

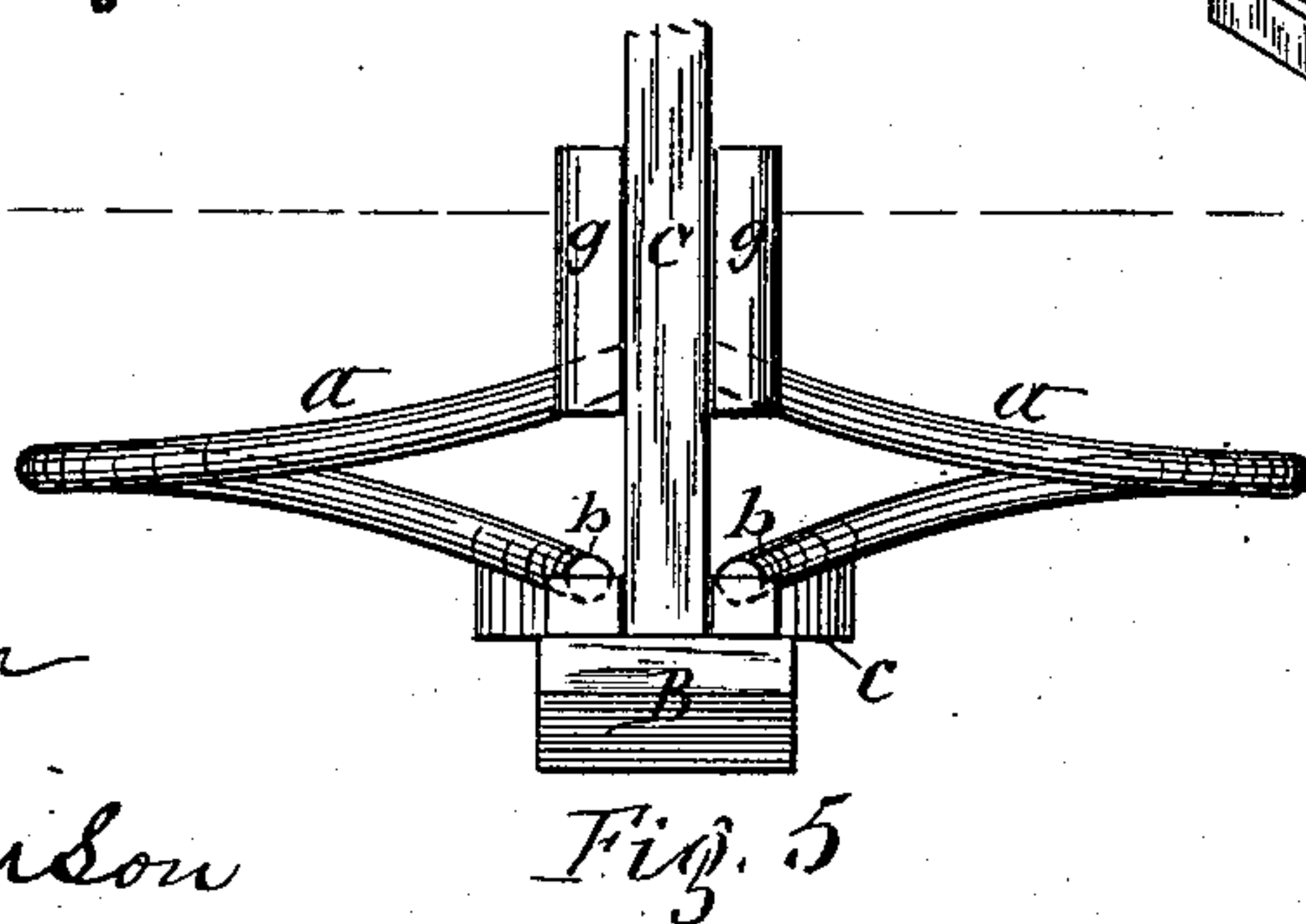
