

Dec. 8, 1925.

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W. T. BRETHERTON ET AL

AUTOMATIC DRIFTING CONTROL

Filed Nov. 5, 1924

2 Sheets-Sheet 1

FIG-1

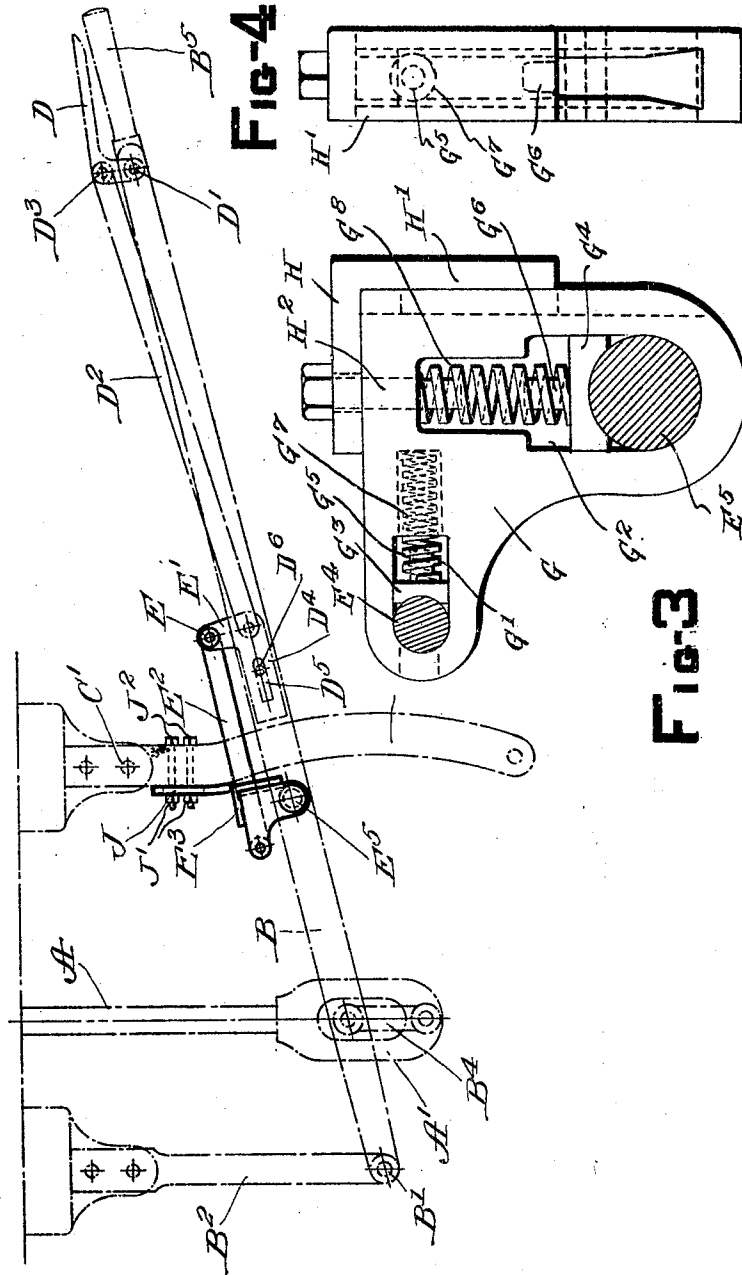


FIG-4

FIG-3

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BY

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2 Sheets-Sheet 2

FIG-2

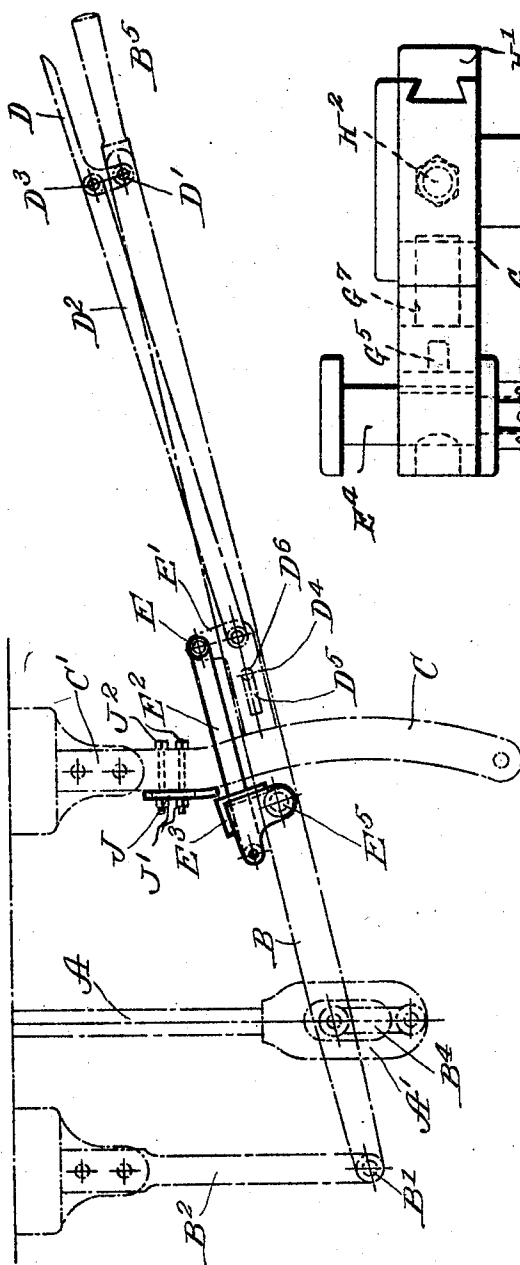
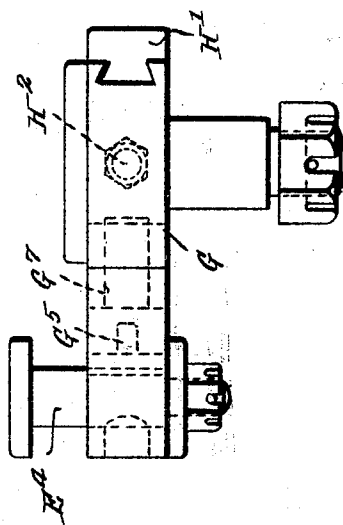


FIG-5



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Patented Dec. 8, 1925.

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UNITED STATES PATENT OFFICE.

WILLIAM T. BRETHERTON AND ROBERT R. BUSH, OF CHICAGO, ILLINOIS.

AUTOMATIC DRIFTING CONTROL.

Application filed November 5, 1924. Serial No. 747,968.

To all whom it may concern:

Be it known that we, WILLIAM T. BRETHERTON and ROBERT R. BUSH, being citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois (whose post-office address is 1334 North Kostner Avenue, Chicago, Illinois), have invented a certain new and useful Improvement in Automatic Drifting Controls, of which the following is a specification.

Our invention relates to a drifting control for locomotive throttle valve levers and has for one purpose the provision of a control for such levers which shall permit the engineer to set the lever at drifting position with maximum ease. Another purpose is to provide a control of the class described which shall make it impossible for the engineer to close the lever beyond the point proper for drifting until hand pressure on the lever has been released. Other objects will appear from time to time in the course of the specification and claims.

We illustrate the invention more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a side elevation of the control lever caught or held in the drifting position;

Figure 2 is a similar elevation illustrating the lever as released from and passing beyond the drifting position;

Figure 3 is a detail on an enlarged scale;

Figure 4 is an end view of the part shown in Figure 3;

Figure 5 is a plan view of the parts shown in Figure 3.

Like parts are indicated by like characters throughout the specification and drawings.

A is the valve rod which will be understood to extend through the throttle, the detail of valve and throttle being omitted, since they form no part of the present invention.

B is the control lever pivoted as at B¹ to any suitable supporting element B² and connected, for example, by the link B³, to the end A¹ of the rod A.

C is any suitable quadrant secured as at C¹.

