

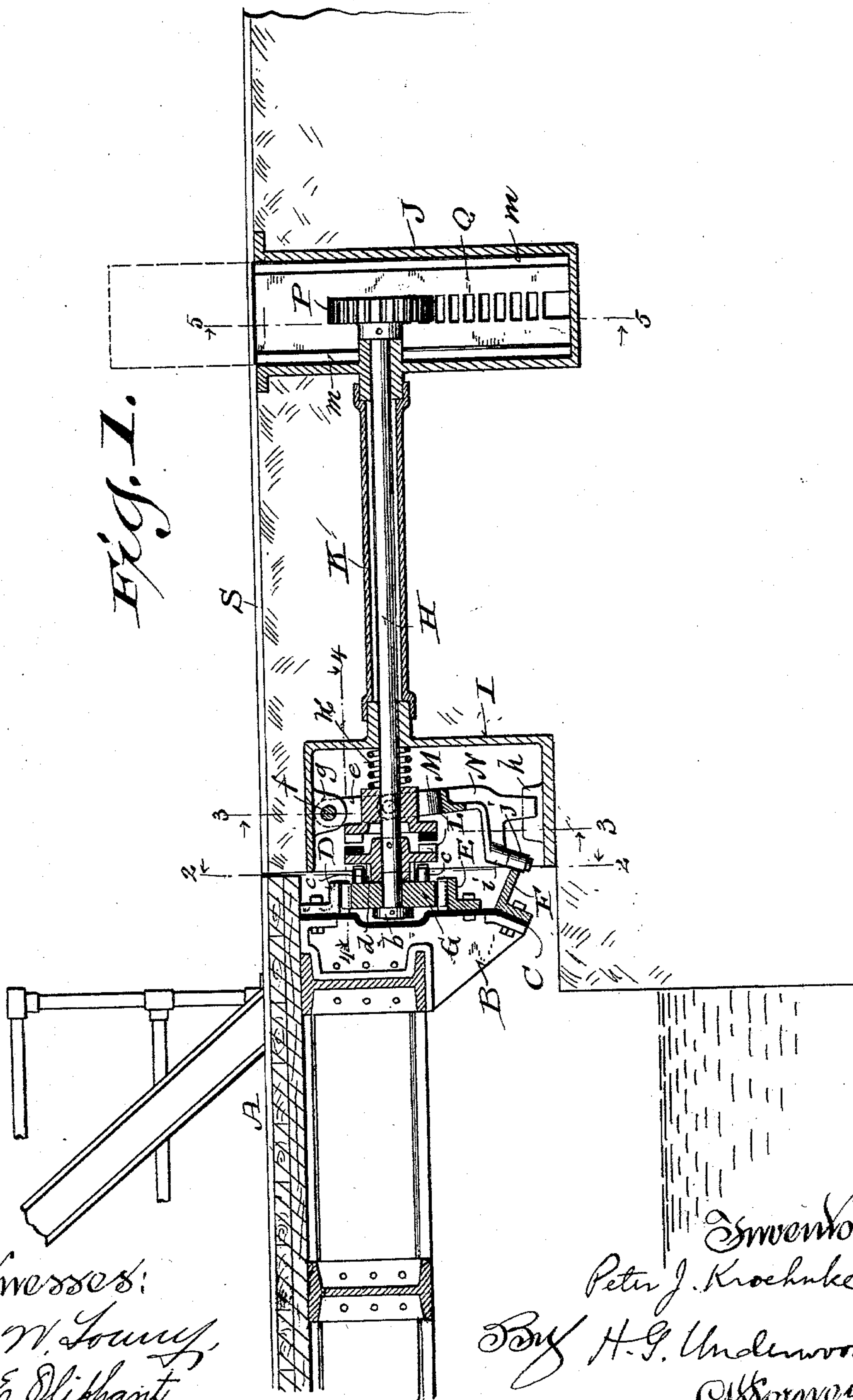
(No Model.)

2 Sheets—Sheet 1.

P. J. KROEHNKE.  
BRIDGE GUARD.

No. 561,671

Patented June 9, 1896.