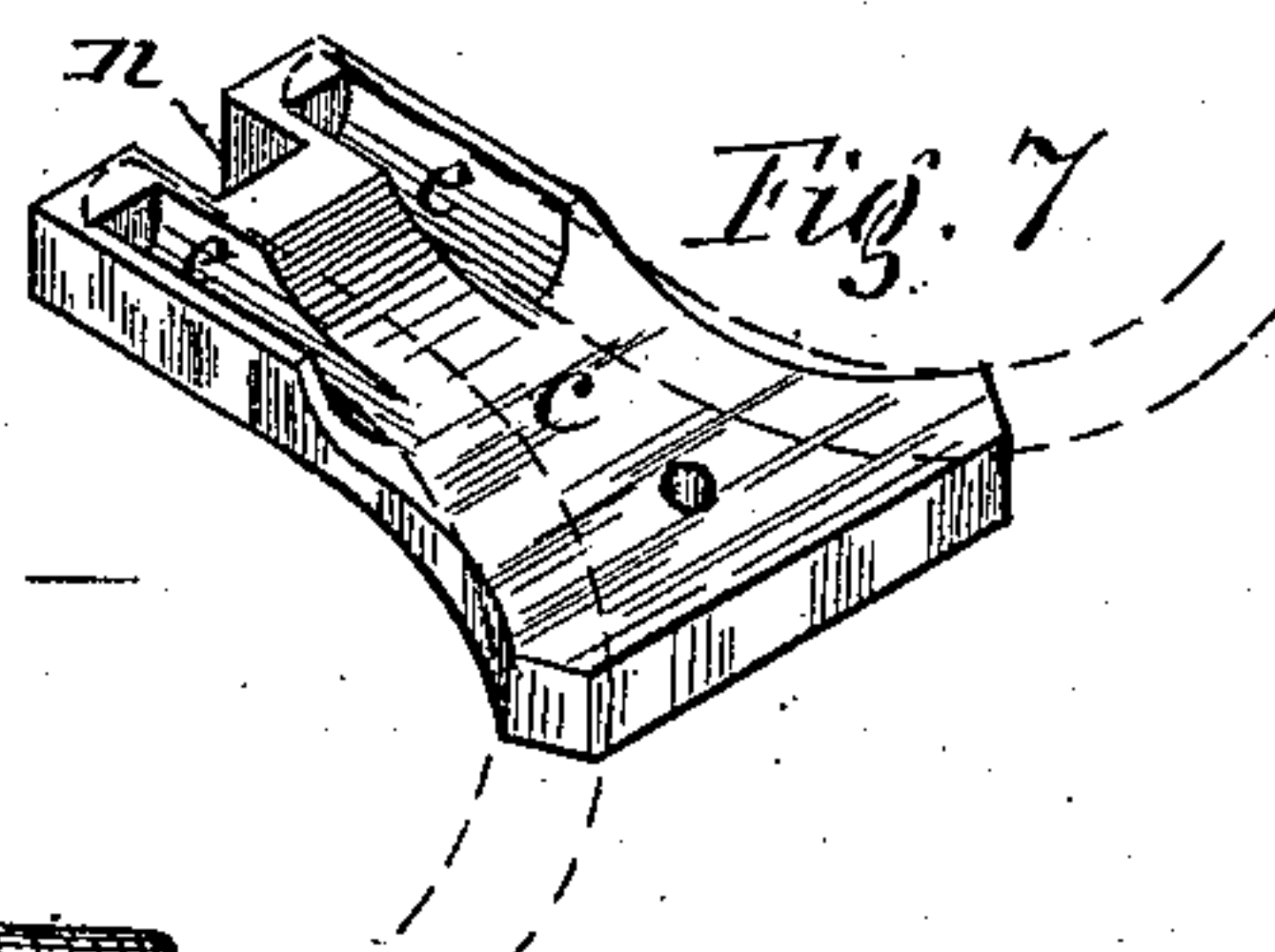
