

UNITED STATES PATENT OFFICE.

JOSEPH EDWARDS, OF NEW YORK, N. Y.

SWIVEL-DRAWBRIDGE.

SPECIFICATION forming part of Letters Patent No. 652,019, dated June 19, 1900.

Application filed March 4, 1899. Serial No. 707,713. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH EDWARDS, a citizen of the United States, residing in the borough of Brooklyn, in the city and State of New York, have invented new and useful Improvements in Swivel-Drawbridges, of which the following is a specification.

This invention relates to apparatus for temporarily interrupting a section of roadway over which steam or other cars are propelled, and particularly to drawbridges or turn-tables or like constructions; and one of the objects of this invention is to provide efficient mechanism for liberating the movable member of the apparatus from contact with the fixed member in order that the members may be moved out of alinement or engagement with each other.

In apparatus of the foregoing character the free ends of the movable member will unavoidably sag, and the free ends thereof must be raised and supported in the same horizontal plane as the fixed member in order that the tracks or roadway upon both members may be in the same alinement; but the apparatus heretofore constructed have not proved satisfactory in practice, for it has been demonstrated by use that the mere line bearings afforded by a roller, carried by the movable member and adapted to bear upon the fixed member are not adequate to sustain the heavy weight to which the free ends or portions of the movable member are subjected unless the roller at each end of the movable member be of large dimensions or have an extensive bearing-surface, and even when so constructed such rollers become flattened and are forced into the surface of the fixed member on which they rest or engage; but rollers so constructed are objectionable in practice on account of the amount of space occupied and the scope of their outward and inward movement in raising and lowering the free ends of the movable member, to say nothing of the great force required to operate the same. Other constructions have been produced designed particularly to afford a suitable bearing-surface upon the fixed member to resist the great pressure exerted thereupon; but such constructions are objectionably complicated, bulky, and expensive.

Another object of this invention is to pro-

vide a construction designed particularly to economize space, power, and expense and at the same time to provide ample bearing-surface upon the fixed member to receive and support the free portions of the movable member, together with the weight passing thereover, consisting of steam-railway trains, trolley-cars, trucks, and various vehicles and crowds of people.

It is also an object of this invention to overcome the difficulties, imperfections, and objections in the apparatus heretofore produced, some of which have been hereinbefore mentioned.

A further object of this invention is to provide a supporting and releasing device to be connected with the free portions of the movable member, constructed particularly to sustain great weight and to give increased bearing-surface.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as hereinafter more fully described in the specification and illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 illustrates a portion of one of the free ends of the movable member of an apparatus of the character above described and also a portion of the fixed member thereof, showing the supporting and releasing devices in elevation and out of engagement with the fixed member. Fig. 2 is a view similar to Fig. 1, showing the supporting and releasing devices in engagement with the fixed member. Fig. 3 is an enlarged sectional view taken on lines *x x* of Figs. 1 and 2. Fig. 4 is a perspective view illustrating the lower member of the toggle. Fig. 5 illustrates the toggle member and bearing-block or ram in engagement. Fig. 6 is a side elevational view showing the toggle-ram in detail. Fig. 7 is a transverse section thereof, taken on lines *y y* of Fig. 6; and Fig. 8 is a top view of the toggle-ram.

Similar characters of reference designate corresponding parts throughout the several views.

