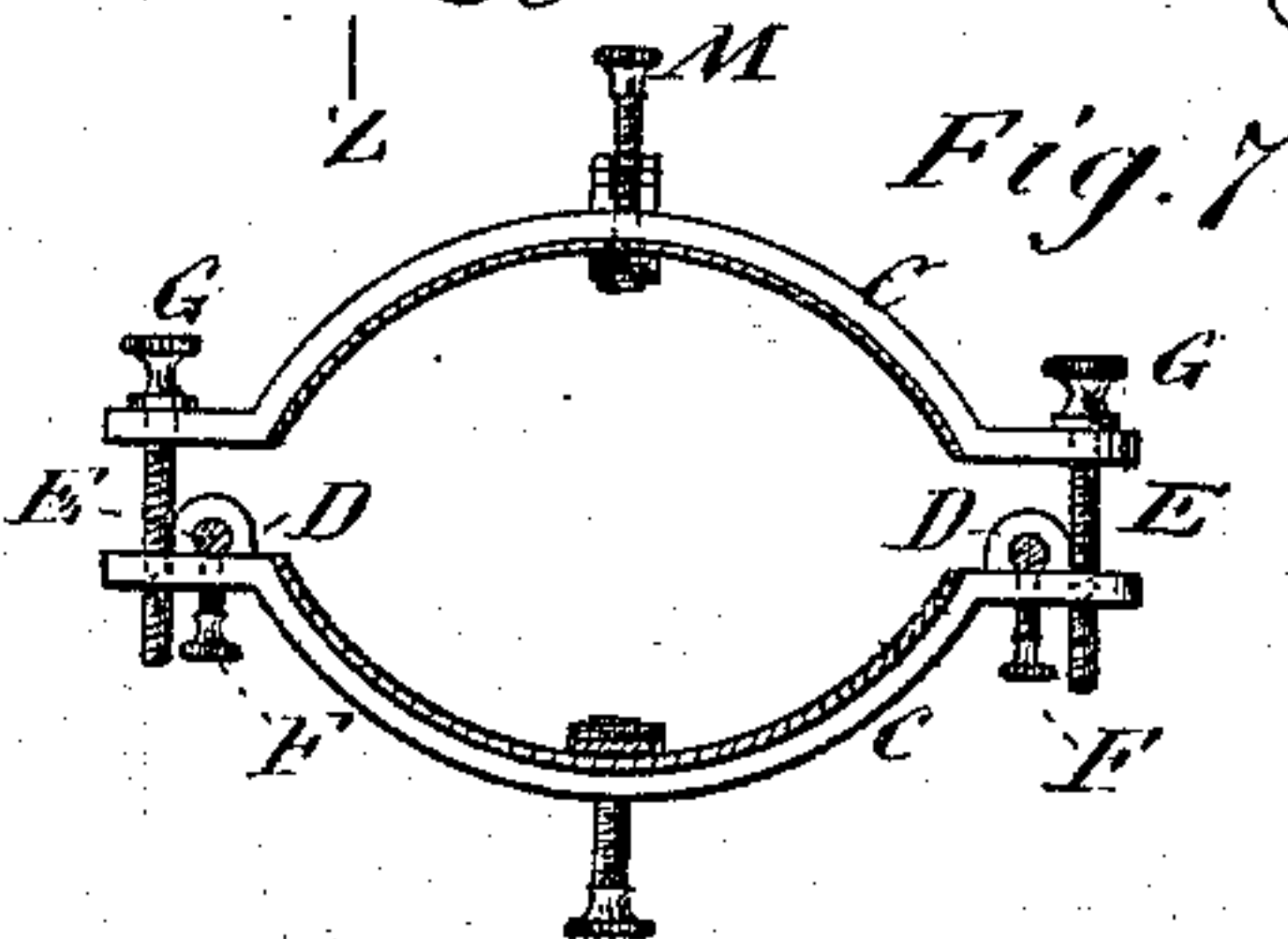
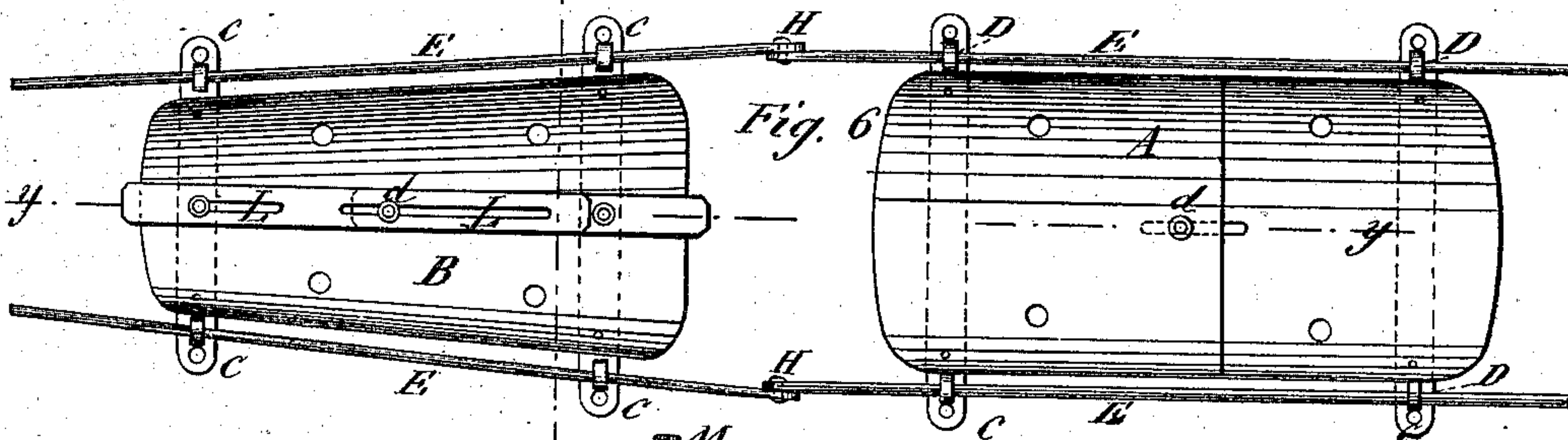
