

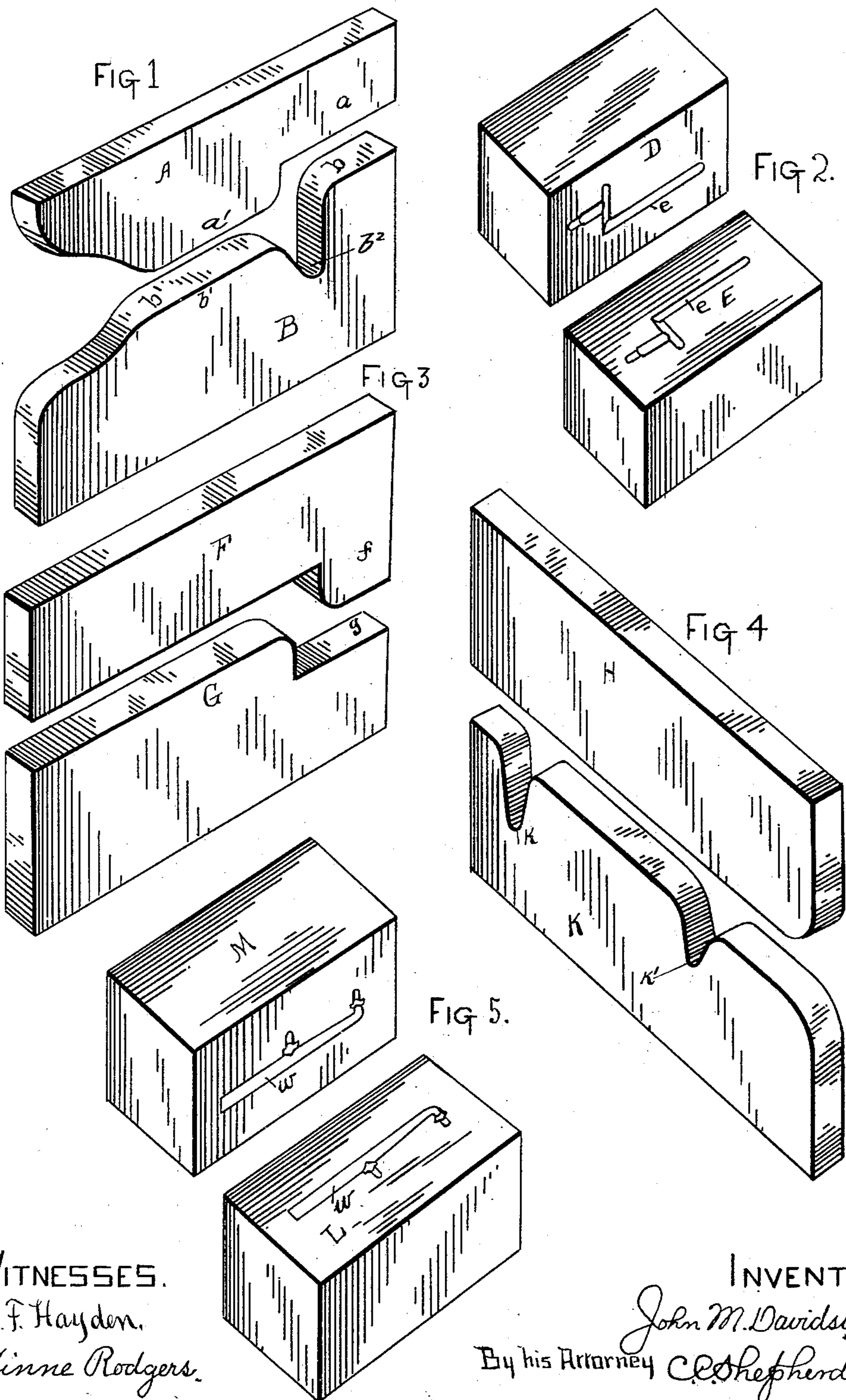
(No Model.)