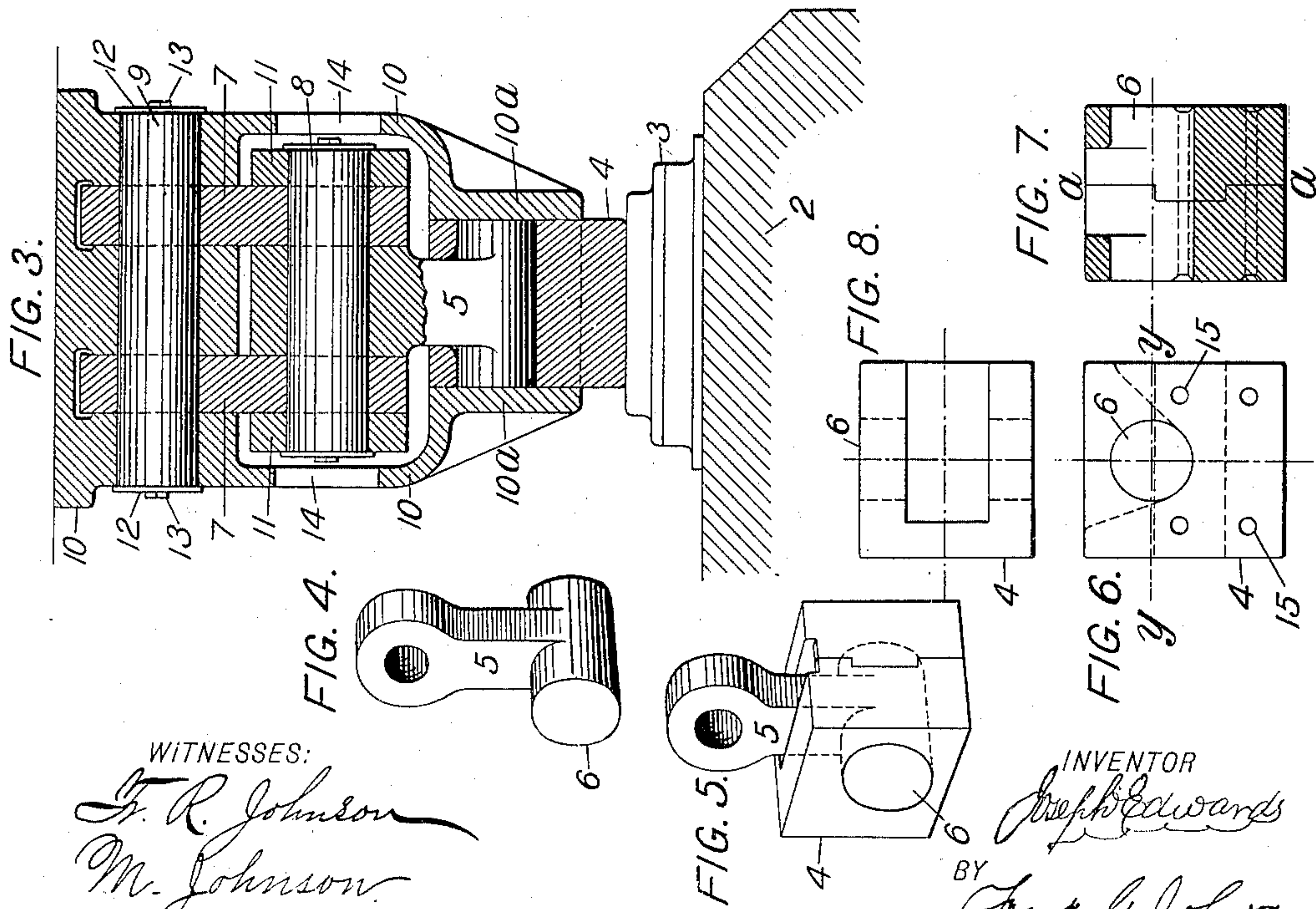
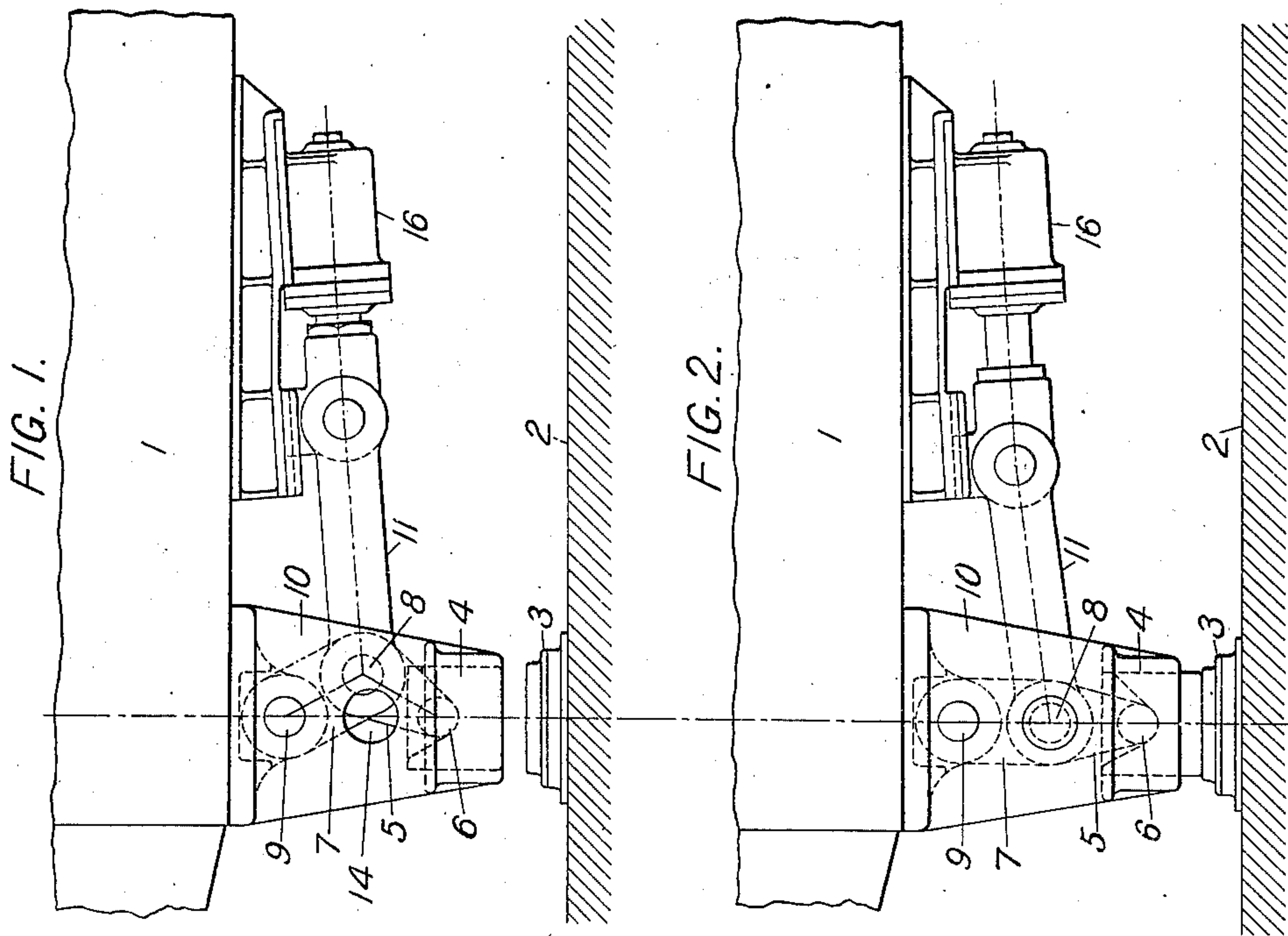
The drawings illustrate only a portion of the engaging portions of the fixed and movable members of the apparatus hereinbefore

