

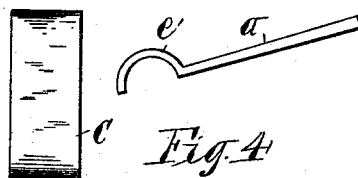
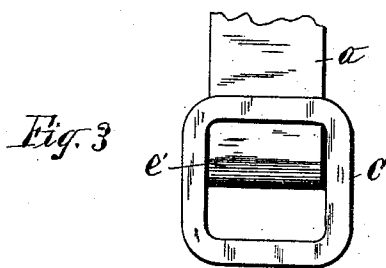
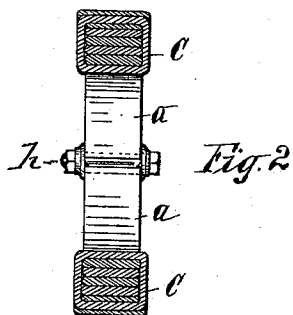
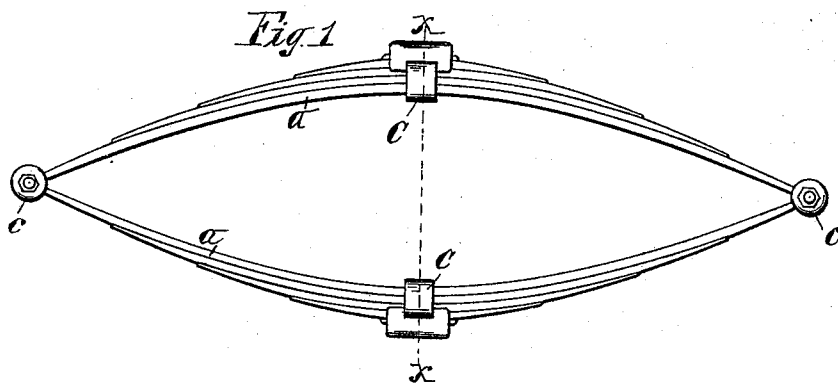
(No Model.)

2 Sheets—Sheet 1.

E. CLIFF.
ELLIPTIC SPRING.

No. 496,723.

Patented May 2, 1893.



WITNESSES:

J. J. Laass
C. L. Bendixon

INVENTOR:

Edward Cliff
By Hull, Laass & Hull
his ATTORNEYS.

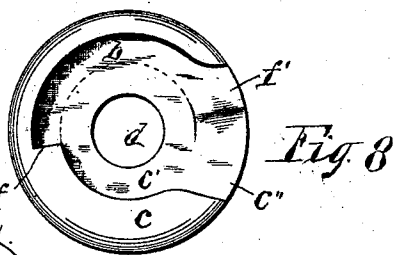
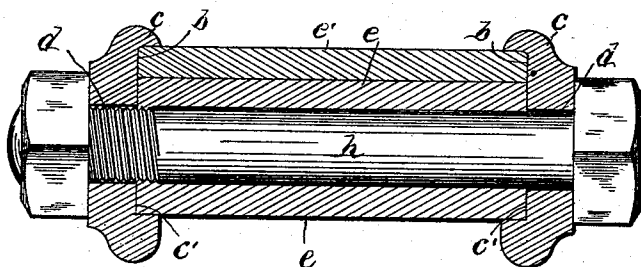
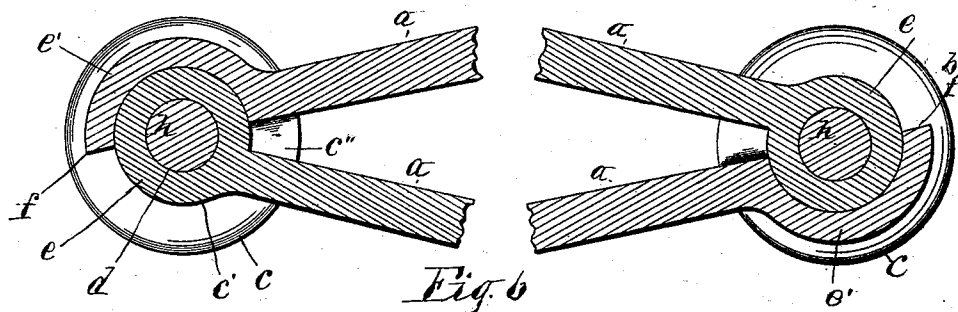
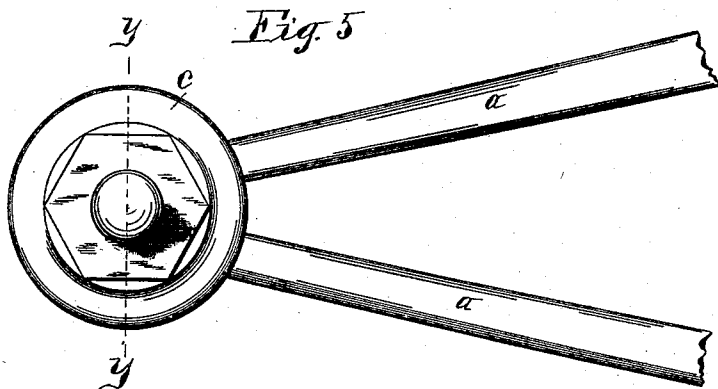
(No Model.)

