

No. 744,464.

PATENTED NOV. 17, 1903.

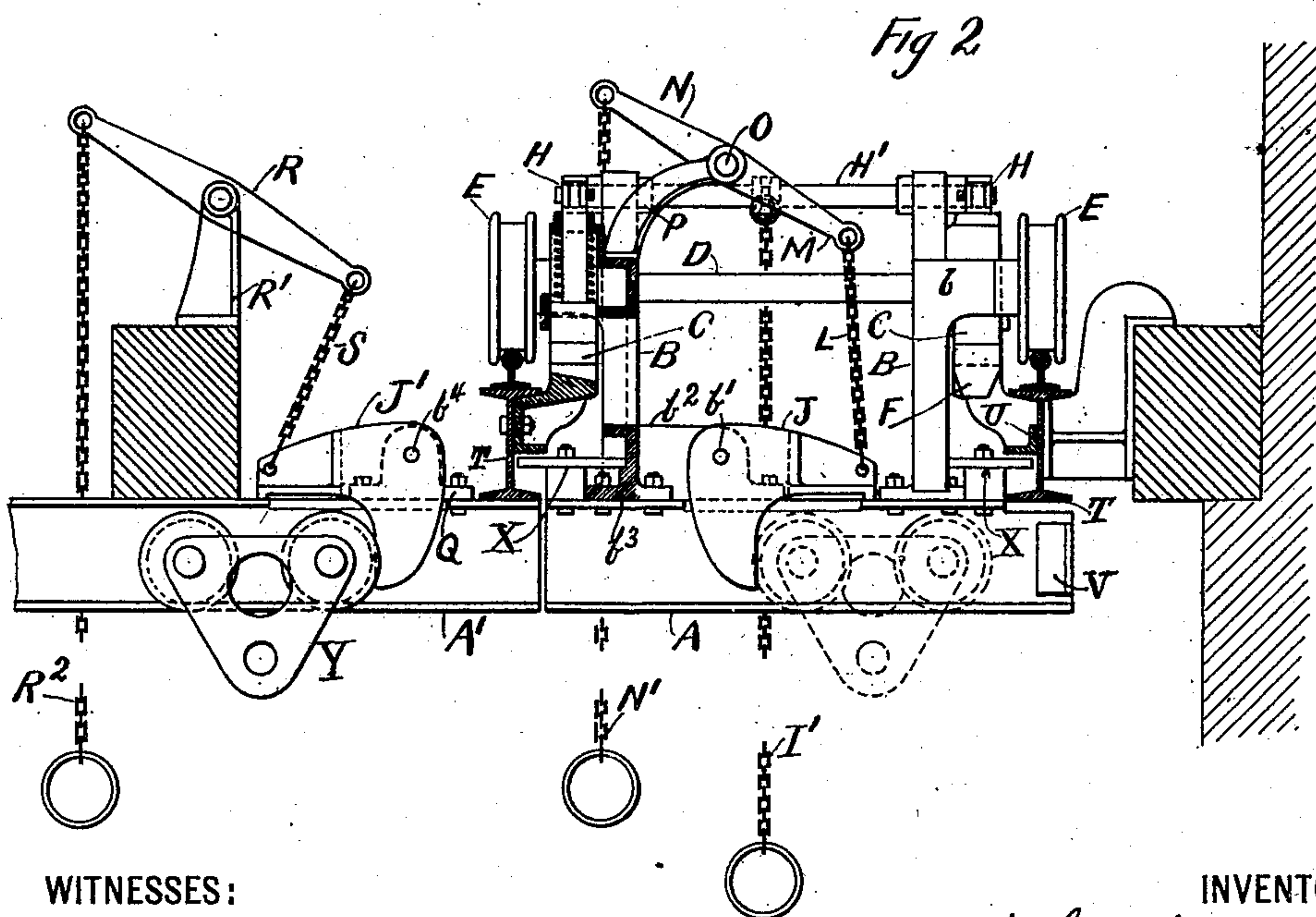
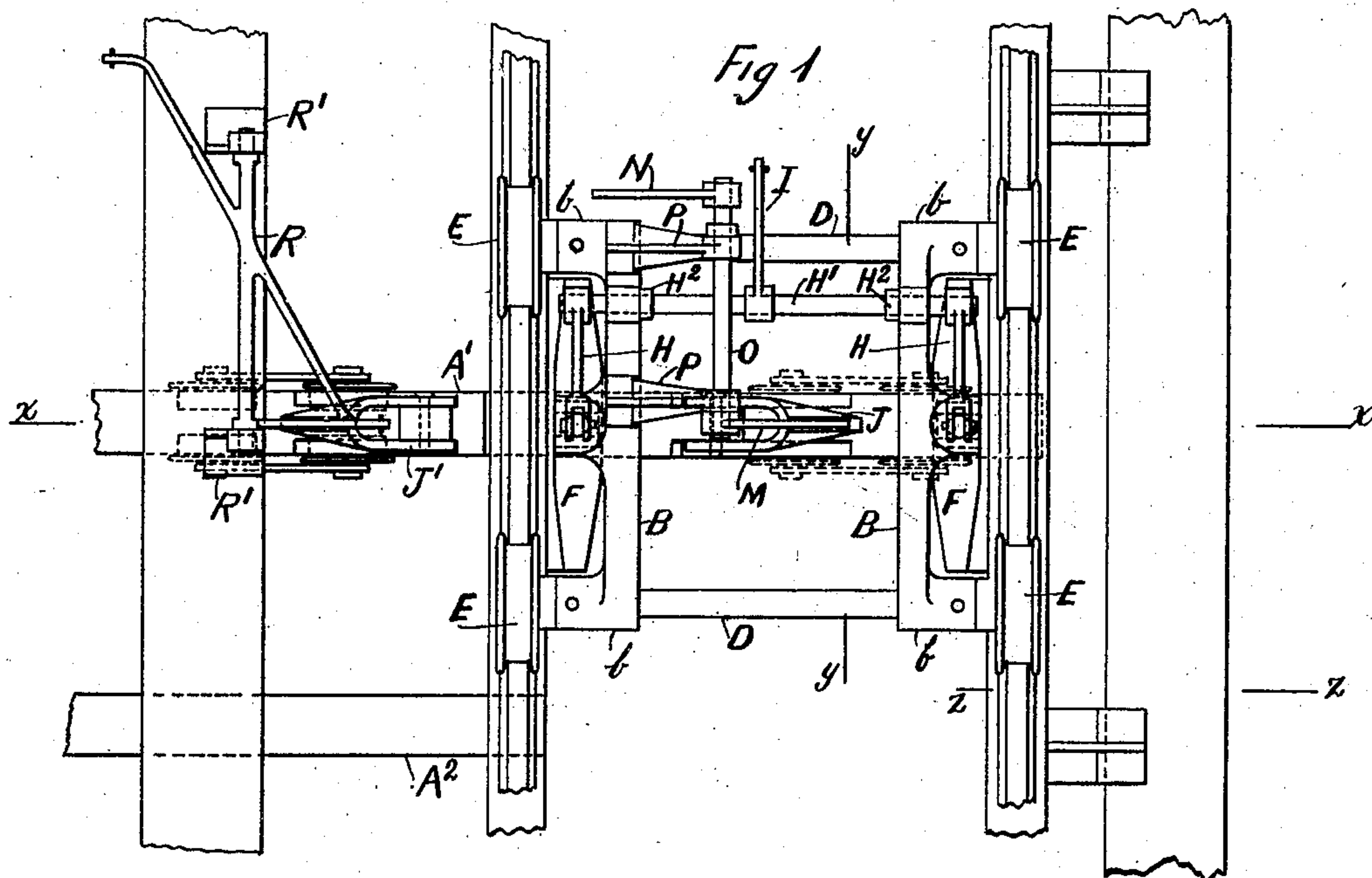
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## CRANE AND APPURTENANCES.