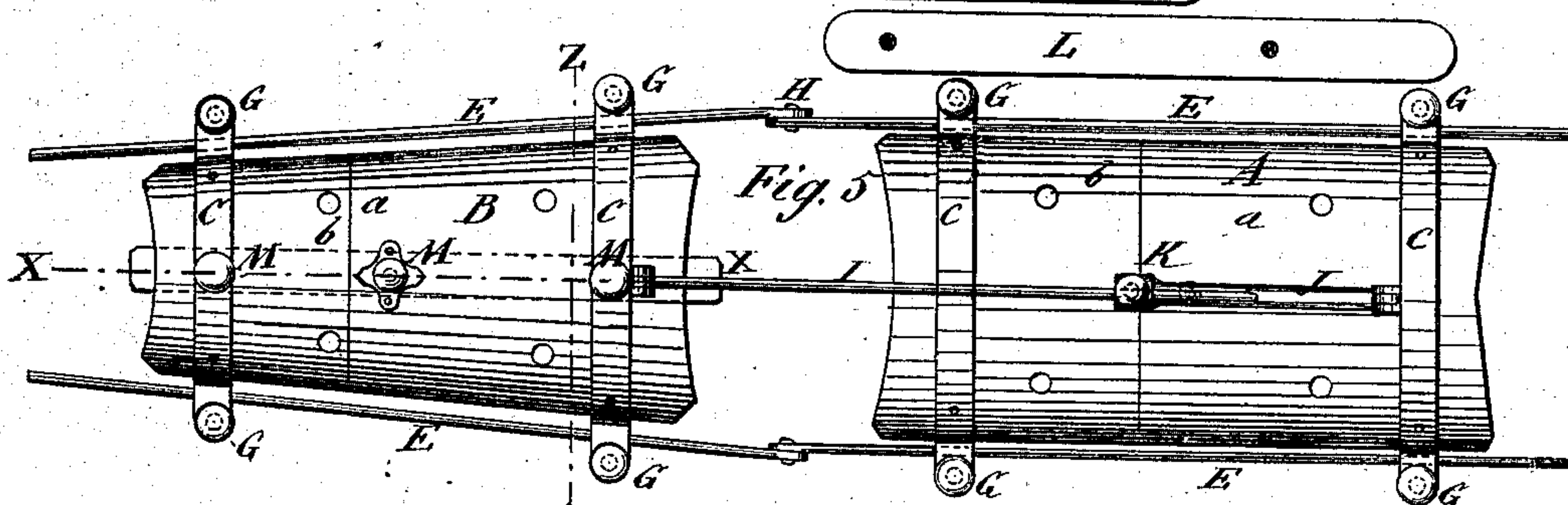
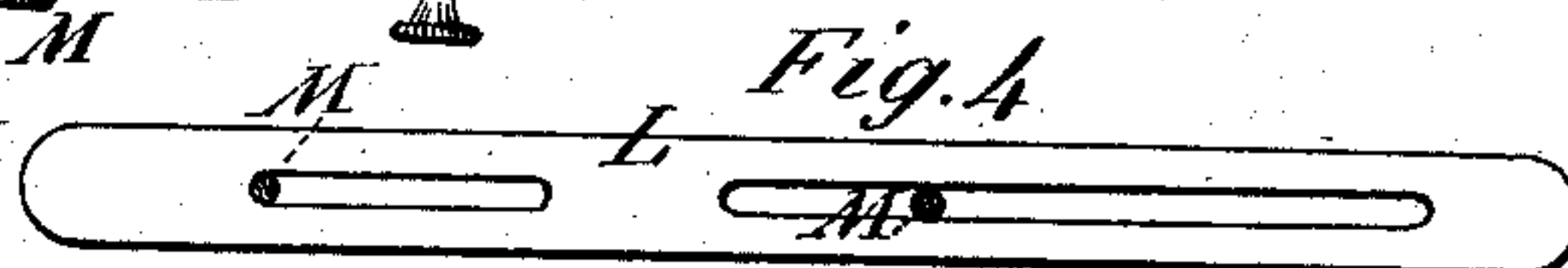