2 Sheets—Sheet 2.

E. CLIFF.
ELLIPTIC SPRING.

No. 496,723.

Patented May 2, 1893.



WITNESSES:

J. J. Saass
C. L. Bunker

INVENTOR:

Edward Cliff
By *Wm. L. Saass & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

ELLIPTIC SPRING.

SPECIFICATION forming part of Letters Patent No. 496,723, dated May 2, 1893.

Application filed October 1, 1892. Serial No. 447,468. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFF, of Newark, in the county of Essex, in the State of New Jersey, have invented new and useful
5 Improvements in Elliptic Springs, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the connection of
10 the two halves of an elliptic spring, and has more particularly reference to the connecting devices shown in my United States Patent No. 326,847, dated September 22, 1885.

The object of the invention is to render said
15 connection simpler in construction and capable of being more readily taken apart when desired. And to that end the invention consists in the improved construction and combination of parts as hereinafter described and
20 specifically set forth in the claim.

In the annexed drawings Figure 1 is a side elevation of an elliptic spring embodying my improvements. Fig. 2 is a transverse section
25 on line *x, x*, in Fig. 1. Fig. 3 is an enlarged end view of one of the semi elliptic portions of the spring showing the facility of applying the band to the spring. Fig. 4 is a side view of the same. Fig. 5 is a further enlarged side
30 view of one end of the elliptic spring. Fig. 6 is a vertical longitudinal section of the end-
portions of said spring. Fig. 7 is a vertical transverse section on line *y, y*, in Fig. 5, and Fig. 8 is a detached face view of the inner
side of one of the caps.

35 Similar letters of reference indicate corresponding parts.

a-a represent the two main leaves of an elliptic spring. One of said leaves is formed at each end with the cylindrical sleeve —*e*—, and the other main leaf is terminated with
40 semi-cylindrical or approximately semi-cylindrical bearings —*e'*—*e'*— by which it is seated on the cylindrical sleeve —*e*—. The sleeve may be either on the upper or lower leaf as shown
45 in Fig. 6 of the drawings.

By allowing the bearing —*e'*— to embrace only half of the circumference of the sleeve —*e*—, said bearing can be dropped directly onto or lifted from the sleeve, whereas hith-

erto the bearing was made to nearly embrace 50 the entire sleeve and had to be slipped end-wise onto the same.

The sleeve —*e*— and bearing —*e'*— are of the same width and to opposite ends thereof I apply the caps —*c-c*—, each of which is provided with the central eye —*d*— and formed
55 on its inner side with the recessed annular seat —*c'*— around said eye and radial way —*c''*— extending from said seat, and with the recessed semi circular seat —*b*— adjacent to
60 the seat —*c'*— and terminating with the square shoulder —*f*— at one end and with the radial slot —*f'*— at the opposite end.

The annular seats —*c'*— of the two caps receive the ends of the cylindrical sleeve —*e*—
65 and in the semi-circular seats —*b*— are fitted tightly the ends of the semi-cylindrical bearing bearing —*e'*— which abuts against the shoulder —*f*— while the edges of the adjacent
70 portion of the same leaf fit closely in the slots —*f'*—. The bearing —*e'*— is thus securely locked in the two caps. The radial way —*c''*—
is of sufficient width to allow the requisite
75 play of the leaf —*a*— which is provided with the sleeve —*e*—. The two caps are secured to
the spring by means of a bolt —*h*— passing through the eyes —*d-d*— and sleeve —*e*—
and provided with a head and a nut respectively at opposite ends.

C-C denote the metal bands which are
80 usually applied to the center of the spring as shown in Fig. 1 of the drawings. These bands have to be removed in case the spring requires repairs or the insertion of one or more new leaves. The removal of said bands is greatly
85 facilitated by the ready disconnection of the ends of the spring as hereinbefore described, which allows the band to be slipped off from the end of the spring as represented in Figs.
3 and 4 of the drawings.

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

In an elliptic spring the combination of one of the main leaves terminated with the cylindrical sleeves —*e*—, and the other main leaf
95 formed with the semi-cylindrical bearings —*e'*— seated on said sleeve and of the same

width, the caps —c—c— each formed with the
central eye —d—, recessed annular seat —c'—
for the end of the sleeve —e—, radial way
—c''— extending from said seat for the play
5 of the sleeved end of the spring, and with the
semi circular seat —b— for the end of the bear-
ing —e'—, said latter seat terminating with
the shoulder —f— at one end, and with the
radial slot —f'— at the opposite end and lock-
10 ing the cap on the bearing —e'—, and the bolt

—h— passing through the said caps and
sleeve, substantially as described and shown.

In testimony whereof I have hereunto
signed my name this 20th day of September,
1892.

EDWARD CLIFF. [L. s.]

Witnesses:

FRED C. ARTOPOEUS,

R. G. REYNOLDS.