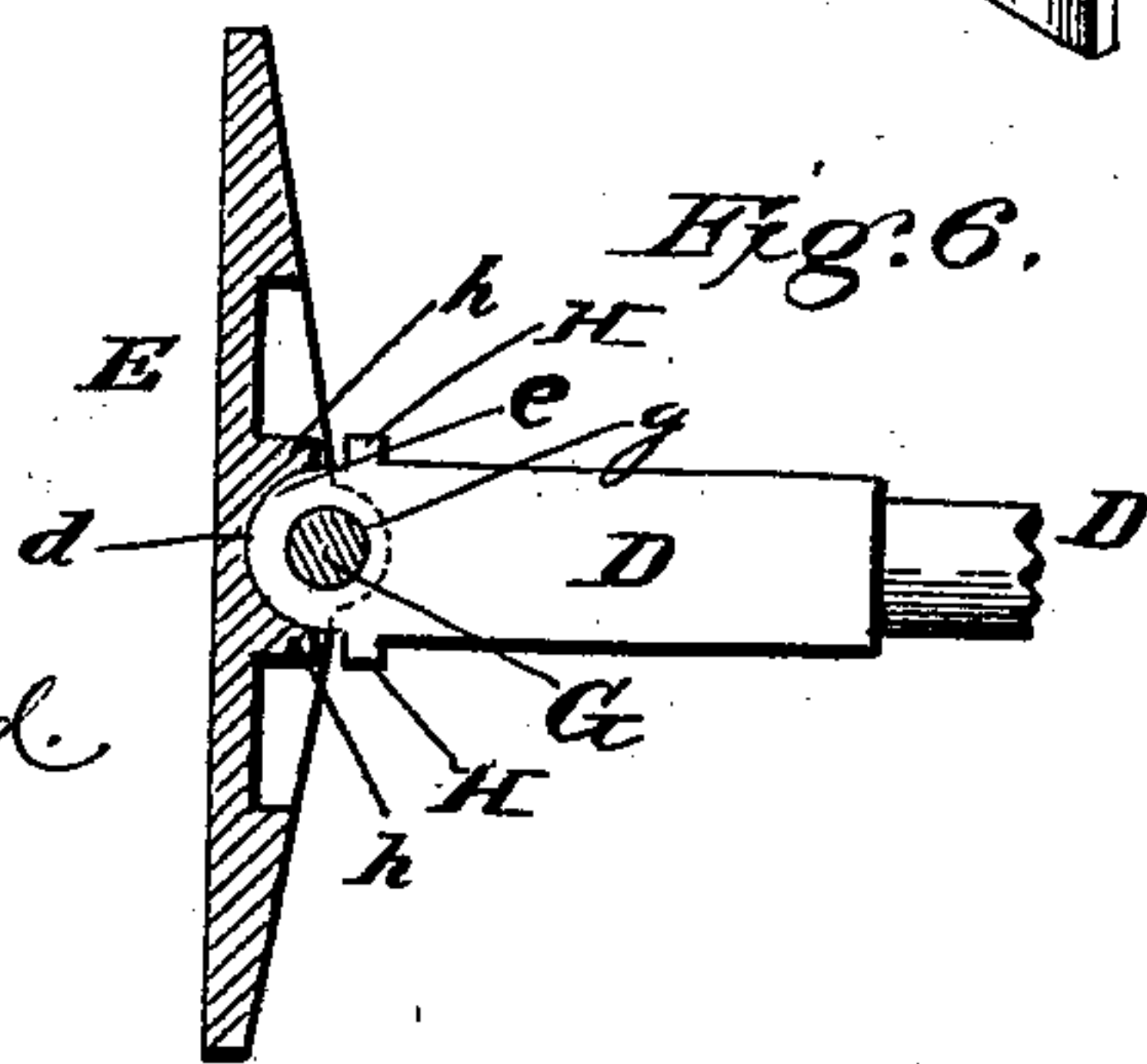