2 Sheets—Sheet 1.

J. M. DAVIDSON.
DIE FOR FORGING SHIFTING RAILS.

No. 358,966.

Patented Mar. 8, 1887.



WITNESSES.
L. F. Hayden.
Minne Rodgers.

INVENTOR.
John M. Davidson
By his Attorney C. C. Shepherd

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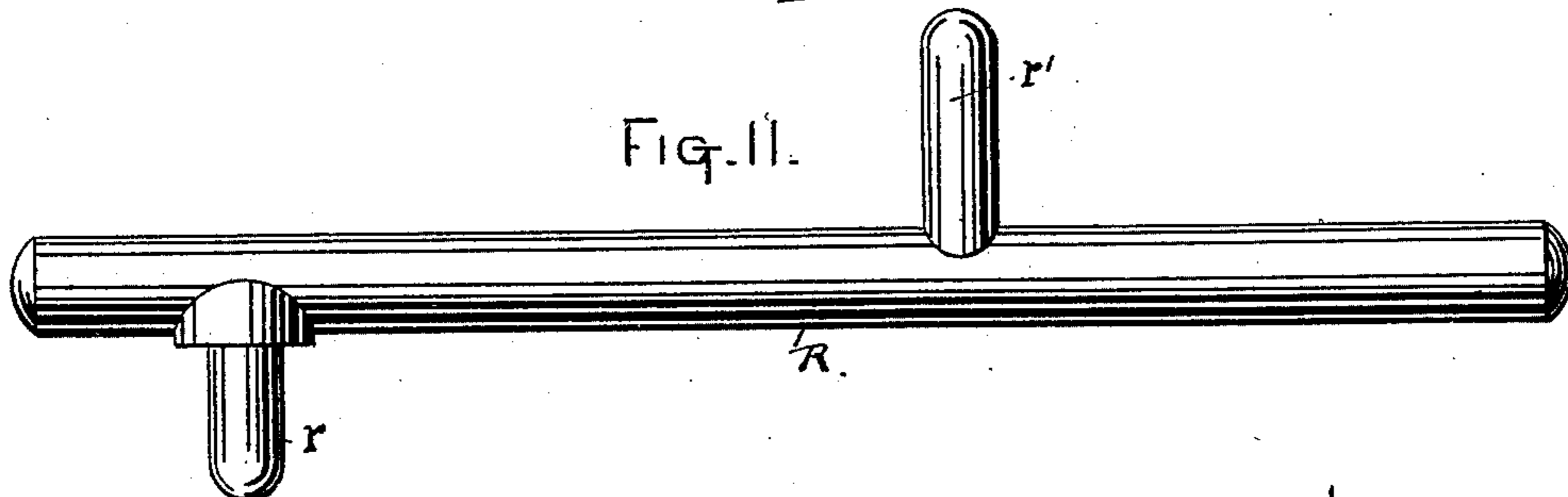
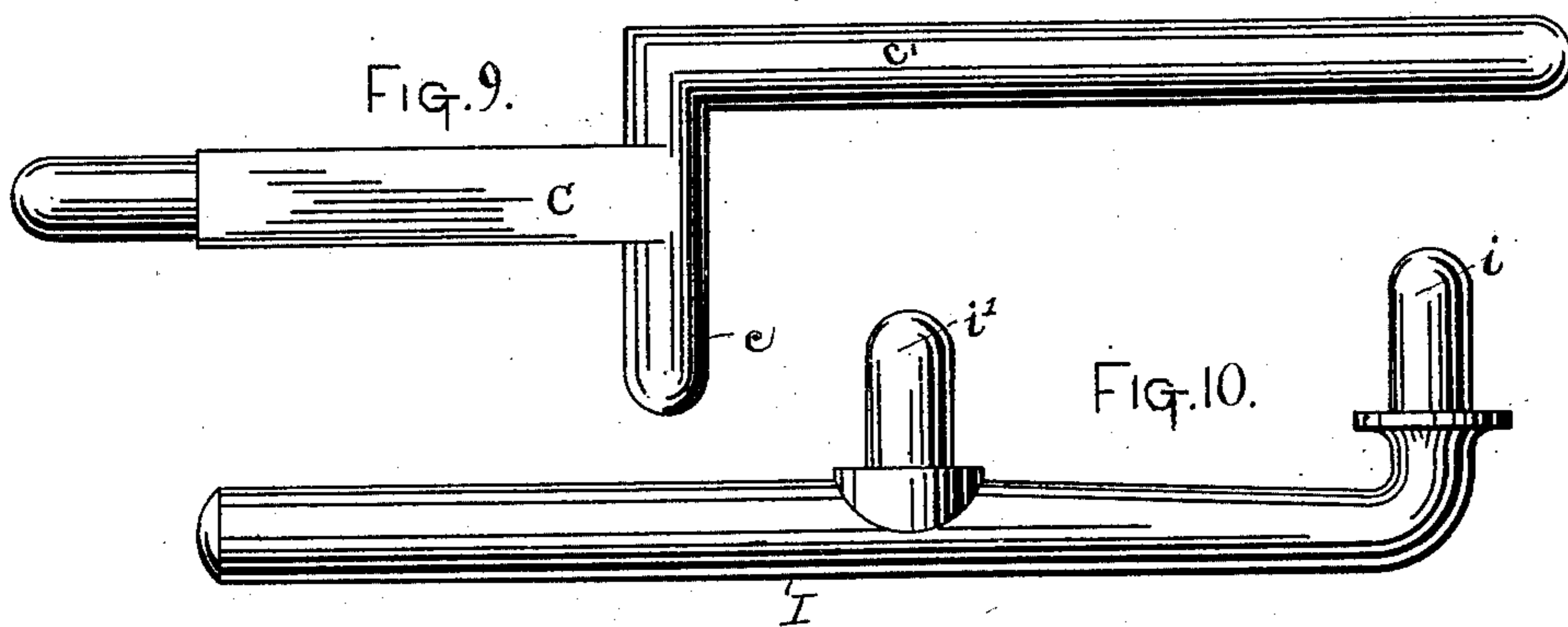