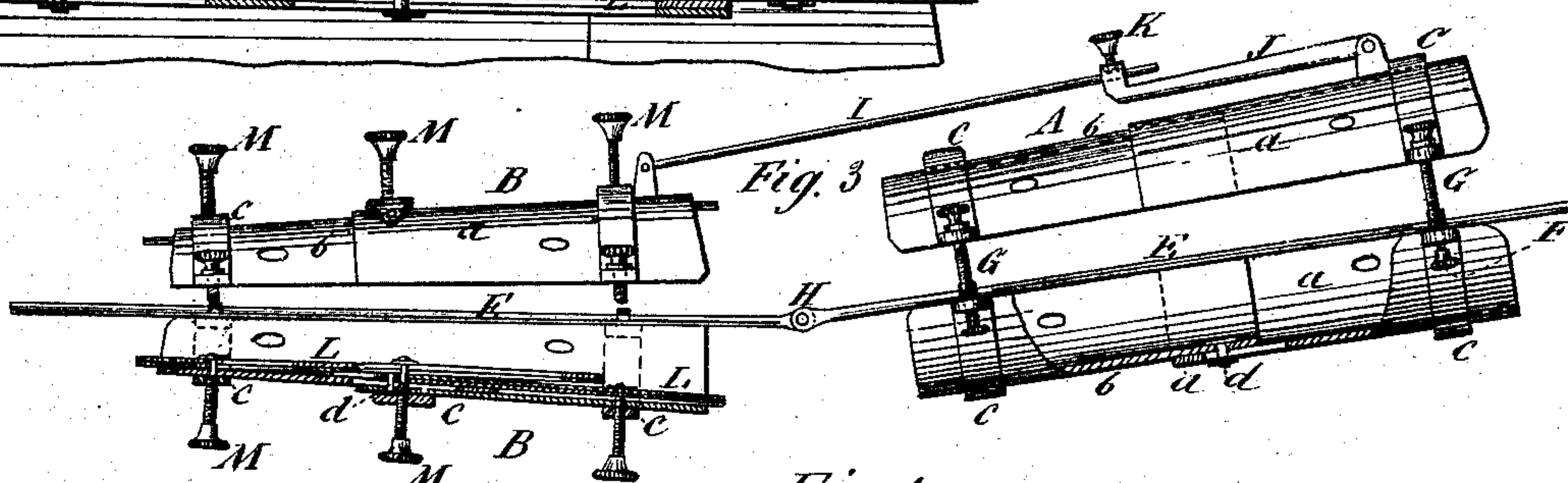
