

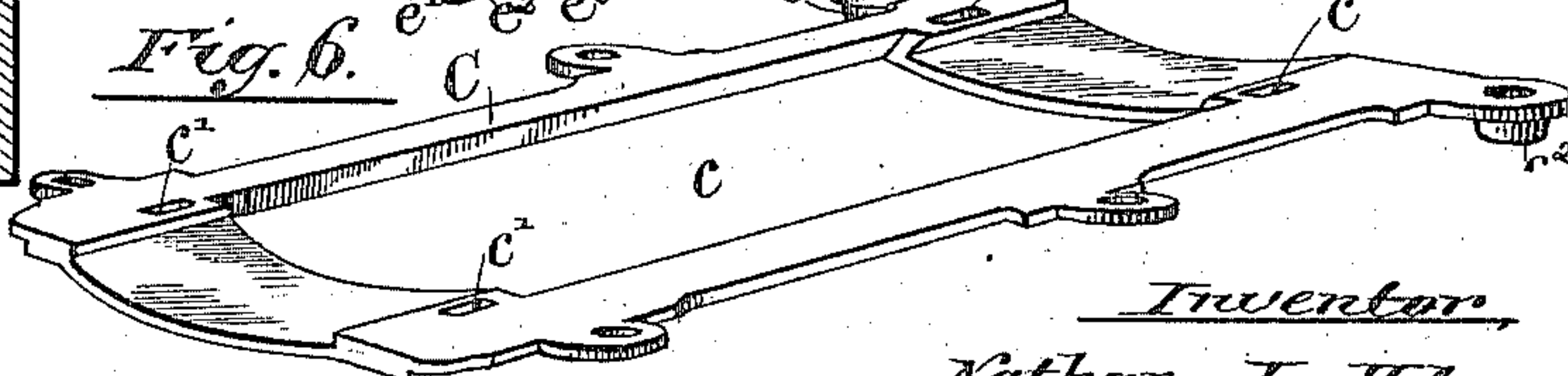
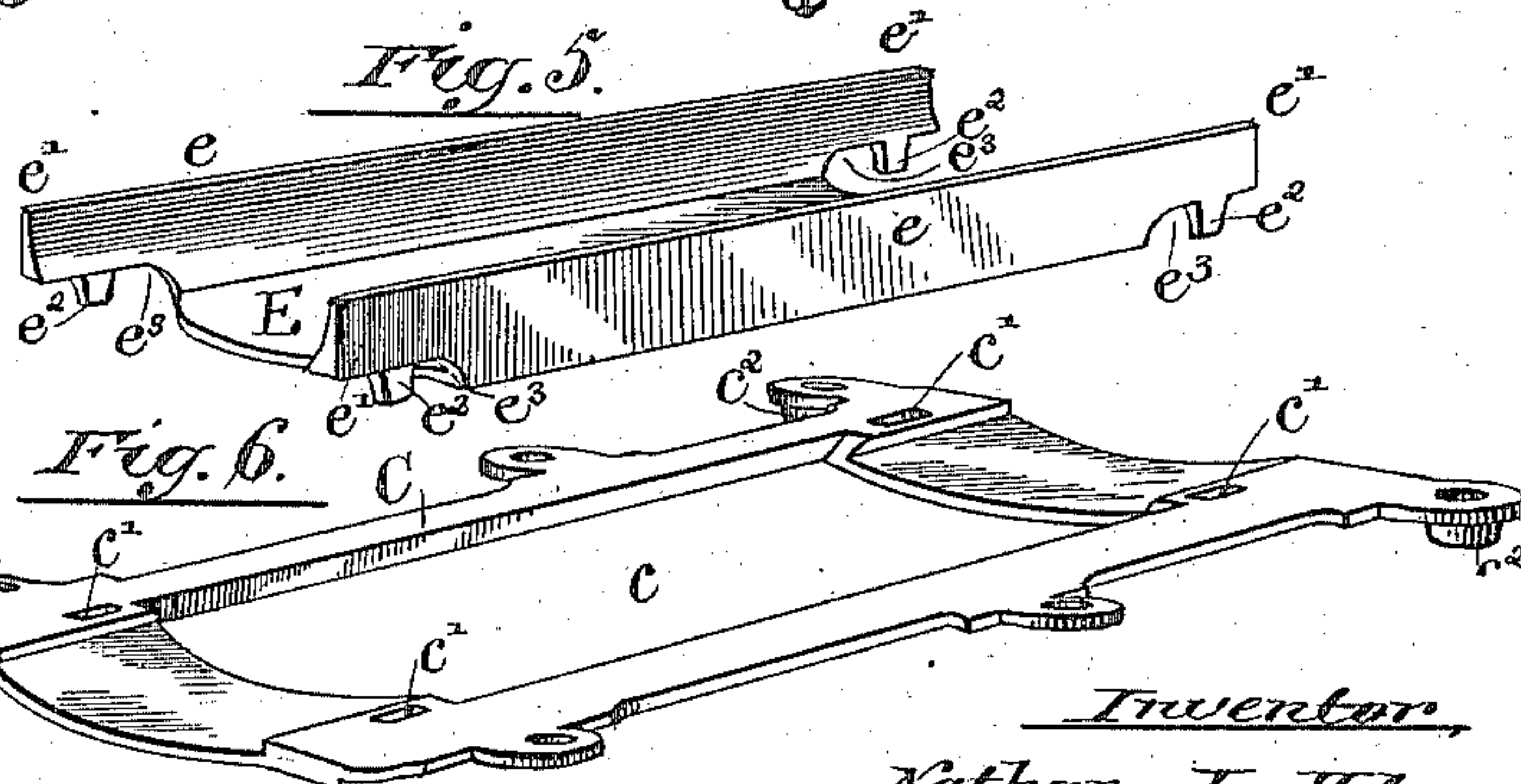
