

No. 877,663.

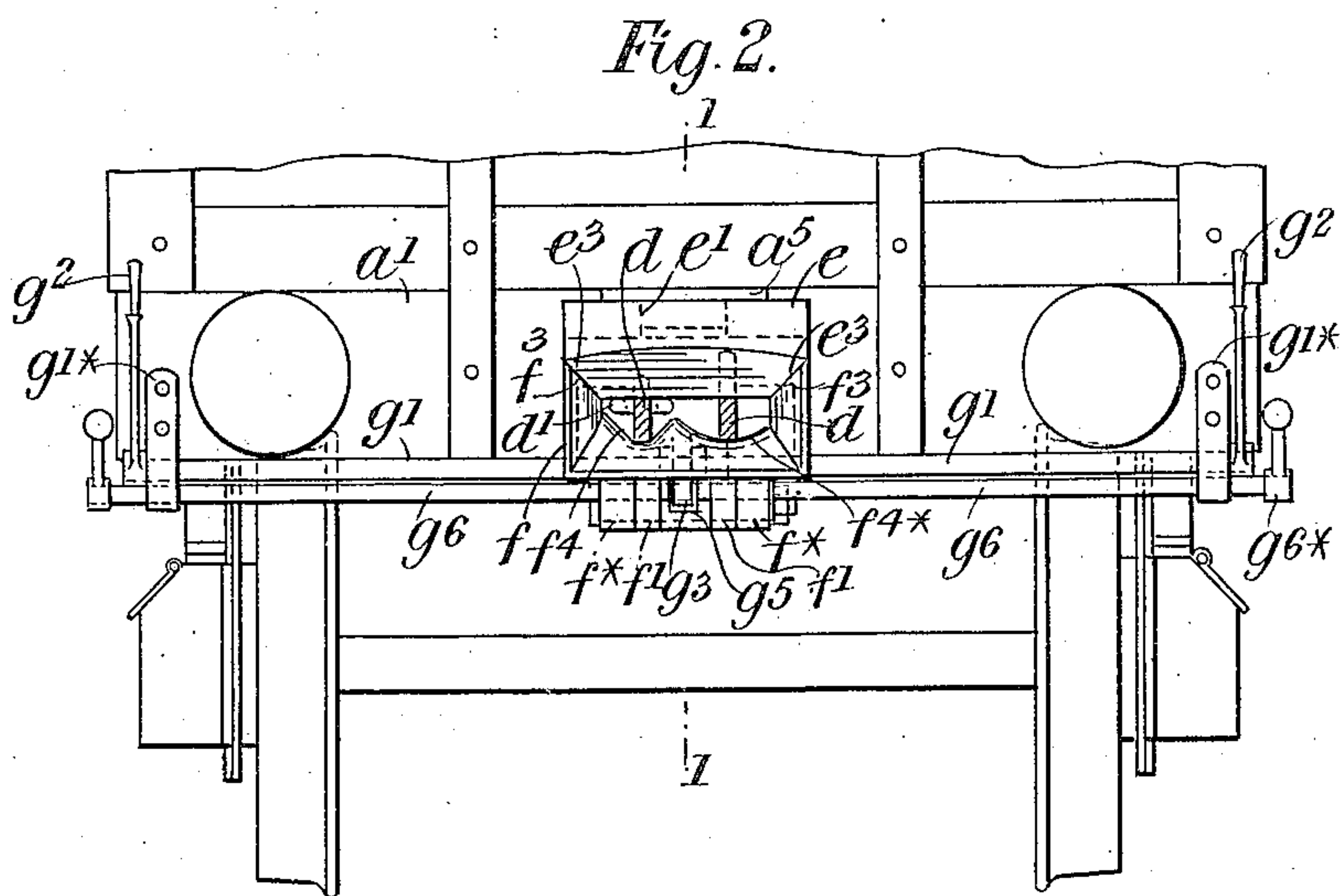
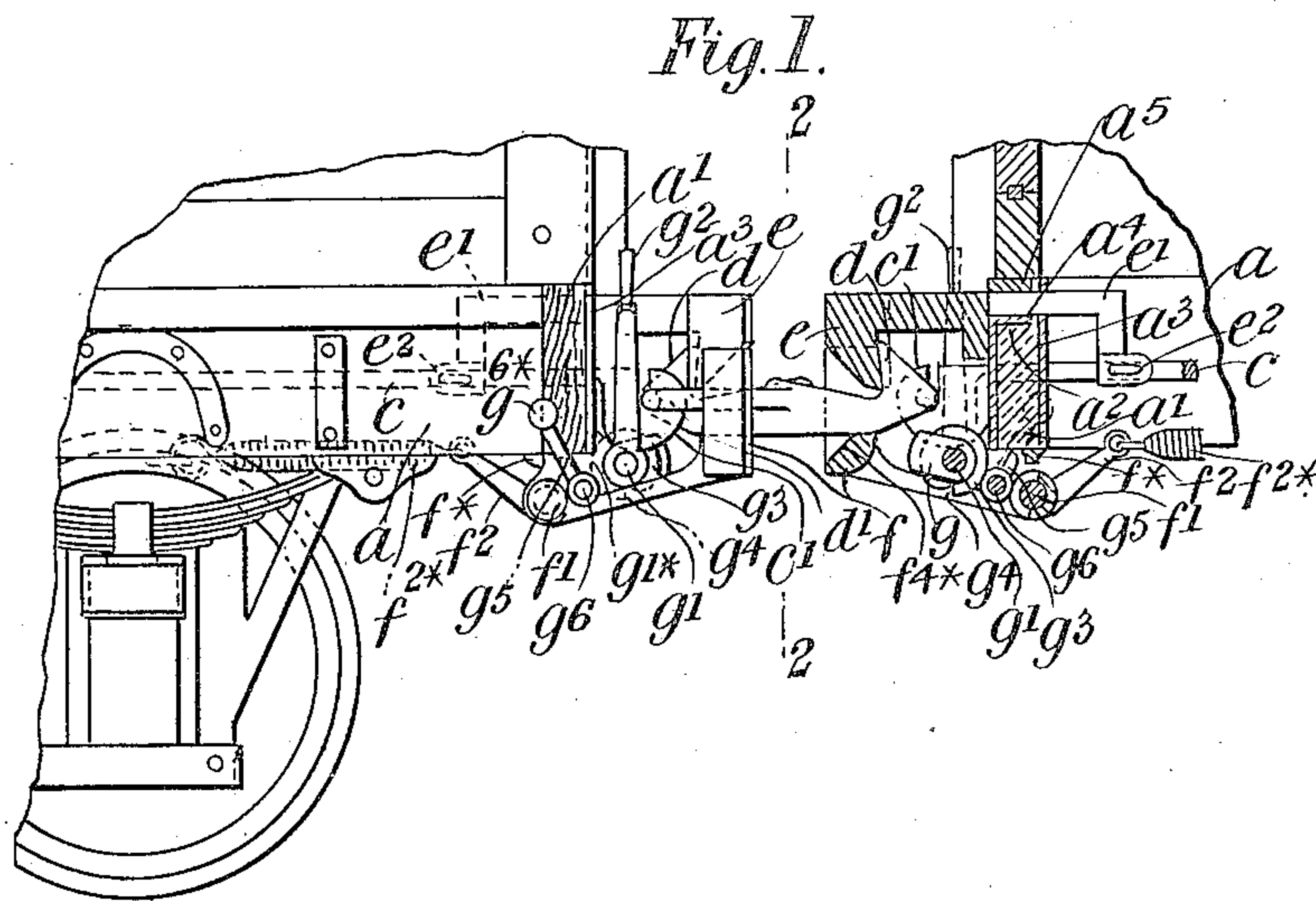
PATENTED JAN. 28, 1908.

