(No Model.)

R. P. CLARK.

ABUTMENT GUARD MECHANISM FOR BRIDGES.

No. 557,106. Patented Mar. 31, 1896.

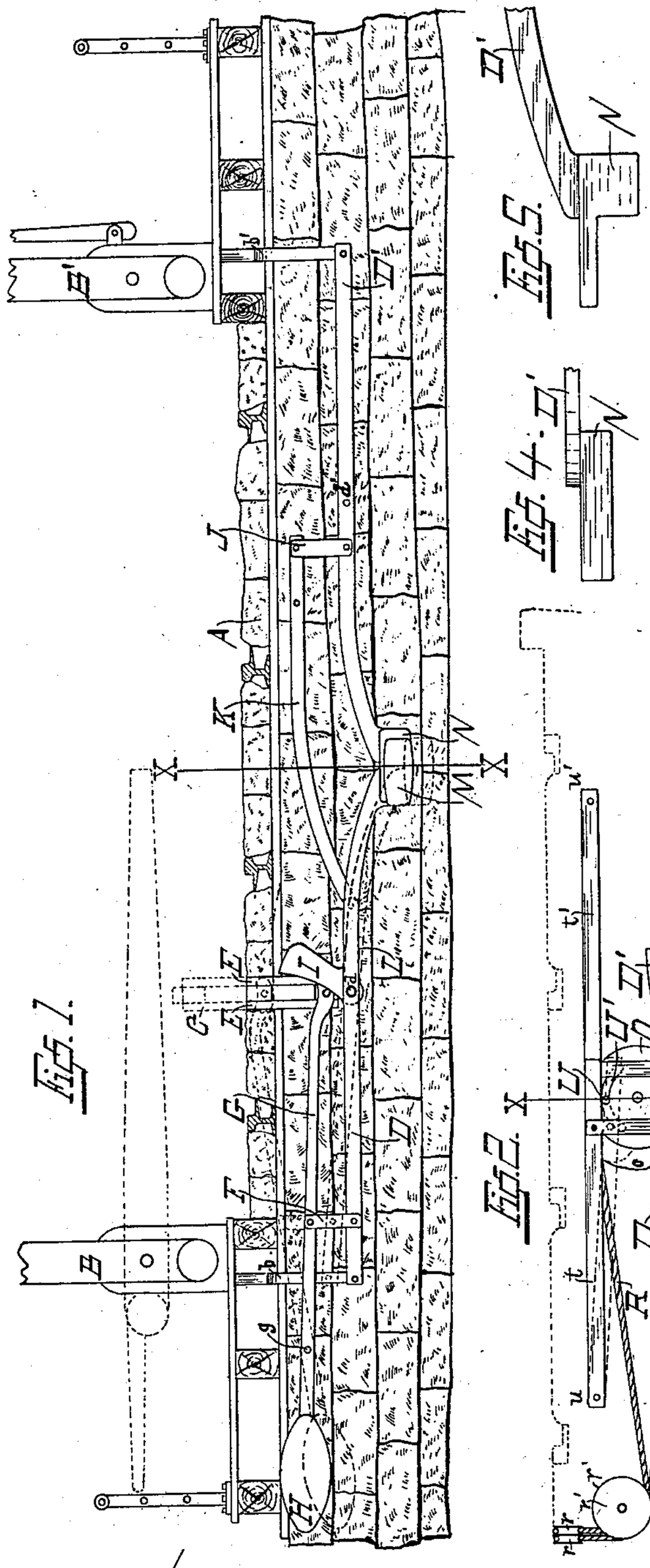

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

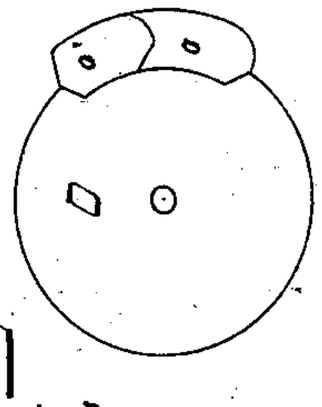

Fig. 7.

