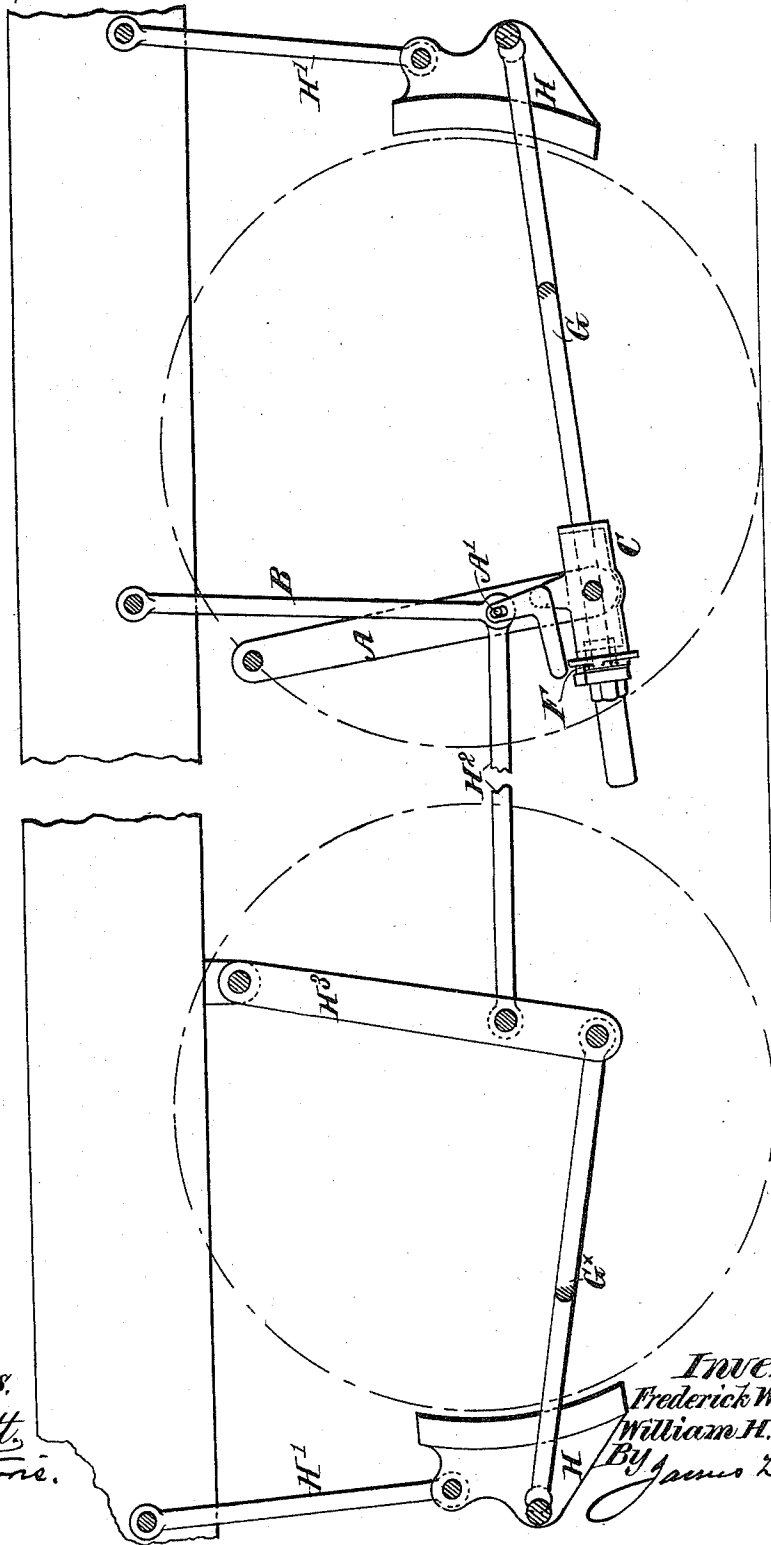


(No Model.)