D is a latch lifting lever pivoted as at D¹ to the outer end of the lever B adjacent its hand piece B⁵. D² is a rod or link pivoted as at D³ to the lever D pivoted at its opposite end to the latch D⁴ which is adapted to engage the teeth of the quadrant C. The latch D⁴ is guided for example by the slot D⁵ through which passes the pin D⁶ out-

wardly projecting from the lever B. Any suitable yielding means, for example an incased spiral spring, may be provided for thrusting the latch D⁴ into contact with the teeth of the quadrant C.

Secured as at E to the lug E¹ outwardly projecting from the latch D⁴ is the link E², the opposite end of which is provided with a transverse pin E⁴. E⁵ is a transverse pin passing through the lever B.

G is a stop block apertured as at G¹ G² to permit the passage therethrough the pins E⁴ and E⁵ respectively. Each aperture is elongated and terminates in a portion having a semi-circular end substantially concentric with the pins E⁴ E⁵ respectively. G³ G⁴ are slide blocks shaped to engage the opposite sides of said pins and to slide along said apertures. They are provided with studs G⁵ G⁶ penetrating the compressed spiral springs G⁷ G⁸.

Mounted on the block G is the angular bearing element H one arm of which H¹ may be dove-tailed into the opposed face of the block G while the other arm is held by the bolt H². It will be understood that in order to compensate for wear of the member H, the bolt H² may be removed and shims may be inserted.

J is any suitable stop mounted upon the quadrant C and adapted to engage the member H. The stop J may be adjustable along the quadrant by means of the nuts J¹ and bolts J² as shown. In which case there may be a plurality of bolt holes in the quadrant or the quadrant may be slotted to permit the bolt to be moved adjustably therealong.

Whereas we have shown a practical operative device, it will be realized that many changes may be made in the size, shape, number and disposition of parts without departing materially from the spirit of our invention and that we wish our description and drawings to be taken as in a broad sense illustrative rather than limiting us to the specific form of device herein shown.

The use and operation of our invention are as follows:

Drifting a locomotive may be roughly defined as the movement of a locomotive from its own momentum, or from the momentum of the locomotive and its train combined after the steam is substantially cut off. The purpose and operation of our invention is to so control the movement of the throttle lever that the cylinders will be supplied

with the necessary volume of steam required to prevent a vacuum therein during this period of movement of a locomotive as commonly termed drifting.

5 In usual locomotive practice the control of the lever herein shown as B is entirely manual and the lever must at all times be set by positive manual control. In the operation of a locomotive the valve rod A is
10 withdrawn by a positive manual movement of the lever B to open the throttle. The lever is subsequently set at any desired point depending on the speed desired, the grade traveled, and other factors which need not
15 here be mentioned. The engineer often wishes to let the locomotive drift without entirely shutting the throttle. Drifting may be roughly defined as the movement of a locomotive from its momentum, or from the
20 momentum of the locomotive and the train combined after the steam is substantially cut off.

We provide means for enabling the engineer to set the lever B at the proper point
25 for drifting, the point being predetermined in the case of each locomotive to which our invention is applied. The stop J is positioned on the quadrant C and is initially set at the proper point for each particular locomotive. Assuming that the lever B is with-
30 drawn toward the middle of the lifting lever, he withdraws the latch D⁴ and releases the lever for movement along the quadrant. But through the link E² the same movement of the latch involves the move-
35 ment of the block G and the angle H to such a point that they cannot pass the stop J. Accordingly when the lever B is pushed to the position shown in Figure 1 the stop
40 J engages the angle H and further forward movement of the lever B is limited to the compression of the spring G^s until the block G⁴ engages the opposite ledges of the aperture G². The engineer releases his grasp
45 on the latch-lifting lever and the latch D⁴ is released and engages the quadrant teeth. This movement of the latch D⁴, however, forces the block G and the angle H out of
50 alignment with the stop J and the compressed spiral spring G^s throws the block G on beyond the stop J as soon as it clears the stop J. The engineer can then leave the lever B at this predetermined drifting position or can again compress the lever D
55 and pass the lever B to the limit of its movement along the quadrant. When the lever B is withdrawn from the closed position the stop J in no way impedes the movement of the lever, since spring G^s permits
60 the block G to move to the left, as shown in Figure 1, even though the latch D⁴ is withdrawn from engagement with the quadrant.