J. RILEY & F. A. SPIERS.

AUTOMATIC COUPLING.

APPLICATION FILED MAY 3, 1907.

4 SHEETS—SHEET 1.



Witnesses:

C. H. White  
J. A. Hudson.

Inventors:

James Riley  
Frederick Alfred Spiers  
By Charles Melbourne White  
Attorney

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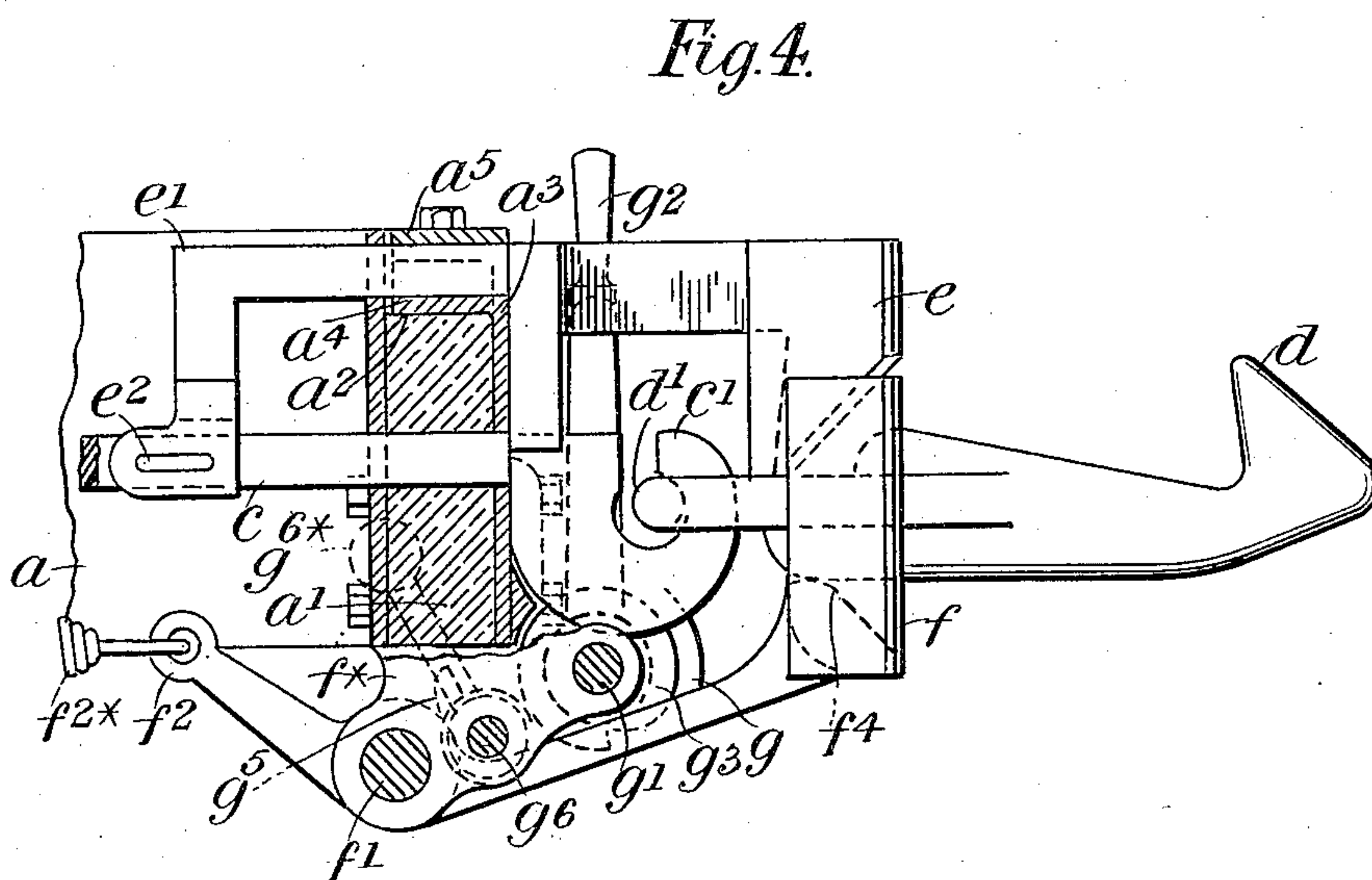
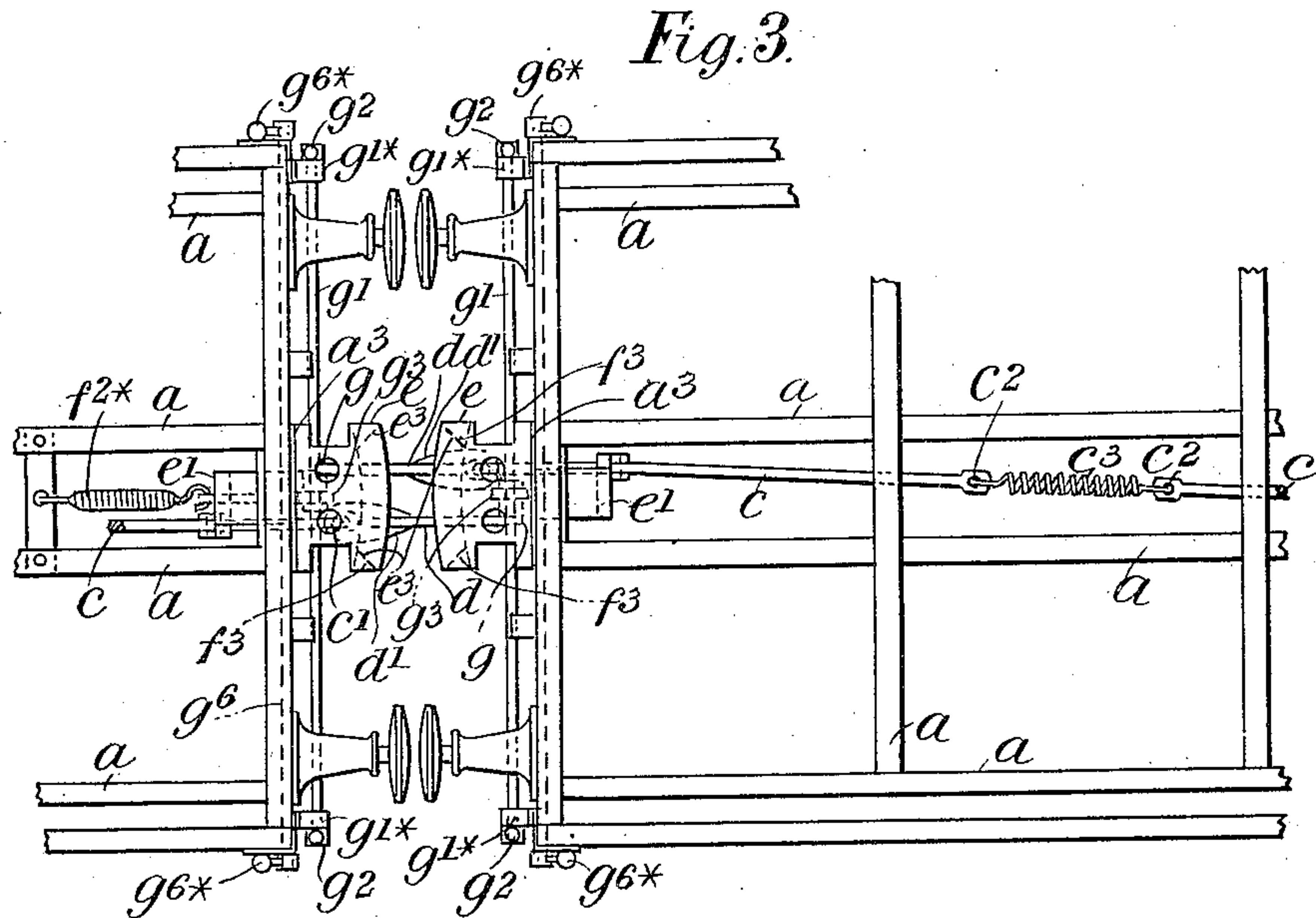
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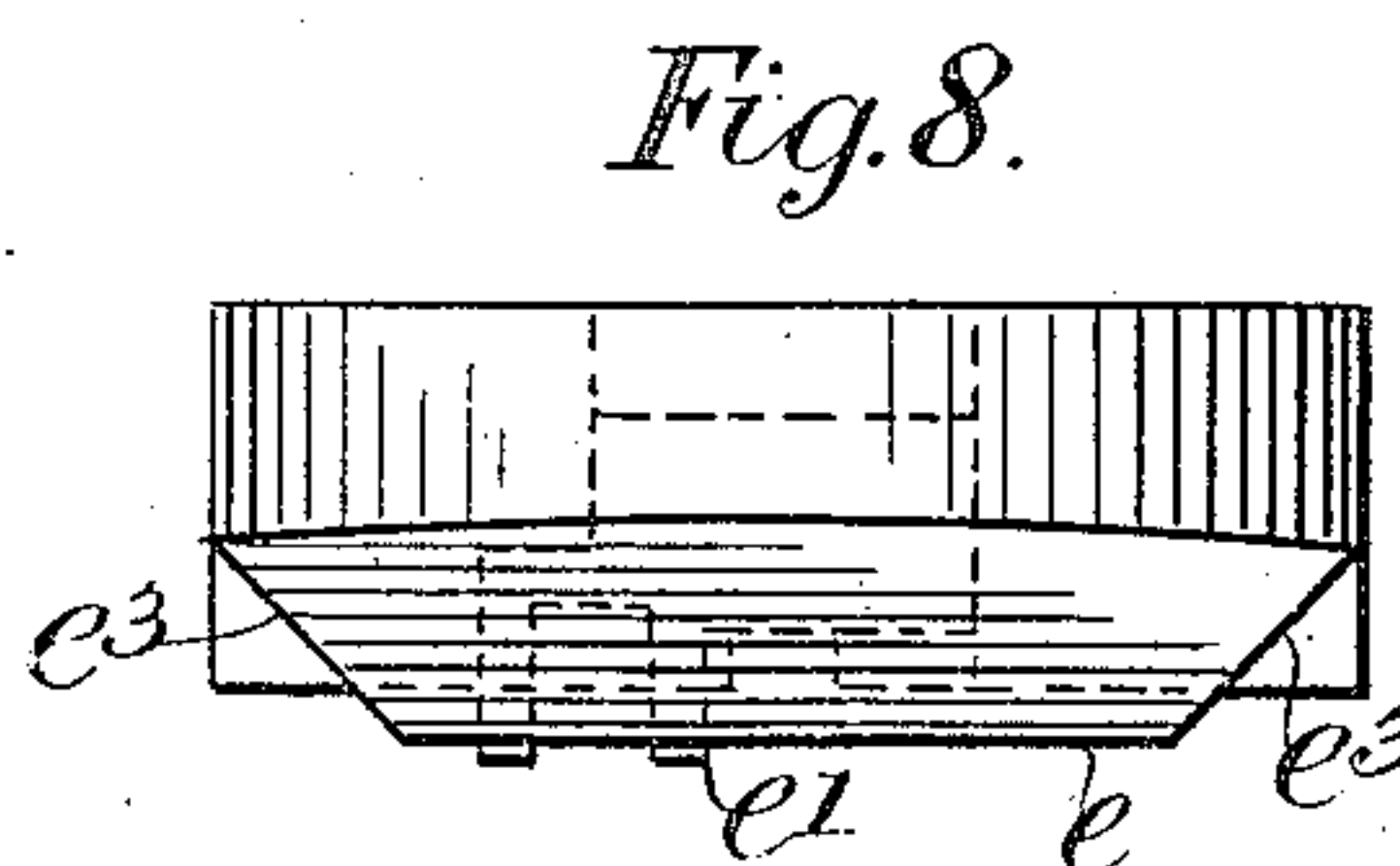