Witnesses:  
Geo W. Loring,  
N. E. Oliphant

Dr. J. Krochutke  
 Prof. H. G. Underwood  
 Ch. H. H. H.

(No Model.)

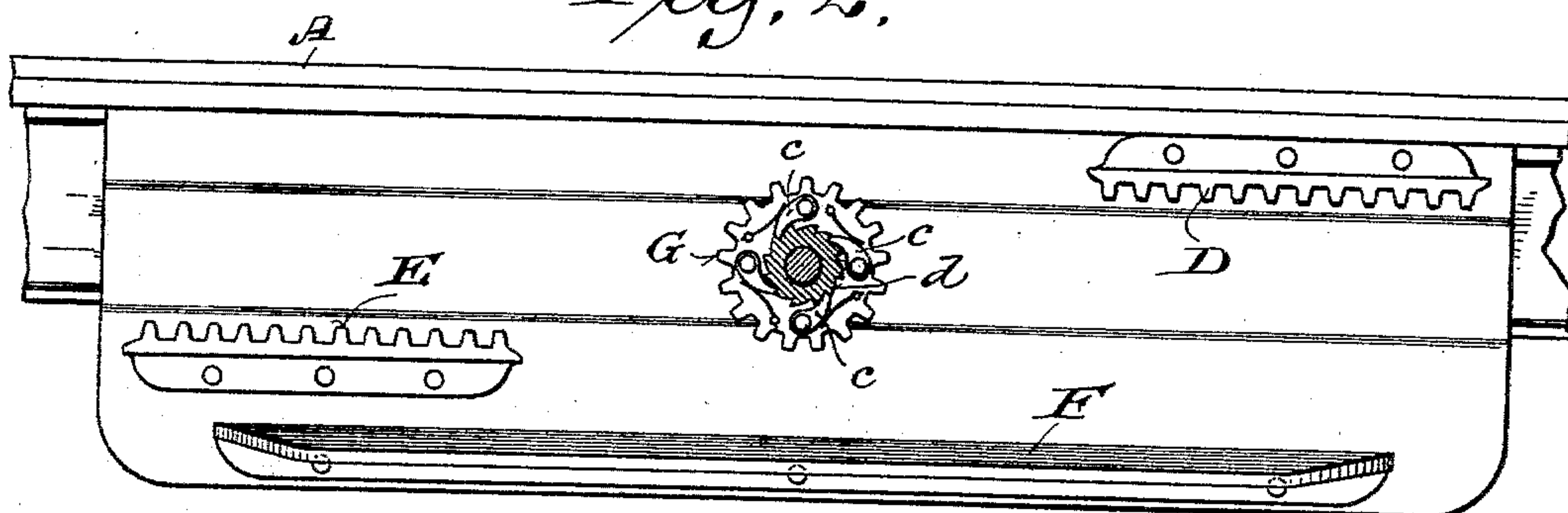
2 Sheets—Sheet 2.