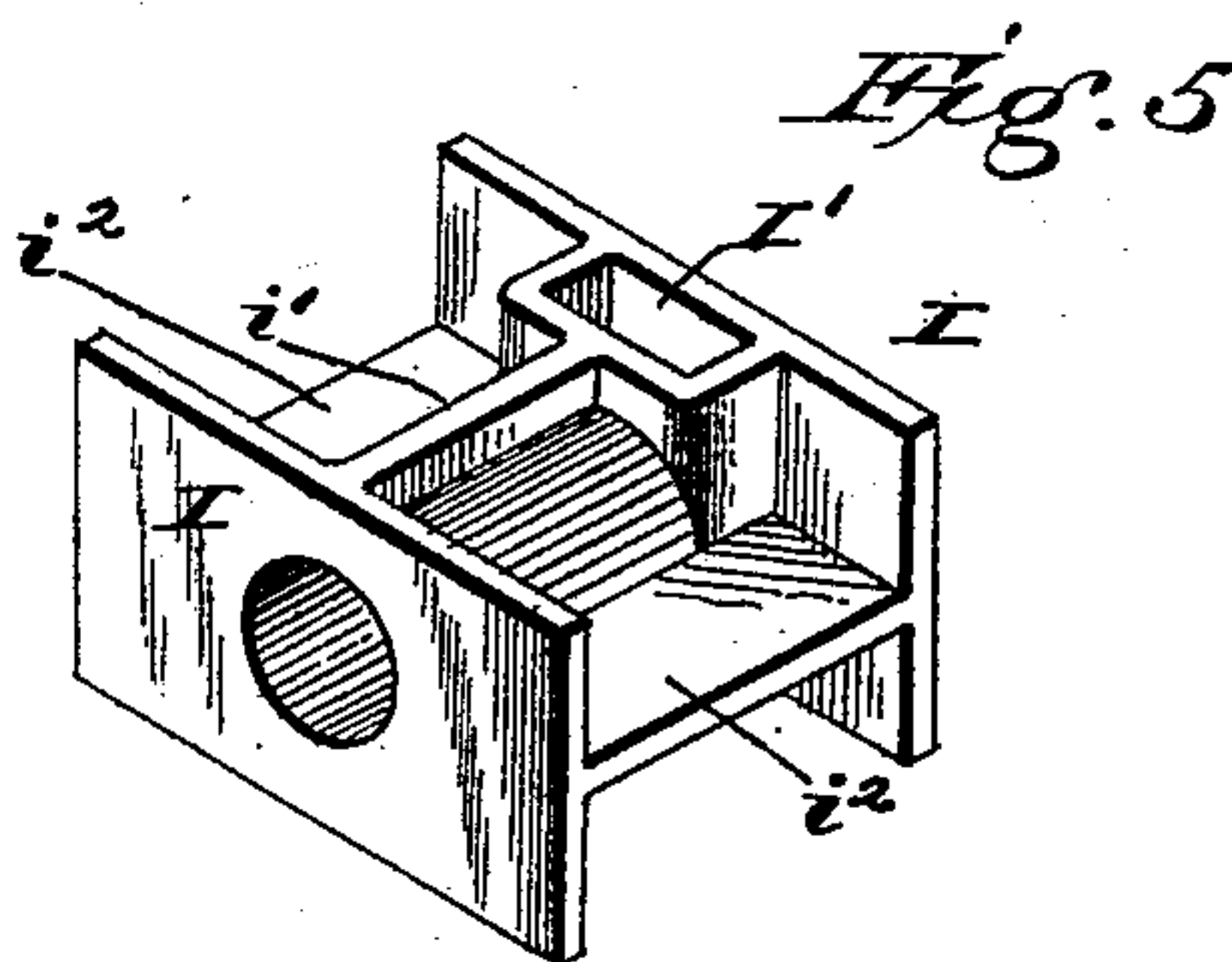
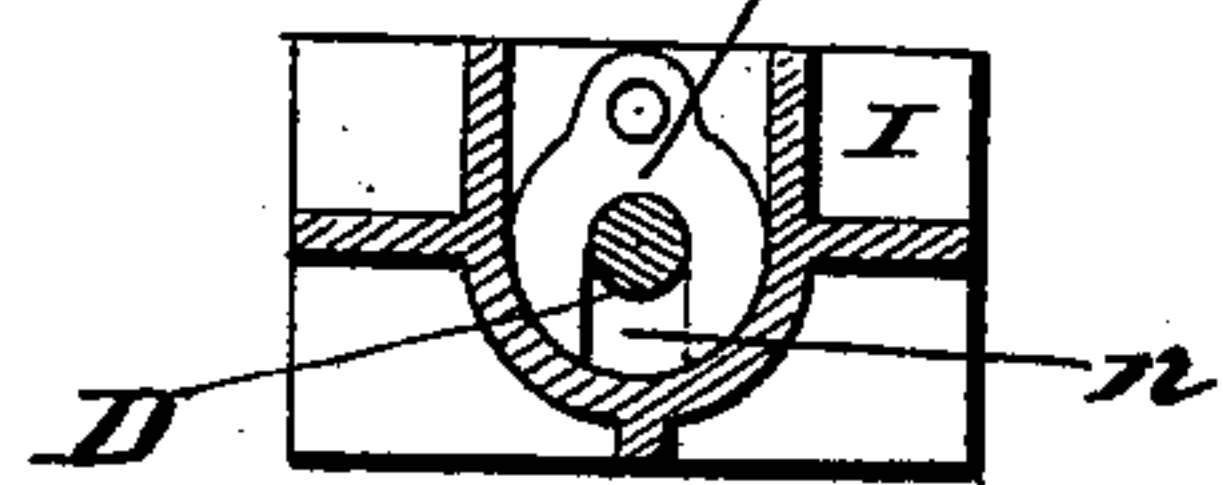