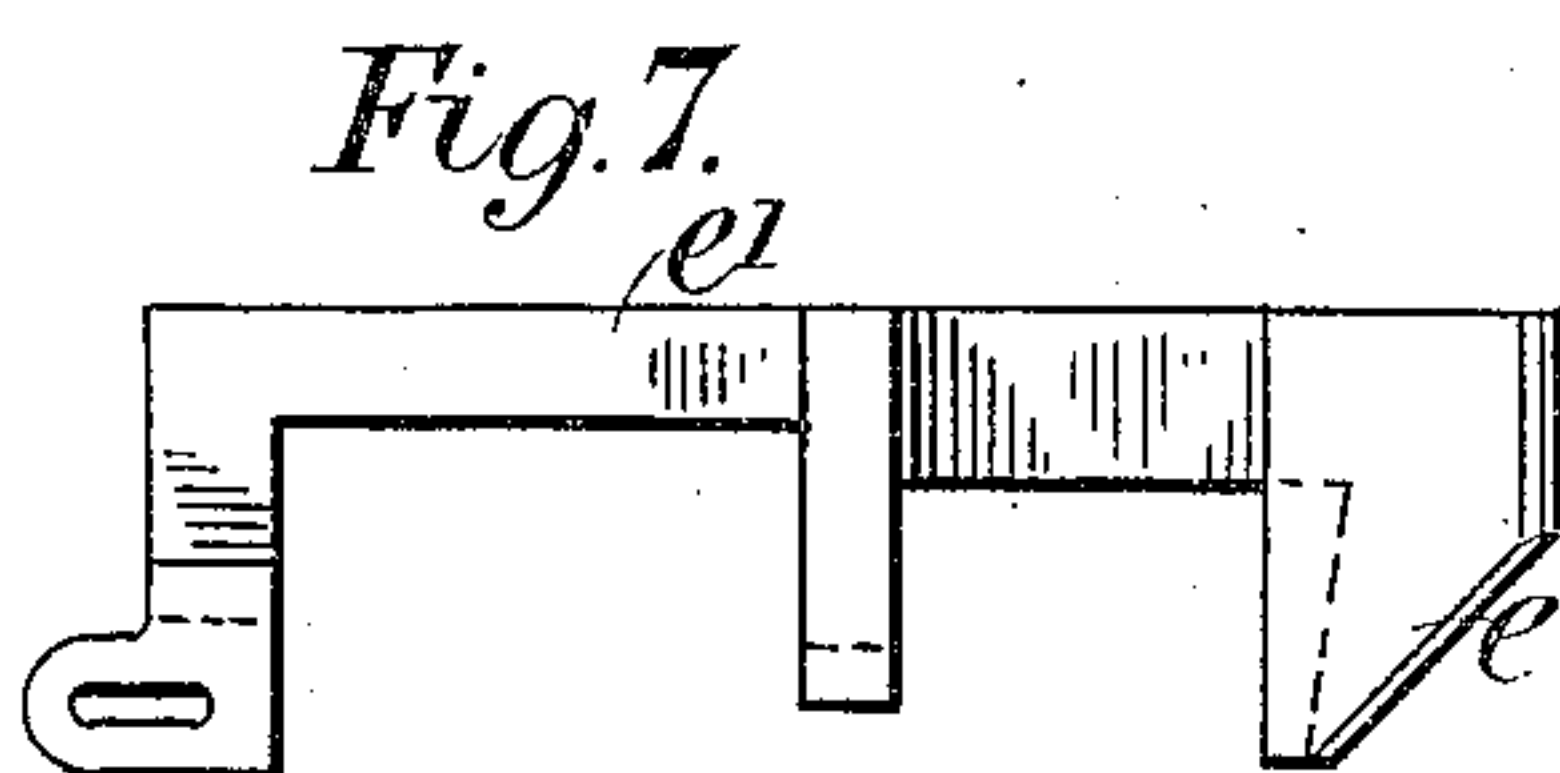
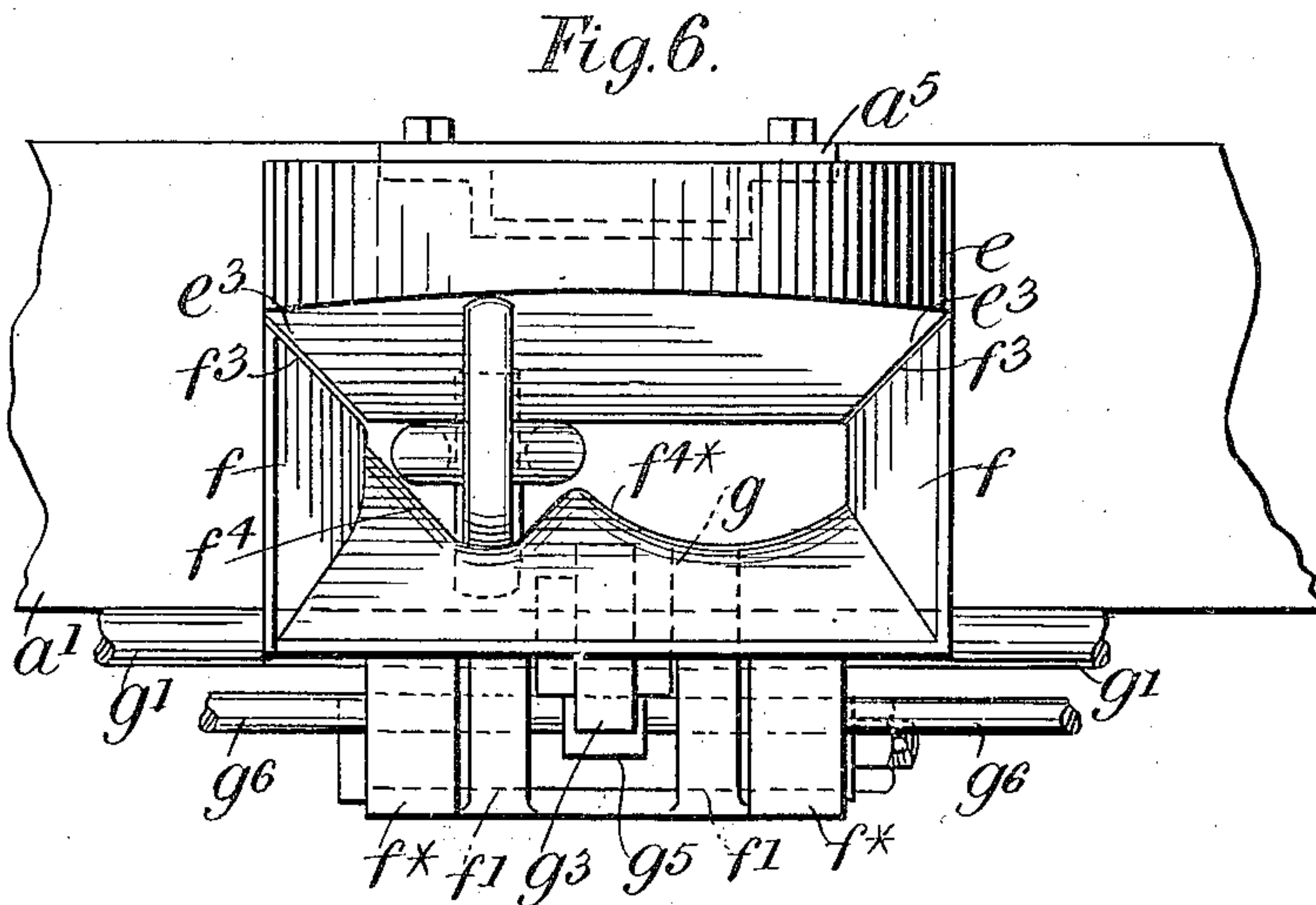
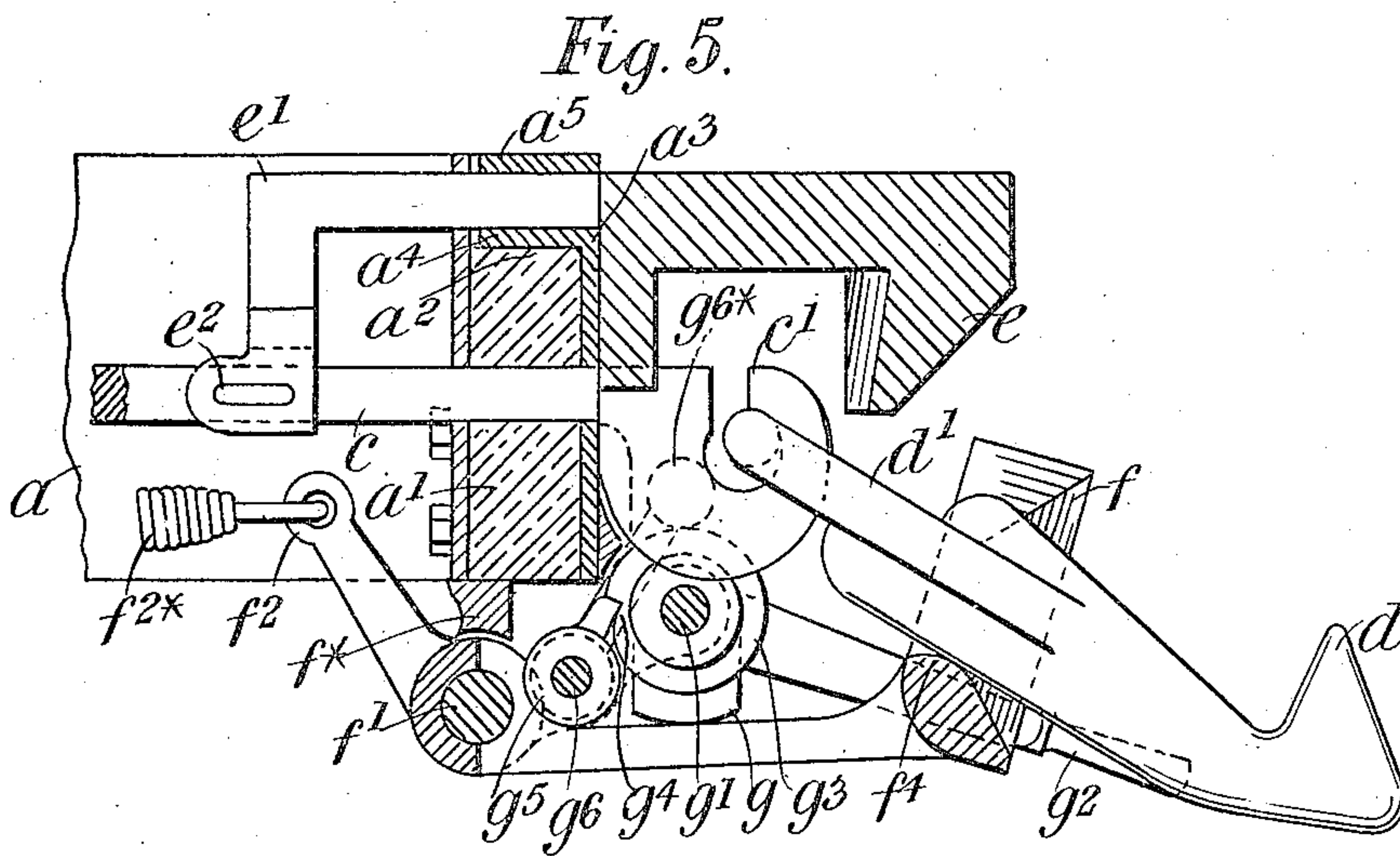
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4 SHEETS—SHEET 4.