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open central portion and a contracted free end, upper toggle members movably mounted in said solid portion, the same being constructed to receive and support said members against lateral deflection, a lower toggle member connected with said upper members in said open central portion of said frame or hanger and a ram carried by said lower member to reciprocate within said contracted end.

3. A fixed member, a movable member, a frame or hanger connected with the latter by solid attaching portion thereof, and having an open central portion and a contracted free end, upper toggle members movably mounted in said solid portion, the same being constructed to receive and support said members against lateral deflection, a T-headed lower toggle member connected at the plain end thereof with said upper members and a ram constructed to receive the T-headed end of said lower member and to slide in said contracted end.

4. A fixed member, a movable member, a frame or hanger connected therewith having a contracted guideway, toggles mounted in said frame, one whereof forms a T-head engaging said ram and constituting a bearing throughout the same and means for actuating the parts.

5. A fixed member, a movable member, a frame or hanger connected therewith, toggles mounted in said frame, one whereof is provided with trunnions, a ram having a bearing therein to receive said toggle and trunnions and means for actuating the parts.

6. In a drawbridge, a supporting and releasing toggle having a trunnion-bearing and a ram attached thereto at the lower end of its lower member, and the upper member of the toggle, having its attachment to the drawspan, a case inclosing said toggle and ram, in combination with any ordinary mechanism for actuating the said toggle.

7. A supporting and releasing device provided with upper toggle members movably connected with the structure to be supported, a lower toggle member articulating with said upper members and having trunnions and a ram constructed to receive the extremity of said lower toggle member and said trunnions to afford bearing-surface upon the toggle proper as well as the trunnions.

8. A supporting and releasing device provided with upper toggle members movably connected with the structure to be supported, a lower toggle member articulating with said upper members and having trunnions and a two-part ram constructed to receive the extremity of said toggle proper and said trunnions to increase the bearing-surface of the toggle.

9. A supporting and releasing device provided with upper toggle members, movably connected with the structure to be supported, a lower toggle member articulating with said upper members and having trunnions and a ram constructed with a solid bearing to receive the extremity of said lower member and said trunnions and being cut away centrally above said bearing to permit the movement of the latter member while forming a guide therefor.

10. A supporting and releasing device provided with upper toggle members articulating with the structure to be supported, a lower toggle member articulating with said members and having trunnions, a two-part ram having tongue-and-grooved connection and each part provided with an opening to receive one of said trunnions and means for securing said parts together.

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