5 Sheets—Sheet 1.

F. W. SELLEY & W. H. NISBET.
SLACK ADJUSTER FOR BRAKE GEARS OF RAILWAY ROLLING STOCK.
No. 579,369. Patented Mar. 23, 1897.

Fig. 1.



Witnesses.
Abt. C. Smith.
A. H. Norris.

Inventors.
Frederick W. Selley,
William H. Nisbet.
By James L. Norris.
Atty.

(No Model.)

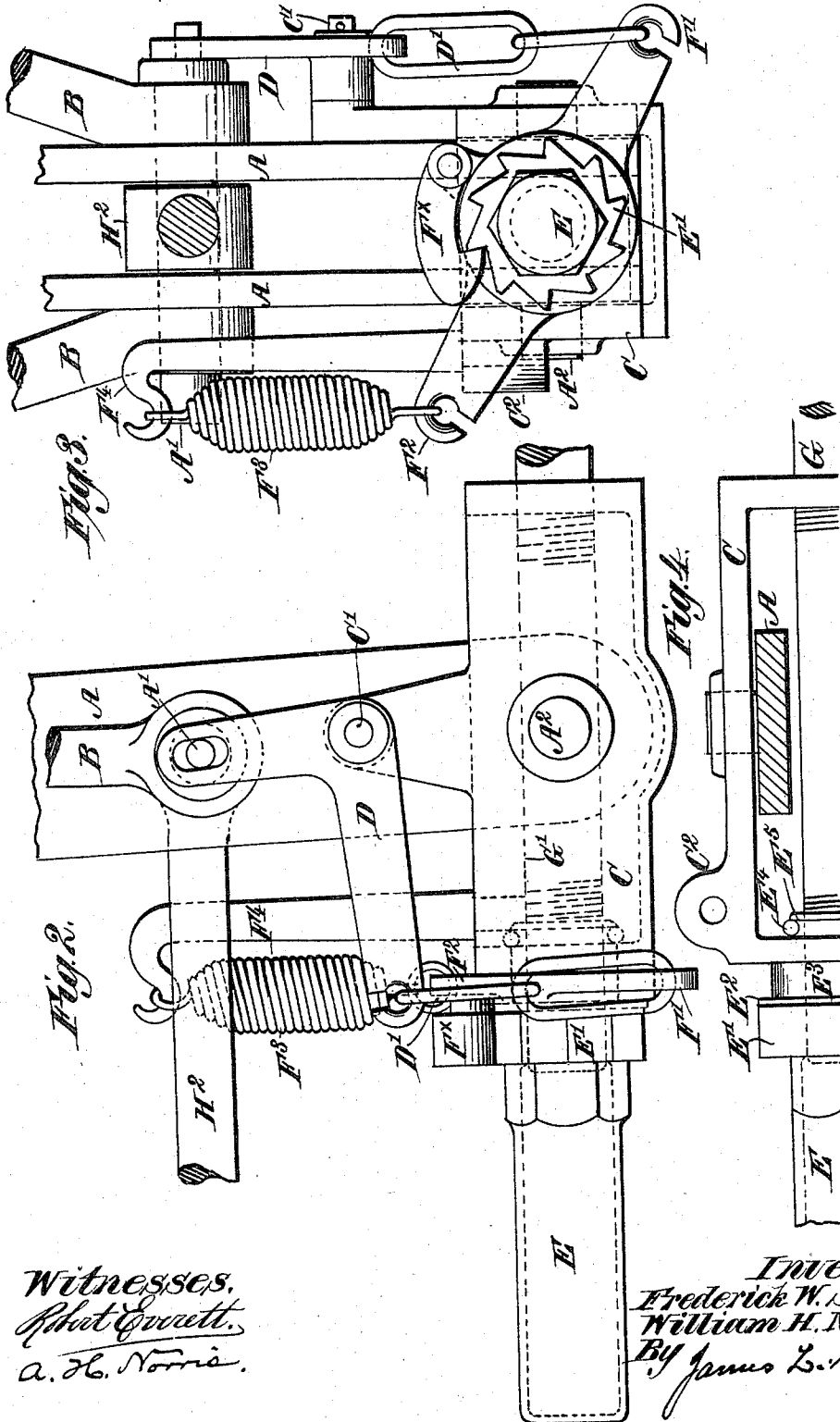
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Witnesses.
Robert Everett.
A. H. Norris.

