

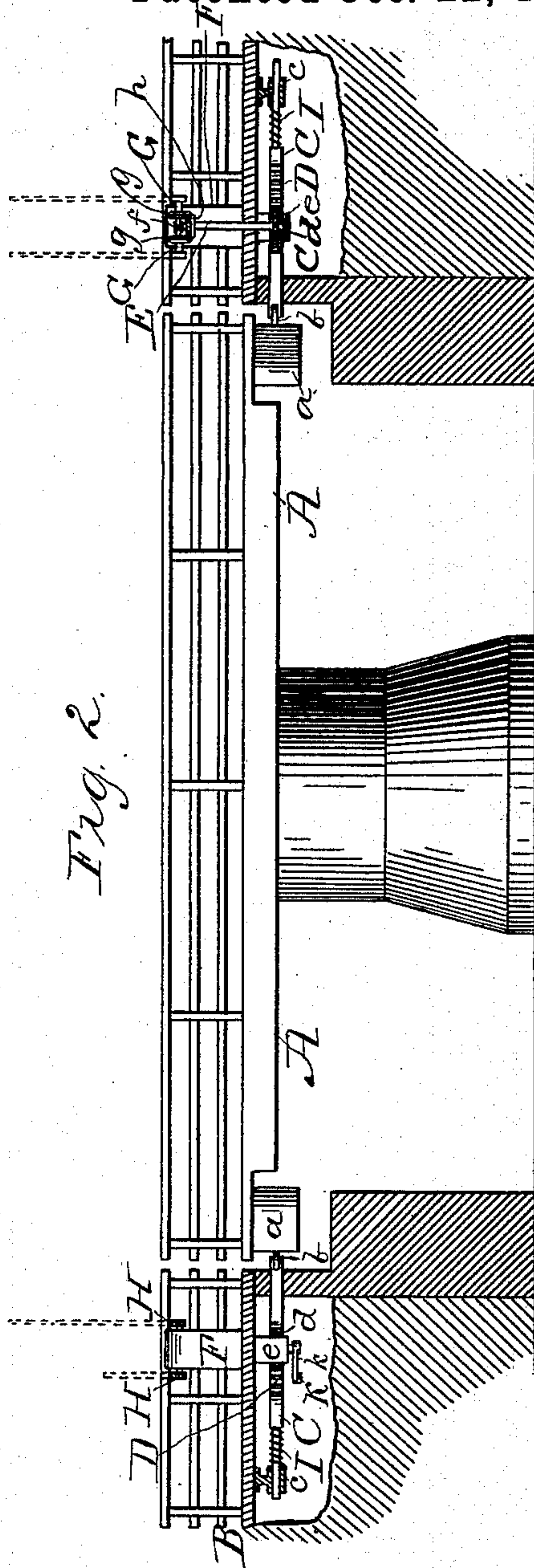
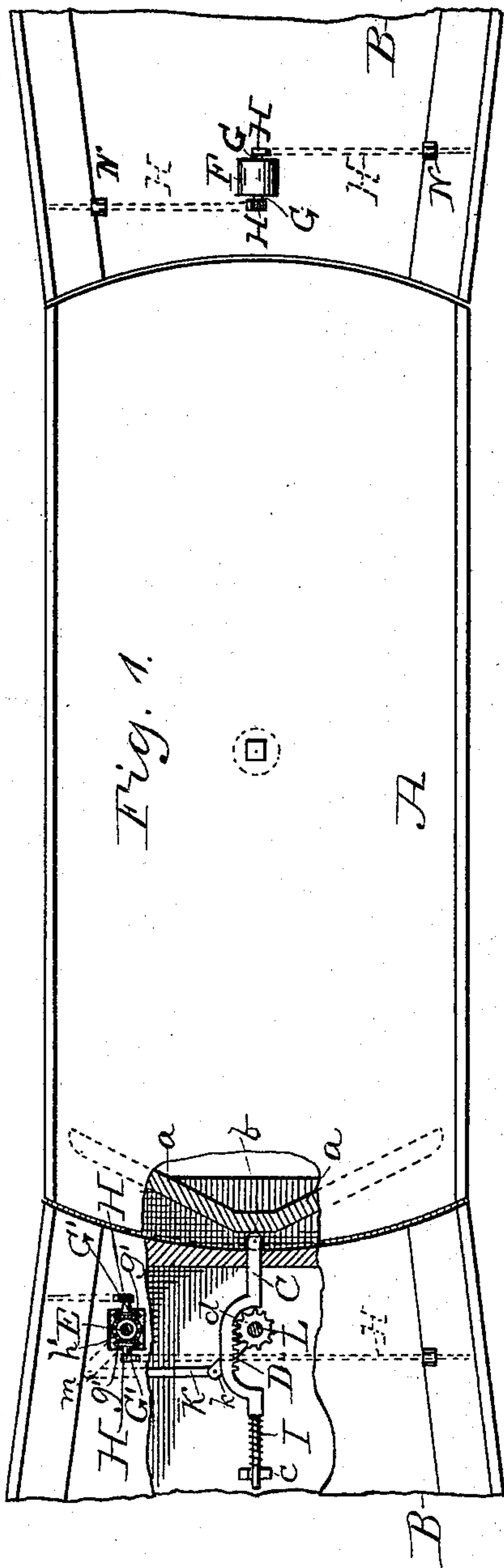
(No Model.)