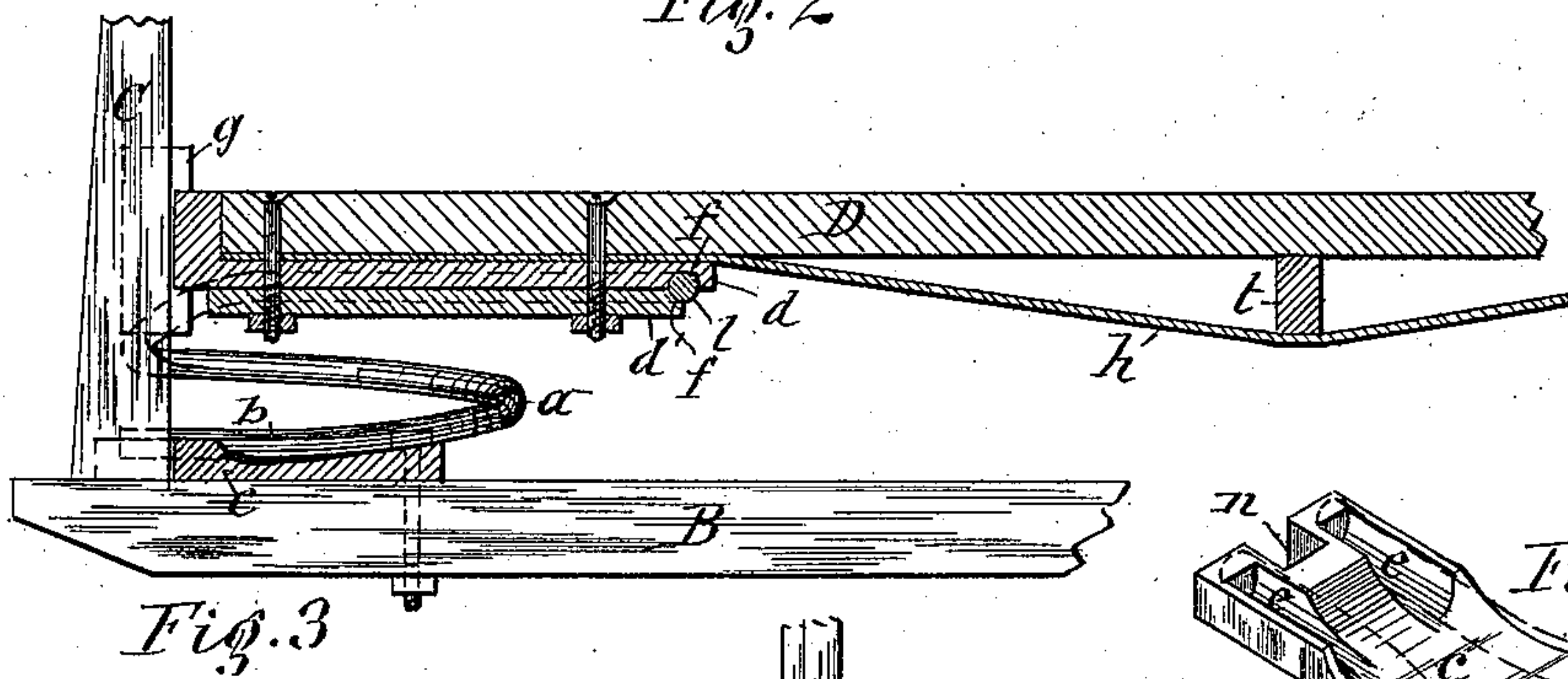
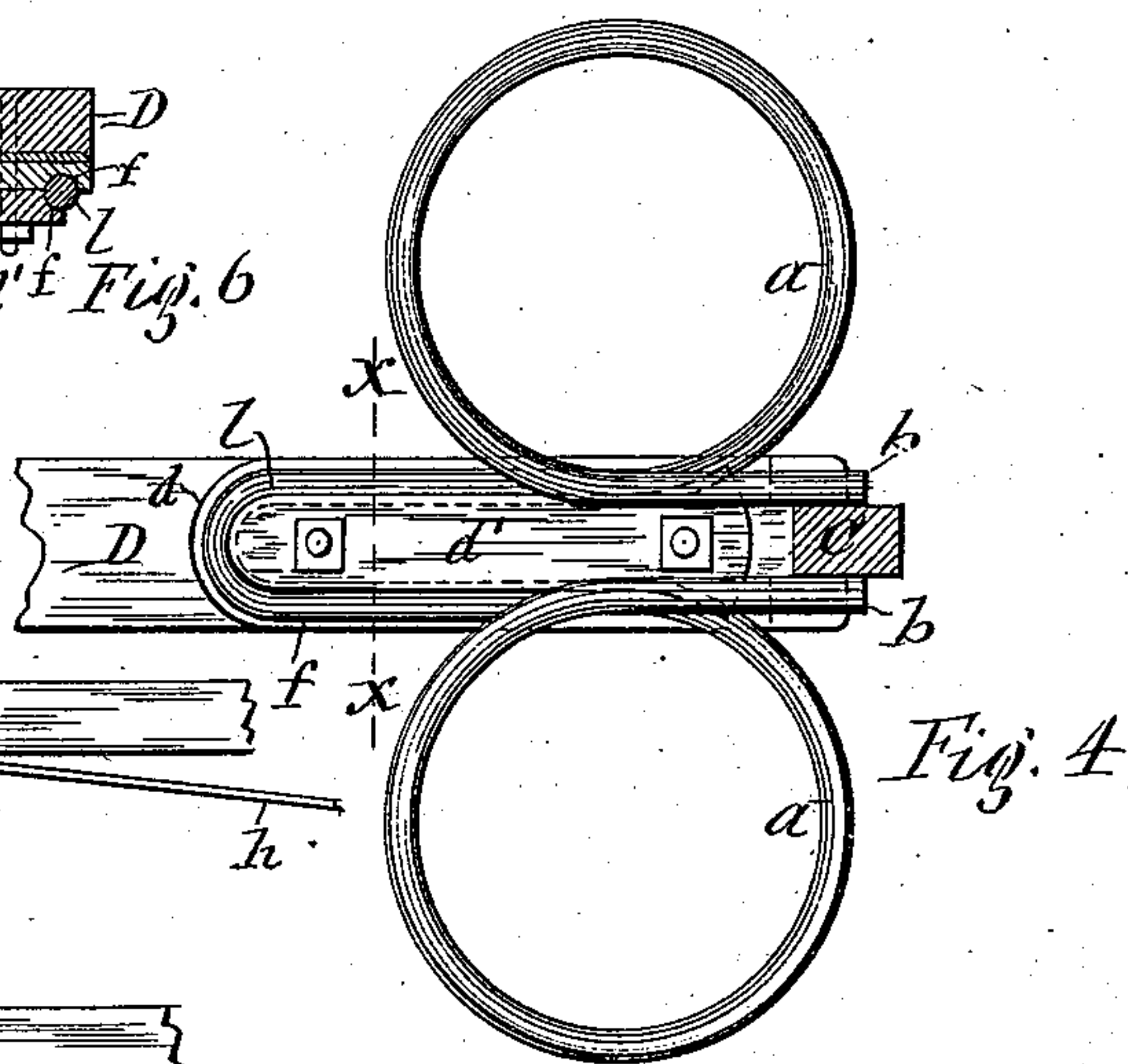