Inventors.
Frederick W. Selley.
William H. Nisbet.
By *James L. Norris.*
Atty.

(No Model.)

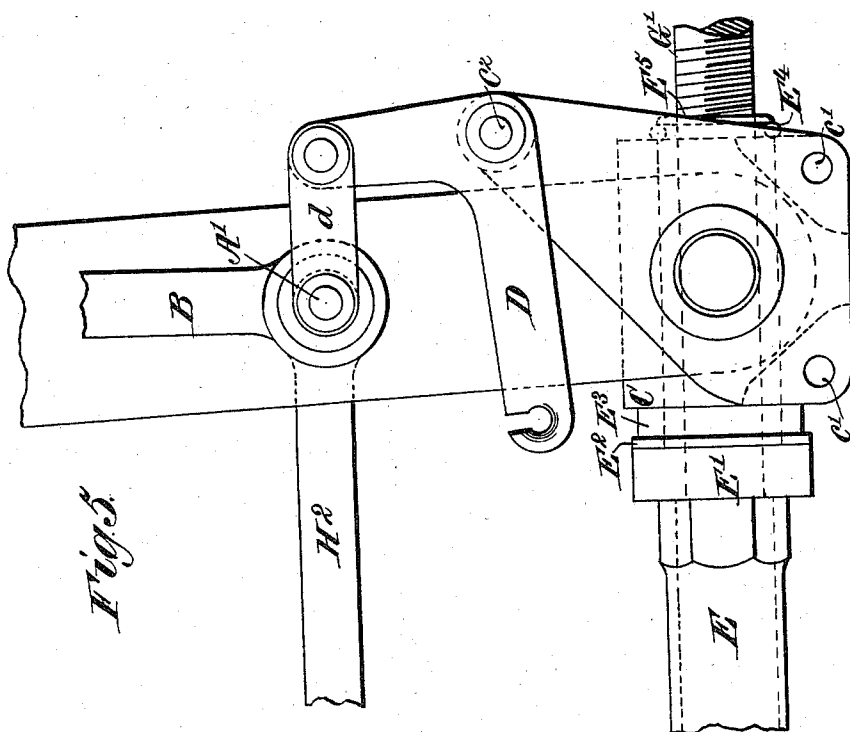
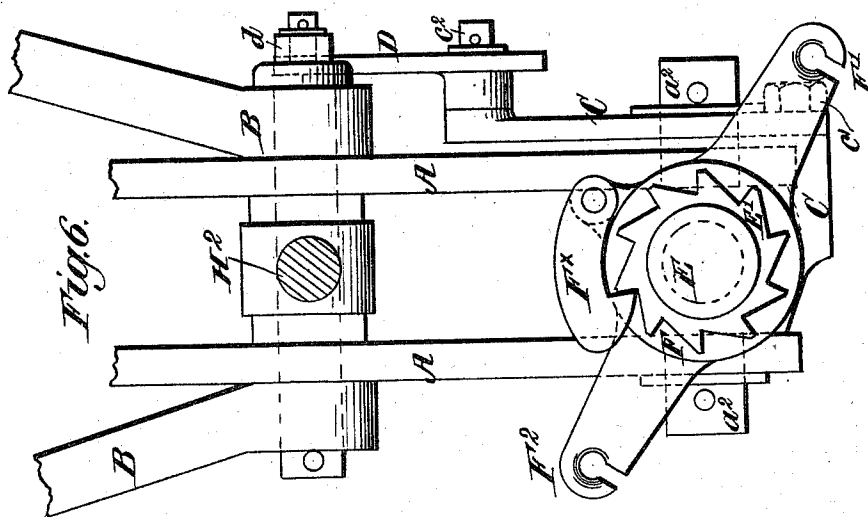
5 Sheets—Sheet 3.