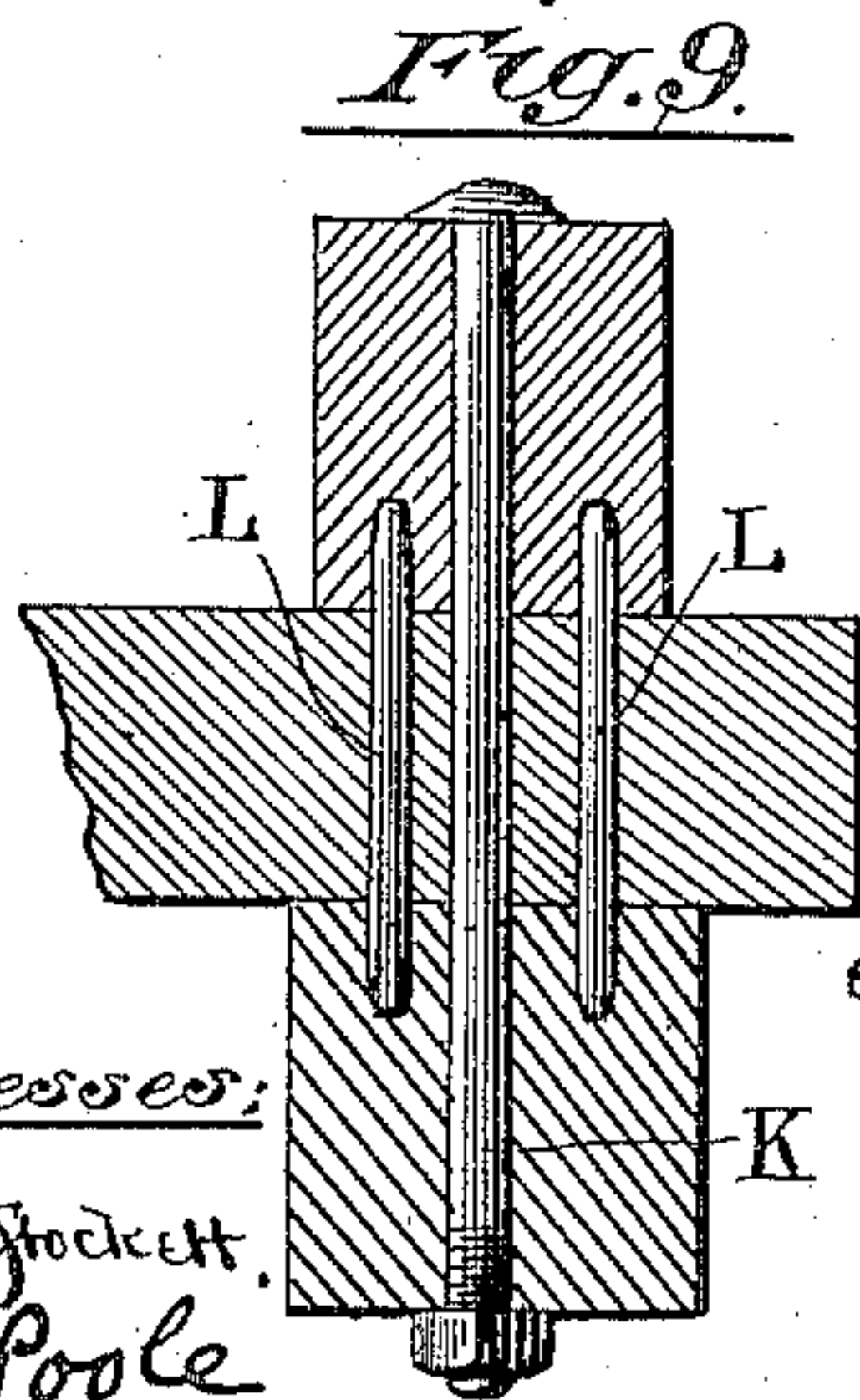
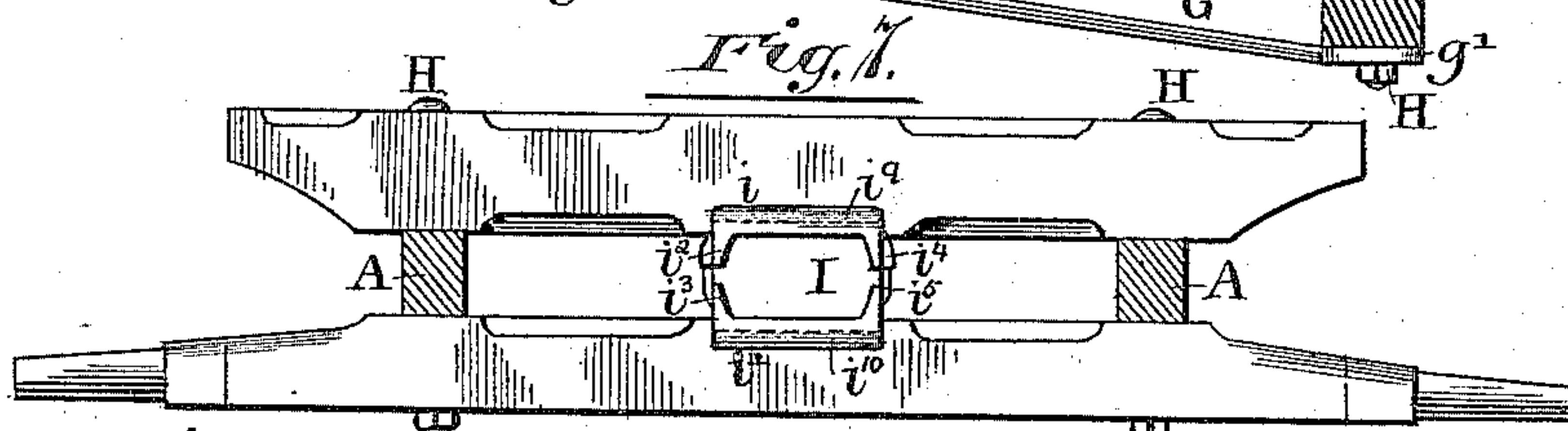
