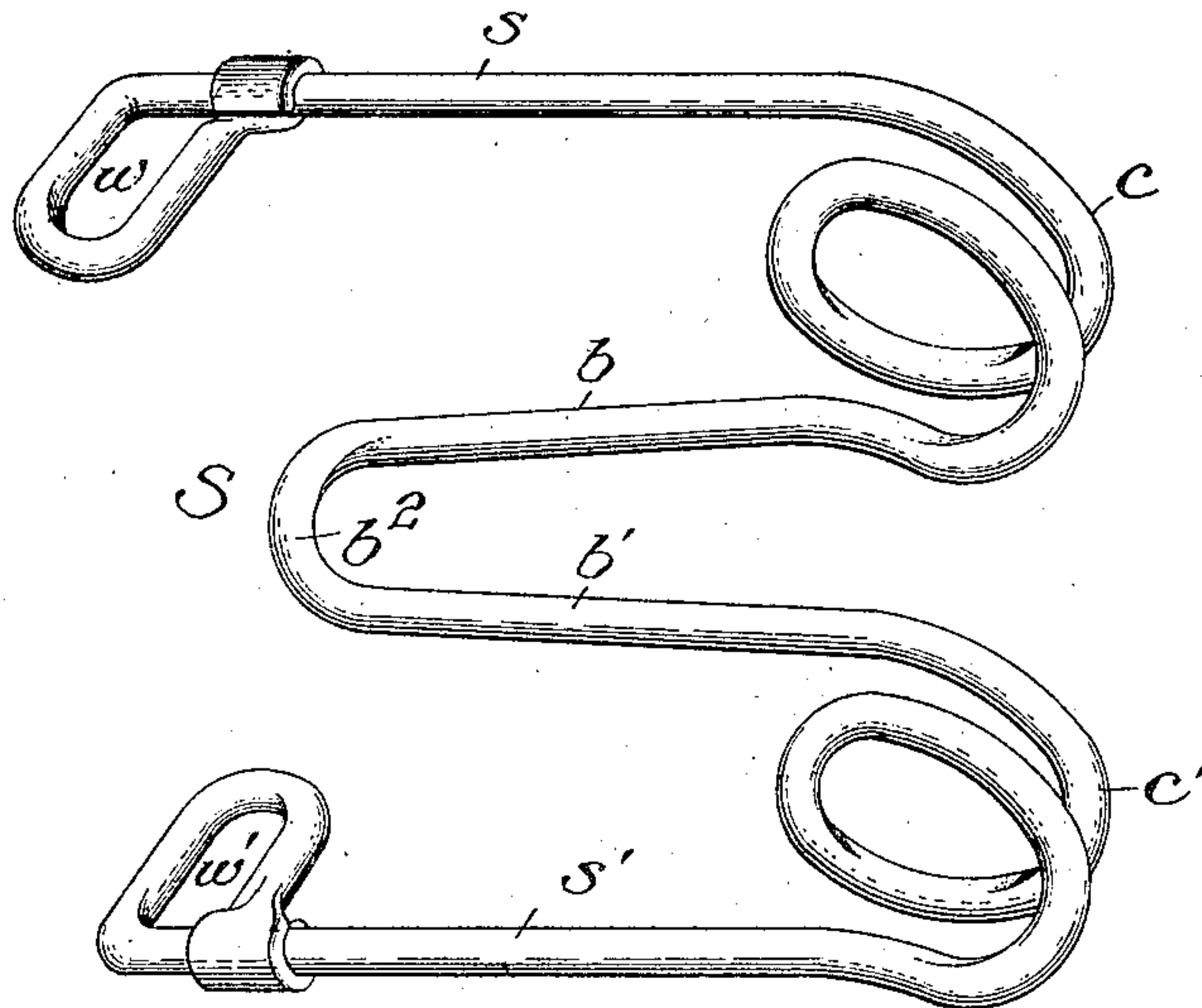


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