Fig. 9.

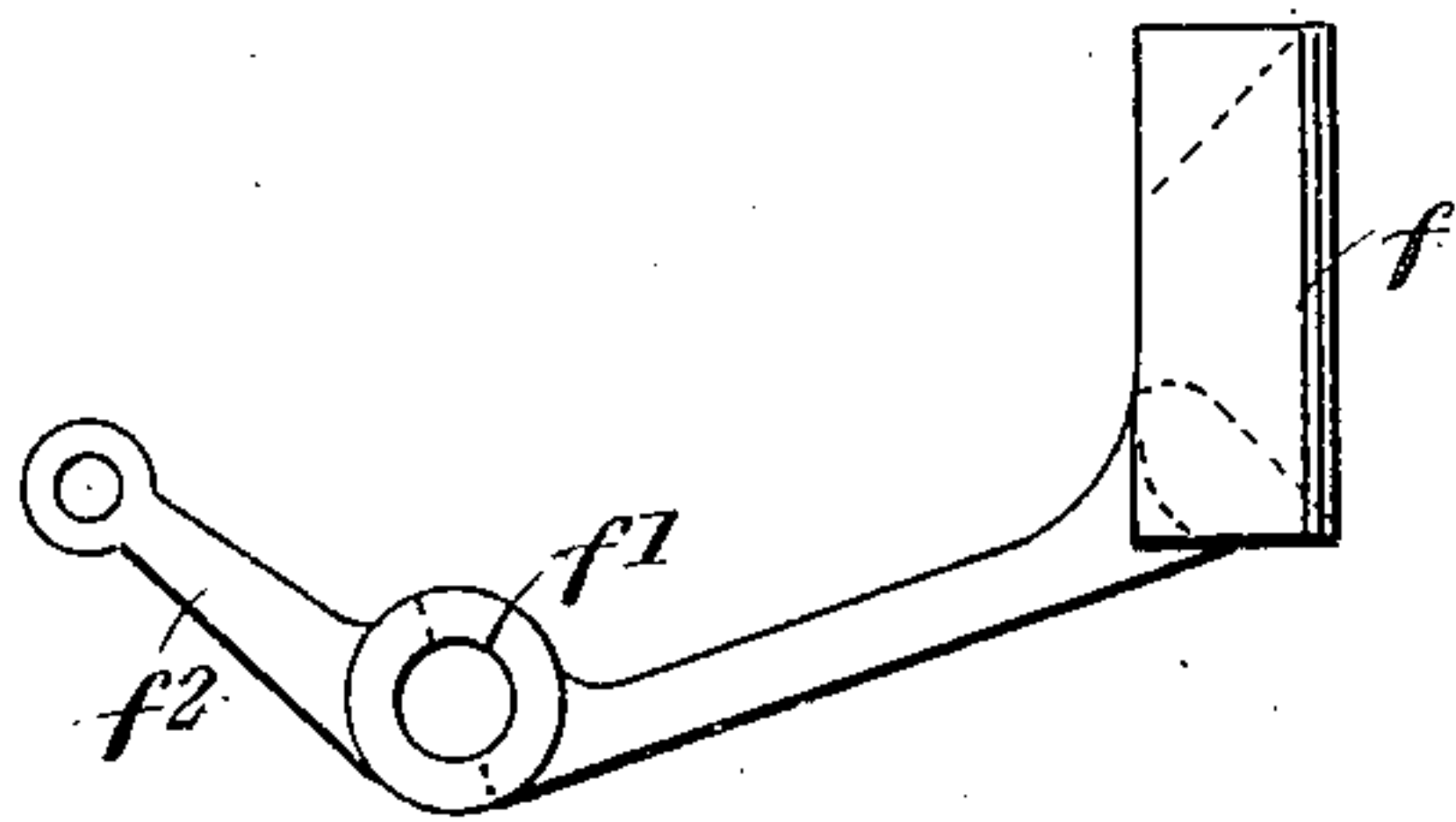


Fig. 11.