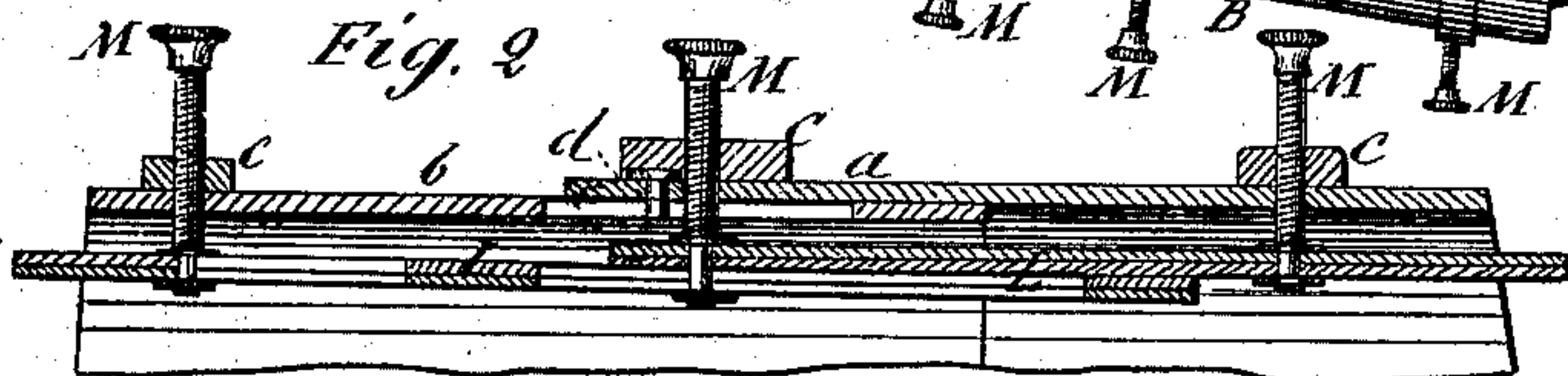
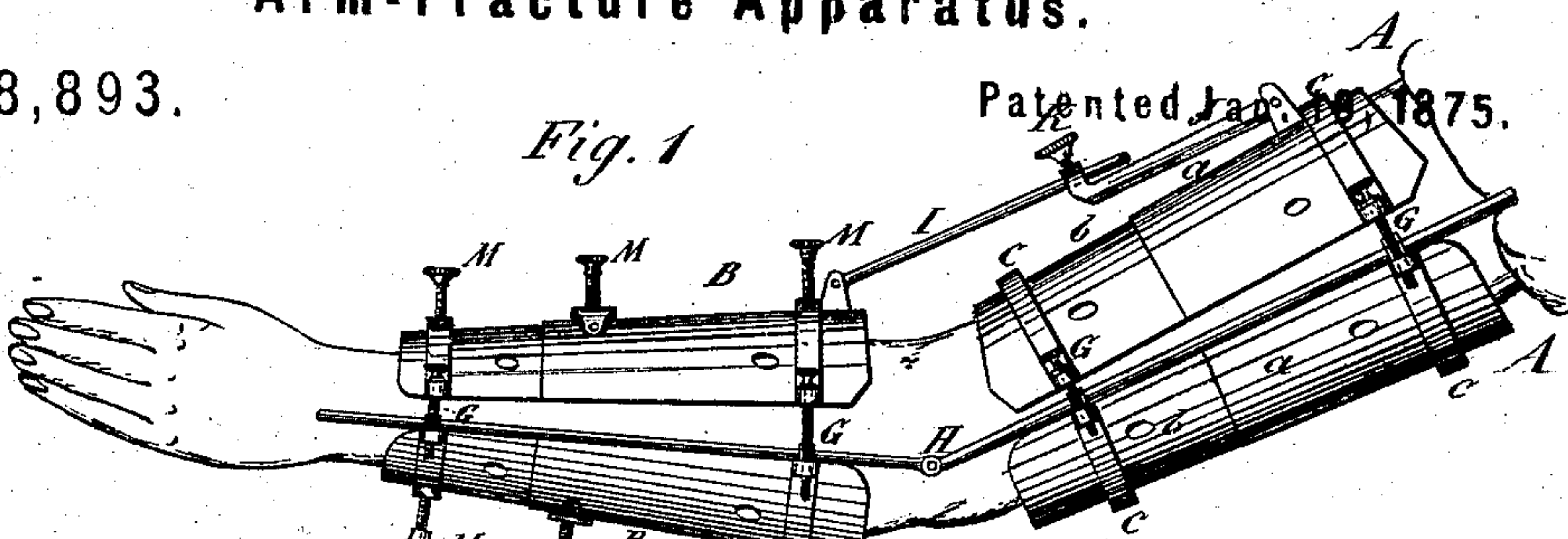