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Witnesses,
Robert Everett,
A. H. Norris.

Robert Everett.

A. H. Norris.

Inventors.

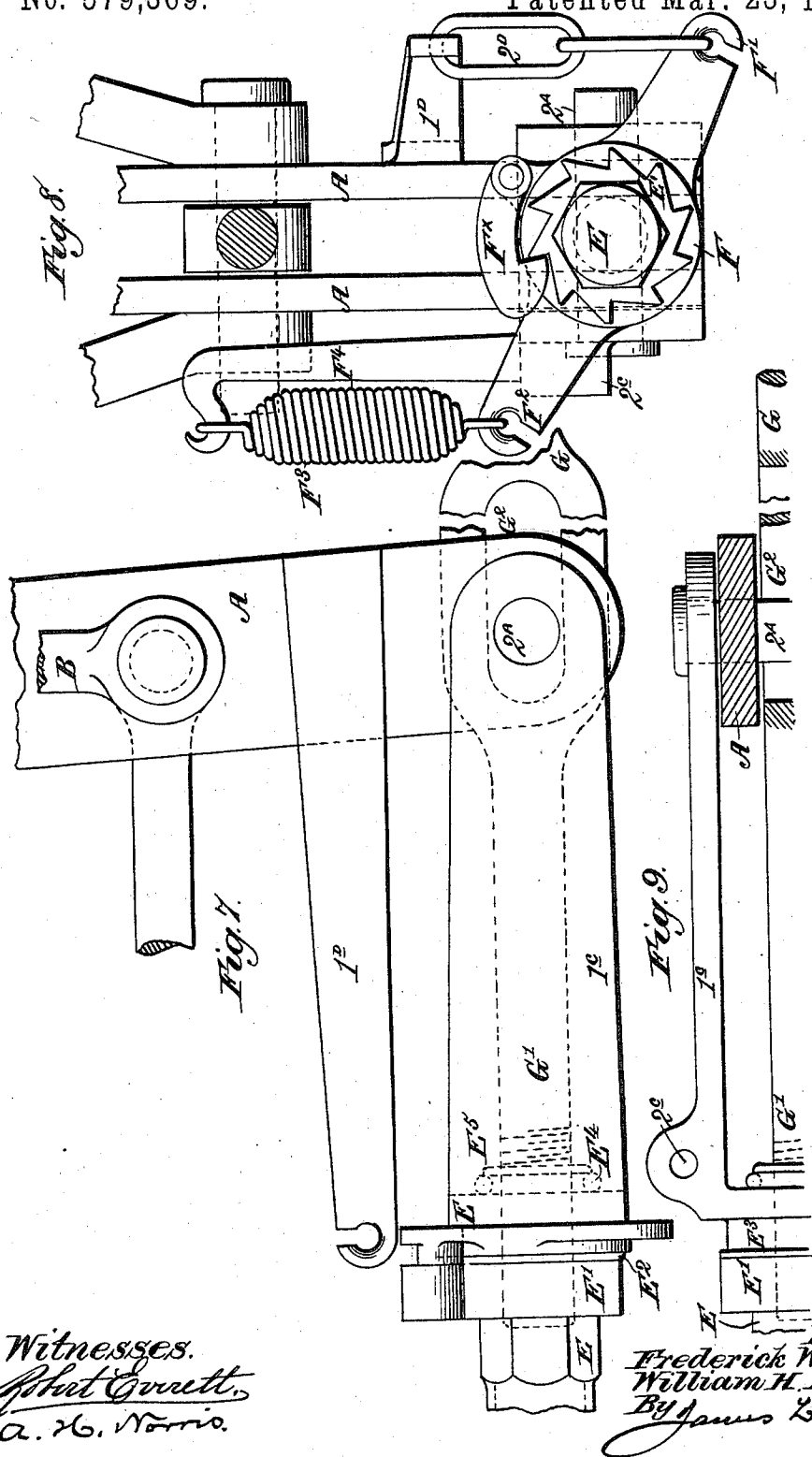
Frederick W. Setley.