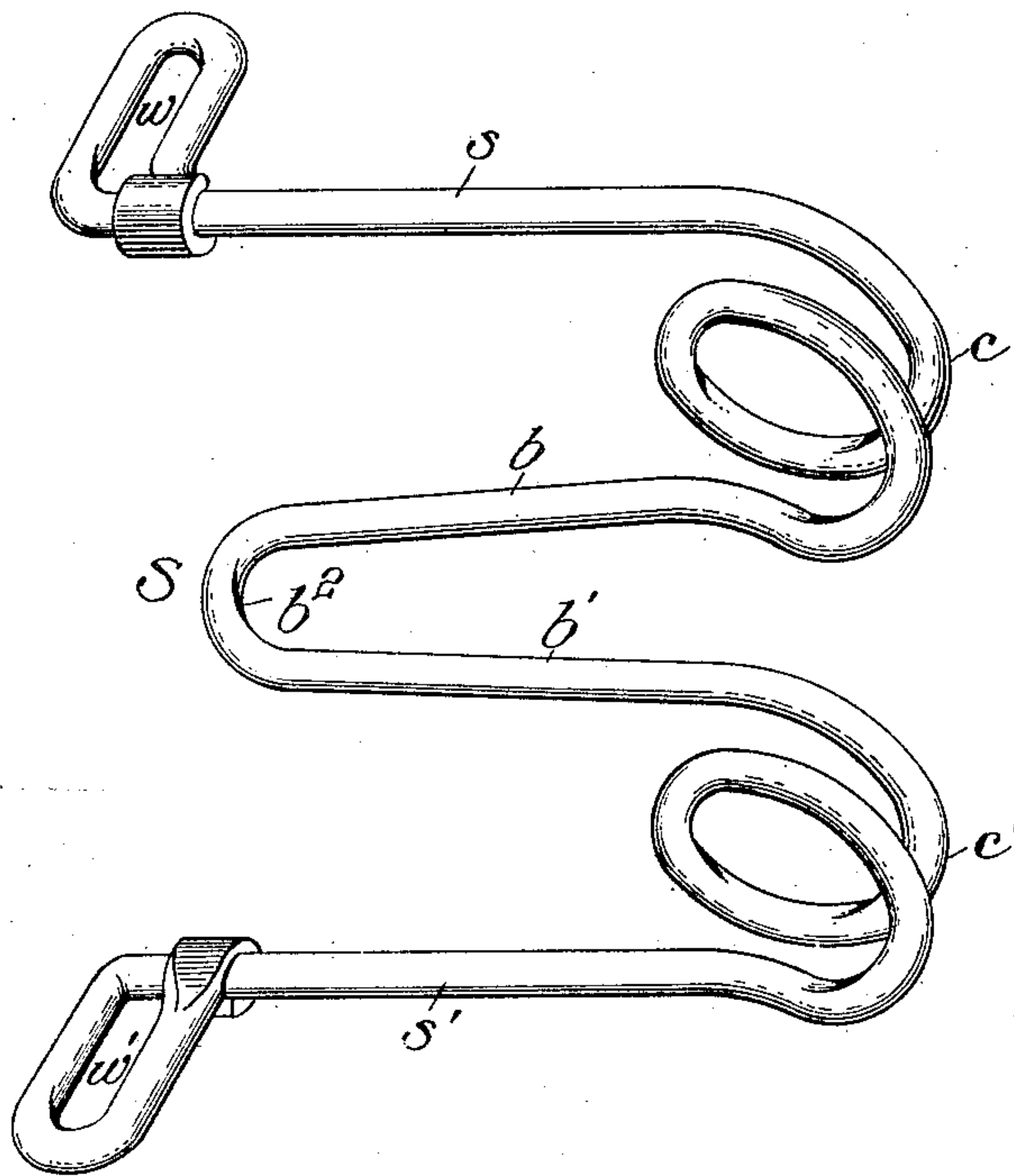
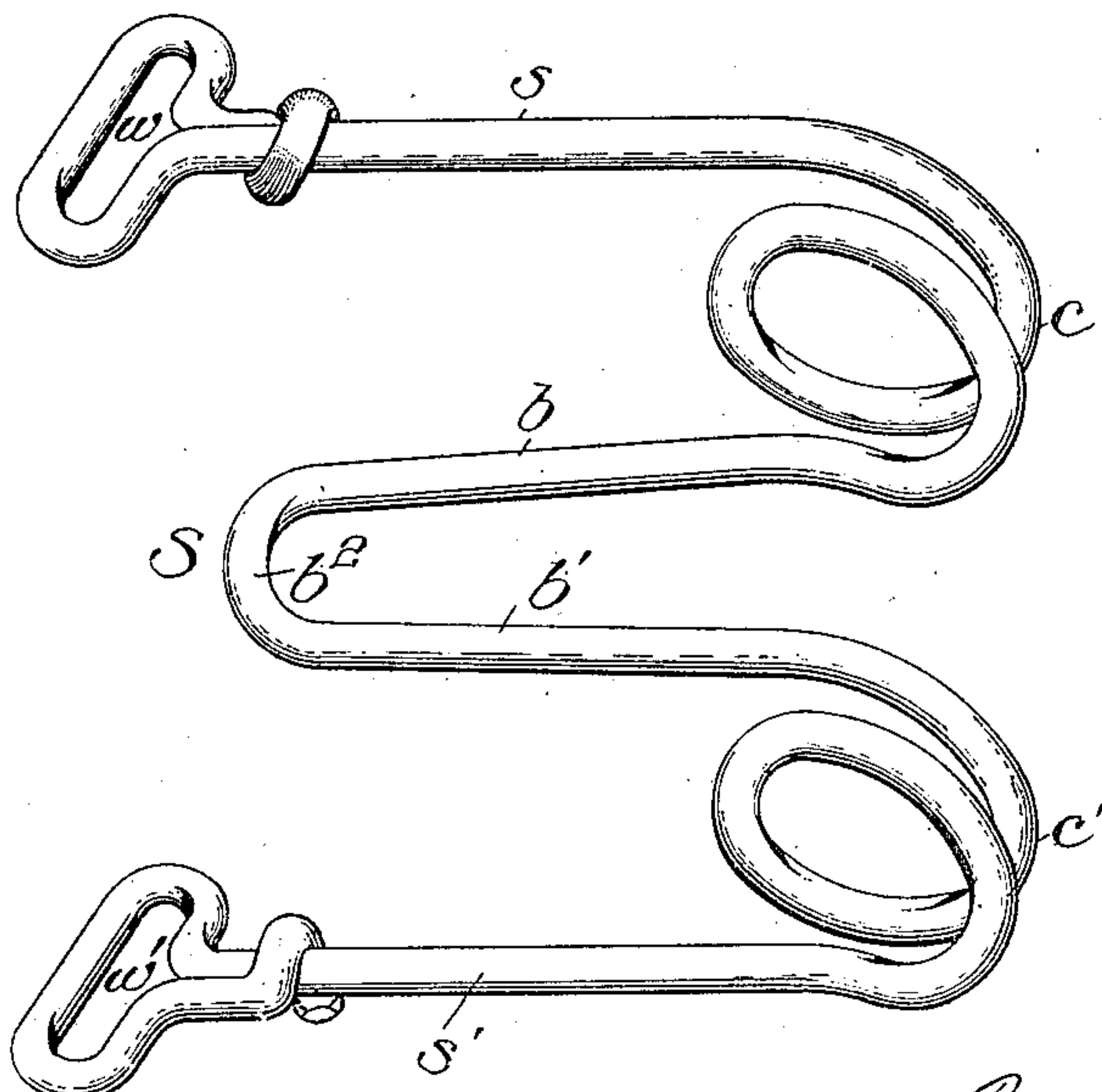


