R. KOSS.

SHIP'S TOWING SYSTEM.

APPLICATION FILED APR. 29, 1909.

955,412. Patented Apr. 19, 1910.

FIG. 2.

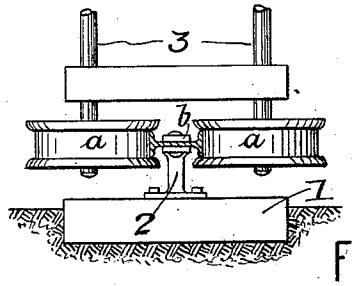


FIG. 1.

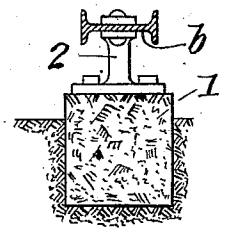


FIG. 6.

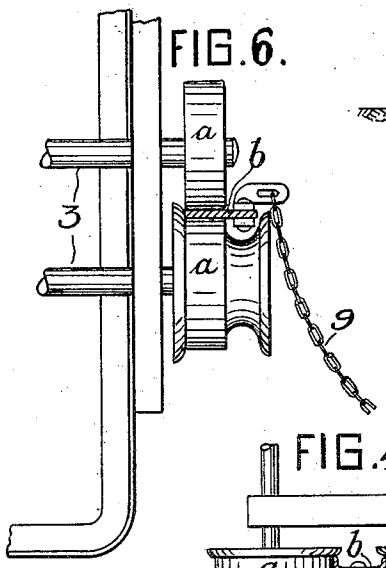


FIG. 5.

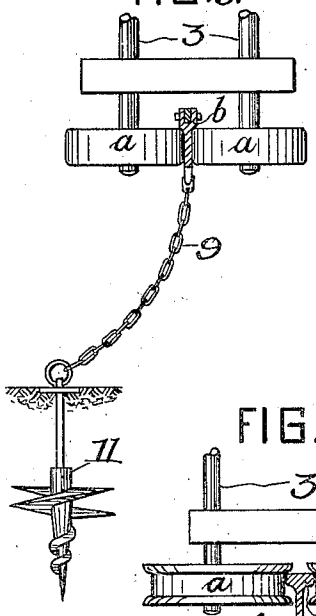


FIG. 4.

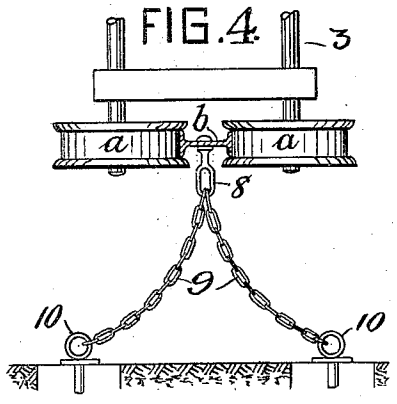
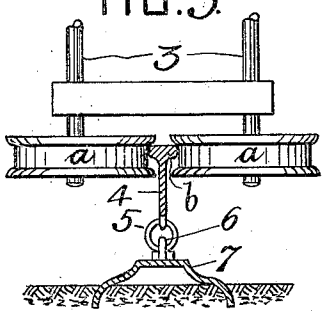


FIG. 3.



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UNITED STATES PATENT OFFICE.

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SHIP'S TOWING SYSTEM.

955,412. Specification of Letters Patent. **Patented Apr. 19, 1910.**

Application filed April 29, 1909. Serial No. 492,881.

To all whom it may concern:

Be it known that I, RICHARD KOSS, subject of the German Emperor, residing at 28 Steinfurterstrasse, Münster, Germany, have invented new and useful Improvements in Ships' Towing Systems, of which the following is a specification.

This invention relates to an improved form of ship's towing system and comprises a submarine guiding member and driven or driving members designed to frictionally engage the guide. The guiding member may assume various forms and may be rigidly secured to the river bed or it may be secured thereto so as to have a considerable range of movement in relation to the bed.

The principle embodied in the present invention is exemplified in the accompanying drawing, wherein—

Figure 1 is a vertical sectional view of a double flanged rail serving as a guide, the anchorage for the rail being shown in section; Fig. 2 is a view of a similar rail showing the driving or driven members engaging the same; Fig. 3 is a view similar to Fig. 2 showing a modified form of rail and anchorage therefor; and Figs. 4, 5 and 6 are views illustrating still other modifications.

In each form of the invention illustrated, a single rail or guide member *b* is designed to be engaged at two of its sides by oppositely disposed and oppositely revoluble wheels or the like *a*. In each instance the guide *b* stands up from the bed of the stream a considerable distance, and is either rigidly or movably anchored to the bed. The friction between the guide and rollers is artificially produced by suitable driving mechanism, as contradistinguished from structures wherein wheels travel on rails lying on the bed of the stream, where the friction between the wheels and rails results from the weight of the superstructure bearing on the wheels.

Referring to Figs. 1 and 2, wherein the guide is shown as rigidly secured to the bed of the stream, 1 indicates a suitable anchorage, such as stone or concrete, carrying a standard 2 which serves to hold the double flanged rail *b* against the flanges of which the wheels *a* journaled on the shafts 3 revolve. The wheels and shafts form part of a traction device suitably suspended from the vessel (not shown) which is being towed.

In Fig. 3, the rail *b* is provided with a depending arm 4 carrying a ring 5 which engages the eye 6 of a double pronged grapple 7 anchored in the bed of the stream.

Fig. 4 of the drawing illustrates a form of the invention in which the rail *b* has an eye bolt 8 secured thereto, a pair of chains 9 engaging the eye bolt and similar eyebolts 10 held in the bed of the stream, serving to limit the movement of the rail in the water.

In Figs. 5 and 6, a single chain 9 serves to hold the rail *b*, the anchoring means in Fig. 5 comprising an auger 11 screwed into the stream bed. Fig. 6 illustrates the possibility of arranging the wheels *a* in the same vertical plane, while in the other figures of the drawing the wheels are arranged in the same horizontal plane.

Having thus described my invention, what I claim is:—

In a towing and propelling system, the combination with a vessel, of a metallic guide rail lying normally on the water bed, means anchored to the water bed only and secured at intervals directly to the said guide means whereby the latter is permitted to have limited freedom of movement relatively to the water bed, and traction or propelling means suspended from the vessel and adapted to inclose and traverse the guide rail and raise the same when being traversed, said guide rail, when not being traversed by the propelling means resting on the water bed, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD KOSS. [L. S.]

Witnesses:
OTTO KÖNIG,
WILLY KLEIN.