D. BISSELL.  
Arm-Fracture Apparatus.

No. 158,893.

Patented Jan. 5, 1875.

Fig. 1



WITNESSES:

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INVENTOR:

*Davis Bissell*  
BY *Mmm*  
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# UNITED STATES PATENT OFFICE.

DAVID BISSELL, OF DETROIT, MICHIGAN.

## IMPROVEMENT IN ARM-FRACTURE APPARATUS.

Specification forming part of Letters Patent No. **158,893**, dated January 19, 1875; application filed December 5, 1874.

### CASE A.

*To all whom it may concern:*

Be it known that I, DAVID BISSELL, of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Arm-Splint, of which the following is a specification:

My invention comprises two pairs of clamping-plates, one for the arm and the other for the fore-arm, the plates being of concavo-convex form, whereby they are adapted to envelop the arm, or nearly so. They are also made double, and contrived to lengthen and shorten, and they are fitted on rods, so as to be adjusted toward and from each other, to shift along the arm, as may be required, and the rods are jointed to allow the arm to be bent at the elbow when required. The upper plates of each pair are detachably connected to the others by clamping-bars and screws, so as to be taken off and put on readily, in applying the splint to and removing it from the arm; and the part to be applied to the fore-arm is provided with flexible springs, with adjusting-screws for applying the pressure to the arm, the object being to conform the pressing device to the shape of the arm for regulating the pressure on the different parts, and to hold the arm in the requisite shape. These springs are also serviceable in applying the pressure, so as not to press the two bones of the fore-arm together. The clamping-plates are made of zinc, and a zinc plate is used in front of the pressure-springs for the benefit of its cooling nature, and to facilitate the application of electricity.