Fig. 5.



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UNITED STATES PATENT OFFICE.

MOSES H. NABER, OF CHICAGO, ILLINOIS, ASSIGNOR TO NABER SPRING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SPRING.

No. 887,112.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed March 28, 1903. Serial No. 149,947.

To all whom it may concern:

Be it known that I, MOSES H. NABER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Springs, of which the following is a specification.

My invention relates to springs, and the object is to provide a spring which brings into play the resilient and torsional effect or power of the wire of which it is composed when employed between the base and body which is supports.

The invention consists in the matters hereinafter described and pointed out in the appended claims.

In the accompanying drawings which form a part of this specification—Figure 1 is a plan view of a chair-base equipped with springs constructed in accordance with my invention, one of the springs being broken away at its point of attachment to the base to show suitable means for adjustably connecting the springs to the base; Fig. 2 is an outside end view in elevation of one of the springs of Fig. 1; Figs. 3, 4 and 5 are side perspective views of springs similar to the springs of Fig. 1 but differing therefrom in matters of detail as hereinafter described.

In the drawings, in which like letters of reference indicate the same or similar parts in the various views, and referring especially to Figs. 1 and 2, the letter A denotes a base of any suitable construction for any desired article, as here a chair-base, to the longitudinal parallel rails a of which the springs S are suitably attached, as by bolts a' .

The springs S are preferably made of steel wire and are arranged upon the base to receive the body of the article in any suitable manner, it being of course understood that these springs may be employed for chairs, couches, carriage-seats, and all structures where it is desired to provide a spring connection between the base and body thereof.

Each spring is made of a single strand of wire formed with an upper and lower wing w and w' , respectively, by which it is attached to the body and base of the structure, the wings being formed by bending into open form the ends of the length of wire comprising each spring and carrying the extremities of the wire around the adjacent arms s and s' , respectively. The wings are thus adapted to receive the bolts, the heads