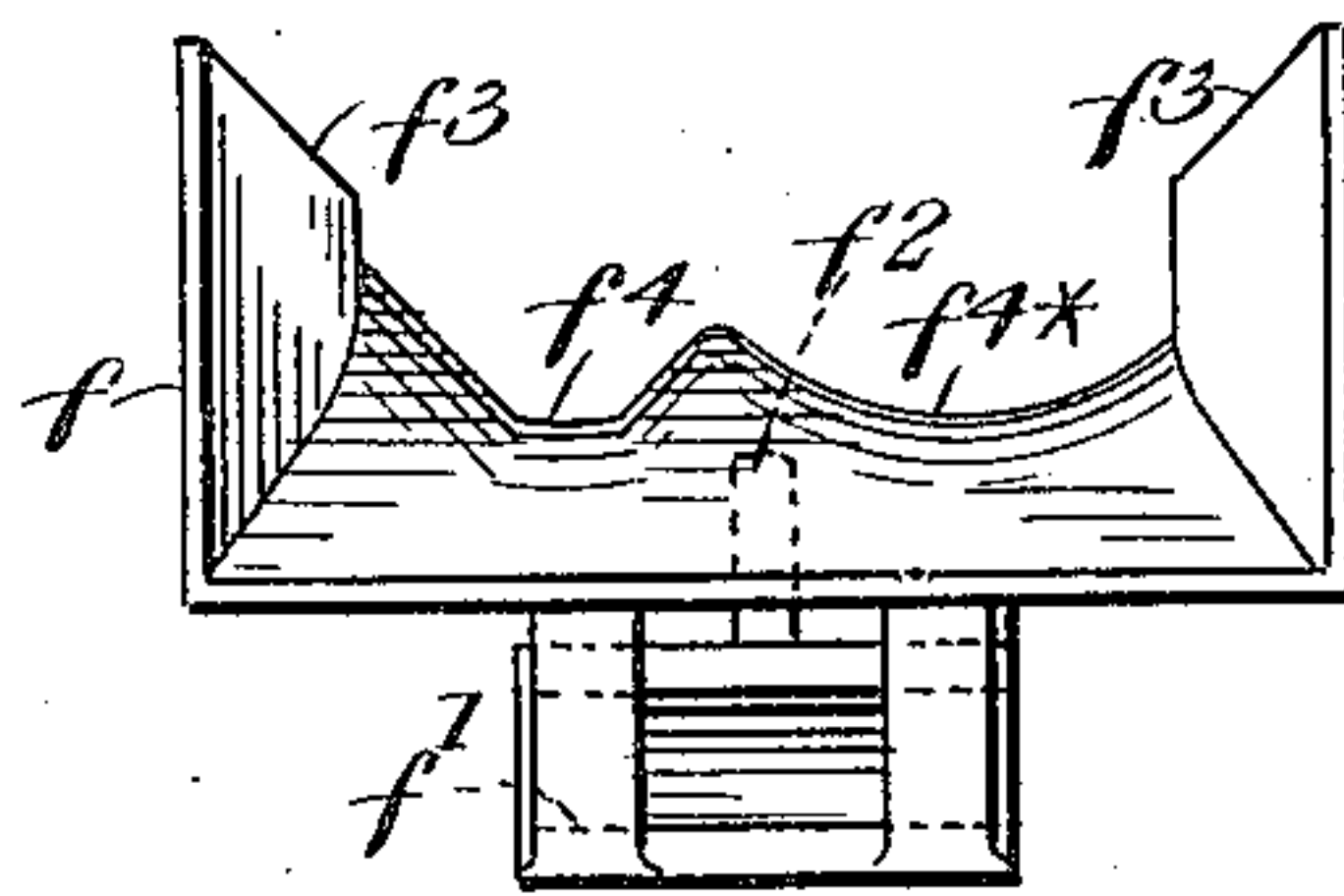


Fig. 10.

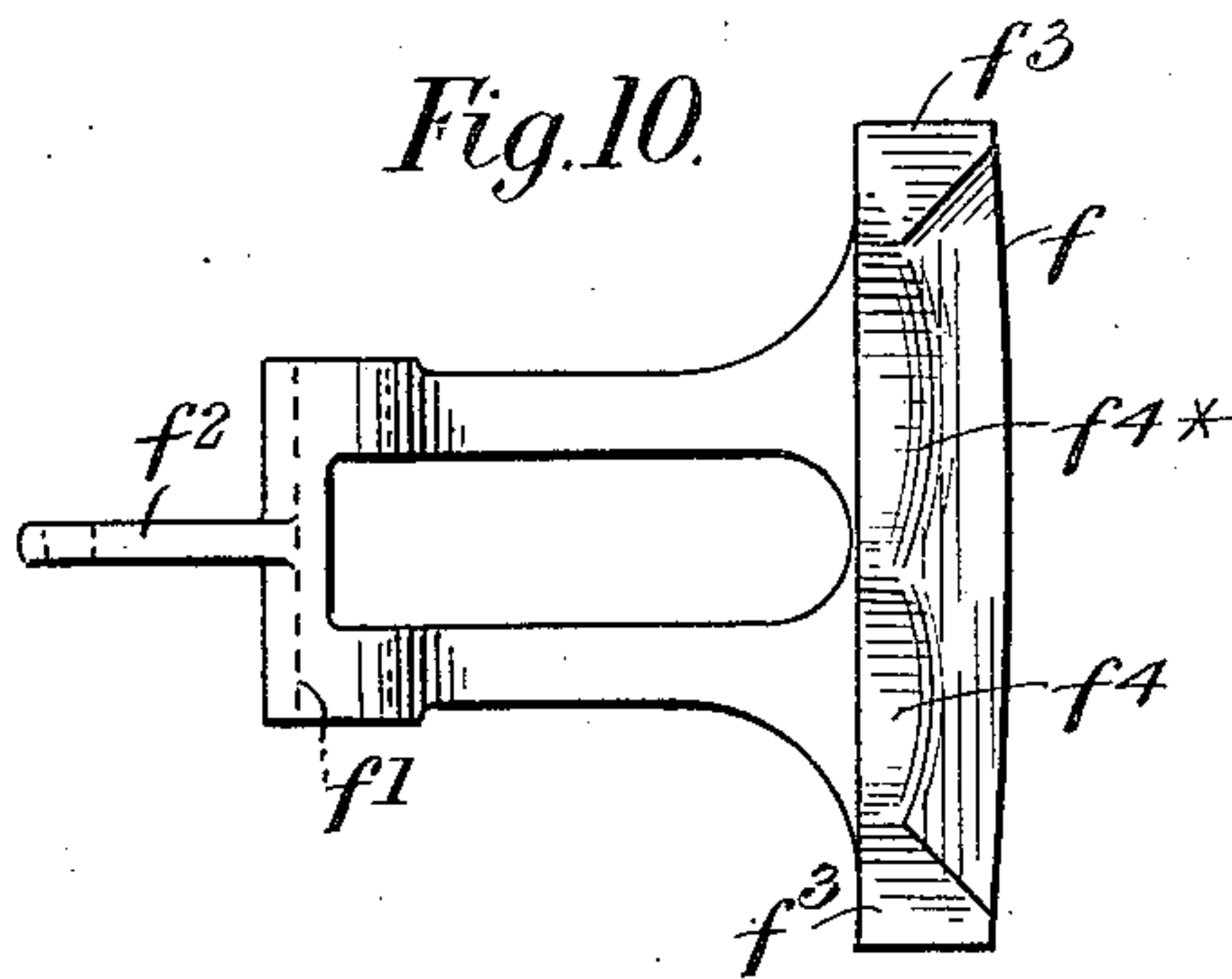
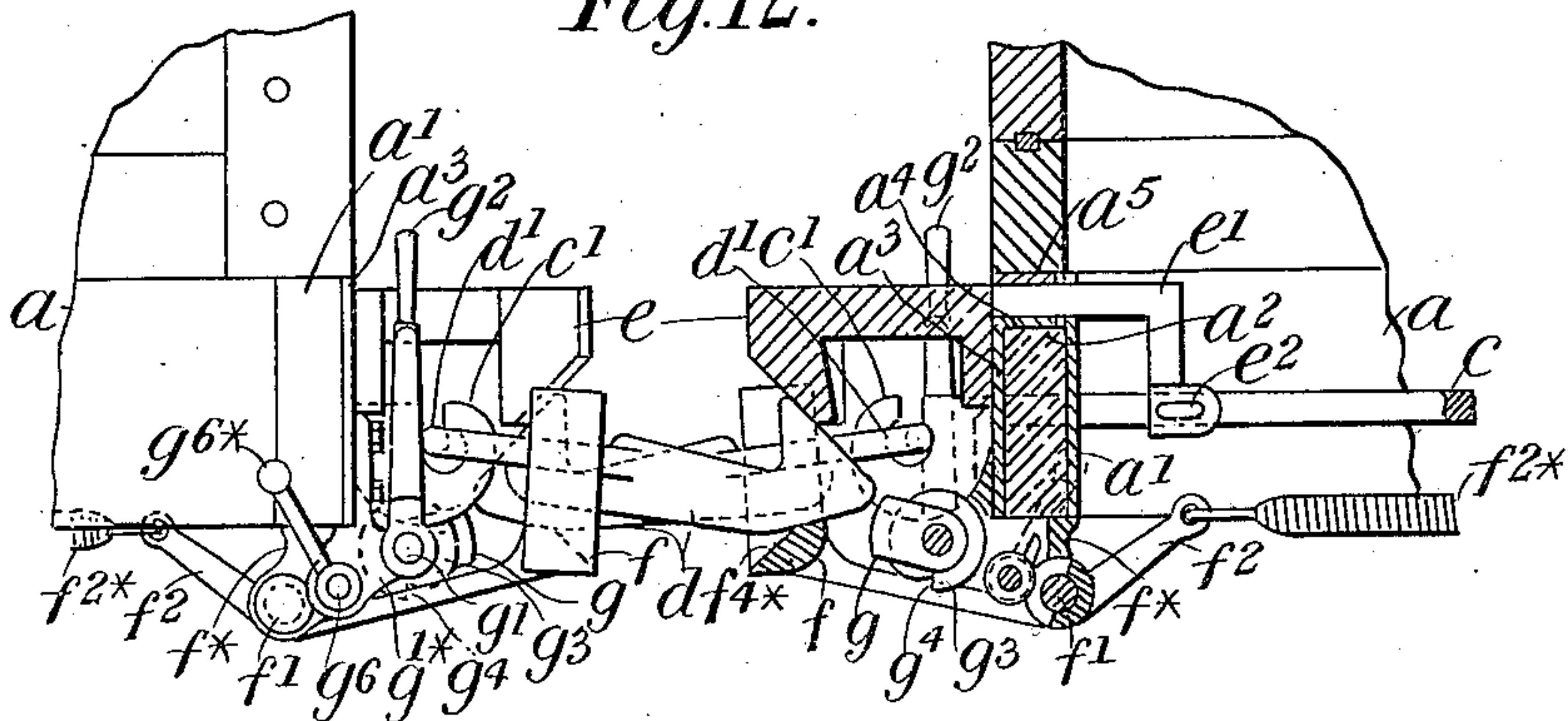