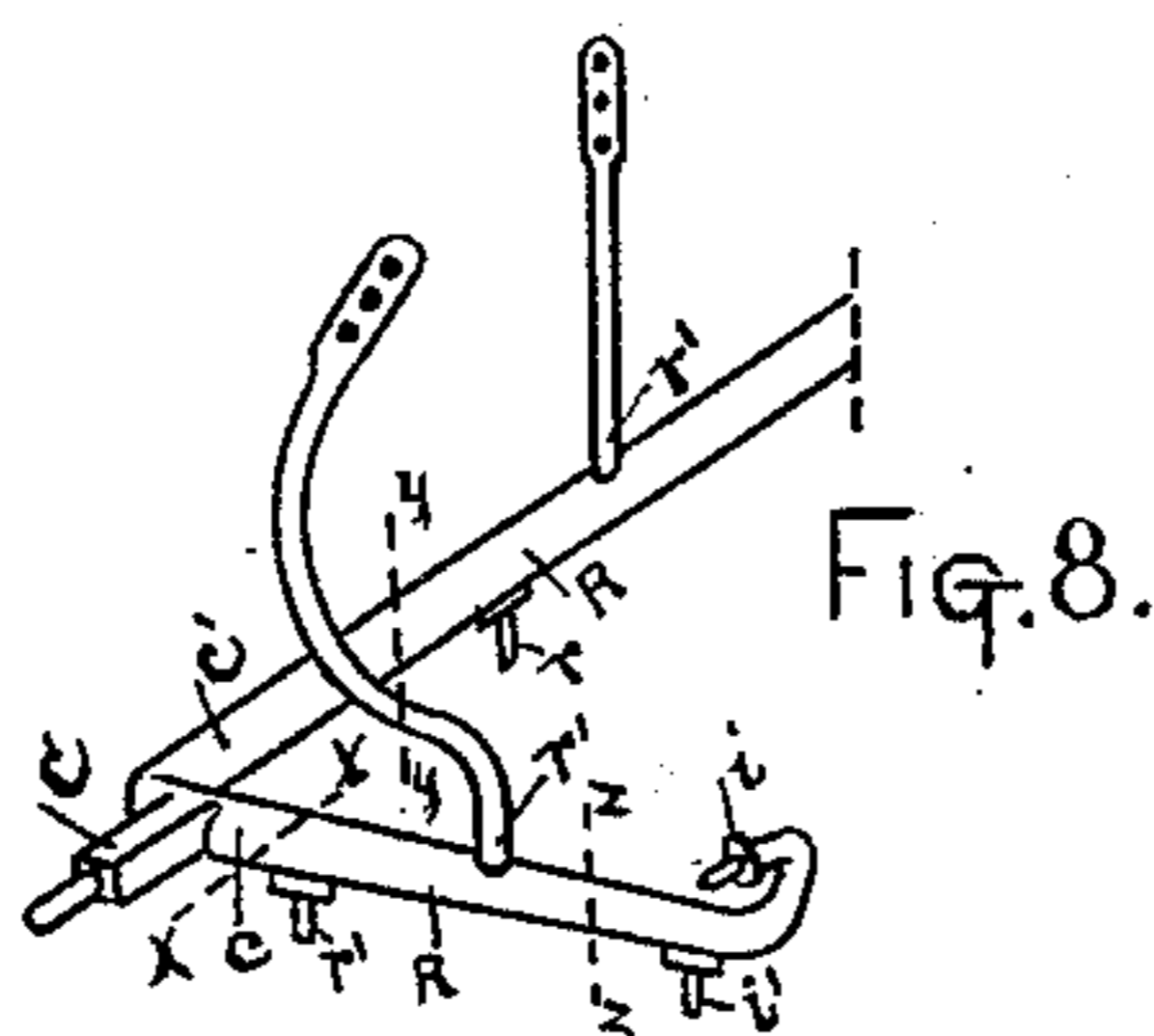
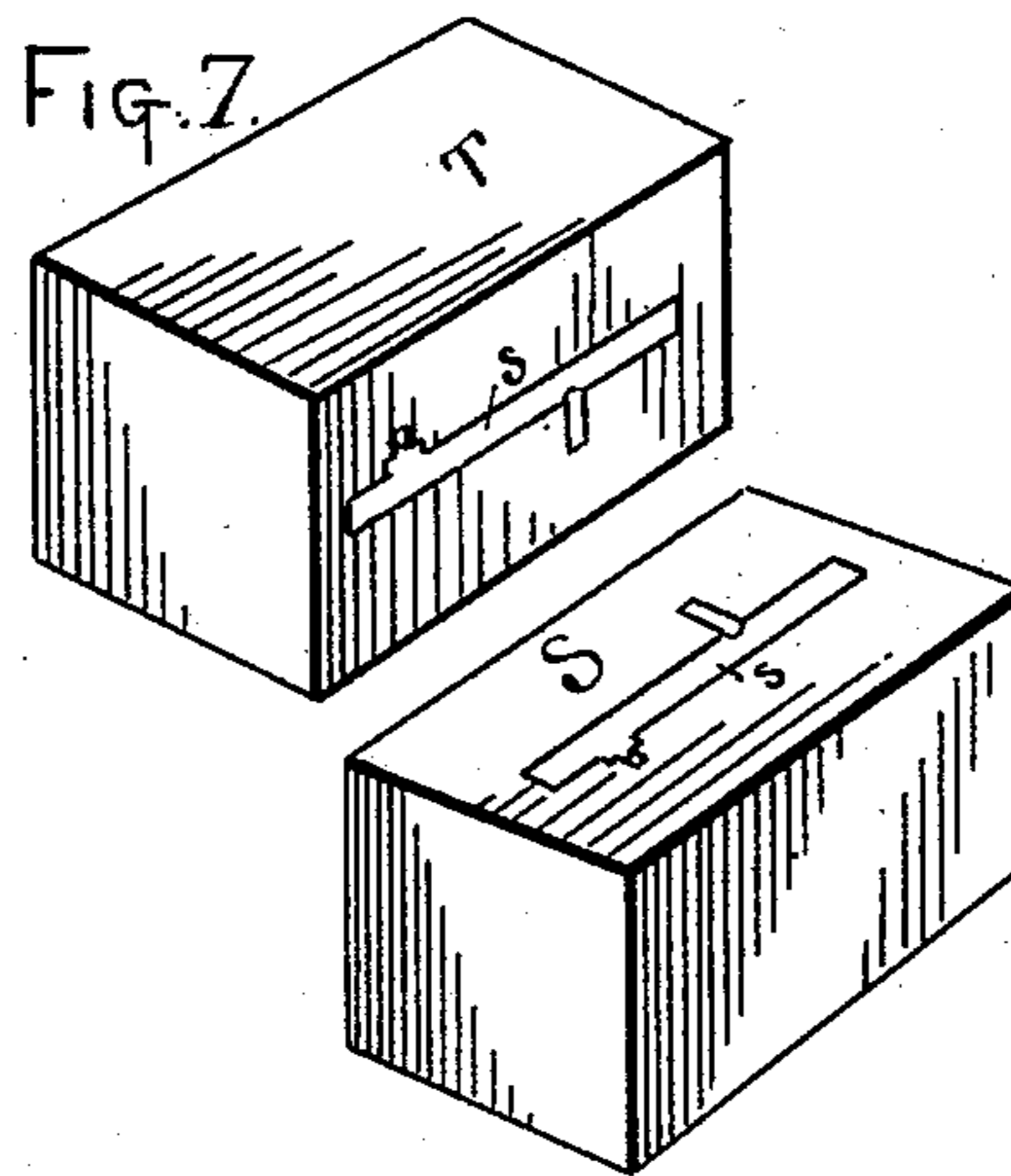
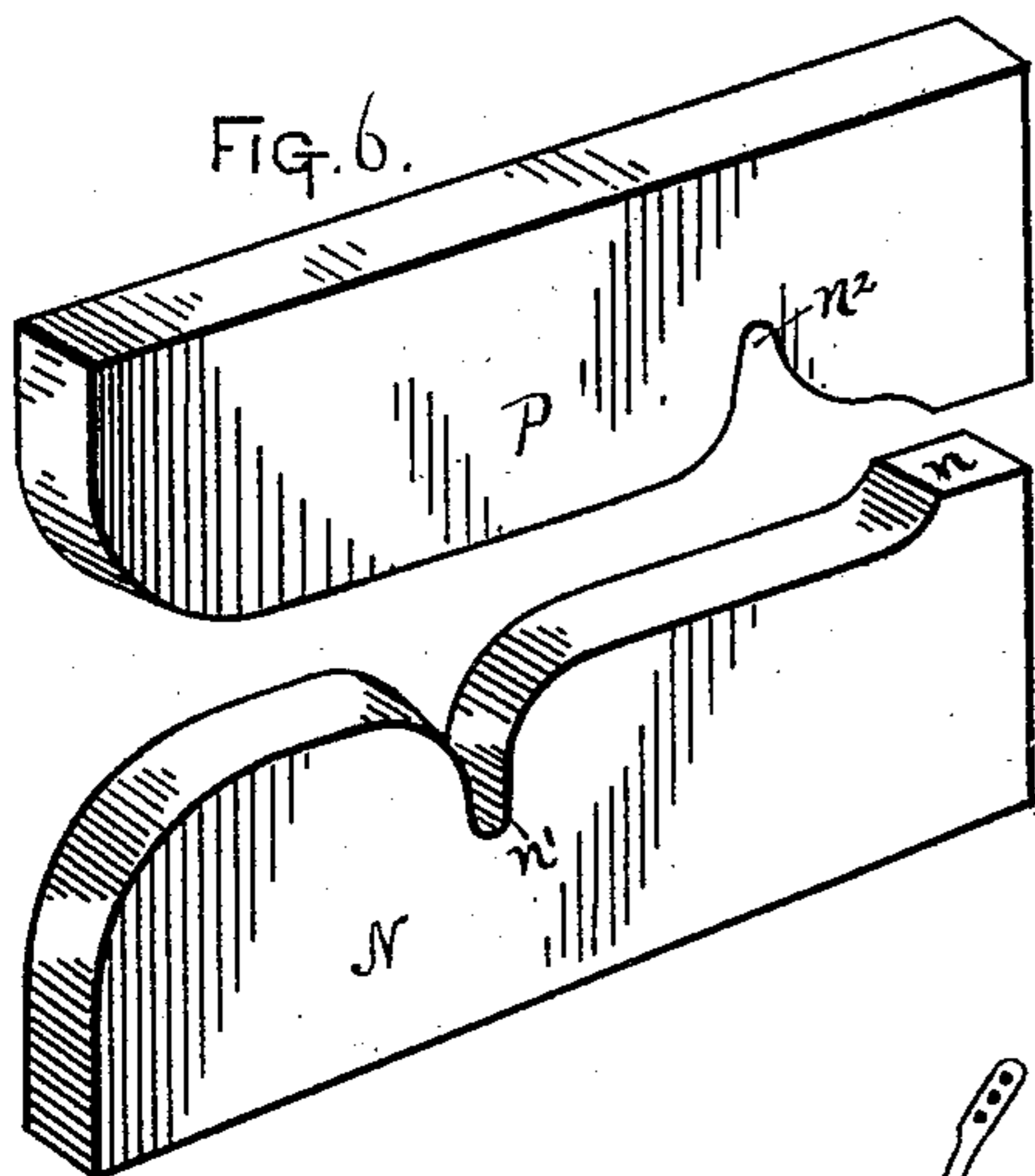