P. J. KROEHNKE.  
BRIDGE GUARD.

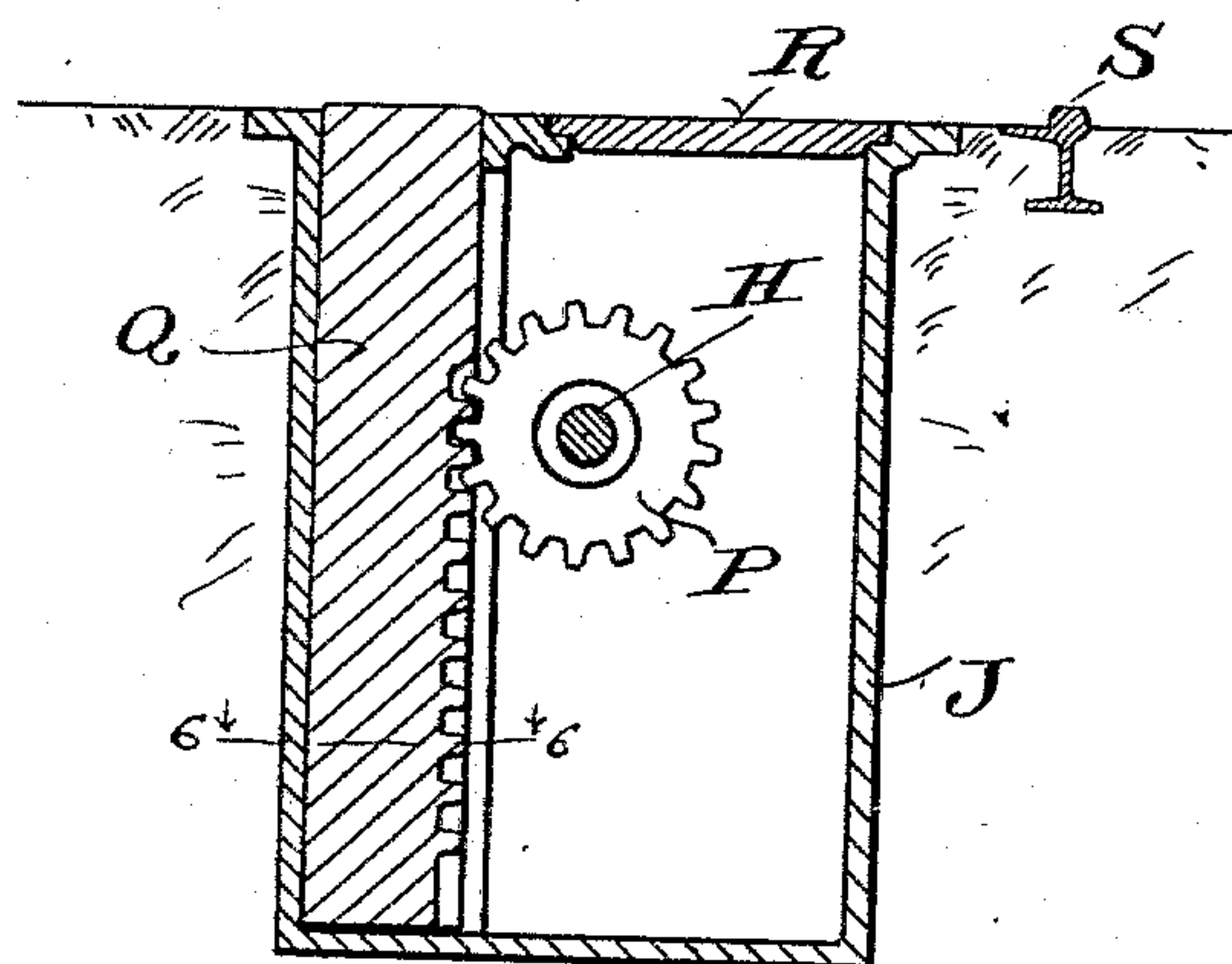
No. 561,671.

Patented June 9, 1896.