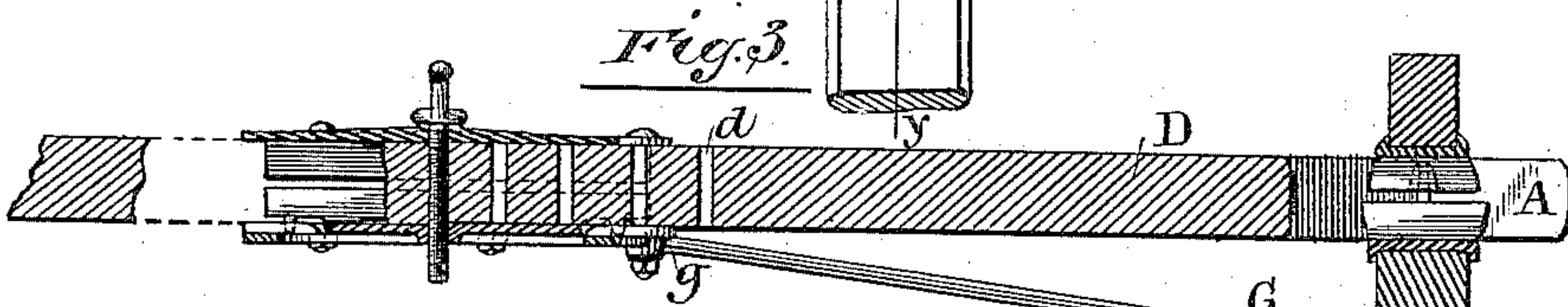
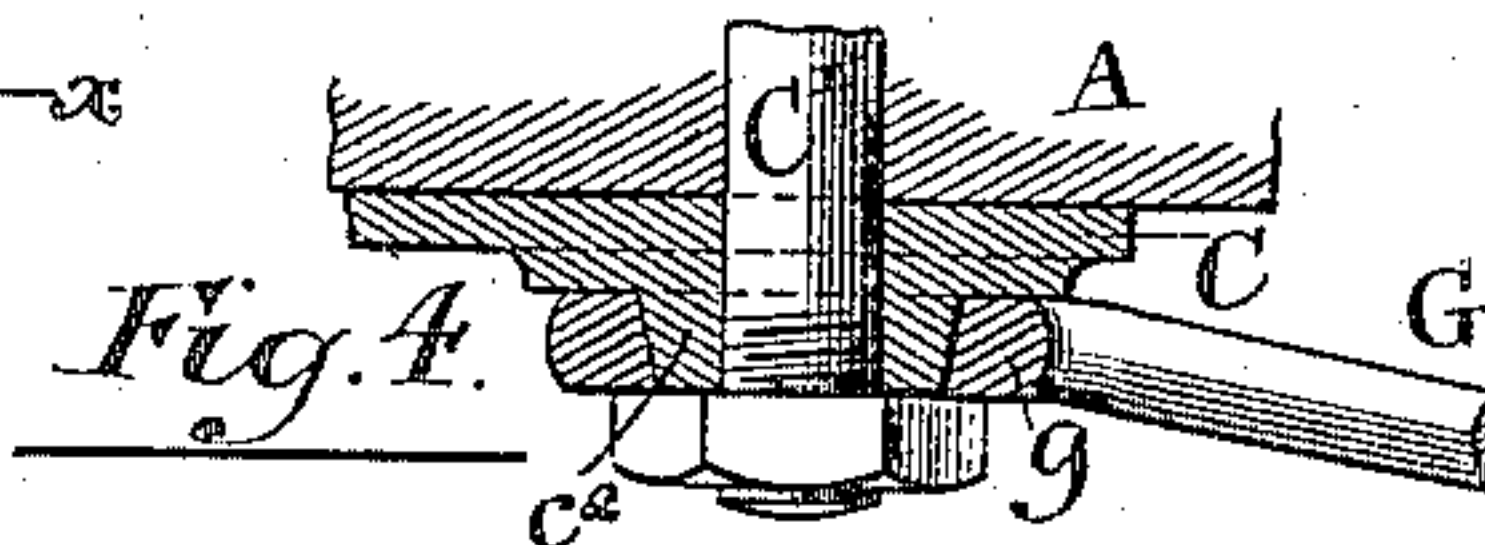