E. GIRARD.

GATE FOR SWINGING BRIDGES.

No. 413,277.

Patented Oct. 22, 1889.



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GATE FOR SWINGING BRIDGES.

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To all whom it may concern:

Be it known that I, EDWARD GIRARD, a citizen of the United States, residing in the city of Chicago, Cook county, Illinois, have
5 invented certain new and useful Improvements in Swinging-Bridge Approach Gates or Fenders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters
10 of reference marked thereon.

My invention relates to gates similar to those now in extensive use throughout the country for guarding the approaches to rail-road-crossings, and to their successful appli-
15 cation to guard the approaches of swinging bridges by the use of means which are automatically operated by the turning of said bridge, substantially as hereinafter fully described, and as illustrated in the drawings,
20 in which—

Figure 1 is a plan view of a swinging bridge, showing my improved gates applied thereto, and having one end and the approach contiguous thereto broken away, so as to show
25 the means for operating said gate. Fig. 2 is a longitudinal vertical section of the approaches to the bridge, with a full side view of the latter.

Reference being had to the drawings, A
30 represents a swinging bridge, and B B the approaches thereto. Immediately under the ends of said bridge, facing outward, are the cam-surfaces *a a*, and their conformations are such that at about the transverse center of
35 the bridge they come nearest the end of the same, and their engaging surfaces on either side of this central point extend obliquely backward from the transverse plane of the said central point toward the sides at about
40 an angle of twenty degrees to twenty-five degrees. The center of length of these surfaces is, for a short stretch, at right angle to the sides of the bridge, so that when open for travel the friction-roller *b* in the end of the reciprocating bar C, projecting longitudinally and
45 centrally from the abutting wall of the approach B, may rest thereon. This reciprocating bar C moves in bearings in said abutting wall of the approach B on a plane below
50 the grade of the surface of the bridge, and extends longitudinally from said cam-surfaces *a*, through said wall, into a suitable chamber

made under the road-bed of said approaches, where its rear end moves through a suitable guide *c*, secured and depending from the roof
55 of said chamber. About the center of length of said bar, or about at the point where the gates ought to swing across the road of the approaches, it is offset and provided with a rack D, which is of a length corresponding to
60 the throw of said bar. This rack engages the gear *d* on the lower end of the vertical shaft E, which latter is journaled at its lower end in a bracket *e*, secured and depending
65 from the floor of said chamber, and passes vertically upward through the road-bed of the approach up into a suitable case F, and has its upper end journaled in a suitable cross-frame *f*. Near the upper end of said
70 shaft E, just below said cross-frame *f*, is a bevel-gear *h*, which meshes with the bevel-gears *g g* on the spindles G G, which latter are journaled at their inner ends in the sides of the case F in alignment with each other,
75 and having the gate-poles H H on their ends. The gate-poles H are of the same length, and as the means actuating them are in the middle of the street when they are lowered or
80 lifted simultaneously, through the medium of shaft E and beveled gears *h* and *g g*, they close or open said approach.