APPLICATION FILED APR. 5, 1900.

NO MODEL.

6 SHEETS—SHEET 1.



**WITNESSES:**

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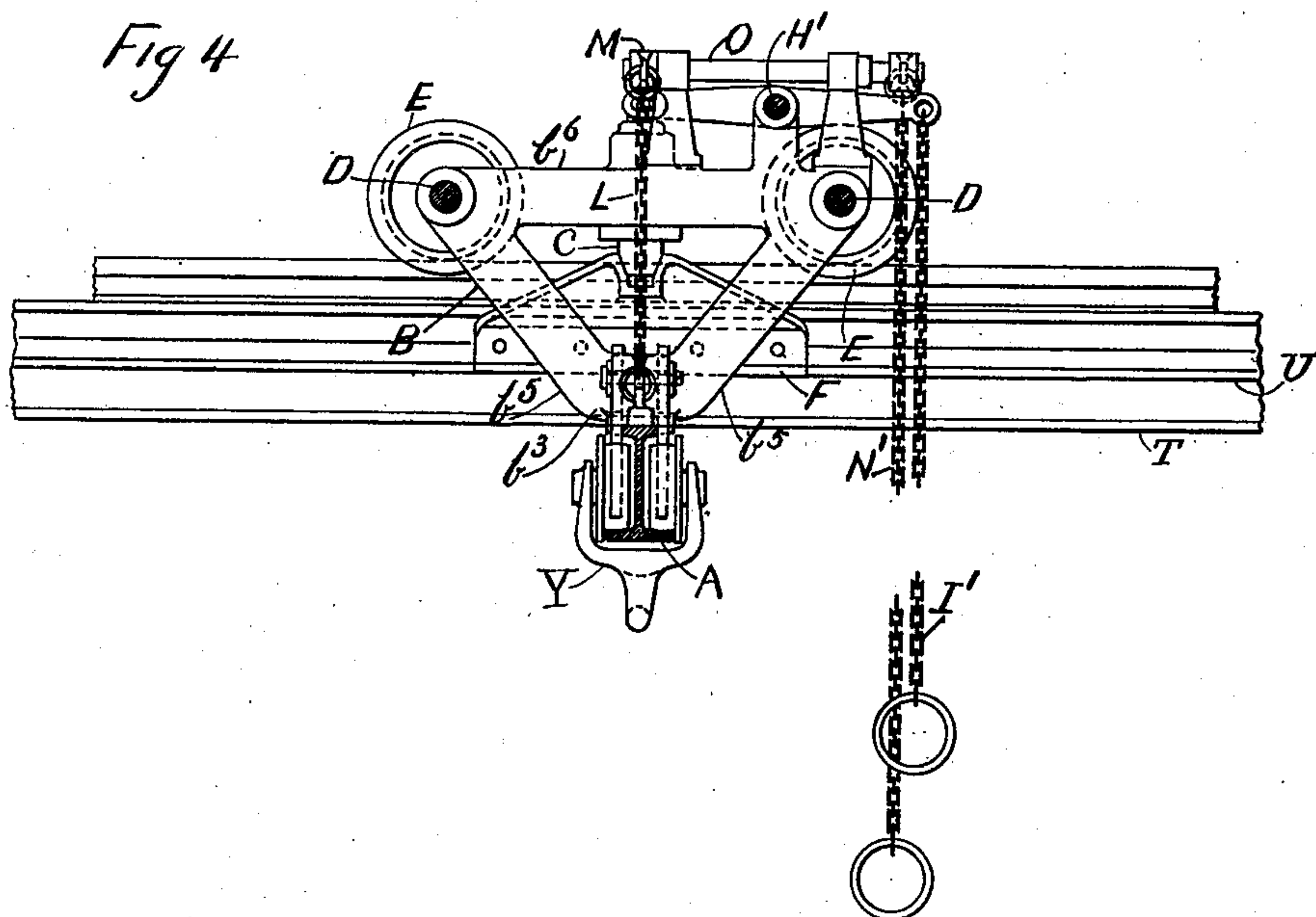
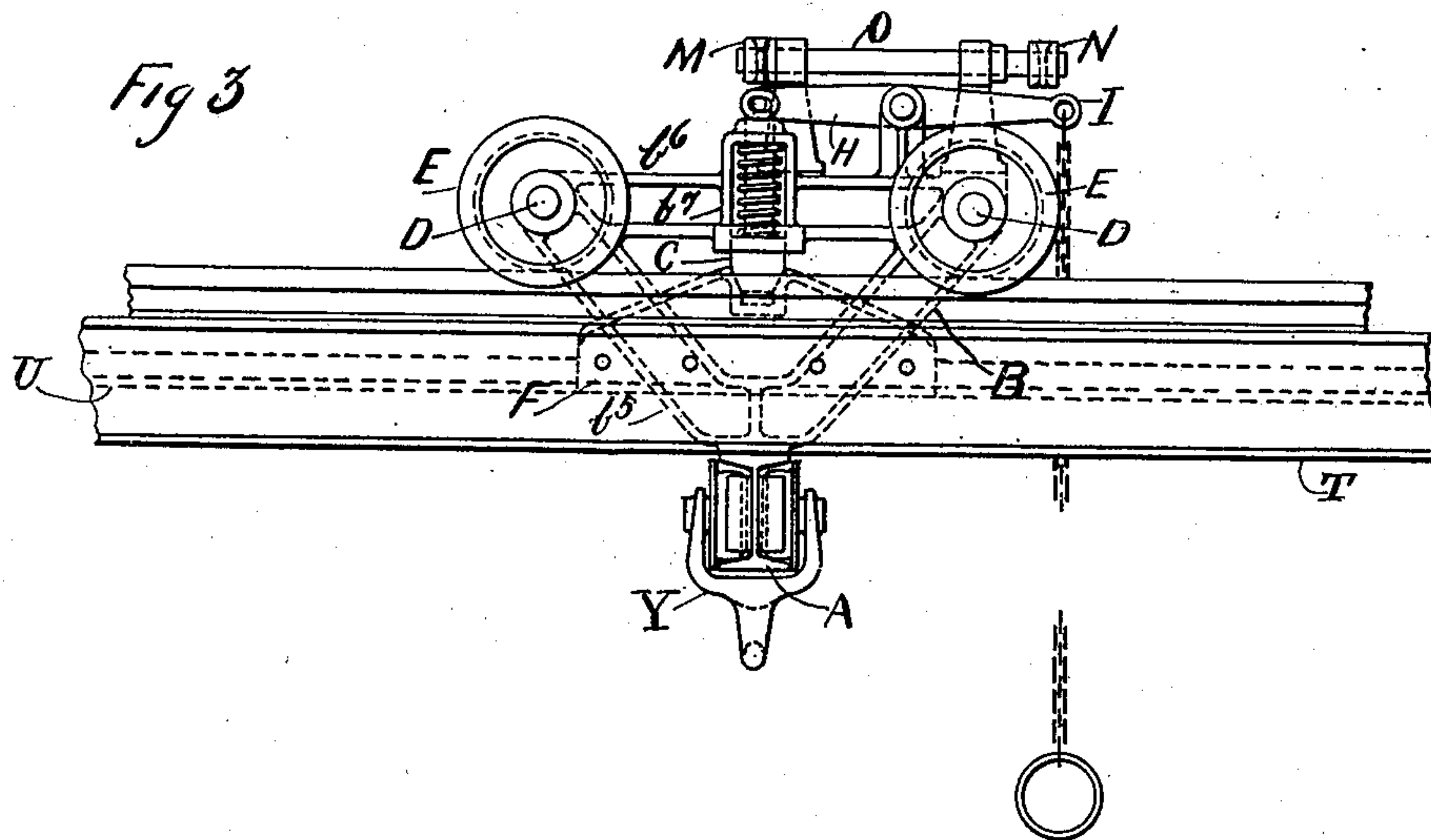
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CRANE AND APPURTENANCES.