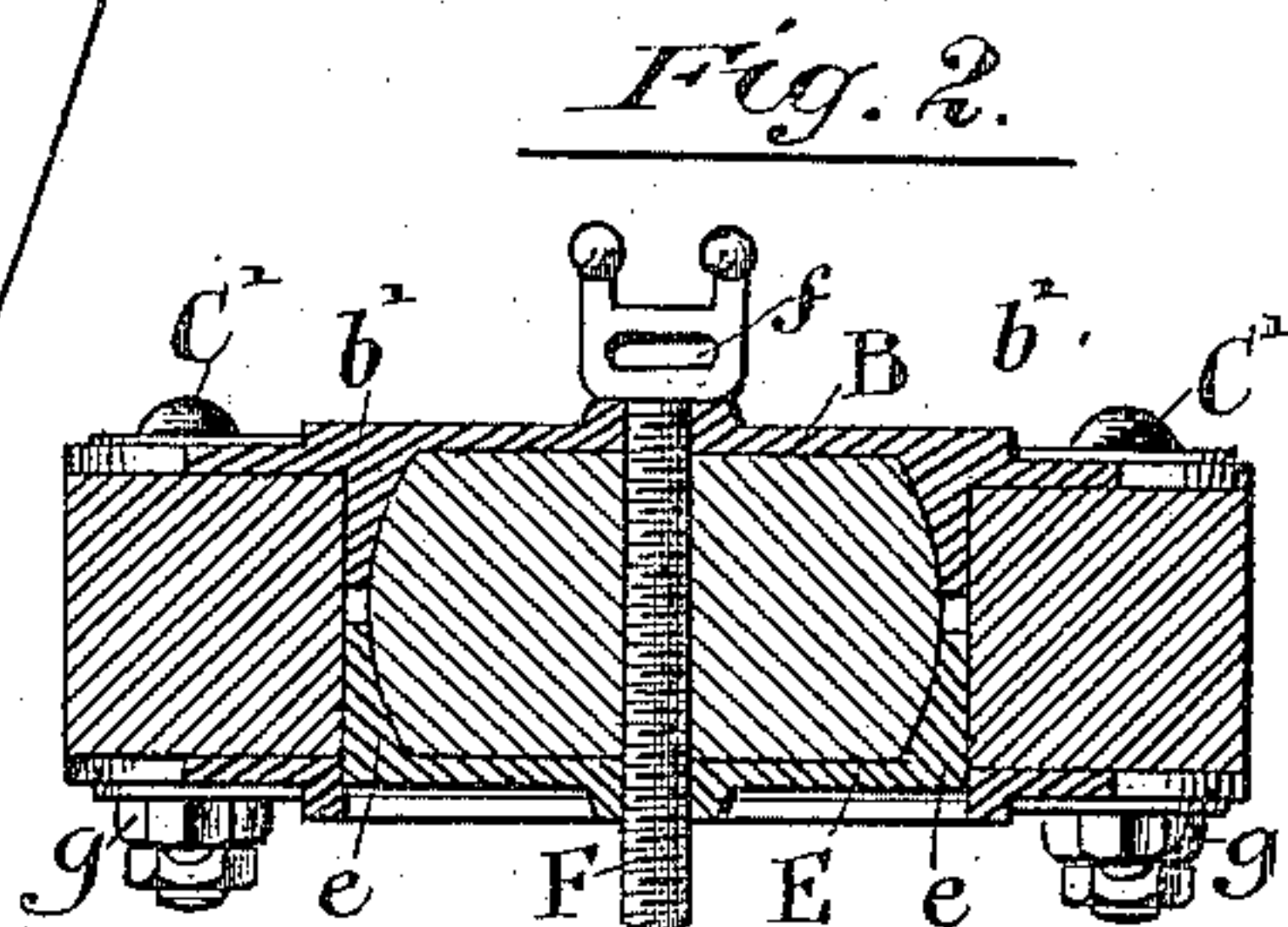