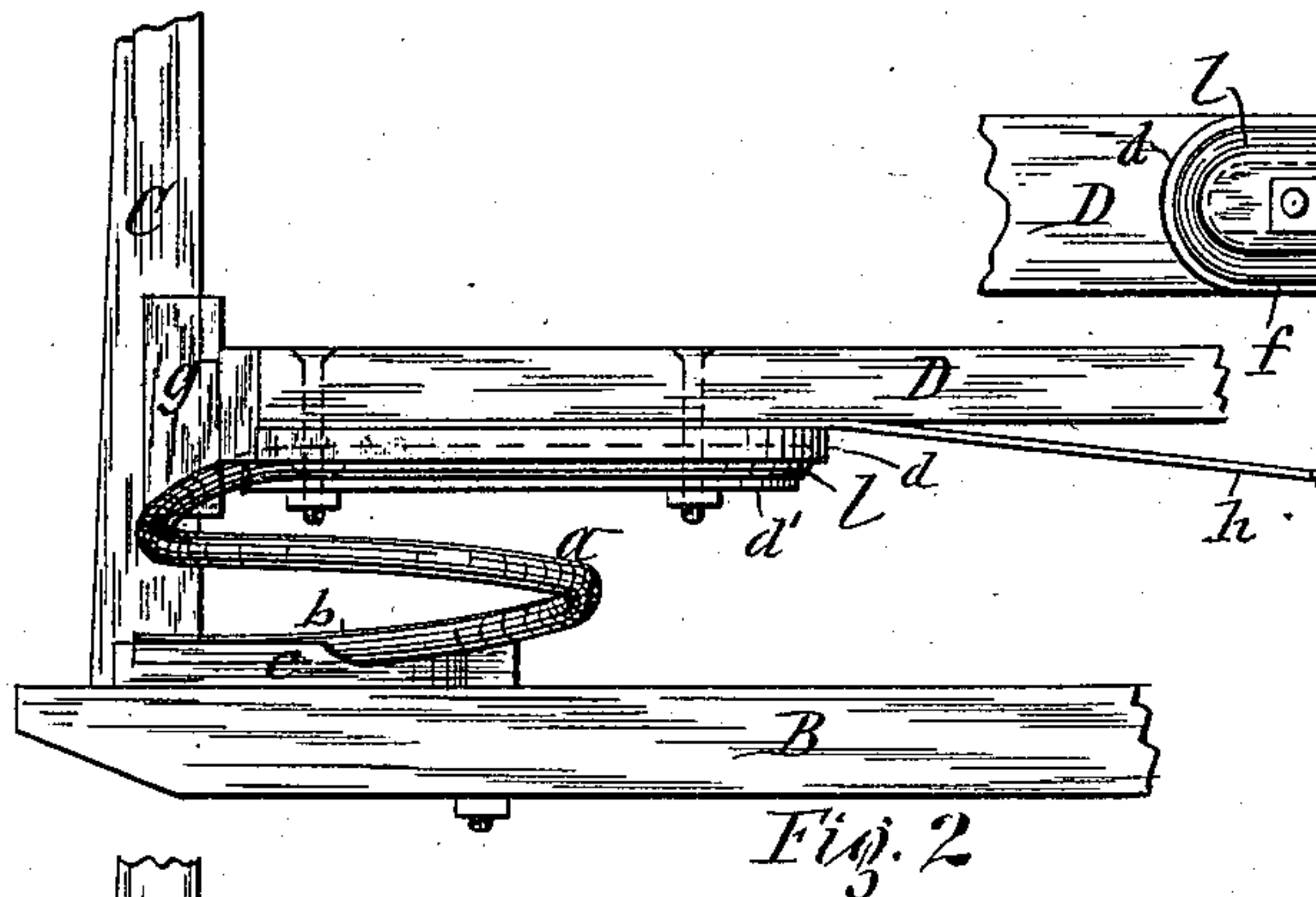