William H. Nisbet.

By James L. Norrie.

Atty.

F. W. SELLEY & W. H. NISBET.
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Witnesses.
Robert Connett,
A. H. Norris.

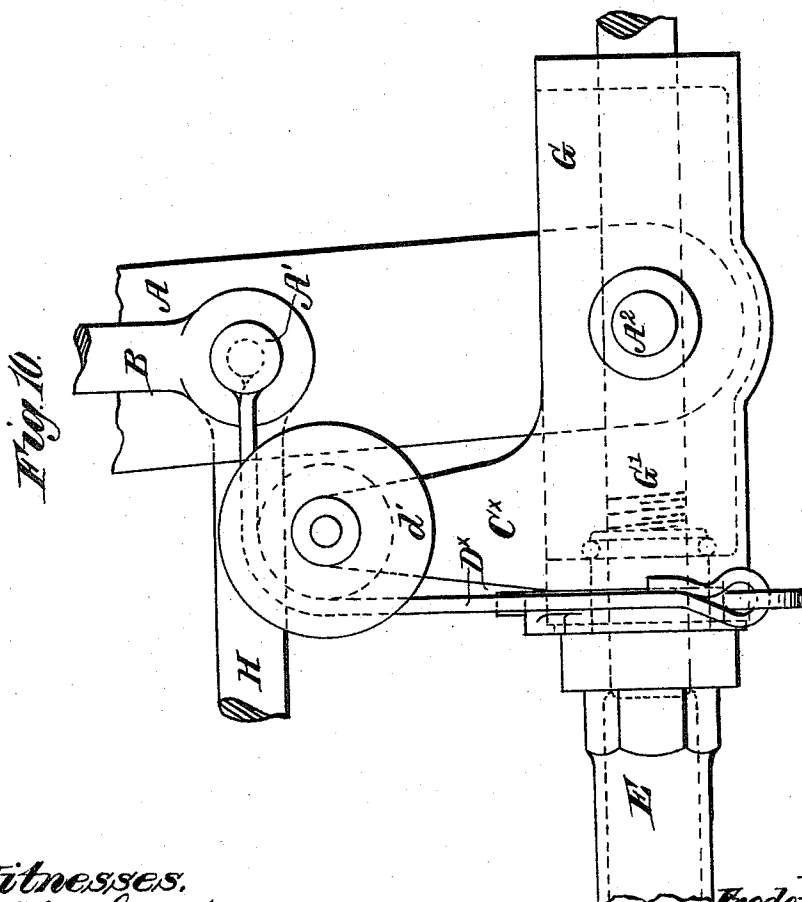
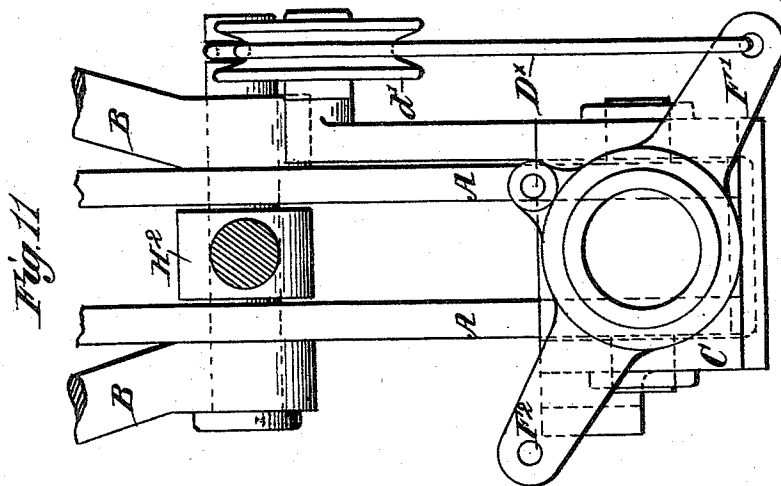
Inventors.
Frederick W. Selley,
William H. Nisbet.
By James L. Norris.
Att'y.

(No Model.)