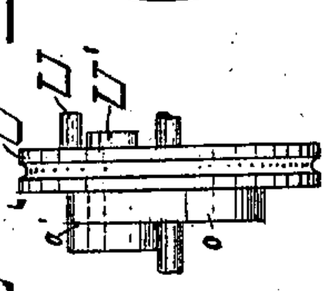

Fig. 6.

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ABUTMENT-GUARD MECHANISM FOR BRIDGES.

SPECIFICATION forming part of Letters Patent No. 557,106, dated March 31, 1896.

Application filed May 23, 1895. Serial No. 550,305. (No model.)

To all whom it may concern:

Be it known that I, ROBERT P. CLARK, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Abutment-Guard Mechanism, of which the following is a specification.

My invention relates to improvements in abutment-guard mechanism for bridges, and pertains especially to the peculiar mechanism hereinafter described for operating the gates and the combination therewith of a folding buffer for blocking the path of street-cars approaching the edge of the draw.

An objection has heretofore existed to the use of automatic mechanism for closing bridge-gates in that the gates are liable to strike or frighten horses or catch on vehicles leaving the bridge; but the use of manually-operated mechanism for opening the gates is also objected to in that the bridge-tender is obliged to give his entire attention to closing the bridge and cannot attend to the gates until after the bridge is completely closed, thus causing delay, especially to pedestrians.

The object of my invention is, first, to provide mechanism for manually closing the bridge-gates and for automatically reopening them by the movement of the bridge in closing; second, to combine such mechanism with a folding buffer, whereby both the gates and the buffer can be actuated simultaneously and by means of the same bridge connections, my present invention being in this respect an improvement over the buffer-actuating mechanism described in my pending application, Serial No. 541,969, filed March 16, 1895, for improvements in abutment-guards.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a front view of an abutment, showing the location of the bridge-controlled levers for actuating the gates and buffer. Fig. 2 is a detail view showing the inner or meeting ends of the bridge-controlled levers and the bridge-supported actuating mechanism in engagement therewith. Fig. 3 is a sectional view of the bridge and abutment, drawn on the line X X of Figs. 1 and 2. Fig. 4 is a top view of the inner end of the bridge-controlled lever connected to the gate B′. Fig. 5 is a side view of the same. Fig. 6 is an edge view of the bridge-supported eccentric, adapted to engage with and actuate the bridge-controlled levers. Fig. 7 is a side view of the same as viewed from the face of the abutment.

The parts are referred to throughout by means of the same reference-letters.

A is the abutment of the bridge.

B B′ are gates which may be of any ordinary construction, such as are used at railway-crossings.

C is a folding buffer, such as described by me in my former application hereinbefore mentioned.

D and D′ are bridge-controlled levers pivotally secured at *d d′* to the face of the abutment, and each being pivotally connected at their outer ends with the vertically-movable downward-projecting bars *b b′* which actuate the gates. When the meeting ends of the levers D and D′ are forced downward, as hereinafter explained, the bars *b* and *b′* are lifted to close the gates and the reverse movement of the levers reopens them.

The upward movement of the outer end of the lever D is communicated to the vertically-reciprocating buffer-posts E E through the connecting-bar F and buffer-actuating lever G, the latter being pivotally supported on the face of the abutment at *g* and provided with the counterbalance H at its outer end, which assists in the elevation of the buffer.

The object of the buffer is to block the approach against the passage of street-cars or other heavy vehicles when the bridge is open, and it may consist merely in the vertically-movable posts E E supported in guideways in the face of the abutment, or these posts can be used to communicate motion to any form of folding or removable mechanism for temporarily blocking the approach.

For supporting the buffer in its raised position I have provided the oscillating stop I, to which the downward motion of the lever D is communicated through the connecting-link J, lever K, and arm L to rock the stop underneath the lever G at its point of connection with the buffer-posts E E when in its raised position.

At the inner or meeting ends of the levers D and D′, I have provided the lever D with a laterally-projecting U-shaped block M, and

have provided the lever D′ with an L-shaped block N, the long arm of which is adapted to fit into the U-shaped space in the block M, as best shown in Fig. 3.