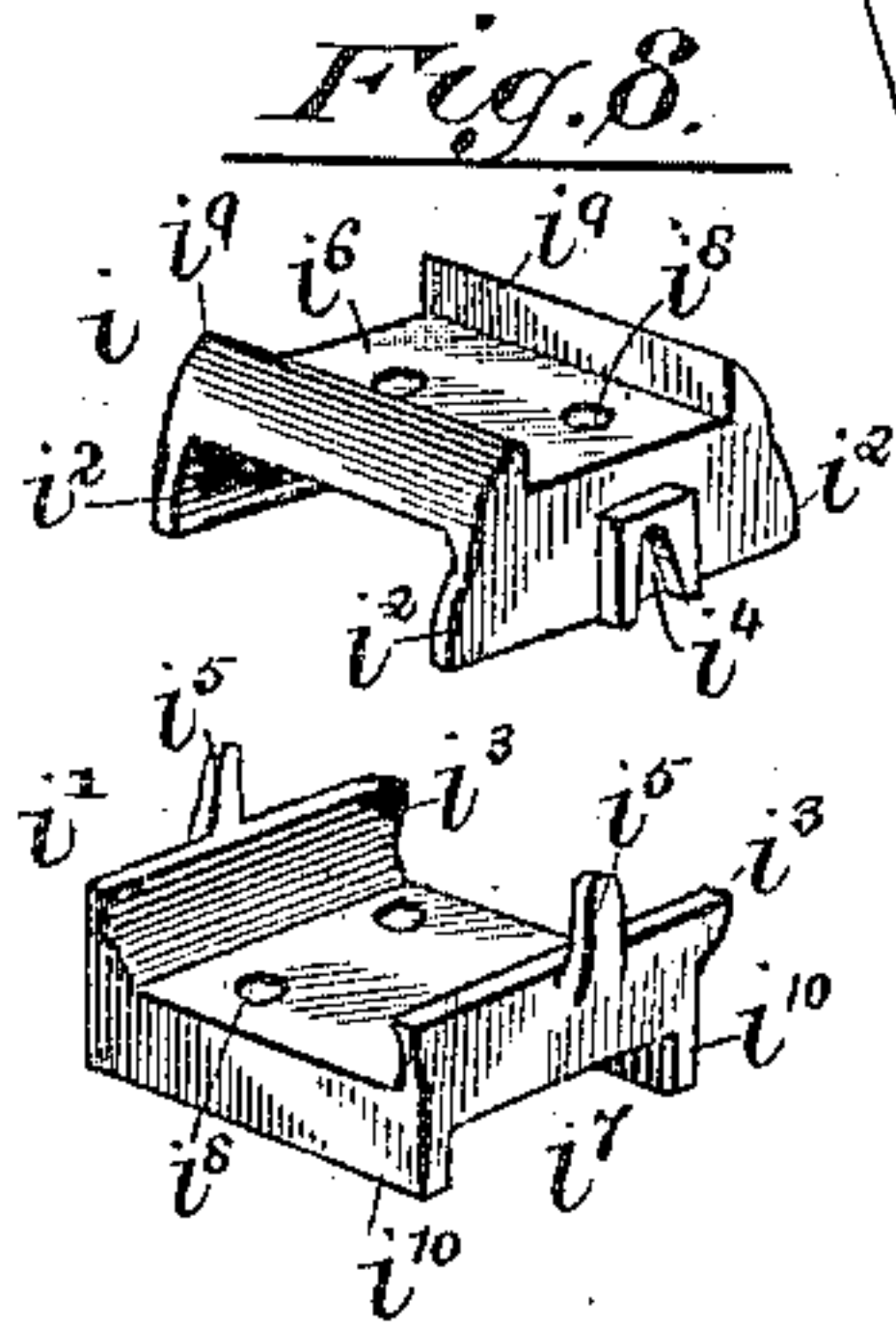
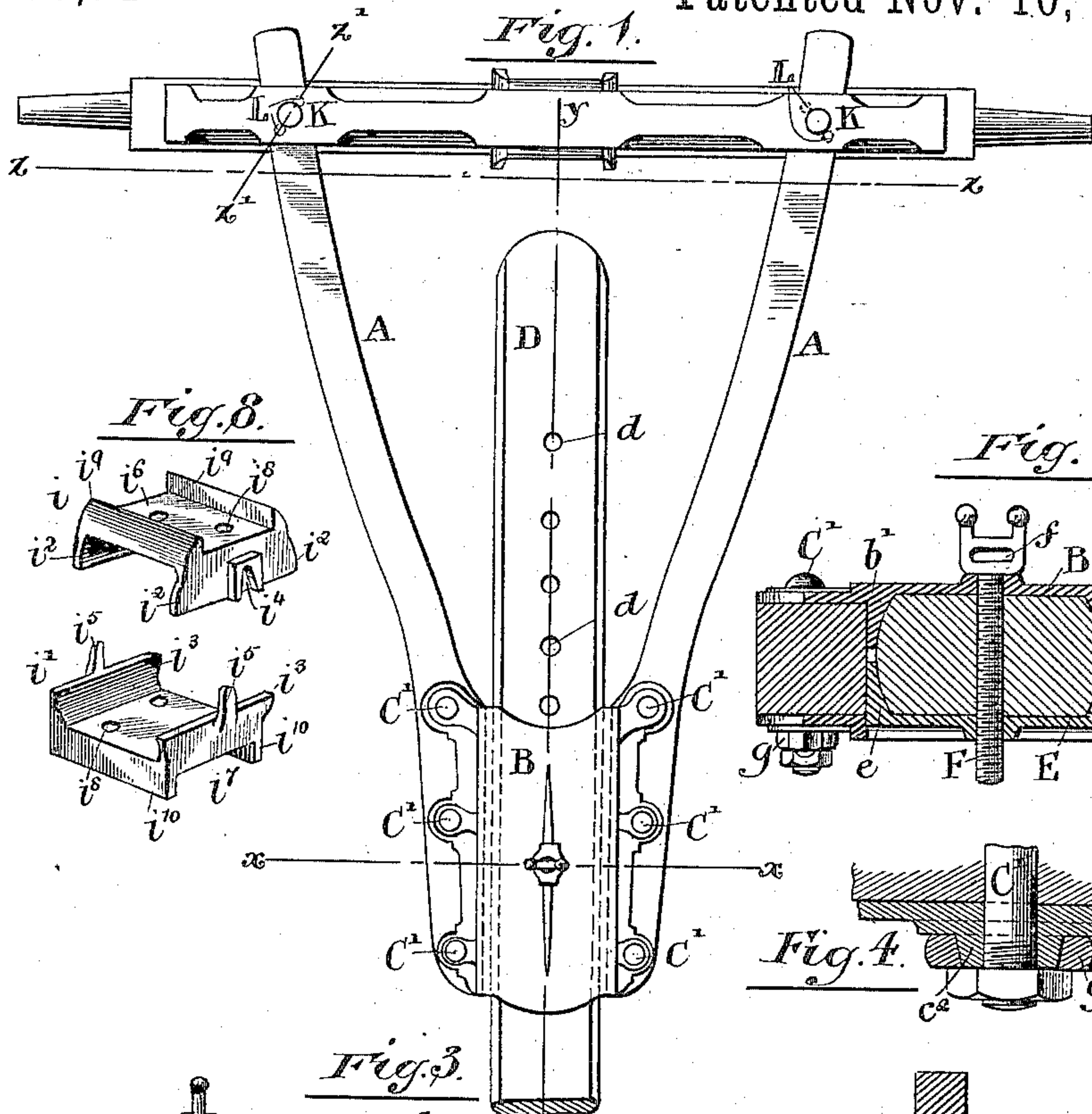
(No Model.)