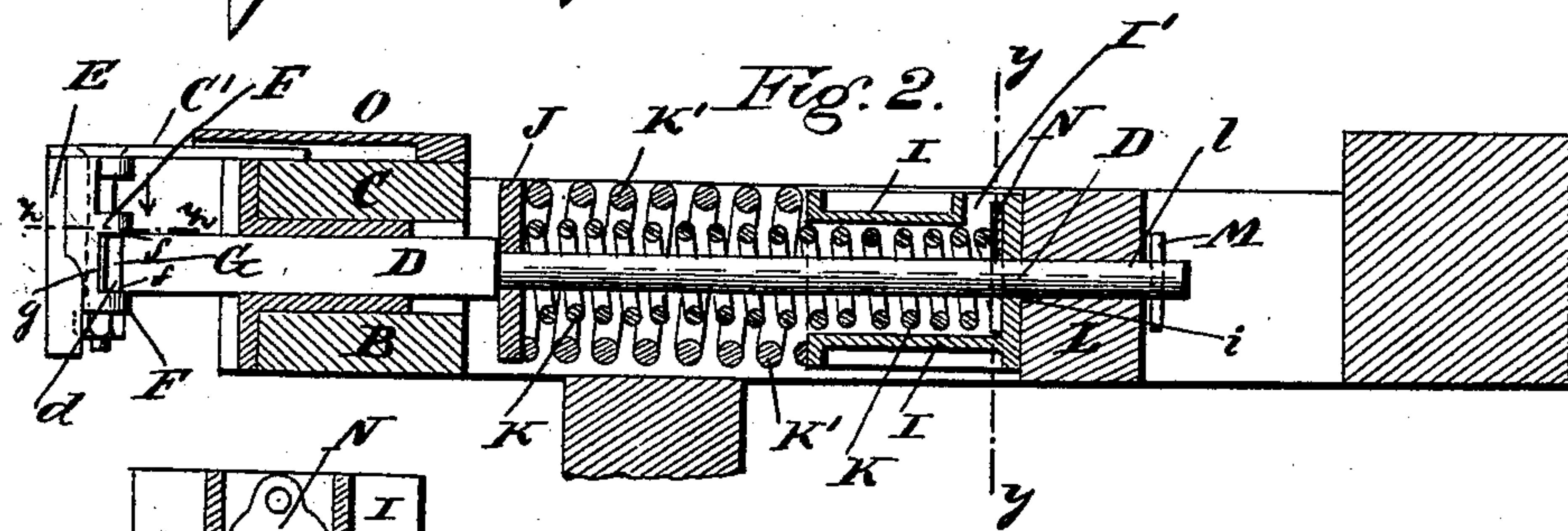