O is a pulley supported by the bridge, as shown in Fig. 3, and provided with the projecting eccentric blocks *o* and *o′*, adapted to be rocked into engagement with the blocks M and N, respectively, when the bridge is closed to actuate the levers D and D′ and close the gates.

P is a hand-actuated lever attached to the pulley-wheel Q near the center of the bridge and adapted to communicate its motion to the eccentrics *o* and *o′* through the pulley-wheel Q, rope R and pulley O, the rope R being passed over the guide-pulleys *r r* and *r′ r′* at the end of the bridge in order to change its direction. It is thus seen that when the bridge is closed the lever P may be actuated to force the eccentric *o* into engagement with the block M, thus forcing the inner end of the lever D downward to close the gate B and elevate the buffer. A further movement of the lever forces the shorter eccentric block *o′* into engagement with the block N, thus forcing the inner end of the lever D′ downward and closing the gate B′. As the lever D′ also actuates the stop I to rock the latter underneath the buffer-actuating lever G, the several levers are all held in position thereby, and the bridge may then be opened.

For automatically reopening the gates I have provided the wedge-shaped blocks S and S′, pivotally supported at *s* by the bars *s′ s″*, the inner ends of the latter being supported, respectively, by the connecting-links T T′. The upper ends of the links T and T′ are attached, respectively, to the bars *t t′*, the latter being supported pivotally at the points *u u′*. The inner end of the bar *t* is supported by the pin U on the opposite side of the pulley O to that on which the eccentric blocks are attached and the inner end of the bar *t′* is supported upon the flange U′. It is thus seen that when the eccentrics are rocked to close the gates the pin U permits the bar *t* and its connected bar *s′* and block S to drop from its position of support underneath the block M and permit the latter to be forced downward by the eccentric block *o*. At the same time the bar *t′* is supported on the flange U′ until the continued movement of the pulley O engages the eccentric *o′* with the block N, at which time the flange is withdrawn from the bar *t′*, thus permitting the latter to sink with its connected bar *s″*, and block S′ and the block N may then be forced downward by the eccentric block *o′* to close the gate B′. As soon as the bridge is opened, the hand-lever P is rocked back to its original position and the levers *t* and *t′* are thus again raised by the pin U and flange U′ to restore the blocks S and S′ to their original positions. It is thus seen that when the bridge is closed the blocks S and S′ engage with the blocks M and N to gradually reopen the gates and permit the buffer to drop to its folded position, and, if desired, the blocks M and N may be weighted, so that the gates will always close and the buffer raise when the supporting-blocks S and S′ are removed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An abutment-guard mechanism, consisting of the combination with the gates B and B′, and the buffer-posts E, E of the bridge-controlled levers D and D′ pivotally secured on the face of the abutment, with their outer ends connected respectively with the gates B and B′ and their inner ends provided with the blocks M and N respectively, the buffer-actuating lever G, connected to the buffer-posts E E at one end and to the lever D between said end and its pivotal support or fulcrum, and the oscillating stop I, connected to the lever D′ by the link J, lever K and arm L, together with means for actuating the levers D and D′ independently, from the bridge substantially as described.

2. An abutment-guard mechanism, consisting of the combination with the gates B and B′ of the levers D and D′ pivotally secured on the face of the abutment with their outer ends connected respectively with the gates B and B′, said lever D being provided at its inner end, with the block or weight M adapted to close the gate B when unsupported and the lever D′ provided with the block or weight N, together with manually-controlled means for lifting and supporting said blocks independently, when the bridge is closed, substantially as described.

3. An abutment-guard mechanism consisting of the combination with the gates of the gate-actuating levers pivotally attached to the face of the abutment, and provided at their meeting ends with the blocks M and N, respectively, the pulley O carried by the bridge and provided with the eccentric blocks *o* and *o′* adapted to engage with the blocks M and N respectively and the hand-actuated lever connected to said pulley by the rope R, the wedge-shaped blocks S and S′ controlled by the movement of the pulley O, and adapted to support the blocks M and N with the gates in an open position when the bridge is closed substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ROBERT P. CLARK.

Witnesses:
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