FIG. 11.

WITNESSES.
L. F. Hayden.
W. S. Shepherd.

INVENTOR
John M. Davidson
By his Attorney, C. C. Shepherd.

UNITED STATES PATENT OFFICE.

JOHN M. DAVIDSON, OF COLUMBUS, OHIO.

DIE FOR FORGING SHIFTING-RAILS.

SPECIFICATION forming part of Letters Patent No. 358,966, dated March 8, 1887.

Application filed December 29, 1886. Serial No. 222,859. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. DAVIDSON, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented an Improved Set of Dies for Forging Shifting-Rails, of which the following is a specification.

My invention relates to the improvement of dies for forging shifting-rails for vehicle-seats; and the objects of my invention are, first, to provide dies by means of which the parts forming a shifting-rail may be produced in a simple and effective manner at a low cost of manufacture; second, to so construct and form said dies as to attain both accuracy and speed in the formation of the parts, and to produce said parts in such form as to admit of their being joined to form the shifting-rail with but few welds. These objects I accomplish in the manner illustrated in the accompanying drawings, which, for convenience, are shown in perspective, and in which—

Figure 1 is a perspective view of the upper and lower die-section used in the formation of the top-prop and rail-corner section. Fig. 2 represents the finishing-die sections for said prop and corner-piece. Fig. 3 is a view of the die-sections used in the formation of the end bend or "goose-neck" of the end section of the side rail. Fig. 4 is a view of the die-section used for the first formation of the lugs of said end section. Fig. 5 represents the finishing-dies for said end section of the rail. Fig. 6 is a view of the die-sections by means of which the intermediate or central sections are formed. Fig. 7 is a view of the finishing-die of said central section. Fig. 8 is a view of one-half of a shifting-rail. Fig. 9 is an elevation of the corner-section and top-prop of the rail. Fig. 10 is an elevation of the end section of the side rail, and Fig. 11 is an elevation of the central section of the rail—shown, for convenience, inverted.