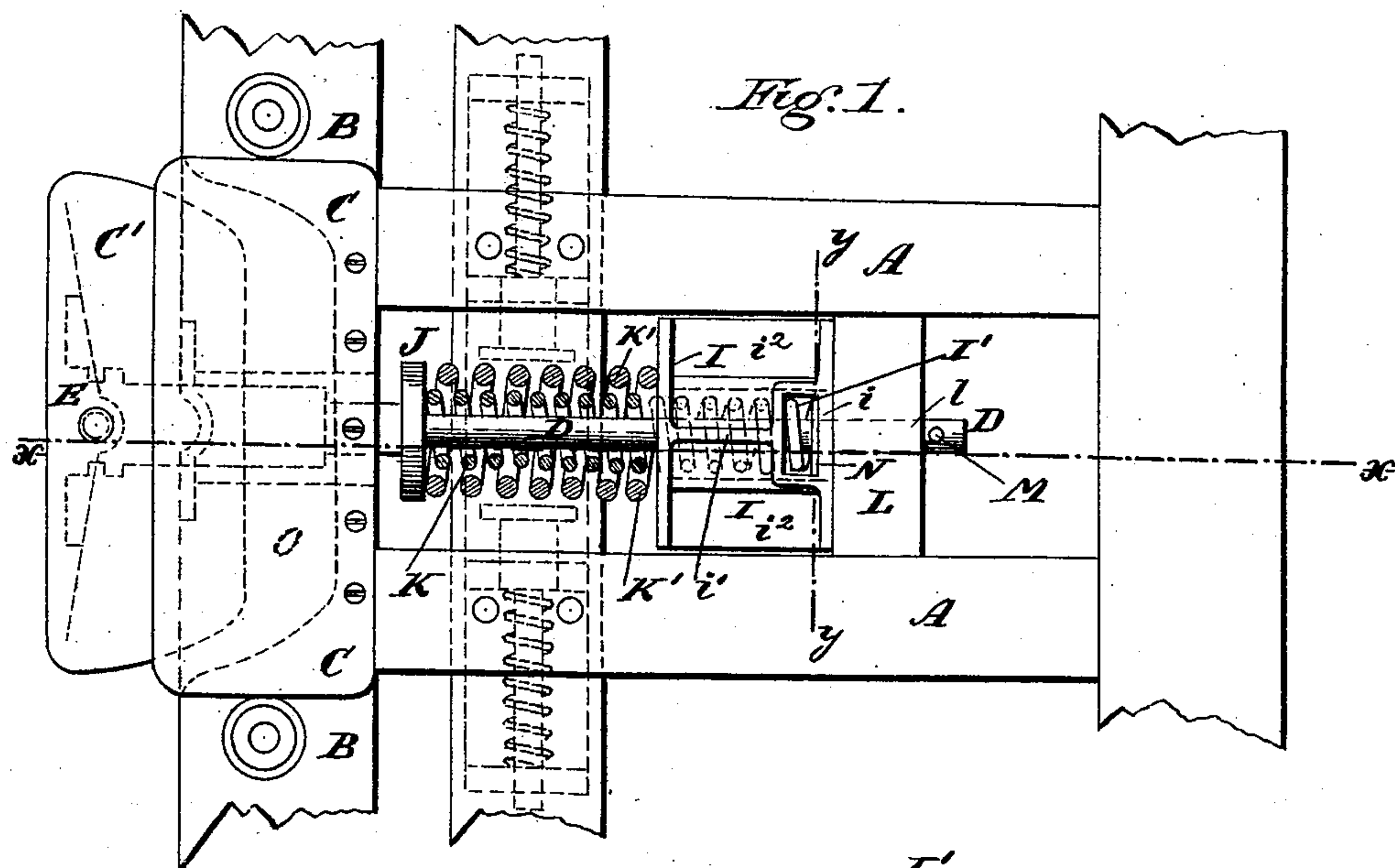