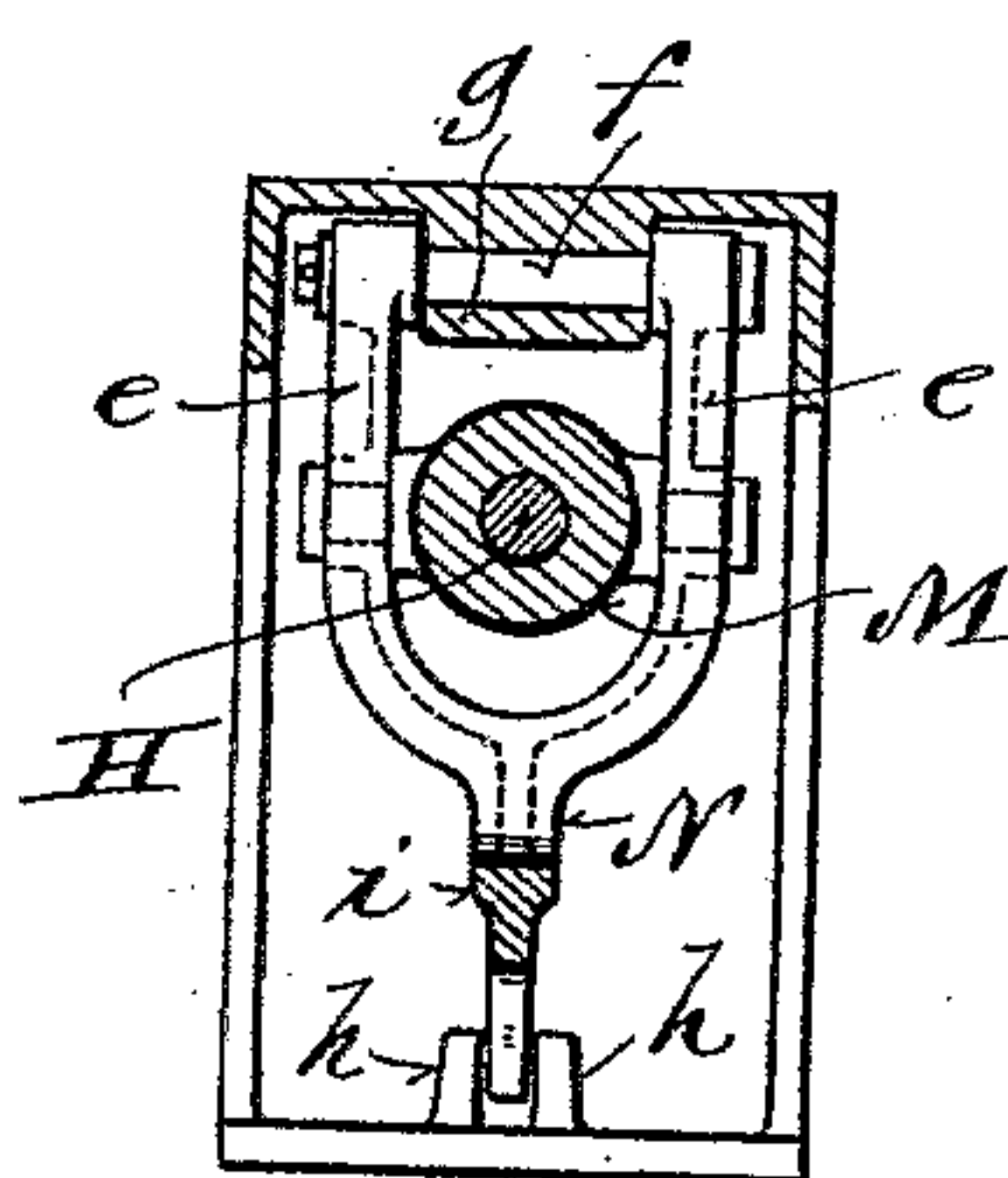
*Fig. 2.*



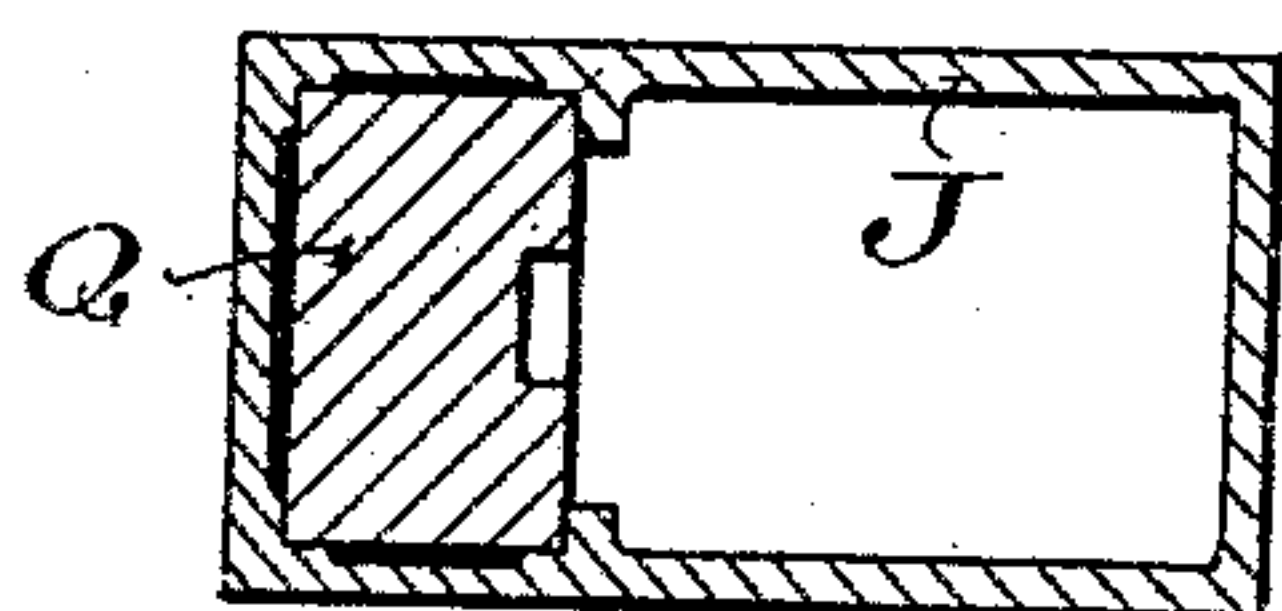
*Fig. 5.*



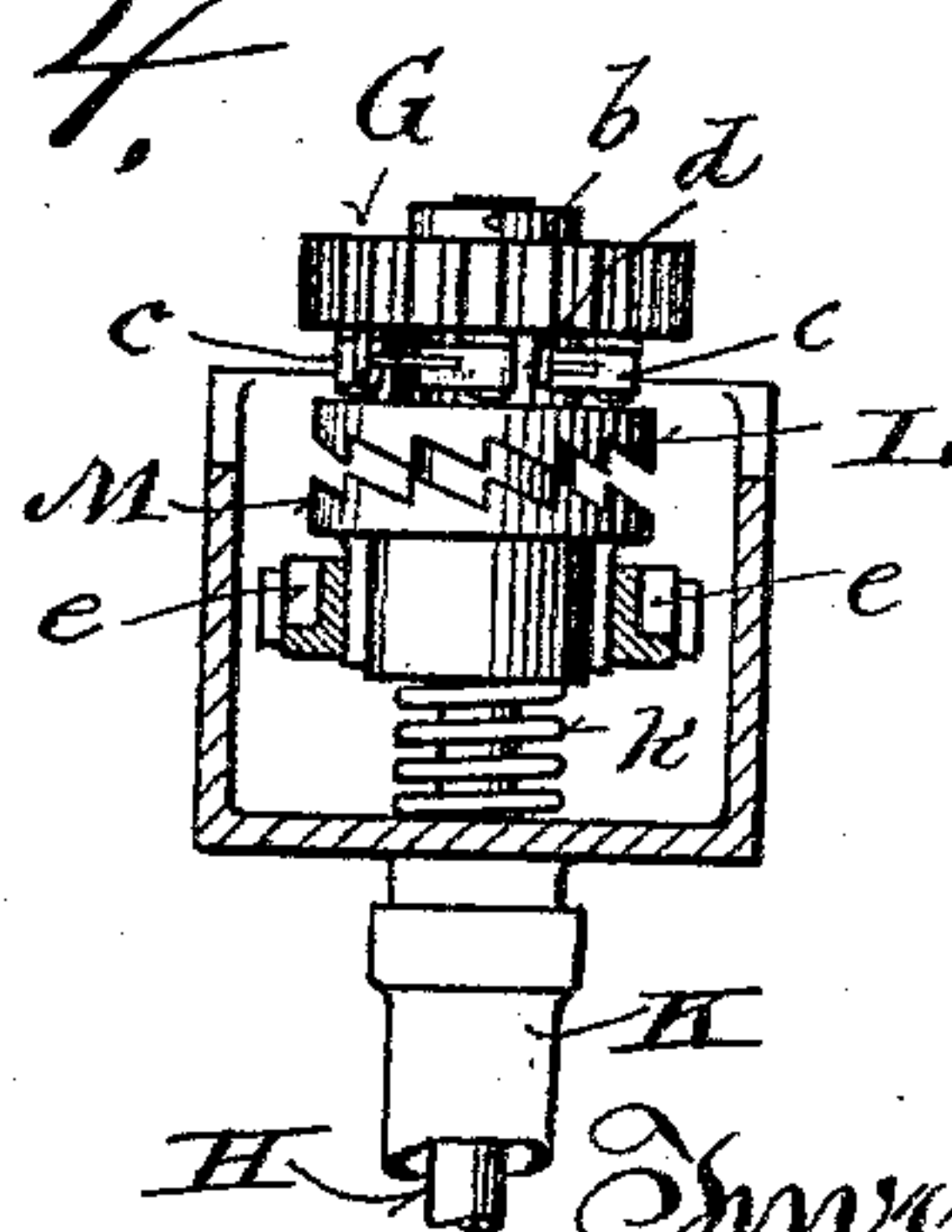
*Fig. 3.*



*Fig. 6.*



*Fig. 4.*



Witnesses:  
Geo. W. Young,  
N. E. Oliphant

Inventor:  
Peter J. Kroehnke  
By H. G. Underwood  
Attorney



# UNITED STATES PATENT OFFICE.

PETER J. KROEHNKE, OF THIENSVILLE, WISCONSIN.

## BRIDGE-GUARD.

SPECIFICATION forming part of Letters Patent No. 561,671, dated June 9, 1896.

Application filed January 15, 1896. Serial No. 575,544. (No model.)

*To all whom it may concern:*

Be it known that I, PETER J. KROEHNKE, a citizen of the United States, and a resident of Thiensville, in the county of Ozaukee and State of Wisconsin, have invented certain new and useful Improvements in Bridge-Guards; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a guard in the form of a fender-stop block coöperative with a swing-bridge to automatically come in and out of working position between track-rails accordingly as the bridge is open or closed, said invention consisting in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a sectional view of a portion of a swing-bridge, one of its abutments, my fender-stop, and the bridge-controlled mechanism by which this stop is actuated to come in and out of working position; Figs. 2, 3, 4, and 5, detail sectional views, respectively, taken on the planes indicated by lines 2 2, 3 3, 4 4, and 5 5 in the preceding figure; and Fig. 6, a similar view on the plane indicated by line 6 6 in Fig. 5.