Fig. 12.



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# UNITED STATES PATENT OFFICE.

JAMES RILEY, OF SOUTHAMPTON, AND FREDERICK ALFRED SPIERS, OF LONDON, ENGLAND.

## AUTOMATIC COUPLING.

No. 877,663.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed May 3, 1907. Serial No. 371,734.

*To all whom it may concern:*

Be it known that we, JAMES RILEY and FREDERICK ALFRED SPIERS, subjects of the King of Great Britain, the former residing at Hawarden, Bitterne Park, Southampton, in the county of Hants, engineer, and the latter residing at St. Benet Chambers, 1 Fenchurch street, in the city of London, auctioneer, both in England, have invented certain new and useful Improvements in Automatic Couplings, of which the following is a specification, reference being had to the accompanying drawings, and to the figures and letters marked thereon, that is to say:

The invention relates to improvements in or connected with automatic couplings for railway carriages or other vehicles.

The primary object of the invention is to obtain a double coupling which will automatically engage when two vehicles are brought together, which may be disengaged from the sides of the carriages without the necessity for passing between the same, held disengaged and if desired used as a hand operated coupling.

In the accompanying drawings, Figure 1 is a side elevation partly in section, the section being taken on the line 1—1 of Fig. 2 of parts of two railway trucks or wagons having the present invention applied thereto and showing them coupled together the buffers being omitted for the sake of clearness. Fig. 2 is an end elevation thereof partly in section the section being taken on the line 2—2 of Fig. 1 and showing the buffers in place. Fig. 3 is a plan of Fig. 1 with some additions. Fig. 4 represents a sectional view of part of Fig. 1 showing the hook of the draw bar in its raised or active position. Fig. 5 is a similar view to Fig. 4 showing the hook of the draw bar in its lowered or inactive position. Fig. 6 is a front elevation of Fig. 4. Fig. 7 is a side elevation of the broad hook separately. Fig. 8 is a front elevation thereof. Fig. 9 is a side elevation of the movable jaw separately. Fig. 10 is a plan thereof. Fig. 11 is a front end elevation thereof and Fig. 12 is a similar view to Fig. 1 but showing the positions assumed by the parts as the wagons come together in the act of coupling.

In the several figures like parts are indicated by similar letters of reference and Fig. 3 is drawn to a reduced scale, Fig. 12 is drawn to an increased scale, Figs. 7 to 11 are drawn to a further increased scale and Figs.

4 to 6 are drawn to a still further increased scale with respect to the other figures of the drawings.

Referring to Figs. 1 to 11, *a* represents the under carriage or frame of the trucks which is of the usual character, *a*<sup>1</sup> represents the buffer beam and *c* represents the drawbar. The hook *c*<sup>1</sup> of the drawbar *c* is provided with a link *d*<sup>1</sup> having fixed therewith a hook *d* at its end formed pointed or beveled while its engaging part immediately to the rear of the point is formed flat or slightly undercut.

Mounted upon the face of the buffer beam *a*<sup>1</sup> of each carriage is a broad downwardly directed hook *e*, the face of which is curved to a suitable arc to admit of the wagon taking curves and this broad hook *e* is supported with capability of horizontal movement by a cranked rod or bar *e*<sup>1</sup> fixed therewith and working in and passing through a countersink or recess *a*<sup>2</sup> formed in the buffer beam *a*<sup>1</sup> and lined by means of a trough shaped projection *a*<sup>4</sup> from the face plate *a*<sup>3</sup> of the buffer beam *a*<sup>1</sup> while the rod or bar *e*<sup>1</sup> of the broad hook *e* is secured against vertical movement by means of a strap *a*<sup>5</sup> extending across the recess *a*<sup>2</sup> and fastened to flanges from the projection *a*<sup>4</sup> of the face plate *a*<sup>3</sup>.

The inner end of the rod or bar *e*<sup>1</sup> is cranked vertically and laterally and at its extremity is forked to embrace the drawbar *c* and by means of a pin or key *e*<sup>2</sup> is connected with the draw bar *c* at a point to the rear of the buffer beam so that a pull upon the broad hook *e* will partake of the spring resistance of the drawbar *c*. Or the broad hook *e* might be otherwise mounted and connected with the drawbar *c*.