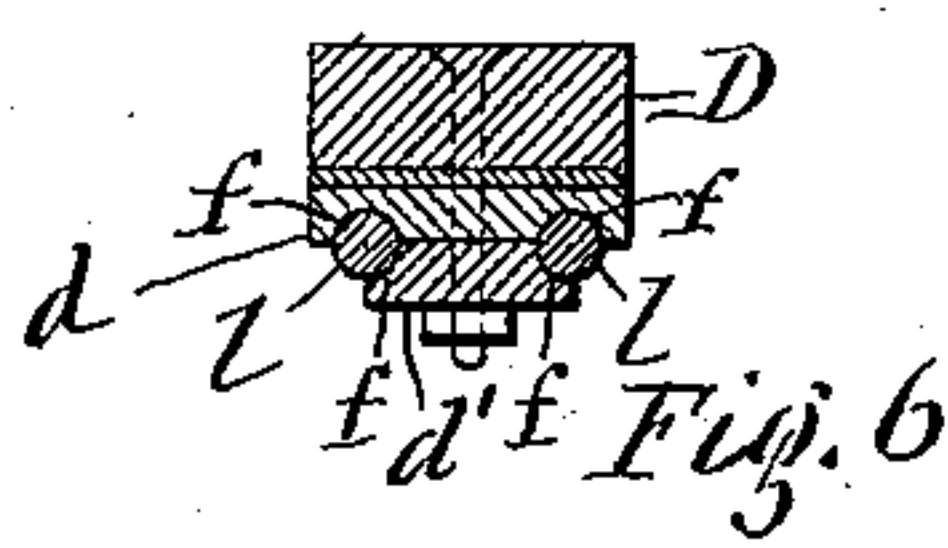