Similar letters refer to similar parts throughout the several views.

The general form of each of the die-sections herein mentioned is rectangular.

A represents the upper die-section, and B the lower die-section, used in the formation of the top-prop and corner-section of the shifting-rail. The lower section or base, B, has formed on its rear portion a short elevated

plane, *b*. Between said elevation *b* and the lower central and rear portion, *b'*, is formed a transverse depression, *b''*. The upper section, A, has a depression, *a*, formed on the under surface of its rear portion, and has its central portion, *a'*, projecting downwardly, said downward-projecting portion being of a length corresponding with the length of the central portion, *b'*, of the lower section.

A bar of metal having been placed horizontally on the upper surface of the lower section, B, the latter being held on a suitable base in the usual manner, the upper section, A, held by a ram in any well-known manner, is made to descend with great force on said metal bar. The sections A and B are so set as to cause the portions *a* and *a'* of the section A to strike, respectively, above the parts *b* and *b'* of section B. As will be seen, this operation will tend to force a portion of the metal into the depression *b''*, to form in rough the side-rail extension *c* of the prop C. At the same time the corner-section and its back-rail extension *c'* is formed between the portions *a* and *b* of the dies. The lug-forming depression *b* being open at its sides, it will be seen that after one or more strokes of the ram, as above described, the metal bar may be turned at right angles with its former position, and the ram again allowed to descend to force the flattened metal of the prop into shape. This operation may be repeated until the prop C and its extensions are sufficiently shaped to admit of its being placed in the finishing-die. (Shown in Fig. 2 of the drawings.) This finishing-die consists of an upper die-section, D, and a lower die-section, E, having on the under surface of the former and the upper surface of the latter a depression, *e*, of the exact shape of one-half the said corner-section. Said prop and corner-section of the rail having been well shaped between the two die-sections A and B, and having been placed in the depression *e* of the finishing-die section E, it will be found that when the die-section D is brought in contact with the section E, in the usual manner, the said section of rail has assumed the desired shape, and that but a small fin is formed about the outer edges of the depressions *e*.

F and G represent, respectively, upper and lower die-sections used in the formation of the end section, I, of the rail and its bent outer

end or goose-neck, *i*. The lower die-section, G, is provided with an offset or depression, *g*, on its upper surface, beginning at its rear end and extending a short distance forwardly. The upper die-section, F, has formed on the rear portion of its lower surface a short projection, *f*, corresponding in depth with the depression *g*, but being preferably shorter. A bar of metal having been placed on the upper surface of the die-section G, it will be seen that the stroke of the section F thereon, in the manner described for the die A, will cause the metal bar to be bent at its end to form in rough the lug or goose-neck *i*. The rail-section I is then transferred to the upper surface of a lower die-section, K, having formed thereon two transverse lug-depressions, *k* and *k'*, the depression *k* being located near the rear end of the die, and being of a depth somewhat greater than the depression *k'*, which is preferably located near the front end of said die-section.

The under surface of the upper die-section, H, is preferably made smooth. The section I of the rail is placed on the upper side of the die-section K, so that the bent portion *i* will enter the depression *k*. The descent of the upper die-section, H, will operate to force sufficient metal into the depression *k'* to form in rough a lug, *i'*, on the rail. As described for the section C, the rail-section I may be turned alternately from this position to one at right angles therewith until it is shaped sufficiently to admit of its being placed in its finishing-die, the latter consisting of an upper and lower die-section, M and L, each of which is provided with an impression, *w*, of one-half of the rail-section I, and of the exact shape desired to be formed.