Figure 1 is a side elevation of my improved arm-splint. Fig. 2 is a longitudinal sectional elevation of one of the clamping-plates of the fore-arm, on an enlarged scale, the section being taken on the line *xx* of Fig. 5. Fig. 3 is partly a side elevation and partly a sectional elevation, the section being taken on the line *yy* of Fig. 6. Fig. 4 represents a pair of the pressure-springs in detail. Fig. 5 is a plan view of the splint. Fig. 6 is a plan of the lower half of the splint. Fig. 7 is a cross-section on the line *zz* of Figs. 5 and 6.

Similar letters of reference indicate corresponding parts.

A represents the pair of clamps for the arm, and B the pair for the fore-arm, each plate consisting of two parts, *a b*, fitted together, one upon another, and fastened by rivets or other contrivances, *d*, so as to lengthen and shorten the clamp at will, to adapt it to the length of the arm, and to the nature of the case. The plates are riveted to bars C, and the bars of the lower parts are fitted by perforated ears D on rods E, so as to slide freely, and the ears have set-screws F to fasten the plates at any point on the rods. The upper bars C are connected, detachably, to the lower ones by the screws G, which also press the clamps on the arm. The rods E are jointed between the two clamps at H, to work the clamp coincident with the elbow, and the clamps are connected together by the adjusting-rods I J, with an adjusting-screw, K, so that they can be fastened in a straight line, or at any required angle, to hold the arm in any required position. The clamp for the fore-arm has spring presser-pads L, consisting of a very flexible flat steel spring, with a front plate of zinc arranged lengthwise along the middle of the inside of each plate by adjusting-screws M, to apply the pressure principally, and to preserve the true form of the arm. They are also adapted to so apply the pressure that it will not press the two bones of the fore-arm together as the common bandages do. These pressure-springs are also made in two parts, which are held together by the middle screw, so that they can be altered readily in length to adapt the instrument to the nature of the case and to project the springs beyond the plates to support the wrist when it may be required to do so.

These springs enable the broken arm to be shaped exactly like the other, by taking a pattern from it, and then adjusting the broken arm to the pattern. The pattern is taken by applying the springs of one of the halves of the clamp to the well arm and adjusting the springs exactly to the curvature of it, and then by the other springs setting the broken arm to the pattern thus taken.

When it is desired to utilize the spring-pads to prevent the two bones of the fore-arm from



being pressed together, the packing material, such as cotton and the like, used between the springs and the arm for cushions may be adjusted so as press between the bones, and tend to separate them, the bones being free from pressure in the opposite direction, by being relieved of the clamping-plates, which the bandages will not admit of. These springs and other adjusting-screws will also be very useful in relaxing the pressure in case of swelling of the limb, and in tightening up again when the swelling subsides, which can be done merely by turning the screws.

By tightening the clamp B around the wrist so as to hold snugly and relieving the pressure at the other end of said clamp, and then shifting the clamp along the rods E and tightening it at any point by screws F, while the upper clamp remains stationary, the extension of the arm can be effected readily.

This improved splint enables the surgeon to dispense with all buckling of straps and pinning of bandages, and thus saves much labor and discomfort to the patient. It also dispenses with the bandage called the "roller," and greatly simplifies the process of dressing the limb.

The zinc plates are employed for the benefit of the cooling properties of zinc, which will

be serviceable in allaying fever, and they afford means of applying electricity readily, which, in certain stages of the case, is highly desirable, for exciting the paralyzed flesh.

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

1. The combination of extensible concavo-convex clamping-plates A or B, curved clamping-bars C, sliding upon jointed rods E, and adjusting-screws C, substantially as specified.

2. The combination of extensible clamping-plates A B, bars C, adjusting-screws G, jointed rods E, and an adjustable fastening, as I J K, substantially as specified.

3. The combination of pressure-springs L and adjusting-screws M, with the clamping-plates of a fracture apparatus, as specified.

4. The said springs, arranged to extend out of the plates along the wrist, for supporting it, substantially as specified.

5. The combination of zinc facing-plates with the pressure-springs, substantially as specified.

DAVID BISSELL.

Witnesses:

T. B. MOSHER,  
ALEX. F. ROBERTS.