5 Sheets—Sheet 5.

F. W. SELLEY & W. H. NISBET.
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No. 579,369.

Patented Mar. 23, 1897.



Witnesses.
Robert G. Smith,
A. B. Norris,

Inventors.
Frederick W. Selley,
William H. Nisbet.
By *James L. Norris,*
Atty.

UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM SELLEY, OF HURSTVILLE, AND WILLIAM HOLMES
NISBET, OF SYDNEY, NEW SOUTH WALES.

SLACK-ADJUSTER FOR BRAKE-GEARS OF RAILWAY ROLLING-STOCK.

SPECIFICATION forming part of Letters Patent No. 579,369, dated March 23, 1897.

Application filed August 8, 1896. Serial No. 602,188. (No model.) Patented in New South Wales February 5, 1896, No. 6,374; in Victoria February 7, 1896, No. 12,867; in Queensland February 7, 1896, No. 3,255; and in South Australia February 10, 1896, No. 3,163.

To all whom it may concern:

Be it known that we, FREDERICK WILLIAM SELLEY, engineer, residing at Hurstville, near Sydney, and WILLIAM HOLMES NISBET, engineer, residing at Martin Place, in the city of Sydney, in the British Colony of New South Wales, subjects of the Queen of Great Britain, have invented new and useful Improvements in Slack-Adjusters for Brake-Gears of Railway Rolling-Stock, (for which Letters Patent were granted in the respective British Colonies of New South Wales on the 5th day of February, 1896, No. 6,374; in Victoria on the 7th day of February, 1896, No. 12,867; in Queensland on the 7th day of February, 1896, No. 3,255, and in South Australia on the 10th day of February, 1896, No. 3,163, all for the term of fourteen years,) of which the following is a specification.

This invention refers to the brake-gears of all kinds of railway-vehicles, including carriages, wagons, locomotives, &c., in which gears the brake-blocks are applied to the wheels by the movement of a lever suspended under such vehicles, and which said lever is necessarily in connection by a beam or a truss with one set of blocks and might be further connected by tie-rod or tie-rods to link or links and beam or beams and truss or trusses with other set or sets of brake-blocks; and this invention relates to improvements in slack-adjusters for such brake-gears, so that any slack in the connections resulting from wear of the brake-blocks or otherwise will be automatically adjusted or taken up and the gear be thus retained effective under all ordinary circumstances.

Slack-adjusters for brake-gears of railway rolling-stock constructed according to these present improvements consist, essentially, first, of a lever or crank or arm or cord or chain and pulley connection to the actuating or brake lever adapted to have motion imparted to it by movement of said lever; secondly, of a nut box or bridle or holder articulated to the brake-lever and supporting a screw connection upon the end of the pull-rod of the brake beam or truss; thirdly, of a rocking pawl in connection with the men-

tioned lever or crank connection to the brake-lever and resiliently anchored to a rigid support on the mentioned nut box or bridle or support or on the underframing of the vehicle and with its pawl in gear with a ratchet on one factor of the mentioned screw connection of the brake beam or truss, and though these four parts are thus set out as essential features of these present improvements yet it is to be understood that for one or other or more of them might be substituted mechanical equivalents whose duties or actions would be the same or similar to the functions hereinafter fully described and explained of such essential parts.

In order that this invention may be clearly understood, reference will now be made to the drawings herewith, in which—

Figure 1 is an outline sectional elevation of so much of a railway-vehicle as is necessary to show the arrangement and disposition of a brake having as part of its gear a slack-adjuster constructed according to these improvements. Fig. 2 is a side elevation, Fig. 3 an end elevation, and Fig. 4 a half-plan, of a complete slack-adjuster. Figs. 5 and 6 are side elevation and end elevation, respectively, of a modified construction of such slack-adjuster; and Figs. 7, 8, and 9 are side and end elevations and partial plan, respectively, of a further modified construction of same. Figs. 10 and 11 are side and end elevations, respectively, of a still further modified construction of such slack-adjuster, having a cord or chain and pulley connection with the brake-lever.