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5 SHEETS—SHEET 2.



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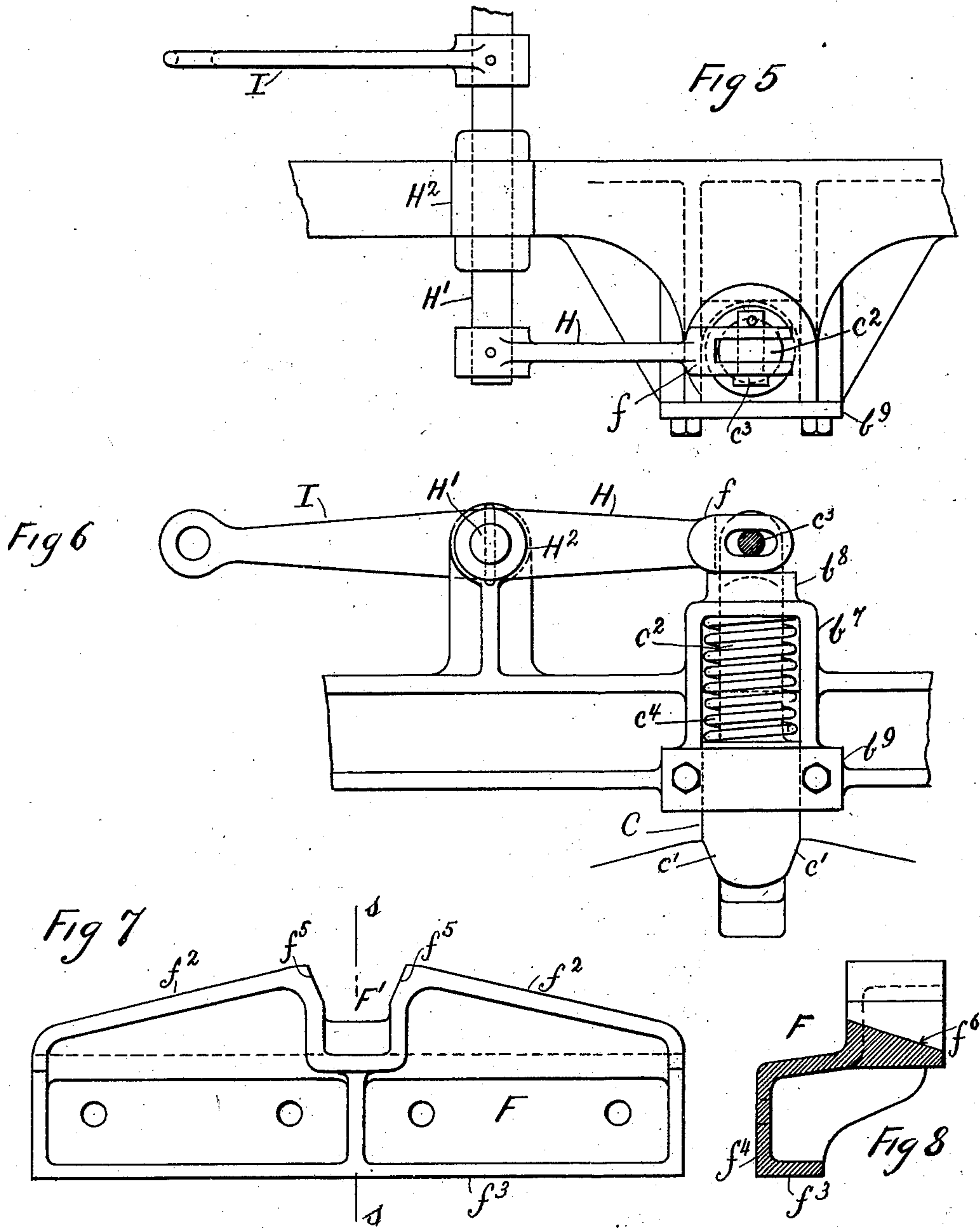
A. A. DE BONNEVILLE & A. JOHNSTON.