We claim:

65 1. A throttle control for locomotive en-

gines comprising a manually operated lever, a quadrant, a latch on said lever adapted to engage said quadrant, a secondary lever positioned upon said lever and adapted to actuate said latch, and automatic means necessitating the manipulation of the secondary lever to permit complete throttle valve closure. 70

2. A throttle control for locomotive engines comprising a manually operated lever, a quadrant, a latch on said lever adapted to engage said quadrant, a secondary lever positioned upon said lever and adapted to actuate said latch, and automatic means necessitating the manipulation of the secondary lever to permit complete throttle valve closure, comprising a stop, and a stop element in opposition thereto positioned upon said lever. 75

3. A throttle control for locomotive engines comprising a manually operated lever, a quadrant, a latch on said lever adapted to engage said quadrant, a secondary lever positioned upon said lever and adapted to actuate said latch, and automatic means necessitating the manipulation of the secondary lever to permit complete throttle valve closure, comprising a stop on said quadrant and an opposed element positioned on said lever, and a connection between said member and said latch adapted to hold said member in line with said stop when said latch is withdrawn from contact with said quadrant. 80

4. A throttle control for locomotive engines comprising a manually operated lever, a quadrant, a latch on said lever adapted to engage said quadrant, a secondary lever positioned upon said lever and adapted to actuate said latch, and automatic means necessitating the manipulation of the secondary lever to permit complete throttle valve closure, comprising a stop on said quadrant and an opposed element mounted on said lever, and a connection between said member and said latch adapted to hold said member in line with said stop when said latch is withdrawn from contact with said quadrant, and yielding means for throwing said member forwardly beyond said stop upon release of the latch into engagement with the quadrant at the termination of the excursion of the lever toward said stop. 85

5. A throttle control for locomotive engines comprising a manually operated lever, a quadrant, a latch on said lever adapted to engage said quadrant, a secondary lever positioned upon said lever and adapted to actuate said latch, and automatic means necessitating the manipulation of the secondary lever to permit complete throttle valve closure, comprising a stop on said quadrant and an opposed element mounted on said lever, and a connection between said member and said latch adapted to hold said member in line with said stop when said latch is with- 90

120 125 130

drawn from contact with said quadrant, and yielding means for throwing said member forwardly beyond said stop upon release of the latch into engagement with the quadrant at the termination of the excursion of the lever toward said stop, and yielding means for permitting said member to override said stop when the lever is moved in the opposite direction, regardless of the position of the latch.

6. In a throttle control for locomotive engines the combination with a manually operated lever and a secondary lever associated therewith, or automatic means necessitating manipulation of said secondary lever to permit complete throttle valve closure.

7. The combination with a throttle lever and sector of opposed stop elements adapted automatically to prevent the completion of the throttle valve closure by one manual motion comprising a stop normally fixed on the sector, and a stop movably mounted on the lever and means, mounted on the lever, for moving said stop.

8. The combination with a locomotive throttle lever and sector and a throttle valve controlled thereby of means for holding said throttle lever open to a predetermined extent to permit the locomotive to drift com-

prising a stop normally fixed on the sector, and a stop movably mounted on the lever and means, mounted on the lever, for moving said stop.

9. The combination with a throttle lever of opposed stop elements adapted automatically to prevent the completion of the throttle valve closure by one manual motion, one of said stop elements being yieldingly mounted on said lever.

10. A throttle control for locomotive engines comprising a manually operated lever, a quadrant, a latch on said lever adapted to engage said quadrant, a secondary lever positioned upon said lever and adapted to actuate said latch, and automatic means necessitating the manipulation of the secondary lever to permit complete throttle valve closure, comprising a stop, and a stop element in opposition thereto positioned upon said lever, and means for adjusting the position of said stop element in order to compensate for wear.

Signed at Chicago, county of Cook and State of Illinois, this 23rd day of October 1924.

WILLIAM T. BRETHERTON.
ROBERT R. BUSH.