Referring by letter to the drawings, A represents a portion of one end of a swing-bridge, the same being shown in closed position. Fast to the end of the bridge beneath the floor thereof is a transverse angle-iron bracket B, that may be stiffened by a sheet-metal face-plate C or other suitable means.

The bracket B is provided at one end with an upper rack D and at the other end with a lower rack E, these racks being horizontal. As herein shown, the racks are separate parts bolted to the bracket; but it may be found practical to make them integral with the same. A horizontal cam-track F is also shown extending outward from the bracket B below the rack E, and while this track is shown bolted to the bracket it may also be found practical to form it integral therewith.

The racks are for the engagement of a pinion G, loose on a shaft H, that has its bearings in casings I J, set below the surface of the road approaching that end of the bridge herein shown, and a shaft-protecting tube K may connect the bearings, as is also herein

shown. The distance of the casing J from the one I may be more or less than that illustrated in Fig. 1.

One side of loose pinion G abuts a stop-collar b, fast on shaft H, and a series of spring-controlled pawls c are pivoted on the other side of said pinion to engage with a ratchet d, forming part of the hub of a clutch-section L, fast on said shaft. The clutch-section just described is in opposition to another clutch-section M, loose on shaft H, and this latter clutch-section has its hub in trunnion connection with arms e of a forked lever N, these arms being connected by a pivot-rod f, that has its bearing in a boss g, depending from the top of casing I, above specified.

The shank of the forked lever is preferably held against torsional strain by parallel ribs h on the bottom of casing I, and a lateral branch i of said shank carries an antifriction-roller j, that comes in opposition to the cam-track F, the depressions of the latter being at its ends.

A spiral spring k of suitable power is arranged on the shaft H intermediate of clutch-section M and an adjacent wall of the casing I, this spring being compressed when said clutch-section is moved out of engagement with the one L by the action of the cam-track on the forked lever N, in which the former clutch-section is trunnioned. Another pinion P, fast on shaft H, within the casing J, engages a rack that constitutes part of a vertical block that constitutes a fender-stop Q, movable along guides on said casing, the latter being open at the top and provided with a countersunk cover R for so much thereof as is not occupied by the fender-stop, in order that ready access may be had to the inclosed pinion-and-rack gear.