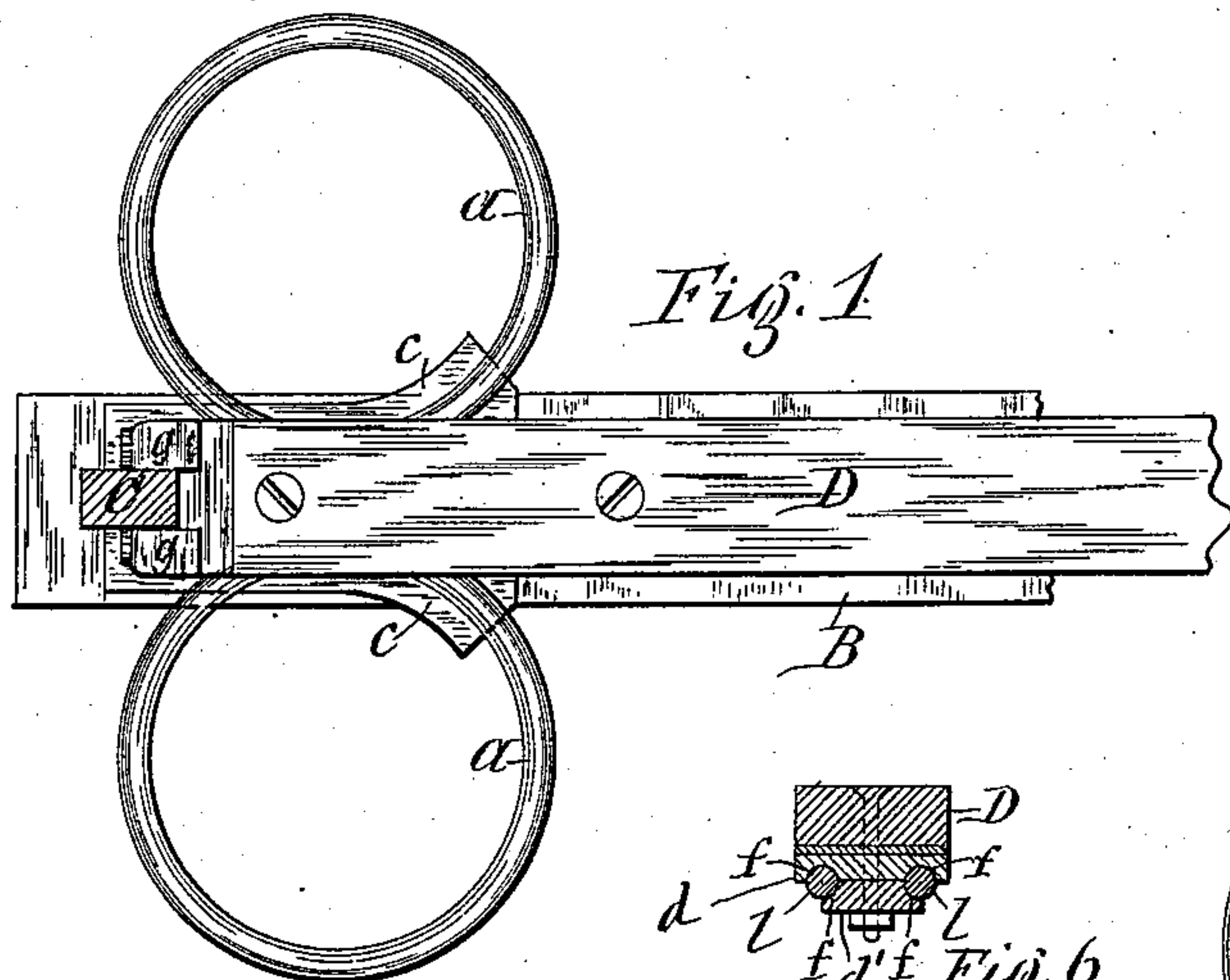
(No Model.)