Beneath the broad hook *e* and pivotally mounted at *f*<sup>1</sup> upon a bracket or hanger *f*<sup>\*</sup> fixed with the buffer beam *a*<sup>1</sup> is a broad jaw *f* the face of which is similarly curved to that of the broad hook *e* and this broad jaw *f* is beyond its axis *f*<sup>1</sup> provided with an offset *f*<sup>2</sup> to which is connected one end of a spring *f*<sup>2\*</sup> the other end of which is connected to the frame *a* of the wagon and the jaw *f* is thus held up to the broad hook *e* with a yielding or spring pressure with the hook *d* of the drawbar *c* held securely between said parts and supported in the required horizontal or acting position for coupling purposes; or a counterbalance



weight or any other suitable yielding means might be employed for thus supporting the jaw *f*. The jaw *f* is provided with lateral cheeks beveled at *f*<sup>3</sup> to coact with corresponding bevels *e*<sup>3</sup> upon the broad hook *e* and the front adjacent edges of both the jaw *f* and the broad hook *e* are inwardly beveled so that upon two carriages or wagons being brought together the pointed or beveled hook *d* of the opposite drawbar upon each carriage or wagon will come against the beveled edges of the coacting broad hook *e* and movable jaw *f* and force the latter downward so that the hook *d* passes between them as shown at Fig. 12 and then being lifted by the movable jaw *f* will engage the broad hook *e* and be so held as shown at Figs. 1 to 3.

Each of the movable jaws *f* is formed with notches or recesses *f*<sup>4</sup> *f*<sup>4\*</sup> the one *f*<sup>4</sup> being somewhat deeper than that *f*<sup>4\*</sup> and the link *d*<sup>1</sup> of the hook *d* upon each wagon lies in the deeper notch *f*<sup>4</sup> of the movable jaw *f* so that in the normal or raised position of said jaw the hook *d* will be held in the requisite engaging position relatively to the broad hook *e* and jaw *f* upon an opposite wagon the shallower notches *f*<sup>4\*</sup> in the jaws *f* serving to guide the hooks *d* into the required positions relatively to the broad hooks *e* and jaws *f*.

The drawbar *c* is by way of example shown to be formed in two parts and the hooks *d* of the drawbars *c* are suitably spaced by arranging each drawbar diagonally as shown at Fig. 3 so that the hooks *d* on the opposite ends of meeting wagons will be in different vertical planes and pass clear of one another; the opposite ends *c*<sup>2</sup> of the two parts of the drawbar *c* are connected by a spring *c*<sup>3</sup> to afford the usual spring resistance. Or the spacing of the hooks *d* might be arrived at by cranking the drawbar or by employing two separate drawbars parallel to one another but located in different vertical planes and provided with separate springs; or the same result might be attained in other ways.

In connection with each movable jaw *f* is arranged a cam *g* which is fixed upon a cross shaft *g*<sup>1</sup> which extends to the sides of the wagon where it is supported in bearings formed in brackets *g*<sup>1\*</sup> fixed to the buffer beam *a*<sup>1</sup> while at its center it is supported in a bearing formed in the bracket or hanger *f*<sup>\*</sup>. The cross shaft *g*<sup>1</sup> at each end thereof is provided with a lever or handle *g*<sup>2</sup> by which it can from either side of the carriage be turned through a suitable angle and the cam *g* is arranged to act upon the shank of the movable jaw *f* as shown more particularly at Figs. 4 and 5 so that by turning the cross shaft *g*<sup>1</sup> by means of the lever or handle *g*<sup>2</sup> the cam *g* will be caused to depress the movable jaw *f* against the resistance of the spring *f*<sup>2\*</sup> and throw it, and consequently the hook

*d* which it supports, out of action thus rendering the coupling inoperative as shown at Fig. 5.

The movable jaw *f* and hook *d* are held out of action by the weight of the lever or handle *g*<sup>2</sup> but in order to positively lock the parts in that position when desired the following device is provided: Upon the shaft *g*<sup>1</sup> of the cam *g* is fixed a wheel or disk *g*<sup>3</sup> provided with a ratchet notch or tooth *g*<sup>4</sup> or the wheel might be formed with a segment of teeth and in connection with the ratchet or locking wheel or disk *g*<sup>3</sup> is arranged a pawl *g*<sup>5</sup> which is fixed upon a cross shaft *g*<sup>6</sup> which extends to the sides of the wagon and is mounted in bearings formed in the brackets *g*<sup>1\*</sup> and *f*<sup>\*</sup> and at each end this shaft is furnished with a weighted handle *g*<sup>6\*</sup> so that by turning said handle in one direction the pawl *g*<sup>5</sup> may be thrown and held out of action as shown by the dotted lines in Fig. 4 while by turning the handle *g*<sup>6\*</sup> in the other direction the pawl *g*<sup>5</sup> will be thrown into action, that is into a position to engage the ratchet notch or tooth *g*<sup>4</sup> of the wheel or disk *g*<sup>3</sup> as shown at Fig. 5 and thus upon the lowering of the movable jaw *f* by the handle *g*<sup>2</sup> said jaw will be locked out of action. The hooks *d* may be employed in connection with the ordinary chain coupling when desired.

By the means hereinbefore described a simple inexpensive and reliable coupling is obtained which whether worked automatically or by hand may be operated from the sides of the carriage or wagon thereby avoiding the necessity for the railway men passing between the carriages and the consequent risk of injury while the double construction that is the employment of a double set of hooks *d* and *e* one set connected with the drawbar of each wagon affords an additional security against the breaking apart of the carriages.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed we declare that what we claim is:—

1. In an automatic coupling a broad hook connected with the drawbar of the carriage and having a beveled edge, a pivotally mounted broad and beveled edged jaw arranged beneath the broad hook means for holding the jaw up to the broad hook, a pointed or beveled hook linked to the drawbar of the carriage and arranged toward one side of and supported by the movable jaw in such manner that a similar pointed hook on another carriage can be received between the broad hook and the jaw at the side of the first pointed hook and means for depressing the movable jaw at the times desired substantially as herein shown and described and for the purpose stated.

2. In an automatic coupling a broad hook connected with the drawbar of the carriage



and having a beveled edge, a pivotally mounted broad and beveled edged jaw arranged beneath the broad hook, means for holding the jaw up to the broad hook, a pointed or beveled hook linked to the drawbar of the carriage and arranged toward one side of and supported by the movable jaw in such manner that a similar pointed hook on another carriage can be received between the broad hook and the jaw at the side of the first pointed hook, guide notches in the movable jaw for the pointed hooks and means for depressing the movable jaw at the times desired substantially as herein shown and described and for the purpose stated.

3. In an automatic coupling a broad beveled edged hook mounted upon the end of a carriage with capability of sliding longitudinally of the carriage, a connection between the broad hook and the drawbar, a broad and beveled edged jaw arranged beneath the broad hook and mounted upon an axis of motion, an offset from the broad jaw, a spring acting upon said offset to hold the jaw up to the broad hook, a pointed or beveled hook linked to the drawbar of the carriage and arranged to one side of and supported by the movable jaw in such manner that a similar pointed hook on another carriage can be

received between the broad hook and the jaw at the side of the first pointed hook, a cross shaft extending to the sides of the carriage and there provided with levers or handles, a cam upon the cross shaft adapted to act upon the movable jaw and depress it and a device operative from both sides of the carriage for locking said jaw in its depressed position substantially as herein shown and described and for the purpose stated.

4. In an automatic coupling of the character referred to means for locking the movable jaw in its depressed position consisting of a cross shaft extending to the sides of the carriage and there provided with handles, a cam upon the cross shaft adapted to act upon the movable jaw, a separate cross shaft a pawl fixed with the latter shaft and a coacting toothed or notched wheel fixed with the cross shaft of the cam substantially as herein shown and described and for the purpose stated.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

JAMES RILEY.

FREDERICK ALFRED SPIERS.

Witnesses:

H. D. JAMESON,

F. L. RAND.