(No Model.)

T. L. McKEEN.  
BUFFER FOR CARS.

No. 500.414.

Patented June 27, 1893.



Witnesses:  
F. L. Ourand.  
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Inventor:  
Thomas L. McKeen,  
by Louis Baggett  
his Attorney.



# UNITED STATES PATENT OFFICE.

THOMAS L. McKEEN, OF NEW YORK, N. Y., ASSIGNOR TO ISAAC G. JOHNSON & CO., OF SAME PLACE.

## BUFFER FOR CARS.

SPECIFICATION forming part of Letters Patent No. 500,414, dated June 27, 1893.

Application filed February 24, 1893. Serial No. 463,569. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS L. McKEEN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Buffers for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan, partly in section, of my improved buffer with its appurtenances. Fig. 2 is a longitudinal sectional view of the same on line  $x-x$ . Fig. 3 is a transverse vertical sectional view on line  $y-y$  in Figs. 1 and 2. Fig. 4 is a detail view of the spring-adjusting or reinforcing-plate which forms, in its proper combination, one of the elements of my improvement. Fig. 5 is a perspective detail view of the abutment box within which said spring-adjusting-plate is located; and Fig. 6 is a horizontal sectional view through the buffer head, on line  $z-z$  in Fig. 2.

Like letters of reference denote corresponding parts in all the figures.

This invention relates to buffers or bumpers for railway cars, and consists in certain improvements—as hereinafter more fully described and claimed—which are particularly applicable to buffers of the construction shown and described in my Letters Patent of the United States No. 302,512, dated July 22, 1884; No. 490,977, dated January 31, 1893; and No. 491,371, dated February 7, 1893. At the same time I desire it to be distinctly understood that the improvements hereinafter to be described may also be applied advantageously to buffers or bumpers of different constructions, and are not by any means limited in their application and adaptation to the particular form of buffer described in the above named Letters Patent.

Referring to the accompanying drawings, the letters A A denote the two parallel beams or sills of the body or frame of a railway car between which the (in this case) centrally located buffer is placed, and B is the trans-

verse front sill or beam which supports the platform C. This platform may be of the improved construction shown in my two patents of January 31, and February 7, 1893, respectively, *i. e.* provided with a false movable platform, C', affixed to and sliding with the buffer head E; its inner end, which overlaps the platform, being covered and protected by an overlapping plate or guard O, as fully specified in my two aforesaid patents; but this feature is not essential to my present improvement.

The projecting forward end of the buffer stem D is rounded, as shown at  $d$ , to fit into a correspondingly rounded recess  $e$  in the buffer-head or plate, which has two parallel inwardly projecting lugs or ears F F, that are perforated vertically at  $f f$  in alignment with a hole  $g$ , bored through the rounded end  $d$  to receive a pin or pintle, G, by means of which the head E is fastened movably upon its stem D; the registering apertures  $f g$  and  $f$  forming the center of a circle formed by the convex rounded head  $d$  and concave rounded recess  $e$ . It follows that the buffer head has free play, in a horizontal plane, in its relation to the stem D, and this play or movement is limited by two laterally projecting lugs or stops H H, one on each side of the stem, in conjunction with two corresponding stops or projections,  $h h$ , on the inner side of the movable head E, forming the sides of the concave recess  $e$ . Thus it will be seen that the movable buffer head is confined or controlled in its lateral motions by the stops H and  $h$  (a pair on each side), so that in turning even the sharpest curves, the sides of the buffer head or plate cannot strike against the front sill of the platform or car body.

The inner or rear end of the buffer stem D is inserted through a box I, supported by the parallel side sills A A; and between this box and a plate J, fastened upon the stem, back of the front sill B, is placed one or more stiff coiled springs K, the function of which is to force the front end of the buffer out beyond or in front of the platform, as shown. The box I not only forms a receptacle or enclosure for the rear end of spring K; but it forms a guide for the same, preventing lateral



deflection of the coils which work loosely upon the stem, as well as for the stem itself, the rear end of which projects through an aperture *i* in the rear wall of the box, and also through a coinciding aperture *l* in the beam or cross-piece L, which is bolted to and between the side-sills A A of the car frame. The extreme rear end of the stem D, which projects through this aperture *l*, is drilled through for the insertion of a pin M, which forms the rear stop and prevents the buffer from being withdrawn from the car of which it forms a fixture.