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NO MODEL.

5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

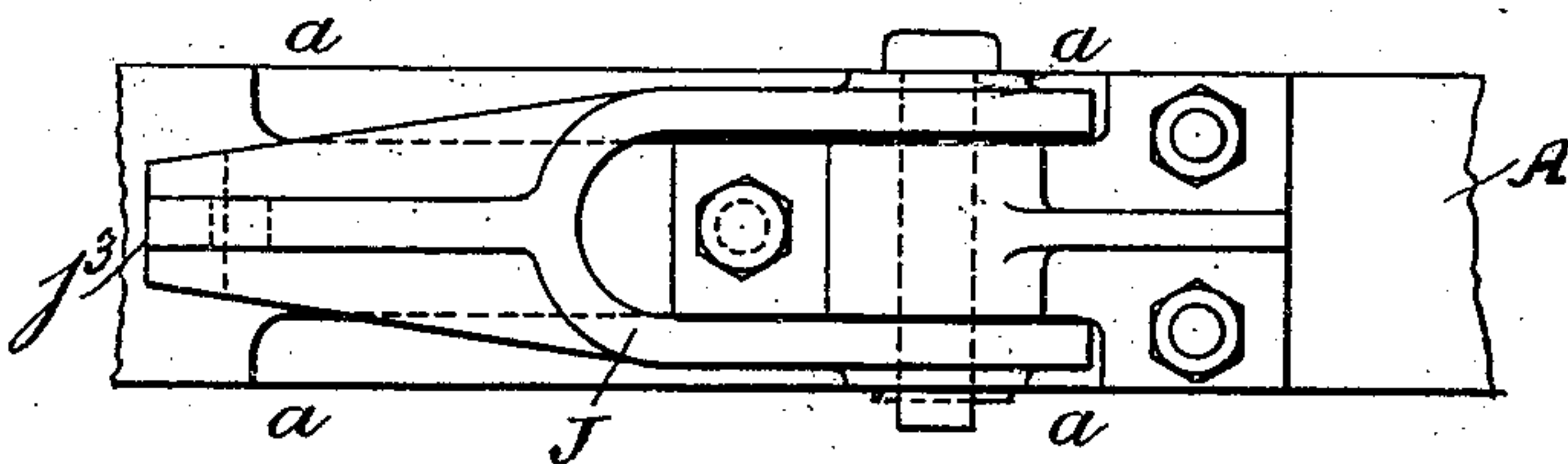


Fig 9

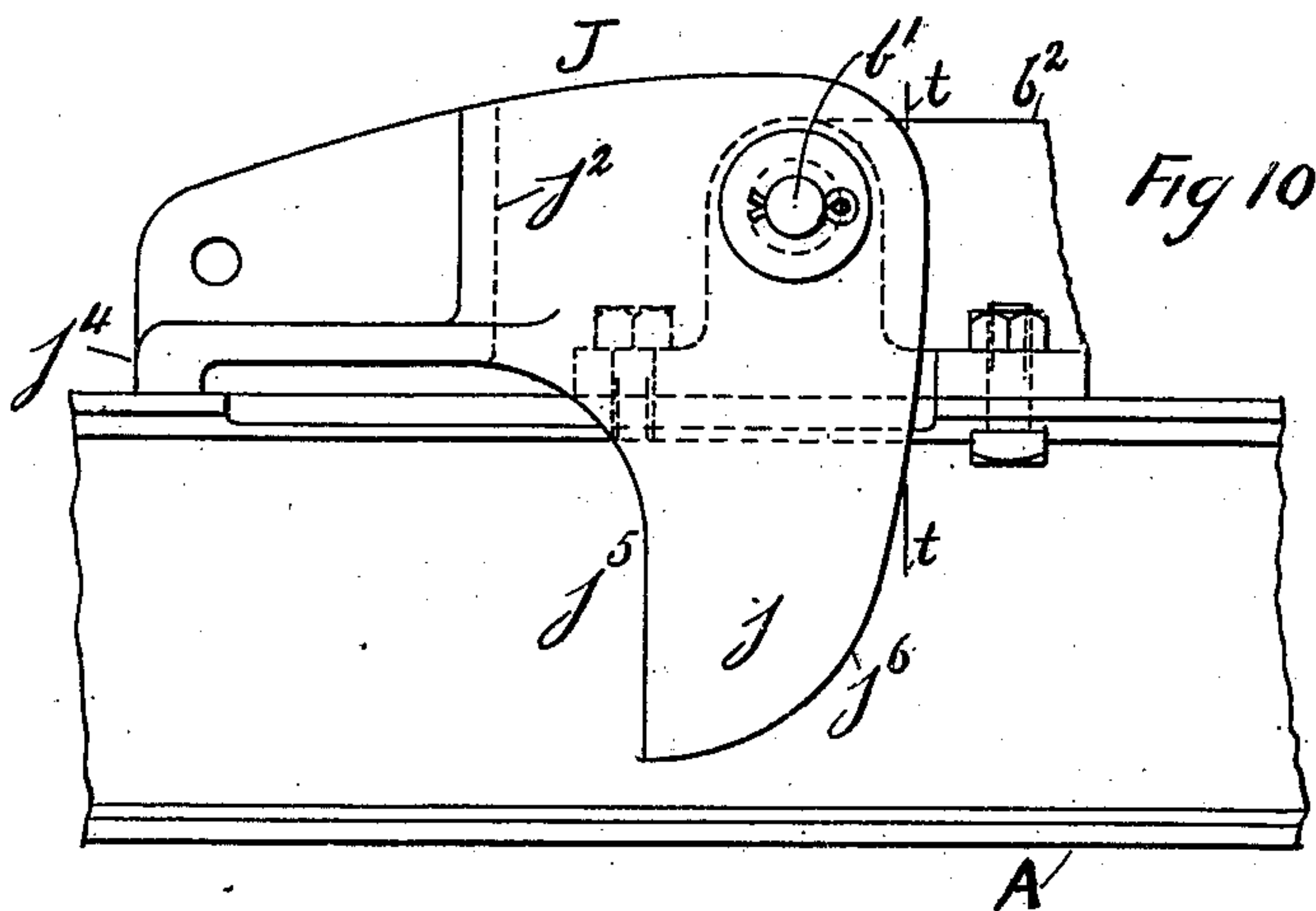