N. L. HOLMES.

WAGON GEAR.

No. 330,118.

Patented Nov. 10, 1885.



Witnesses:
Jno. H. Stockett,
C. C. Poole

Inventor,
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UNITED STATES PATENT OFFICE.

NATHAN L. HOLMES, OF RACINE, WISCONSIN.

WAGON-GEAR.

SPECIFICATION forming part of Letters Patent No. 330,118, dated November 10, 1885.

Application filed November 24, 1884. Serial No. 148,638. (No model.)

To all whom it may concern:

Be it known that I, NATHAN L. HOLMES, of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Wagon-Gears; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention is essentially directed to the improvement of the running-gear of a wagon; first, at the point where the forward converging ends of the rear hounds are permanently connected together, and an adjustable connection established between the rear hounds and the reach; secondly, at the point where the reach passes between the bolster and the rear axle; thirdly, at the points where the braces which usually extend from the rear axle to the forward ends of the rear hounds are connected with the latter; and, finally, at the points where the rear ends of the rear hounds are connected with the bolster and the rear axle.

The several prominent objects of my invention are to embody, in the construction of a rigid and permanent connection between the forward converging ends of the rear hounds at the point where the reach passes between the same, a socket for the reach adapted to establish between the latter and the hounds a strong and rigid connection, which shall effectively prevent either a vertical, lateral, or end movement of one member independently of the other; to adapt said socket to be adjusted in area, so as to provide not only for a ready relative adjustment between the hounds and the reach, but also to provide for firmly and effectively clamping and holding the reach between the walls of the socket, and to incorporate in the construction of said socket means which shall admit of the ready contraction or expansion of its area without necessitating the slightest change or adjustment in the direct connection which is employed at this point as a means for rigidly connecting together the hounds; to provide at the point where the reach passes between the bolster and the rear axle a socket or bearing for the reach composed of two interlocking parts susceptible of being respectively secured to the bolster and the rear axle

before the said two members are connected, and adapted both to serve as a guide in bringing together the bolster and the rear axle and as a durable and efficient socket or bearing for the reach after the bolster and the rear axle have been secured together in their proper relative positions; to provide simple and substantial means for connecting certain brace-rods with the devices which serve to connect together the forward converging ends of the rear hounds and to provide means for securing the rear ends of the rear hounds between the bolster and the rear axle, whereby the said members can be firmly and squarely fitted together, and several decided advantages, hereinafter more particularly referred to, attained in fitting and connecting said parts of the running-gear of a wagon. Further objects are to insure a general rigidity throughout the entire structure, and hence to more generally distribute the strain throughout the same, and to provide certain novel and improved details of construction at the points hereinbefore mentioned in the running-gear of a wagon, all as hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a portion of the running-gear of a wagon embodying my invention. Fig. 2 is a transverse section taken on the line *x x*, Fig. 1, and made on a somewhat larger scale. Fig. 3 is a longitudinal section taken on the line *y y* of Fig. 1. Fig. 4 is a detail sectional view on a somewhat larger scale than Fig. 3, and illustrates the connection between a brace-rod and a bottom plate attached to and connecting the hounds. Fig. 5 represents in perspective and on a larger scale the clamping-plate, which is employed in connection with a socket formed between the forward ends of the rear hounds. Fig. 6 is a perspective on a similar scale of the bottom plate, which constitutes a portion of the said socket. Fig. 7 is a section taken on line *z z*, Fig. 1, looking toward the rear axle and the bolster. Fig. 8 represents in perspective a pair of flanged plates adapted to be respectively secured to the bolster and the rear axle in order to provide a two-part bearing for the reach. Fig. 9 is a section taken on line *z' z'*, Fig. 1, but made on a somewhat larger scale.

The rear hounds, A, are at their forward

converging ends rigidly connected together and maintained at a fixed distance apart by means of a pair of metal plates, B and C, which are respectively fitted against the top and bottom sides of the hounds, and securely bolted thereto by means of bolts C', which pass through the hounds and through the said top and bottom plates. The reach D, which will extend back from the front axle to and between the rear hounds, as usual, passes between these two plates, which latter, therefore, constitute portions of a socket formed between the two forward ends of the rear hounds. In order to incorporate in the construction of this socket means whereby the area of the socket can be contracted, so as to cause the reach to be firmly clamped between the top and bottom walls of the socket, and thereby any vertical play on the part of the reach independently of the hounds prevented, and also so as to provide for either tightening up the top and bottom walls of the socket against the reach, or loosening the grip of said walls on the reach without either disconnecting the top and bottom plates, B and C, from the hounds, or in anywise adjusting or disturbing said plates in their connection with the hounds, I provide in or for substantially the greater portion of the lower wall of the socket a horizontally-arranged and vertically-adjustable clamp-plate, E, and as a means for raising or lowering said clamp-plate so as to either contract the area of the socket or expand the same to its normal extent, I provide a vertically-arranged adjusting-screw, F, which extends through the middle of the socket and passes through a threaded opening formed centrally through the clamp-plate. This adjusting-screw has a bearing in the top plate, B, and is provided at its upper end with an oblong eye, f, in which a board or rod can be fitted, so as to provide a convenient handle for operating the screw. When the socket is expanded to its greatest extent or area, the clamp-plate will be seated either in or on the bottom plate, C, the preferred construction being to provide the said bottom plate with a substantially-rectangular opening, e, corresponding in area to the clamp-plate, so as to permit the latter to seat in the bottom plate and lie flush therewith when desired.

By means of the adjusting-screw F the clamp-plate can be raised from its seat in the bottom plate and drawn up against the reach, so as to cause the latter to be clamped between the clamp-plate E and the top plate, B, which latter also serves as a means for connecting the hounds. The adjusting-screw for the clamp-plate also passes through one of a series of holes, d, which are formed vertically through the reach, the position of the adjusting-screw in this series of holes being determined by the adjustment of the reach relatively to the hounds and the rear axle, with which latter the hounds are connected at their rear ends.

By means of the clamp-plate and screw for adjusting the same the reach can be securely

clamped between the top plate and the clamp-plate, which latter will bind against the under side of the reach in proportion to the extent to which it is adjusted against the reach by operating the adjusting-screw. 70

In order to further secure the reach within the socket and to prevent any lateral play on the part of the reach independently of the hounds, I provide the top plate, B, with a pair of pendent wedge-shaped flanges, b', upon its under side; and I also provide the clamp-plate E upon its top or inner side with a pair of wedge-shaped flanges, e, of a like character. These wedge-shaped flanges serve to exert against the sides of the reach a binding force proportional to the area of the socket, or to the extent to which the clamp-plate is drawn up against the reach, it being evident that the greater the extent to which the clamp-plate is drawn upward and toward the top plate, B, the greater will be the binding force of the wedge-shaped flanges, which are arranged to come between the inner sides of the hounds and the two sides of the reach. The flanges b' of the top plate are formed somewhat back of the side edges thereof, and have their outer sides made by preference at right angles to the plate, so as to form suitable shoulders, which, when the plate is secured to the hounds, constitute shoulders or abutments for the latter. These shoulders serve to steady the connection between the top plate and the hounds, and also constitute stops by means of which the relative position of the top plate and the hounds can be readily determined. 80 85 90 95 100