Fig. 1 illustrates the brake-gear of a railway-vehicle with the underframing and wheels simply indicated. The double brake-lever A is geared or connected to the piston-rod of the cylinder of a pressure or other brake. The suspension-rods B carry the fulcrum-pin A' of said lever A, whose lower ends have connection to the nut box or bridle C, which carries female screw or nut E, taking on the screwed end of pull-rod G of truss or beam and adapted to be revolved by connections D and F. Each set of brake-blocks H is supported by hangers H', and tie-rod H''

connects lever A to suspension-lever H³, connected to the pull-rod G^x of the second truss or beam. The details of the parts forming the slack-adjuster will be now described with
5 special reference to the other figures of the drawings.

In the slack-adjuster shown in Figs. 2, 3, and 4 the lower ends of double brake-lever A have each of them an outwardly-pointing
10 pin or pintle A², which fits orifices about mid-way of the length of the box C, (on top of which box there might be a cover, though none is shown,) which thus insures that said box C partakes of the same motion as the
15 lower part of said lever A. Connected to said box C and to the fulcrum-pin A' of said lever A is a bell-crank D, whose upper end takes on said fulcrum-pin A', whose angle has as a fulcrum the pin C' on box C and
20 whose other end is linked by links D' to end F' of a double-ended rocking lever whose other end, F², is connected by means of spring F³ to hook stanchion or support F⁴, taking in socket C² on box C, (or said end F² might be
25 resiliently connected to the underframing of the vehicle.) The boss F of this double-ended rocking lever rides upon journal E³ on end of box or bridle C and takes against loose washer E² on nut or female screw E.
30 The pawl F^x of said rocking lever engages with ratchet E' of nut E, which is screwed upon the pull-rod G of truss or beam, and which, passing through an aperture or orifice in the end of box C, is retained in place free
35 to revolve by means of divided or split ring E⁴, fitting behind collar E⁵ and exceeding it and the orifice in diameter. Now in operation the brake-lever A, moving on fulcrum A' in suspension-rods B, in applying the
40 brakes will, if there be any slackness in the connections caused by wear of the brake-blocks or otherwise, so move the position of fulcrum A' relative to nut-box C and pin C' as to give motion to bell-crank D, causing it
45 by means of links D' to rock the double-ended pawl-lever F against the resilient force of spring F³. The pawl F^x thus travels backwardly over one or more of the teeth of ratchet E', so that when the brake is released, said
50 spring returning the pawl-lever F' to its normal position, said pawl F^x will partially revolve nut E on screw G' of the pull-rod G of truss or beam, and so shortening the length of the pull-rod of said truss or beam from said
55 nut and nut-box C' to the brake-blocks will adjust or take up the slack of the connections.

In the modified construction of this slack-adjuster shown in Figs. 5 and 6 the rather lengthy nut-box C is dispensed with, thus
60 obviating the addition of the pins or pintles A² to the lower ends of the brake-lever. For the box C is substituted a nut block or holder c, carrying pins or pintles a², which take through the lever ends. To the block or
65 holder c is secured by screws c' a cheek-piece-carrying pin c² as fulcrum for the bell-crank D. The nut E has thereon ratchet E' and

loose washer E², and the journal E³ of holder c supports double-ended pawl-lever F, while
70 said nut E passes right through block c and is secured thereon by divided ring E⁴ under collar E⁵. The bell-crank D does not take directly on fulcrum-pin A' of brake-lever A, but is linked to it by link d, and it has links D' (not shown) attached to end F' of the pawl-
75 lever, and the end F² of said lever is resiliently attached by spring or otherwise to the underframing of the vehicle or to a rigid connection from nut block or holder c. The operations of the parts of this modified construction, Figs. 5 and 6, are exactly similar to
80 those described in reference to the similar parts referred to in Figs. 2, 3, and 4, and no further explanation of them can possibly be
85 needed.