Fig 10

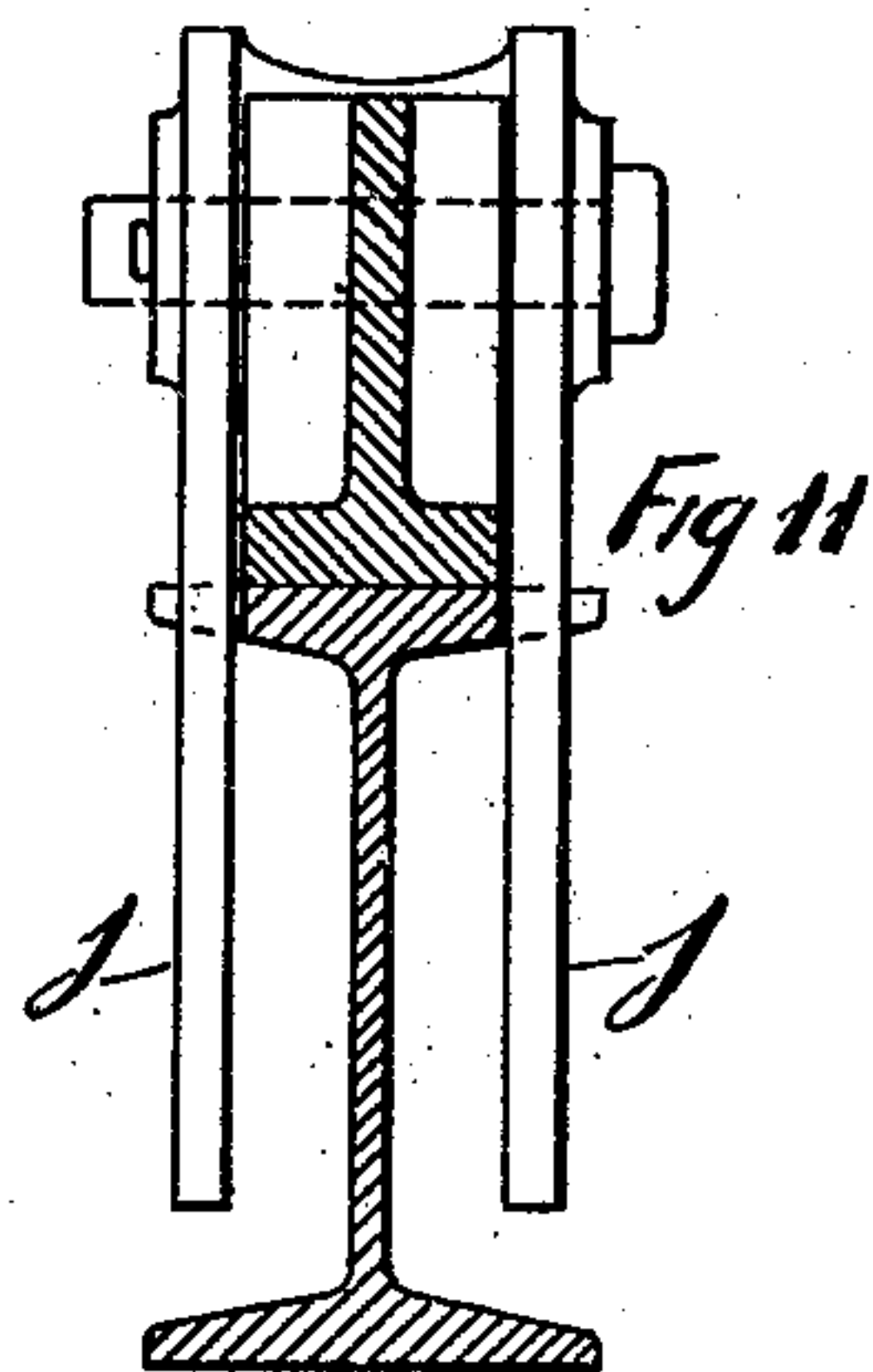


Fig 11

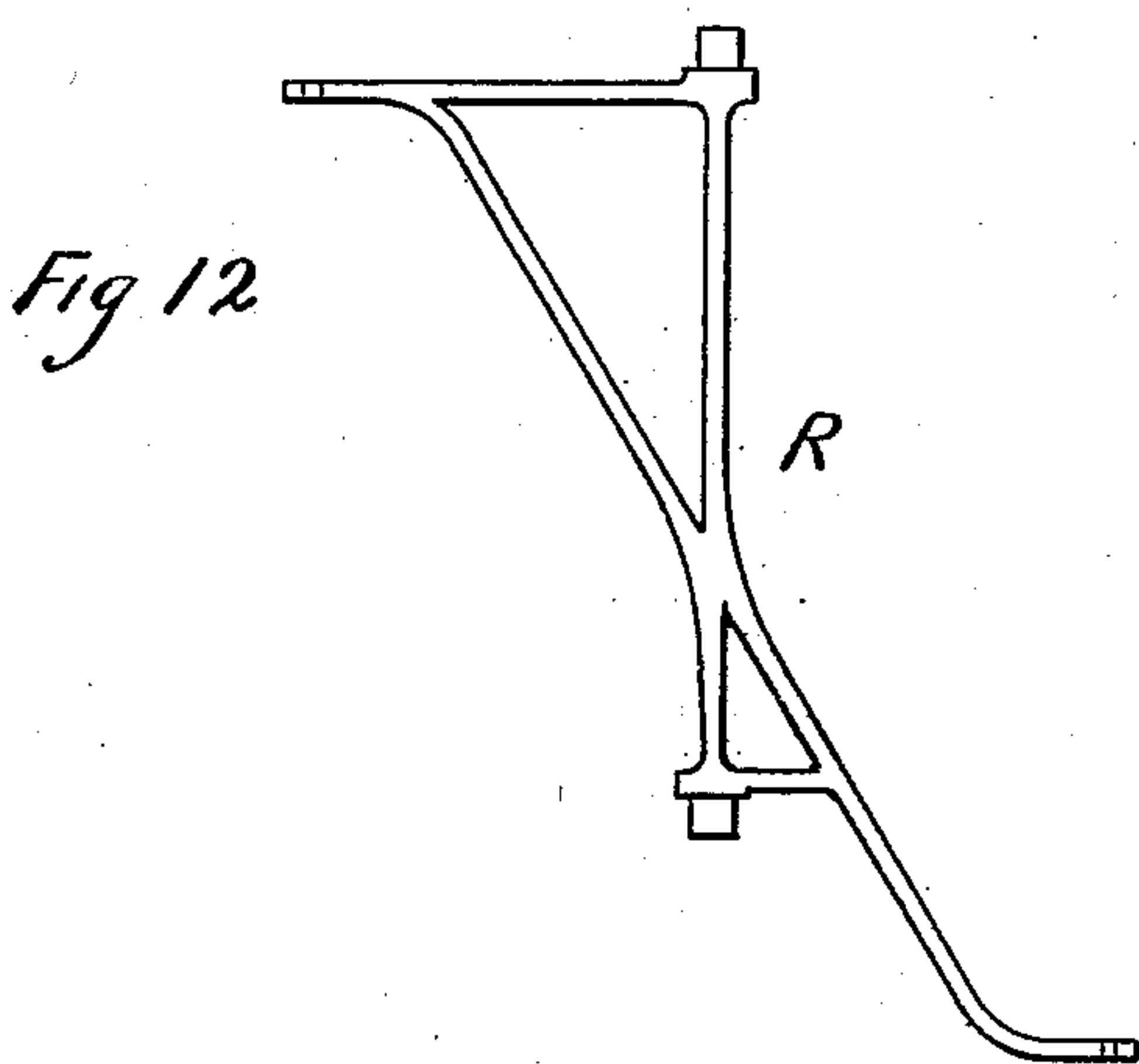


Fig 12

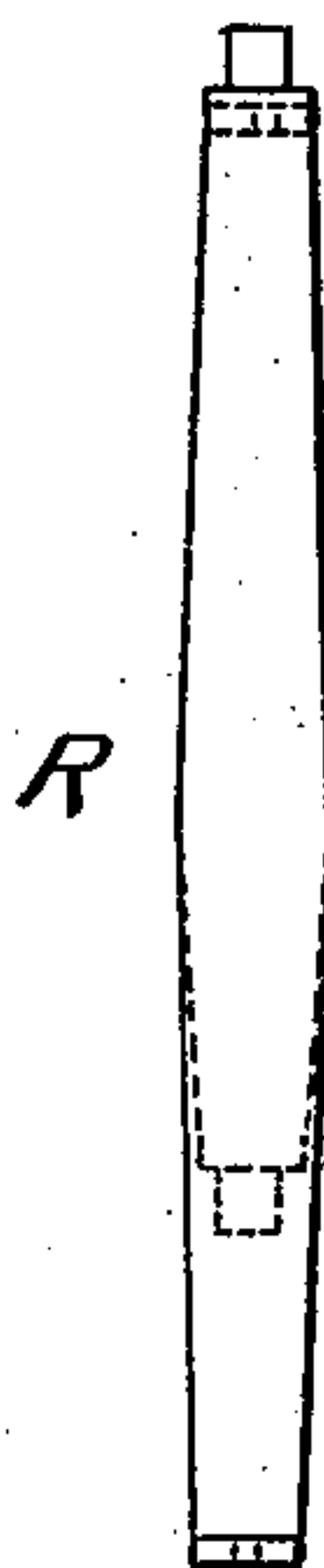


Fig 13