The flanges e of the clamp-plate are formed directly along the side edges of the same, and, like the flanges of the top plate, have their outer sides formed at right angles to the plate, so as to conform to and fit against the flat inner sides of the hounds. Under such arrangement the wedge action of all the flanges is obtained by inclining or curving their inner sides, as illustrated in Fig. 2. It will be understood, however, that any other wedge-conformation of flanges might be employed, the one herein shown being, however, the preferred one, since the hounds of a wagon are usually squared along their inner sides. 105 110 115

The flanges e of the clamp-plate extend beyond the ends of said plate, so as to form corner-extensions e', which, when the clamp-plate is seated in the opening e in the bottom plate, C, rest upon the bottom plate, and hence prevent the clamp-plate from dropping through the same in the event of the detachment of the adjusting-screw, which will become necessary in passing the reach through the socket and in adjusting the reach. 120 125

The extensions e' of the flanges of the clamp-plate are each provided with a pin or lug, e², which extends downwardly from the lower edge of the extension. These lugs are received in guide-openings e', formed through the clamp-plate at points adjacent to the corners thereof, the lugs being adapted to slide through the said openings in order to permit 130

the clamp-plate to be raised and lowered by the adjusting-screw. The lugs and openings thus arranged serve as guides for the clamp-plate, and will check any tendency on the part of the same to shift to either side or in the direction of its length. The clamp-plate is also steadied by these guides and prevented from binding at any one of its corners against the hounds when the adjusting-screw is turned for the purpose of raising or lowering the clamp-plate; and in addition to all of these functions said guides also serve to maintain the central screw-hole in alignment with the adjusting-screw, so that when the latter is turned down through the reach the threaded opening in the clamp-plate will be in position to receive the screw.

The extensions e' of the flanges of the clamp-plate are cut away at their lower edges, as at e^3 , the purpose of which is to allow the clamp-plate to seat in the lower plate, C, flush with the latter at such time as it is desirable to expand the socket to its fullest extent—as, for instance, such position of the clamp-plate is desirable prior to and during the act of passing the reach through the socket.

In applying to the rear hounds the plates hereinbefore described, so as to connect the hounds together, and also so as to form a socket for the reach, the top plate, B, can be applied to the top sides of the hounds, with the outer sides of its flanges b' abutting against the inner sides of the hounds, which relative position of the hounds and top plate will insure the proper position of the hounds relatively to the bottom plate, C, which latter, while supporting the clamp-plate, can be applied against the bottom sides of the hounds, and the top and bottom plates rigidly secured to the hounds by means of bolts passing through the hounds, and the plates and nuts fitted upon the bolts and tightened up against one of the plates—as, for example, against the bottom plate, C.

In Fig. 3 I have shown one of a pair of brace-rods, G, employed for connecting the rear axle with the forward ends of the hounds, in order to brace the latter and thereby relieve the connections between the rear ends of the hounds and the rear axle from a portion of the strain.

The forward ends of the brace-rods are connected with the bottom plate, C, and for the purpose of establishing a firm and convenient connection between the brace-rods and said plate I provide the latter with a pair of bosses, c^2 , one of which is formed at each of the rear corners of the bottom plate. These bosses are formed around the bolt-holes at said rear corners of the plate, and the brace-rods are each formed with an eye, g , which is fitted upon a boss, c^2 , of the bottom plate. In this way a strong connection is attained between the brace-rod and the bottom plate independently of the bolts C' , which extend through the bosses, so that their nuts can be tightened up against the eyes of the brace-rods and thereby

hold the latter on the bosses. The brace-rods are at their rear ends provided with flat eyes g' , so as to admit of their being bolted to the under side of the rear axle. The bolts H, employed for securing the rear ends of the hounds between the rear axle and the bolster, are also conveniently utilized for bolting the brace-rods to the rear axle. In order to provide a socket or bearing, I, for the reach at a point between the bolster and the rear axle, I employ a pair of metal plates, i and i' , which are respectively secured to the under side of the bolster and the top side of the rear axle, at the middle of each of said members, so that when the bolster and rear axle are properly connected together these two plates shall come in opposition to each other. The plate i is provided with a pair of flanges, i^2 , along its lower side edges, and the plate i' is provided along its upper side edges with a similar pair of flanges, i^3 , so that when the two plates are in opposition to each other, as in Fig. 6, the flanges of the two plates shall constitute the side walls of a socket or bearing for the rear end of the reach. These flanges have curved or inclined inner sides, so as to fit closely the sides of the reach when the latter is extended through the bearing at this point. The plate i is provided at each of its flanged sides with a wedge or other suitably-shaped socket, i^4 , and the plate i' is provided with side lugs, i^5 , projecting upwardly from its flanges i^3 , and adapted to enter the sockets i^4 of the plate i , so as to practically lock the two plates together. The plate i is provided in its top with a rectangular recess or seat, i^6 , in which the bolster is seated, while the plate i' is provided in its bottom side with a rectangular recess, i^7 , in which the middle portion of the rear axle is received, and both plates are provided with screw or bolt holes i^8 , for the bolts or screws by which said plates are respectively secured to the bolster and the rear axle. The bolster will be provided with a recess in which the middle portion of the plate i will be seated, while the flanges i^9 , constituting walls of the recess i^6 in said plate, will fit against the front and rear sides of the bolster. In like manner the middle portion of the plate i' will be seated in a recess formed in the top side of the rear axle, while the flanges i^{10} , constituting the side walls of recess i^7 in plate i' , will fit against the front and rear sides of the rear axle. By thus seating these plates in the bolster and rear axle the plates will be prevented from shifting along the said members, and by recessing the plates, so as to form flanges which embrace the front and rear sides of the bolster and axle, any tendency of the plates to slip transversely to the length of the members to which they are secured will be obviated. The lugs and notches of these plates also serve as guides for determining the proper positions of the bolster and axle relatively to each other—as, for example, after one plate has been secured to the bolster at the middle thereof and the remaining plate secured to the rear axle at

the middle of the latter, the bolster and rear axle can be brought together into a position which will admit of the lugs on one plate entering the sockets in the remaining plate, which condition will accurately define the proper relative position of the bolster to the axle, thereby saving time and labor in fitting the parts together.