Surrounding the rear end of the bar C, between the offset thereof and guide *c*, is a coil expansion-spring I, which is compressed when
85 the bar is pushed back by the cam-surface *a* of the bridge, and which, when said bridge is swung to close travel, urges forward the bar. When said bar is pushed backward by the cam-surface, as the bridge is being
90 swung to open travel, the gate-poles are oscillated to a vertical position, and when said bar moves toward the pivoted center of said bridge, upon the latter being swung parallel with the stream it crosses, the gate-poles are
95 lowered so as to cross the approaches.

When the poles are oscillated from the middle of the street, it is generally in connection with a double bridge—that is, one having two roads traversing it lengthwise. For
100 single road-bed bridges I prefer to locate the oscillating point of the gate-poles to one side of the bed. In order to do this I do not extend shaft E up through the road-bed, but terminate and journal it below. The lower

end of said shaft preferably extends through its bearing in bracket *e*, and has secured and projecting therefrom an arm *k*, which is connected by means of a connecting-rod *K* to the arm *m*, projecting from the lower end of a vertical shaft *L*, located at the side of the road-bed on about the same transverse plane as shaft *E*. This shaft *L* extends up through the road-bed into a case *F*, and has its upper end journaled in a cross-frame *f*. It has a beveled gear *h'*, which meshes with similar gears *g' g'* on spindles *G' G'*, and these latter extend through the case and have the gate-poles secured to and projecting therefrom. In fact, the gate-post-actuating mechanism above the ground is just the same as that hereinbefore described when the poles are oscillated from the center of the street.

If desired, posts *N* may be located on either side of the street or approach *B*, with their upper ends bifurcated, so that the poles when they reach a horizontal position may rest between the bifurcations.

When the actuating-point of the gate-poles is located at one side of the road, the pole which closes down over the foot or side walk is shortened. Instead of depending upon a spring to obtain the outward throw of the reciprocating bar, a weight suspended to the end of a rope which passes over a pulley nearer the abutting wall of the bridge-approach and is secured to the end of the reciprocating bar, as shown in dotted lines in Fig. 2, may be used.

What I claim is—

1. The combination, with a swinging bridge and transverse cam-surfaces secured to the under surfaces thereof near the end, of a reciprocating bar *C*, having a rack *D*, said rack *D*, gear *d*, shaft *E*, bevel-gear *h*, spindles *G G*, and beveled gears *g g*, as set forth.

2. The combination, with a swinging bridge and cam-surfaces secured to the under side of said bridge near the ends thereof, of a longi-

tudinally-reciprocating bar projecting from the abutting wall of the approaches of said bridge and parallel therewith, having an offset near its center of length, rack *D* on the inner side of said offset, gear *d*, shaft *E*, bevel-gear *h*, spindles *G G*, beveled gears *g g*, and gate-poles secured to and projecting from the ends of said spindles, as set forth.

3. The combination, with a swinging bridge and transverse cam-surfaces secured to the under side thereof near the ends, of a longitudinally-reciprocating bar *C*, having a rack *D*, said rack *D*, spring *I*, gear *d*, shaft *E*, bevel-gear *h*, spindles *G G*, beveled gear *g g*, and poles secured to and projecting from the outer ends of said spindles, as set forth.

4. The combination, with a swinging bridge and transverse cam-surfaces secured to the under side thereof near the end, of a longitudinally-reciprocating bar *C*, having an offset near its center of length, rack *D* on the inner side of said offset, spring *I*, surrounding said bar between said offset and the guide through which its rear end passes, shaft *E*, rocked by said bar, bevel-gears *g g*, meshing with gear *h*, and poles secured to the ends of said spindles, as set forth.

5. The combination, with a swinging bridge and cam-surfaces secured to the under side thereof near the ends, of a longitudinally-reciprocating bar *C*, having a rack *D*, said rack *D*, shaft *E*, gear *d* on said shaft engaged by said rack, arm *k*, projecting from said shaft, arm *m*, shaft *L*, and connecting-rod *K*, connecting said arms, gear *h* on the upper end of shaft *L*, transverse spindles *G G*, beveled gears *g g*, meshing with gear *h*, and gate-poles secured to and projecting from the ends of said spindles, as and for the purpose set forth.

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Witnesses:

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