In practice the top of casing J is flush with the surface of a road-bed leading to the bridge and intermediate of car-track rails S on said road-bed. The fender-stop being run down, its upper end is approximately flush with the road-bed, and this is the position of said fender-stop when the bridge is closed, as herein shown by full lines.

If the bridge be swung away from the approach in either direction, one or the other of racks D E will operate the loose pinion G, and thus cause the pawls c to push on the

55

60

65

70

75

80

85

90

95

100



ratchet *d* of clutch-section L, that is fast on shaft H, whereby rotary motion is communicated to pinion P in mesh with the rack of fender-stop Q, thereby causing an elevation of the latter, as shown by dotted lines in Fig. 1, this elevation being accomplished prior to the time said bridge clears said approach.

By the time the fender-stop is elevated the contour of the cam-track F will permit expansion of spring *k* and an engagement of clutch-section M with the one L to lock said fender-stop in the position to which it has been adjusted during the time the bridge is open.

On the return of the bridge to normal position the initial engagement of a rack D or E with pinion will cause a free rotation of the latter, the pawls *c* slipping on the ratchet *d* and the cam-track F operating to retract the lever N. The clutch-section M is disengaged from the one L, the spring being again compressed, said lever carrying the adjustable clutch-section remaining held back by said cam-track. The fender-stop being of heavy material, it will run down in casing J, the ratchet *d* slipping the pawls *c* incidental to rotation of shaft H when the retraction of said fender-stop takes place.

The mechanism above described is duplicated at the other end of the bridge, and the structural details of said mechanism may be varied somewhat from that herein illustrated without affecting the scope of my invention.

From the foregoing it will be understood that my invention does not contemplate a bridge-gate, but a fender-stop for street-cars approaching an open draw, this fender-stop being arranged to rise between track-rails for said cars.

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

1. The combination of a swing-bridge, a fender-stop loose in a guideway below the surface of a roadway approach to the bridge, a rack on the fender-stop, a pinion in mesh with the rack, a rotative shaft fast to the pinion, another pinion loose on the shaft, racks carried by said bridge to come in and out of mesh with the latter pinion, a clutch-section fast on said shaft and provided with a ratchet-hub, pawls on the loose pinion en-

gaging the ratchet, a lever-and-spring-controlled loose clutch-section opposing the one aforesaid, and a cam-track on the aforesaid bridge arranged to exert pressure in one direction against the loose clutch-section lever.

2. The combination of a swing-bridge, a casing set below the surface of a roadway approach to the bridge, a fender-stop loose in the casing, a detachable cover for so much of said casing not occupied by the fender-stop, an adjusting mechanism for said fender-stop cooperative with said bridge, and suitable means for locking the aforesaid fender-stop in elevated position when the aforesaid bridge is open.

3. The combination of a swing-bridge, casings set below the surface of a roadway approach to the bridge and provided with bearings, a shaft arranged in the bearings, a shaft-protecting tube connected to the bearings, a fender-stop in the casing farthest from the bridge, a fender-stop loose in this casing, pinion-and-rack gear connecting the shaft and fender-stop, a shaft-rotating mechanism partly inclosed by the other casing and cooperative with said bridge, together with a shaft-locking mechanism also partly inclosed by the latter casing and also cooperative with the aforesaid bridge.

4. The combination of a swing-bridge, a casing set below the surface of a roadway approach to the bridge, parallel guard-ribs projecting upward from the bottom of the casing, a rotative shaft cooperative with the bridge, a clutch-section fast on the shaft, another clutch-section loose on said shaft, a spring-controlled lever connected to the latter clutch-section to have its movement between said guard-ribs, a lever-actuating cam carried by said bridge, and a movable fender-stop having a rack in mesh with a pinion fast on the aforesaid shaft, this fender-stop being out of the way when the aforesaid bridge is closed.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

PETER J. KROEHNKE.

Witnesses:

H. G. UNDERWOOD,  
N. E. OLIPHANT.