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No. 744,464.

PATENTED NOV. 17, 1903.

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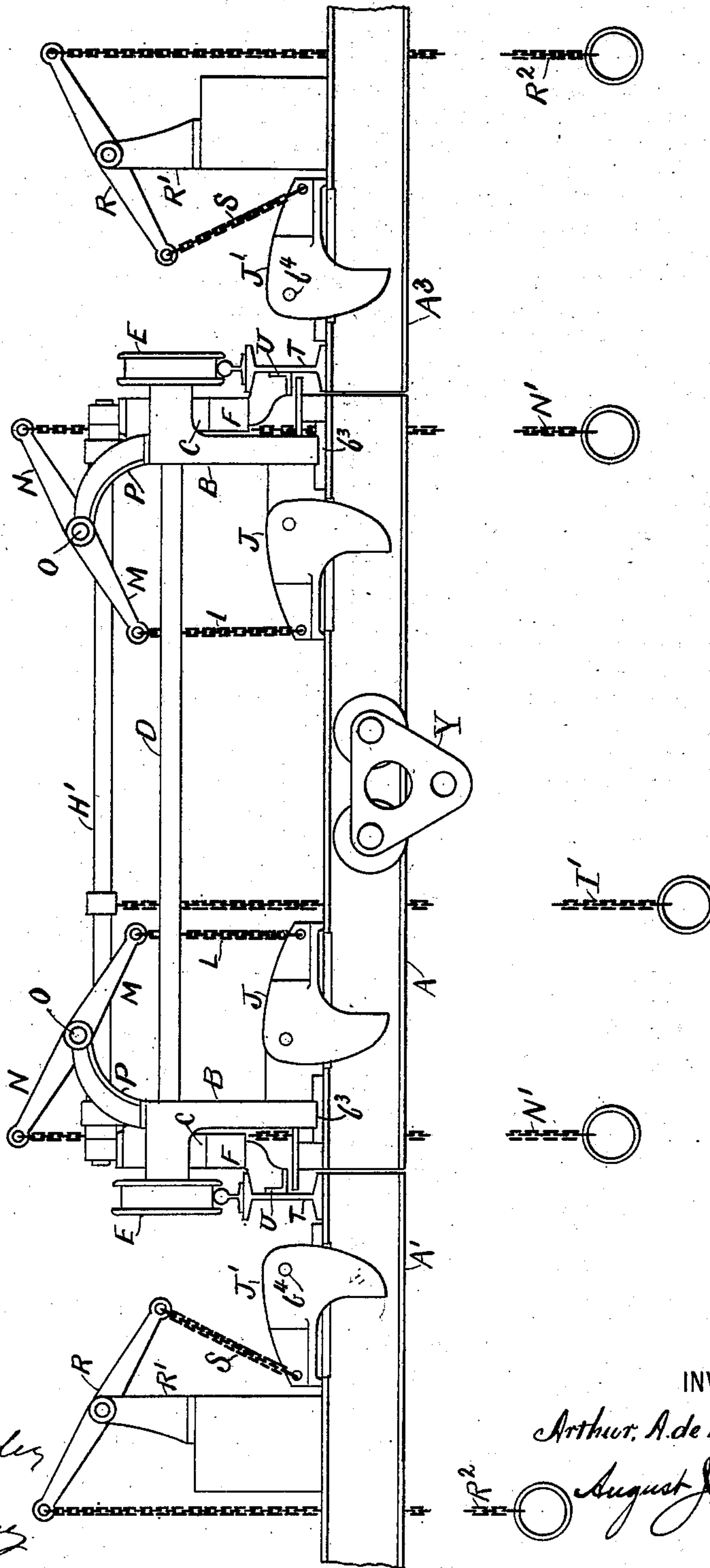
CRANE AND APPURTENANCES.