In Fig. 1 the reach is shown drawn out of and forward from the bearing between the bolster and rear axle, which condition may sometimes exist when it is desired to lengthen the wagon to a considerable extent; but under ordinary circumstances the rear end of the reach will extend through the bearing I, thus relieving the hounds from lateral strain to a considerable extent.

The remaining feature of this invention relates to the mode of connecting the rear ends of the hounds with the bolster and rear axle.

As shown in Fig. 9, the rear end of one of the hounds is secured between the bolster and the rear axle by means of a tie-bolt, K, which serves to clamp the bolster and the axle against the hound and bind the said three members together. The use of tie-bolts and grooves or notches cut in the adjacent surfaces of the parts, as heretofore practiced, has been found to be attended with some disadvantages. Among these may be noted the difficulty of accurately determining the proper relative positions of the gains or notches in such members before the parts are fitted together and the weakening of the parts by the cutting of said gains, the time and labor required to accurately determine the proper position of said members, and also the difficulty in bringing the latter squarely together in case of the previously-warped condition of any one or more of them.

To avoid such objectionable features I have devised the following mode of securing together the hounds, the rear axle, and the bolster: Prior to fitting the rear ends of the hounds between the bolster and the rear axle I bore through each hound a pair of vertical holes, and into each hole drive a metal pin, L, of such length that both ends of each pin project above and below the hound, as illustrated in Fig. 9. I also form in the bolster and the rear axle holes corresponding in position with the pins, into which holes the ends of the pins which project above and below the hound enter when the bolster and the rear axle are driven forcibly toward and against the hound. In connecting the parts, preferably the hounds are placed over the axle and the hounds and pins driven down by the use of a metal block socketed to fit the pins, the sockets preferably being made conical, so as to force inwardly any rough edges upon the pins, and thereby prepare them for entering the holes in the bolster, and the bolster is then placed over and driven down upon the pins and into contact with the hounds. These metal pins cause the bolster and the rear axle to seat squarely against the hound when the members are forced against

each other, and also insure the location of the bolster at a point directly over the rear axle and prevent these two members from being secured otherwise than parallel with each other. After the bolster and the rear axle have been thus fitted against the hound a vertical aperture is bored through the said three members, through which is inserted the bolt K. By tightening up a nut upon one end of the bolt, the bolster, the hounds, and the axle can then be securely held together. The advantage of thus boring the hole for the tie-bolt after the bolster, rear axle, and hound have been fitted squarely together will be apparent, since to bore the hole through all the members without previously connecting them together would be extremely inconvenient, and to bore a hole separately through each of said three members and to then place them together will frequently necessitate a bending of the bolt, on account of the difficulty of boring the holes in the several parts so that they will come into exact alignment when the parts are placed together, and of the liability of the passage formed by the holes in the three parts to lack the requirement of straightness by reason of the warped or other irregular condition of one or more of the parts.

It will be understood that the means above described for connecting the rear hounds with the rear axle and bolster may as well be applied for attaching the forward hounds to the forward axle and the part above it. The connecting device referred to is therefore claimed herein in combination with any three parts of a wagon-gear located in contact with each other, as described, without limitation to their use in connection with the rear hounds, as herein shown.

I claim as my invention—

1. In the running-gear of a wagon, a socket for the reach, formed in the connection between the reach and the forward ends of the rear hounds, and embracing in the construction of its sides a connecting-plate, C, secured to the hounds and provided with guide-openings c' , and a clamp-plate, E, provided with vertical wedge-shaped side flanges, e , extended at their ends beyond the ends of the plate and provided with lugs e^2 , and combined with means, substantially as described, for raising and lowering the clamp-plate within the socket, for the purpose specified.

2. In the running-gear of a wagon, a plate bolted to the forward ends of the rear hounds to connect the same together, and provided around one or more of its bolt-holes with a boss, in combination with one or more brace-rods, each connected at its rear end with the rear axle, and at its forward end provided with an eye fitted on one of said bosses, substantially as described.

3. The running-gear of a wagon, provided between the rear axle and the bolster with a two-part metal bearing for the reach, said parts of the bearing being respectively secured to the axle and to the bolster, and provided

with mutually-engaging recesses and projections, substantially as and for the purpose set forth.

4. The running-gear of a wagon, provided
5 between the rear axle and the bolster with a metal bearing for the reach, composed of two parts which are respectively secured to the axle and the bolster, each one of these said parts of the bearing being provided with
10 flanges and constituting one-half of a socket, and said two pairs of flanges being respectively provided upon their meeting edges with mutually-engaging recesses and projections, substantially as and for the purpose set forth.
15 5. The running-gear of a wagon, provided between the rear axle and the bolster with a two-part metal bearing for the reach, said two parts being provided with flanges forming a socket when the two parts of the bearing are
20 brought together, and being also respectively

provided with recesses *i*⁶ and *i*⁷, constituting seats for the axle and the bolster, said flanges having mutually-engaging recesses and projections upon their meeting edges, substantially as described.

6. As a means for connecting together three
25 wooden parts of the running-gear of a wagon, one or more metal pins passing through the intermediate part and extending above and below the same into both the other parts, and
30 a tie-bolt extending through the said several parts, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

NATHAN L. HOLMES.

Witnesses:

C. CLARENCE POOLE,
OLIVER E. PAGIN.