The further modified construction of slack-adjuster illustrated in Figs. 7, 8, and 9 necessitates a forging of the end of the pull-rod G of the brake truss or beam with a longitudinal slot G², through which the connecting-pin 2^A of the double brake-lever A passes
90 and in which slot said pin may have free movement. The pull-rod of the truss or beam, however, terminates with a screw G', which takes into female screw or nut E, having ratchet E', loose washer E², passes
95 through the end of a bridle or holder, and is held to said bridle or holder by divided ring E⁴, behind collar E⁵. The bridle or holder has sides or cheeks 1^C, extending backwardly to pin 2^A, which pin passes through both
100 cheeks as through lever A. To one side of the lever A is an arm or lever extension 1^B, connected by links 2^D to the end F' of a double-ended pawl-lever F on journal E³ of said bridle or holder 1^C. The other end F² of
105 said lever is resiliently connected by spring F³ to stanchion hook or support F⁴, taking in socket 2^C of bridle or holder 1^C, (or may be resiliently connected to the underframing of the vehicle.) It is to be seen that in place of the arm 1^B there might be used in this arrangement, Figs. 7 and 8, a bell-crank supported by a bracket supported by the
110 bridle or holder and operated by the lever A in manner described in reference to Figs. 2, 3, and 4. In operation when the brakes are applied and there is any undue slackness in the connections the alteration of the relative
115 positions of lever A and bridle or holder 1^C causes arm or lever connection 1^B to move end F' of double-ended pawl-lever F and the pawl F^x to travel back round ratchet E', so that when the lever A recovers its normal position the spring F³ will bring the bridle
120 or holder 1^C to its normal position, during which movement the nut E will be partially revolved and the slack of the connections adjusted.

The still further modified construction of
130 slack-adjuster shown in Figs. 10 and 11 has instead of the bell-crank-lever or arm-lever connection between the brake-lever and the nut box or holder a cord or chain D^x, having

one end attached to lever A, say on end of fulcrum-pin A', passing over a pulley d' on arm or bracket C^x on box C and its other end attached to end F' of the pawl-lever. In all other respects the slack-adjuster is identical with that described with reference to Figs. 2, 3, and 4, and its respective parts bear corresponding letters to those stated in such description. In operation, in consequence of the alteration of relative position of lever A and nut box or holder C, the cord or chain D^x performs exactly similar functions to those of bell-crank D and links D' of Figs. 2, 3, and 4.

It will be easily seen that in all cases instead of the end G' of the pull-rod of the brake truss or beam being a male screw working in the female screw or nut E the screw connection might be reversed and the end G' bear a female screw and the pawl F^x gear into the ratchet-head of a male screw or bolt taking into said last-mentioned female screw.

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

1. In brake-gears of railway rolling-stock, the combination with the brake-shoes, of a brake truss or beam connected to the brake-shoes and provided with a threaded pull-rod, an actuating brake-lever, a nut box or support articulated to the lower end of said lever, a nut carried by said box or support and en-

gaging the threaded pull-rod, a ratchet for turning said nut, a rocking pawl-lever engaging said ratchet, a spring for rocking said pawl-lever in one direction to turn the nut, and means operated by the brake-lever for rocking said pawl-lever against the tension of said spring, substantially as described.

2. The combination with the brake-shoes, of a brake-truss connected to the brake-shoes and provided with a threaded pull-rod G, and actuating brake-lever A fulcrumed intermediate its ends to a support, a nut-box C articulated to the lower end of said brake-lever, a nut E carried by said box and engaging the threaded end of said pull-rod and provided with a ratchet E', a pawl-lever F journaled on the nut-box and engaging said ratchet, a spring F^s operating to rock said pawl-lever to turn the nut in one direction, and a bell-crank lever D fulcrumed on the nut-box and at one end engaging the fulcrum-pin of the brake-lever and connected at its other end to one end of the said pawl-lever and operating to rock the latter against the tension of the spring F^s, substantially as described and for the purpose specified.

Dated this 20th day of June, 1896.

FREDERICK WILLIAM SELLEY.
WILLIAM HOLMES NISBET.

Witnesses:

WILLIAM REFORM CLELAND FORSTER,
THOMAS JAMES WARD.