As, in course of time, the buffer spring K is likely to become weakened through constant use and strain, it becomes necessary or expedient to provide means for the equalization or restoration of its extension, and such means I provide in the shape of one or more plates N, of a width corresponding to the inside width of box I, so that one or more of these plates N may be inserted into the box from the top, and placed back of the inner end of the spring. To make room for the stem, each plate N is cut out, as shown at *n* in the detail view, Fig. 4, so that it will straddle the stem with a leg on each side thereof; the plate or plates being held in place after the insertion simply by the box and the pressure of the inner end of the spring; and in order to retain these plates N firmly in place in their properly adjusted position within box I, the latter is made with a chamber I' at its rear end, open at the top for the insertion of the plates, and reinforced to withstand strain or push in a longitudinal direction by a central longitudinal rib or web *i'* (see the detail view of the box, Fig. 5), which connects the front wall of the chamber or compartment I' with the front wall or abutment-end of the box. As this front wall has to bear considerable pressure (forming, as it does, the rearward bearing or abutment for the strong exterior buffer-spring K'), this central reinforcing-web or rib *i'* plays an important part, in conjunction with the lateral wings or reinforcing-webs *i<sup>2</sup> i<sup>2</sup>*, for strengthening the box and making it sufficiently stiff and rigid to withstand pressure against its front end, without interfering with the proper adjustment of the take-up-wear plates N, which can be readily inserted or removed through the open top of the compartment I' at the rear end of the combined abutment— and guide-box I. This device takes the place of the push-bar or push-rod N described in my patent (No. 490,977) of January 31, 1893, than which it is less complicated and therefore less expensive and easier in its application and adjustment. As the spring requires it, more plates may be added, from time to time, to give to the spring the requisite tension. As these plates have no strain to sustain, they can be made of cast-iron or other cheap material; but they should have the edges filed off so as to fit the side of the box nicely.

Another important function of box I, besides serving as a holder for the spring-reinforcing plates N, is to form an abutment for the inner end of the outside coil of buffer-springs, where more than a single coil is used. I have found it difficult, in practice, to construct a single spring of sufficient strength and tension to work the buffer on heavy cars, such as sleeping and compartment coaches, dining cars, &c., where the strain taken by the buffer on contact of the cars (when they come together in suddenly stopping the train, for example) is very considerable. Of course, such single springs can be made; but they require the best of steel, carefully tempered, and are therefore necessarily expensive. As good and even better results are attained by using a compound spring, as shown on the drawings, *i. e.*, a long inner coil of spring, K, enveloped by a shorter outside coil, K', of larger dimensions and thicker coils. The thinner inner coil K extends from plate J back to the rear wall of box I, or abuts upon plate N (if there be any) within the same, while the outside shorter but stouter coil K' extends from plate J back to the closed front end of box I only, as clearly shown in the drawings; the length of the box filling up the space between the rear or inner end of the outer coil and the stationary cross-piece or abutment L. In other words: this rigid cross-piece L forms the inner abutment for the inner coil K of the compound spring, while the forward end of box I forms, in substantially the same manner, the inner abutment for the outer coil K'. I have found it necessary to provide take-up wear plates for the inner lighter spring coil K only, which, being of greater length and thinner material than its sister coil K', will give out sooner and may sometimes require to be reinforced in the manner stated, while this will not be necessary as regards the much stouter and stronger short outside coil K'.

By these improvements I provide a buffer which will be found to work satisfactorily at all times and under all conditions, even on the sharpest curves and when the buffers are subjected to the hardest usage. The compound spring, in combination with the box I and adjusting-plates N, is much less expensive than a single spring of the same capacity would be; and by the use of the adjusting plates as described, the compound spring may be adjusted to any requisite or desired tension in a moment of time and at only nominal cost. By means of the stops on the buffer-stem and head, the play of the latter is controlled within its proper limits.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of the stationary platform, the spring-actuated buffer-stem having an apertured convex head provided with projecting lateral stops H H, the buffer-head or plate having a concave recess fitting the



convex head of the stem and provided with side stops *h h*, and the bolt or pintle coupling the head to the stem centrally between the side stops of both; substantially as and for the purpose set forth.

2. The combination of the stationary platform, the buffer-supporting frame below the same comprising the side sills *A A* and cross pieces *B* and *L*; the buffer stem provided with plate *J* or its equivalent; the compound coiled spring; and the box *I* constructed with the chamber or compartment *I'* at its rear end, and provided with a longitudinal rib or reinforcing-web *i'* and side-flanges *i<sup>2</sup>, i<sup>2</sup>*; said box forming a holder for the rear end of the larger inside spring and an abutment for the shorter outside spring; substantially as and for the purpose set forth.

3. The combination with the spring actuated buffer stem and box *I*, of the spring adjusting plates *N*; substantially as and for the purpose set forth.

4. The combination with the buffer-stem and its compound springs, of the box *I* having vertical ends connected by lateral webs or reinforcing side-flanges, and provided with the sub-compartment *I'* and central rib or reinforcing-web *i'*; substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

THOMAS L. McKEEN.

Witnesses:

JOHN PROCTOR CLARKE,  
M. C. HASCALL.