N represents the lower die-section, and P the upper die-section, used in the formation of the central section, R, of both the side and back of the shifting rail. The lower section, N, has formed on the rear portion of its upper surface a short upward projection, *n*, and near the front end a transverse lug-depression, *n'*. The upper die-section, P, has formed on its under side near its rear end, at a point slightly in front of the front line of the elevation *n* of the die N, a transverse lug-depression, *n''*. A metal bar having been placed on the lower die-section, N, and the upper die-section made to descend thereon, as prescribed for the remaining rail-sections, sufficient metal is forced into the depressions *n'* and *n''* to form in rough lugs *n'* and *n''*. After being sufficiently shaped, the section of rail is placed in the half-impression *s*, formed on the lower finishing-die section, S, on which is adapted to strike the upper finishing-die section, T, having a similar impression, *s*.

By the use of the above-described set of dies it will be seen that it becomes necessary to forge but three distinct sections of rail to form the same, said sections being forged of sufficient length to make up the desired length. The side rail is formed by welding together

the rear end of the section R and the side-rail extension *c* of the prop and corner-section at about the point shown in dotted line *x x* of Fig. 8, and by welding together the remaining end of the section R and the rear end of the end section I at about the point shown in dotted line *z z* of Fig. 8. By forming the side rail in this manner it will be seen that but two welds are made, thus forming a strong and durable side rail with but a small amount of labor. The central section of rail I, formed as above described, may also be utilized in the formation of the back rail by welding its rear end to the end of the back-rail extension *c'* of the corner at a point shown by line *y y* of Fig. 8 of the drawings.

By the use of my improved die it will be seen that the sections of rail herein described may be formed of the desired length to complete, when welded together, a rail of standard length, and in case it is desired to form a rail somewhat shorter than said standard length the ends of the rail-sections may be cut accordingly before welding.

The depressions formed in my improved dies being open at their sides, it will be seen that by turning the rail-bar so that the force of the die will fall alternately on one side and another of the same that the spreading stock is forced forward into the body of the rail-section, thus preventing the waste caused by its spreading sidewise, which, as is well known, results in the formation of a large fin on either side of the rail-section.

I am aware that patents have been granted on dies for forging a complete shifting-rail, but believe the above-described dies, whereby three welds are necessarily made in the formation of the complete half-rail, to be the most practicable.

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

1. In dies for forming the prop and corner-section of a shifting-rail, the combination of the upper die-section, A, having the depression *a* and downward projection *a'*, with the lower die-section, B, having the elevated plane *b* and transverse depression *b'*, said die-sections to be used in connection with the finishing-die sections D E, having depressions *e*, formed substantially as described.

2. In dies for forming the end sections of shifting-rails, the combination of the upper die-section, F, having projection *f*, the lower die-section, G, having depression *g*, with the upper die-section, H, having its under side smooth, and the lower die-section, K, having transverse depressions *k k'*, the same to be used in connection with the finishing-die section M and L, having depressions *w*, substantially as and for the purpose specified.

3. In dies for forming the central section of a shifting-rail, the combination of the upper die-section, P, having the transverse lug-depression *n''*, with the lower die-section, N, hav-

ing the upward projection, n , and depression n' , said die-sections to be used in connection with the finishing-die sections S and T, having depressions s , substantially as and for the purpose specified.

5 4. A set of dies for forging shifting-rails, consisting of the die-sections A B and finishing-die sections D and E, die-sections F G H

K, and finishing-die sections M L, die-sections P N, and finishing-die section T S, all formed substantially as and for the purpose specified.

JOHN M. DAVIDSON.

Witnesses:

C. E. SCOTT,
T. DAVIDSON.