APPLICATION FILED APR. 6, 1900.

NO MODEL.

5 SHEETS—SHEET 5.

Fig 14



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# UNITED STATES PATENT OFFICE.

ARTHUR A. DE BONNEVILLE AND AUGUST JOHNSTON, OF NEW YORK, N. Y.

## CRANE AND APPURTENANCES.

SPECIFICATION forming part of Letters Patent No. 744,464, dated November 17, 1903.

Application filed April 5, 1900. Serial No. 11,758. (No model.)

*To all whom it may concern:*

Be it known that we, ARTHUR A. DE BONNEVILLE, a resident of the borough of Manhattan, in the county of New York, and AUGUST JOHNSTON, a resident of the borough of Bronx, in the county of Westchester and State of New York, citizens of the United States, have invented certain new and useful Improvements in Cranes and Appurtenances, of which the following is a specification.

This invention relates to cranes and appurtenances by means of which trolleys can be transferred to and from different lines of tram-rail or to and from different cranes.

To these ends our invention consists of the novel combination of parts illustrated in the accompanying drawings, described in the specification, and pointed out in the claims.

Figure 1 represents a plan view of our device with appurtenances. Fig. 2 shows a fragmentary vertical section on the lines  $xx$  and  $zz$  of Fig. 1. Fig. 3 is an end view of the device, partly in section. Fig. 4 represents a section on the line  $yy$  of Fig. 1. Figs. 5 and 6 show, respectively, a plan and an elevation of a portion of the frame of the crane and a locking-hammer with appurtenances. Fig. 7 is an elevation of the clutch-bracket. Fig. 8 is a section on the line  $ss$  of Fig. 7. Figs. 9 and 10 show a plan and an elevation of a stop-lever. Fig. 11 is a section on the line  $tt$  of Fig. 10. Figs. 12 and 13 represent a plan and side view of a rock-shaft. Fig. 14 shows an elevation of a modification of our device.

Referring to the drawings, the device is shown with a trolley Y and consists of the girder A, secured to the truck-frames B, in which are formed the journal-boxes  $b$  for the axles D, carrying the wheels E. Locking-hammers C operate with the hand-chain I' and the levers H and I, secured to the shaft H', which latter oscillates in the journal-brackets H<sup>2</sup>.

Clutch-brackets F engage the locking-hammers C and are secured to the runway-girders T. Stop-levers J straddle the girder A and turn on pins  $b'$ , supported in journal-box brackets  $b^2$ , cast with one or both of the frames B. On each line of tram-rail which is

to be coupled to the crane a similar stop-lever J' swings on a pin  $b^4$ . The stop-lever of the crane can be raised by the chains L N' and levers M N, secured to the shaft O, which turns in the journal-box brackets P P.

The stop-levers J' are actuated by the chains S R<sup>2</sup> and the rock-shafts R, which swing in the journal-box brackets R'.

The truck-frames B, which may be of any suitable form, are provided with suitable flanges  $b^3$  to secure them to the main crane-girder A.

The frames B are shown to consist, essentially, of the inclined members  $b^5$  and horizontal members  $b^6$ , and at their junction journal-bearings  $b$  are formed for the truck-wheel axles D. In the horizontal members  $b^6$  are cast pockets (see Figs. 5 and 6)  $b^7$  for housing the locking-hammers C. Each of the said hammers is guided through the extended throat  $b^8$  and between the vertical walls of the pockets. Straps  $b^9$  are bolted to the pockets  $b^7$  to form the front guides.

The locking-hammers C consist each of a main portion C, square or rectangular in cross-section on a plane at right angles to its longitudinal axis, with tapering ends  $c'$  and a cylindrical stem  $c^2$  leading upwardly and carrying a pin  $c^3$ . A spring  $c^4$  generally surrounds the stem and rests on the square or rectangular portion and butts against the roof of the pocket. Levers H, having forked ends  $f$  with oblong openings, are connected to the stems  $c^2$  by means of the pins  $c^3$ , the said levers H being carried on the longitudinal shaft H', which swings in the journal-boxes H<sup>2</sup>, cast with or bolted to the frames B B.

The lever I is secured to the shaft H', and by means of a hand-chain I' both locking-hammers can be raised simultaneously, thereby releasing them from the clutch-brackets.

To the runway-girders T are secured special clutch-brackets F, which are shown in detail in Figs. 7 and 8. They are each formed with inclined top surfaces  $f^2$ , extending to the central portion of the same, a rear wall connecting the said surfaces. The top surfaces  $f^2$  connect with the inclined walls  $f^5$  and form a cavity F', which constitutes a stop for the locking-hammer. The lower portion  $f^6$  of



this cavity inclines toward the front face of the bracket, so that dust or any foreign matter can be easily expelled.

The lower portions of the clutch-brackets are straight horizontal flanges  $f^3$ . Vertical walls  $f^4$  connect the upper and lower portions, and through the said vertical walls the brackets are secured to the runway-girders T. The cavities F' in the brackets F are shaped to allow the hammers C, which are similarly shaped, to easily lock into the same and to automatically lock the cranes opposite the tram-rails when operating therewith.

It will be noticed that by means of the inclined ends of hammers, as shown at  $c'$ , and the corresponding faces  $f^5$  of the clutch-brackets the said hammers can easily be released from the brackets and that the crane automatically centers itself in proper position opposite the tram-rails.

To the main girder A are bolted safety-clamps X, which serve the double purpose of preventing the crane, with its load, from falling in case the frames B or anything above them should break and also prevents the crane rising or creeping on the tracks by reason of the lower flanges  $f^3$  of the said brackets constituting stops to the said clamps. Between the clutch-brackets angle-irons U are bolted to the runway-girders for the same purpose.