E. CLIFF.

BOLSTER SPRING FOR VEHICLES.

No. 376,857.

Patented Jan. 24, 1888.



WITNESSES:

C. Bendixon

H. P. Demison

INVENTOR

Edward Cliff

BY

Shull, Laess Shull

ATTORNEYS



# UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF OSWEGO, NEW YORK.

## BOLSTER-SPRING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 376,857, dated January 24, 1888.

Application filed June 15, 1887. Serial No. 241,335. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD CLIFF, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Bolster-Springs for Vehicles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of springs which are coiled and interposed between the bolster and body-supporting cross-bar of a vehicle; and the invention consists in an improved construction of said springs and their connections with the bolster and body-supporting bar, which materially simplifies the same and reduces the cost of the manufacture thereof, and at the same time forms a secure, durable, and efficient spring-support for the vehicle-body; and the invention also consists in novel means of bracing the body-supporting bar at the ends as well as at the center, all as hereinafter more fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a top plan view of one of the end portions of the vehicle-body spring-support embodying my improvements. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical longitudinal section through the center of the aforesaid parts. Fig. 4 is an inverted plan view of the spring and its attachment. Fig. 5 is an end view of a bolster with my improved spring mounted thereon. Fig. 6 is a transverse section on line *x x*, Fig. 4; and Fig. 7 is a detached perspective view of the shoe by which the spring is connected with the bolster.

Similar letters of reference indicate corresponding parts.

B represents the bolster of a wagon, and C one of the stakes, secured to the ends of the bolster in the usual manner.

D denotes the body-supporting bar, which is arranged over the bolster parallel therewith and is guided on the stakes C. The bar D, I support upon the bolster at each end by two coil-springs, *a a*, arranged axially vertically at opposite sides of the bolster, and formed directly at their bases with bearings on the bolster and with short parallel outward-projecting shanks *b b*, which are separated from each other, so as to embrace between them the

stake C, at the front and rear of which they are terminated.