of which securely clamp the wings to place when suitable nuts are applied, it being understood that the bottom wings are bolted to the base and the top wings to the body (not shown) of the article. The wings may be disposed in any suitable manner, as will be hereinafter more fully described. The arms s and s' extend laterally from the wings in the same direction but in different vertical planes, and terminate in one or more vertical coils c and c' , respectively, the coils preferably being disposed and arranged more or less angularly thereto, as clearly shown in the drawings. The wire of each spring projects inwardly from the coils toward or in the direction of the wings in substantially parallel legs b and b' , which are in different vertical planes from each other and also from the arms s and s' , and which are united by the horizontally disposed return or U-shaped bend b^2 . The legs b and b' lead from the bend b^2 toward their points of development into the oppositely directed coils, so that the initial bend of the lower coils c' is in a different and lower horizontal plane from the initial bend of the upper coil c , as clearly shown in the drawings. The upper coils are lateral to or in different vertical planes from the lower coils by reason of the horizontally developed bend b^2 between the two legs respectively associated with the coils, and the top wings are lateral to and inside of the vertical planes of the lower wings by reason of the same bend and the lateral displacement caused by forming the vertical coils. In disposing the springs as in Fig. 1 the lower wings w' preferably become the outer ones of each longitudinally alined pair, and the upper wings w are inner and intermediate the outer wings of their respective pair of springs as shown in Fig. 1.

In the form shown in Fig. 3, the spring is in all particulars the same as that shown in Figs. 1 and 2 except with respect to the wings. In the form of Fig. 3 the wings project in opposite directions inwardly toward the vertical plane of the return bend b^2 , instead of extending in the same direction as in Fig. 1. In the form of Fig. 3 the wings are brought practically in alinement with each other at approximately the central line of the spring itself. This form provides a more compact spring.

In the form shown in Fig. 4 the spring is essentially the same as that heretofore described with the exception that the wings are

oppositely disposed and extend laterally from the arms s and s' in opposite directions away from the central line of the spring.

In the form shown in Fig. 5 the spring is identical in all respects with the forms heretofore described with the exception that the wings w and w' are developed and extended upon each side of their respective supporting arms s and s' . In this form of spring the supporting arms are developed from about the central part of the wings, instead of at one end or the other thereof as in the previous views, whereby the single spring may be so employed as to secure the wings to the base and body at points either inside or outside the central vertical line of the spring as may be desired.

The action of the various springs of the several figures when strain is put upon them is such as to bring into play the resilient force or effect of the wire at the vertical coils, and the torsional force or effect of the wire in the arms and legs, so that the general action of the spring is in part vertical and in part oblique to its central vertical plane, and the spring yields sidewise as well as simply up and down.

The base illustrated in Fig. 1 is intended to show the relative arrangement and location of springs for an average sized parlor chair, it being understood that in case a larger or smaller chair is to be equipped, the springs will be set farther apart or nearer together, as the case may be, in order to provide a stiffer or more yielding structure respectively. For this purpose the openings in the wings to receive the bolts may be in the form of elongated or oblong slots, so that the springs may be adjustably set on the bolts. It is obvious that for effecting any desired adjustment, the passages in the frame for the bolts may be in the form of elongated slots a^2 , or elongated slots in both the wings and frame may be employed.

The rectangular form of wing illustrated in the drawings is preferred as with it the securing means are not so apt to work loose by reason of the fact that it provides a broad and

extended bearing which offers greater surface to resist the torsional action of the springs. 50

It is obvious that various changes may be made in the form of the parts without departing from my invention; for example, the attaching wings may be of any suitable shape, the connecting coil between the legs and arms may be a simple bend or one or more full turns of the wire, as also may be the connection between the two legs, and the shape and relation of other parts may be varied. 60

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

1. A spring composed of a single strand of wire having an attaching wing at each end, horizontally projecting arms developed into vertical coils, and a connecting portion comprising a pair of legs in the same horizontal plane. 65

2. A spring composed of a single strand of wire having an attaching wing at each end, horizontally extending parallel arms, vertical coils at the ends of the arms in different planes, and an integral pair of legs projecting from the adjacent portions of the coils and united in a horizontally disposed bend. 70

3. A spring composed of a suitable length of wire, an attaching wing at each end, an arm horizontally extending from each wing, the arms being in different vertical planes and developed into coils at their other ends, and a U-shaped portion horizontally disposed intermediate the arms and in extension of the coils. 75

4. A spring composed of a single strand of wire and comprising the upper and lower attaching arms developed into vertical coils, and a U-shaped portion disposed intermediate the arms and in extension of the coils. 85

In testimony whereof I affix my signature in presence of two witnesses. 90

MOSES H. NABER.

Witnesses:

E. MOLITOR,
J. McROBERTS.

It is hereby certified that in Letters Patent No. 887,112, granted May 12, 1908, upon the application of Moses H. Naber, of Chicago, Illinois, for an improvement in "Springs," errors appear in the printed specification requiring correction, as follows: In line 7, page 1, the word "it" should read *is*; line 13, same page, the word "is" should read *it*, and line 66, same page, the reference letter " should read *c*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of May, A. D., 1908.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.