The stop-levers J (see Figs. 9, 10, and 11) consist, essentially, of two jaws  $j$ , which straddle the girders with which they operate, the upper flanges of said girders being cut away, as shown at  $aa$ . The said jaws  $j$  are straight on one side, as  $j^5$ , and curved on the other, as  $j^6$ , and they are tied by the connecting-wall  $j^2$  and strengthened by the rib  $j^3$ , to which is cast the foot  $j^4$ . The levers swing on pins  $b'$ , carried on the journal-bracket  $b^2$ , extending from the frame B, and it is evident that the said stop-levers can only swing in one direction from the position, as shown in Fig. 10, which in this case is from right to left and when thus swung can be raised clear of the girder A, which would allow a trolley, as Y, to be run from the girder of the crane onto its accompanying tram-rail. Should it be attempted to swing the stop-lever in the opposite direction from the position shown in the drawings, the foot  $j^4$ , resting on top of the girder, would prevent the same. It will be clearly seen that if it is attempted to run the trolley off of the girder without raising the stop-lever it would be impossible without breaking the lever. This novel feature of our device makes it absolutely safe regarding the danger of one of the trolleys running off of the girders A, A', A<sup>2</sup>, or A<sup>3</sup> when the crane is not locked to a run of tram-rail.

The sides  $j^6$  of the jaws  $j$  are curved, as shown, by virtue of which a trolley can be run onto the crane-girder from the tram-rail and impinge on the said curved sides of the lever and raise it without resorting to the

hand-chains. The stop-levers J' are secured to the tram-rails A' A<sup>2</sup> A<sup>3</sup>, with which the crane is to be coupled, and swing on pins  $b^4$ , carried in journal-brackets Q. The said levers are raised and lowered by the chains S and R<sup>2</sup>, operating with the rock-shafts R, which swing in the brackets R'.

In Figs. 1 and 2 only two tram-rails A' A<sup>2</sup> are shown, and the rock-shaft, with its stop-levers J', is shown only over one of them, but it is evident that any number of tram-rails can be employed, the device being specially applicable where many are used. It is also evident that two stop-levers J could be carried on the crane-girder A, as shown in Fig. 14, and in that case the second stop-lever would be used in connection with runs of tram-rail A<sup>3</sup>, which would be placed on the right-hand side of the crane in addition to the tram-rail A', shown on the left-hand side. With such a disposition of stop-levers another set of levers, as M N, with their chains and appurtenances, would be added to the crane. Similar cranes can be used at the other ends of the tram-rails A' and A<sup>3</sup>, and the combination of tram-rails and cranes could be made to suit any situation. The crane could be operated, although not as securely, by employing only one locking-hammer and its corresponding clutch-brackets.

To operate this device, the crane is moved opposite one of the tram-rails, as A', Figs. 1 and 2, the locking-hammers thereby sliding on the inclined faces  $f^2$  of the clutch-brackets until they are secured in the cavities F', when the girder A of the crane will be exactly opposite the tram-rail A'. The next operation, if it is desired to run a trolley from the tram-rail A' to the crane-girder A, consists in raising the stop-lever J' by means of the hand-chain R<sup>2</sup> and running the trolley on the crane, it being optional whether the hand-chain N' is employed to raise the lever J or whether the wheels of the trolley are allowed to impinge on the curved sides  $j^6$ , and thereby raise the stop-lever. After the trolley is on the girder A of the crane and behind the stop-lever a stop V at the other end prevents the said trolley from running off. The locking-hammers are now pulled out of their cavities and the crane removed.

When the crane approaches a tram-rail to which it is to be coupled, the locking-hammers are allowed to ride on the clutch-bracket accompanying said tram-rail, and the said hammers will secure themselves in proper position in the cavities of the clutch-brackets; but should it be desired to pass one of the tram-rails and lock the crane to one of the other tram-rails the hammers are kept from locking themselves in the clutch-brackets by being held out of gear with them by their hand-chains. After the crane is locked to its tram-rail the stop-lever J is raised by pulling on the hand-chain N', and the trolley is



run onto the tram-rail to which it is coupled in the same manner as when rolling onto the girder of the crane.

It will be noticed that all the stop-levers on the ends of the tram-rails after dropping in place assume position as shown in Fig. 2, and thus prevent any of the trolleys running off of the said rail when the crane is moved away, and the similar positions of the stop-levers J' prevent the trolley running off of the tram-rail.

Having described our invention, we desire to secure by United States Letters Patent and claim—

1. A stop-lever straddling a beam, with a foot of said lever holding the same in position, in combination with a bracket, with which the stop-lever is journaled.

2. A stop-lever straddling a beam, a foot of said lever over the beam, in combination with a bracket with which the stop-lever is journaled.

3. A stop-lever straddling a beam, in combination with a bracket journaled for said lever, and means for raising and lowering the stop-lever.

4. A stop-lever comprising, two legs straddling a beam, an arm approximately at right angles to said legs and above the beam, in combination with a bracket with which the stop-lever is journaled.

5. The combination in a locking-hammer of a main portion rectangular in cross-section on a plane at right angles to its longitudinal axis, a cylindrical stem projecting from said main portion, a pocket incasing the main portion of the hammer, a throat extending from the pocket incasing the said cylindrical stem, straps bolted to the pocket, a spring around the said cylindrical stem and bearing between the main portion of the hammer and one end of the pocket, a pin through the cylindrical stem on the outside of the throat of the pocket, a lever connected with said pin, and means to raise and lower the said lever and hammer substantially as described.

6. In a locking device, clutch-brackets,

comprising inclined top surfaces extending toward the central portion of the same, a cavity separating the said surfaces, and a rear wall connecting the said surfaces and cavity, the lower internal face of the cavity inclining from the said rear wall substantially as described.

7. A crane comprising truck-frames, truck-wheels journaled to the frames, a girder fastened to the frames, a locking hammer or hammers on the crane, levers on the crane to actuate the hammers, clutch-brackets secured near the runways of crane with cavities to fit the locking-hammers, a stop lever or levers straddling the girder of the crane, a bracket or brackets journaled for the stop-lever or stop-levers, and means for moving the locking-hammers into and out of engagement with the clutch-brackets.

8. A crane comprising truck-frames, truck-wheels journaled to the frames, a girder fastened to the frames, locking-hammers on the crane, a longitudinal shaft on the crane, levers projecting from the longitudinal shaft and joined to the locking-hammers, a lever with hand-chain, fastened to the longitudinal shaft, clutch-brackets secured near runway-rails with cavity to engage the hammers, a stop lever or levers straddling the girder of the crane, a cross shaft or shafts, a lever or levers on the cross-shafts, connections between said lever or levers and the stop-lever or stop-levers, levers on the cross shaft or shafts, and means for moving the said levers, tram-rails secured on the same level with the crane-girder, stop-levers straddling the tram-rails, and means for raising and lowering the stop-levers of the tram-rails, trolleys on the girder of the crane and tram-rails.

Signed at New York, in the county of New York and State of New York, this 4th day of April, A. D. 1900.

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AUGUST JOHNSTON.

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