In order to properly support the coils on the bolster, I secure to the top of the bolster, in any suitable manner, a shoe, *c*, provided at one end with a notch, *n*, by which it straddles the stake C, and formed with grooves *e e* at opposite sides of said notch for the reception of the ends of the shanks *b b*. The portions of the bases of the coils adjacent to the shanks rest on the inner end of the shoe, which is preferably formed flaring for that purpose. The two coils *a a* are united at the top by an elongated loop, *l*, extending from said coils in opposite directions from the shanks *b b* and lengthwise the bar D. Said loop I spread apart to form an opening between its inner sides extending the length of the loop, and I secure it to the under side of the bar D by means of plates *d d'*, entering the opening in the loop and attached to the aforesaid bar by bolts passing through the plates and bar, said plates being formed with grooves *f f* on their adjacent sides, which grooves inclose the attaching-loop *l*, so as to confine the same to the aforesaid plates. By spreading the loop *l*, as aforesaid, I obtain a broad bearing and better hold for the attachment of the spring to the bar D.

The plate *d*, I form with a guide, *g*, by which it slides on the stake C. The body-supporting bar D, I brace by means of a strap, *h*, extending lengthwise of the under side of said bar and clamped at its ends between the bar D, underlying plates *d d'* at opposite ends of the aforesaid bar, and between the central portion of the bar and strap I interpose a strut, *t*, said strap and strut forming a truss which, together with the elongated plates *d d'*, serves to brace the bar D at the center as well as at its ends.

I do not claim, broadly, a vehicle-spring composed of two vertical coils formed with attaching-shanks at their upper and lower ends, as I am aware that the same is not new; but

What I do claim as new, and desire to secure by Letters Patent, is--

1. In combination with the bolster B, stake C, and the bar D, arranged over the bolster parallel therewith and guided on the stake, as shown, the coils *a a*, arranged axially vertically at opposite sides of the bolster and united at



the top by the attaching-loop *l*, extending lengthwise the bar D and secured thereto, and the shanks *b b*, extending from the base of the coils and resting upon the bolster and terminating at opposite sides of the stake, substantially as described and shown.

2. In combination with the bolster B, stake C, and bar D over said bolster and parallel therewith, the axially-vertical coils *a a* at opposite sides of the bolster, united at the top by the elongated loop *l*, formed with an opening throughout its length, the shanks *b b*, extending from the base of the coils and resting on the bolster and terminating at opposite sides of the stake, plates entering the opening of the loop, and bolts securing said plates to the bar D, substantially as set forth.

3. In combination with the bolster B and bar D over the bolster and parallel therewith, the axially-vertical coils *a a*, united at the top by a loop formed integral therewith and formed at their base with bearings on the bolster directly under the coils, substantially as set forth.

4. The combination, with the bolster B, stake C, and body-supporting bar D, of the coils *a a*, arranged axially vertically at opposite sides of the bolster and united by the loop *l*, formed in one piece with said coils and extending lengthwise the bar D, and the shanks *b b*, supported upon the bolster and separated and embracing the base of the stake between them, substantially as described and shown.

5. In combination with the bolster B, stake C, bar D, and the coils *a a*, terminating with the attaching-shanks *b b*, the shoe *c*, secured to

the bolster and formed with the notch *n* and with the grooves *e e*, for supporting the attaching-shanks *b b* of the coils, substantially as described and shown.

6. In combination with the bolster B, bar D, and the coils *a a*, formed in one piece with the elongated attaching-loop *l*, the plates *d* and *d'*, secured to the bar D and provided in their adjacent sides with the grooves *f f*, inclosing the loop *l*, substantially as described and shown.

7. In combination with the bolster B, stake C, bar D, and the coils *a a*, united by the elongated loop *l*, the plate *d*, secured to the under side of said bar and formed with the vertical guide *g* and with the groove *f*, and the plate *d'*, secured to the under side of the plate *d* and provided with a corresponding groove, *f*, substantially as described and shown.

8. The combination, with the bar D and its supporting-springs *a a*, of plates *d d*, secured to the under side of opposite ends of said bar, the strap *h*, clamped at its ends between the bar D and plates *d d'*, and the strut *t*, interposed between the said bar and strap, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 2d day of June, 1887.

EDWARD CLIFF. [L. S.]

Witnesses:

H. P. DENISON,  
N. M. SEAMANS.