J. L. NICOLAI.

Canal Boat Propeller.

No. 123,504. Patented Feb. 6, 1872.

Fig. 1

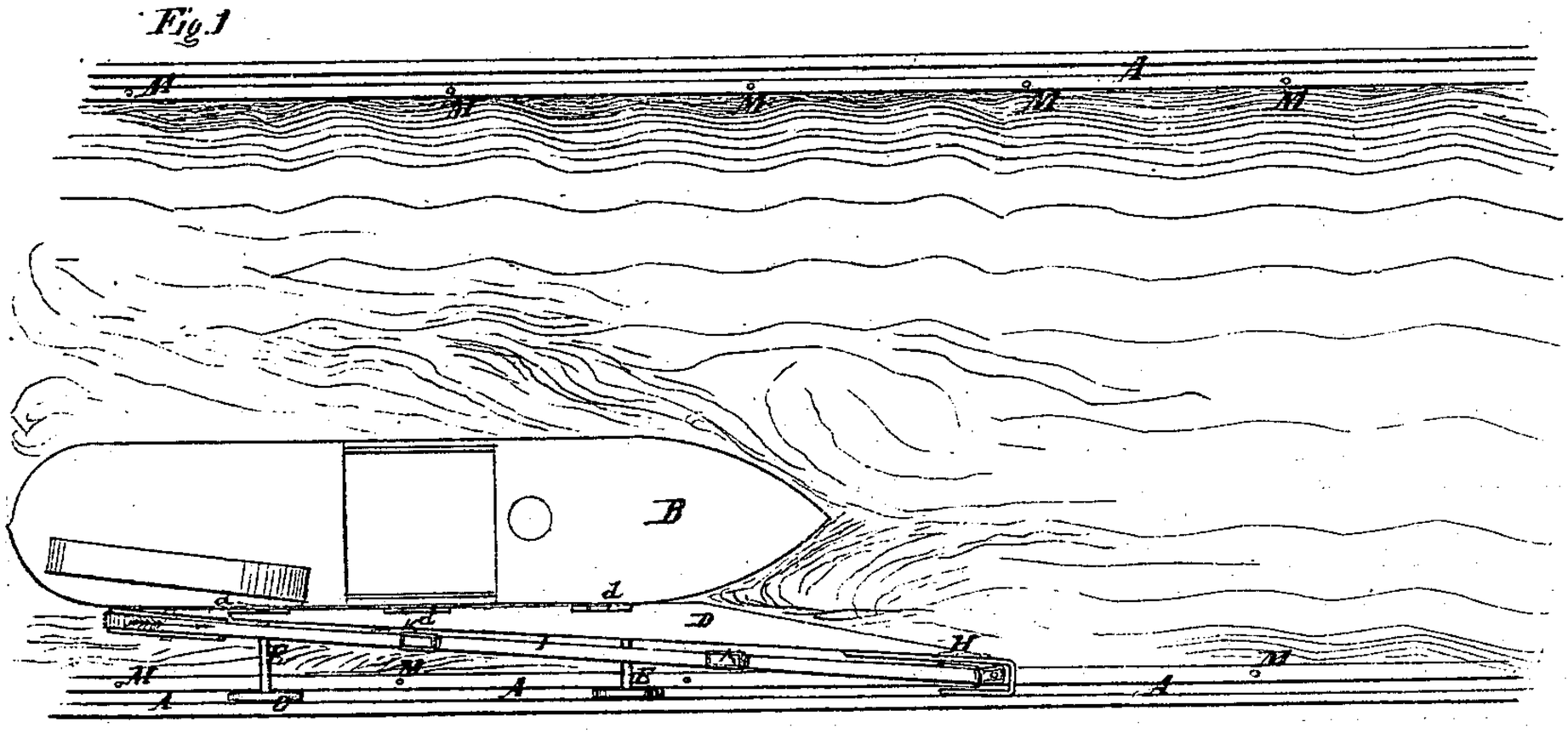
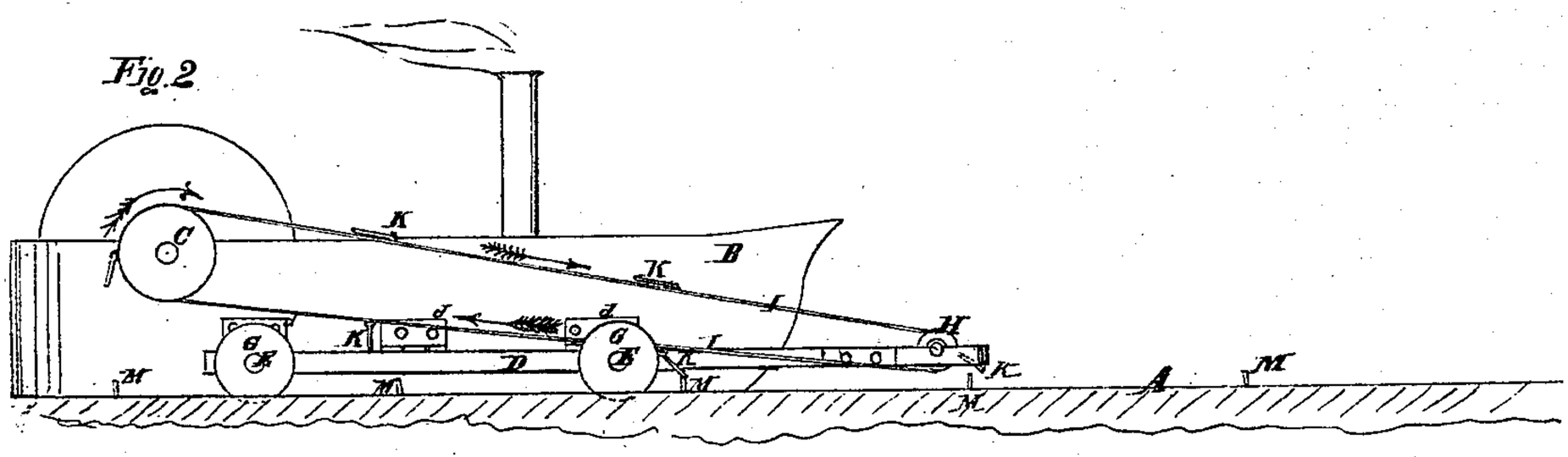


Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN L. NICOLAI, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN CANAL PROPULSION.

Specification forming part of Letters Patent No. 123,504, dated February 6, 1872; antedated January 22, 1872.

SPECIFICATION.

To whom it may concern:

Be it known that I, JOHN L. NICOLAI, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Canal-Boat Propellers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which, together with the letters and figures marked thereon, forms part of this specification, and in which—

Figure 1 represents a top or plan view of a canal and boat embodying my invention, and Fig. 2 a side elevation of same.

Like letters of reference made use of in the several figures indicate like parts.

Nature of the Invention.

The successful application of steam or similar force as a motive-power to the propulsion of barges and boats upon the ordinary earth-banked canals has long been an unsolved problem in mechanical engineering. The employment of paddle-wheels or propeller-screws has been found to be impracticable for the reason that their action agitates the water to such a degree as to wash the banks and bottom of the canal to an injurious extent, such that their continued use would soon destroy the canal. Skeleton wheels, consisting of one or more series of radiating spokes, so arranged upon the boat that the end of the spokes will engage the earth at the bottom of the canal, have been employed; but are entirely impracticable, owing to the unevenness of the canal bottom, and the injury done thereto by the tearing action of the spokes. A third method advanced has been the employment of locomotive-engines, running upon a track laid upon the tow-path, and which it has been contemplated to connect to the boat or a train of boats after the manner of using horses. This is objectionable, by reason of the fact that the engine must be very heavy, and, consequently, a very strong foundation had for the track or tram-way, as in the case of traction-engines of the road-bed, necessitating a greatly increased cost of construction, or constant danger had of the banks caving in under the weight of an engine, which must be made heavy to do its work. With these land-marks of former failures in mind I have concluded that the motive power should be carried within the boat in the shape of a steam or other engine, which shall be connected by appropriate mechanism with the shore or tow-path; said shore or tow-path affording the resistance against which the force of the engine is exerted to pull or push the boat along through the water. This I accomplish by fitting the tow-path with a continuous groove or guide-way, which contains two or more wheels, connected by their axes to the boat, serving to keep the boat always at a certain distance from the shore. An arm or frame, attached to the boat, projects out over the tow-path and carries a pulley connected by a stout band or chain, which is endless, to the driving-pulley of the engine contained within the boat. The tow-path is furnished with a series of pins or pegs driven into or fastened thereto at regular short intervals along its entire course; and the chain or band above mentioned is provided with a series of loops or eyes, arranged to drop down over the pegs, being carried forward by the upper ply of the band and drawn back by the lower ply thereof, passing round therewith in revolution, the return or lower ply being thus connected by means of the loops and pegs to the shore, so that the boat is moved along thereby.

To enable those skilled in the art to understand and use my invention, I will proceed to describe the same particularly with reference to the aforesaid drawing.

General Description.

A A are grooved ways or guides, placed, in the present instance, one upon each side of the canal. B is an ordinary barge or boat, provided with an ordinary engine and boiler, not shown in the drawing, which operates a drum or band-wheel, C, causing it to turn in the direction of the arrow. D is a frame or platform, secured to the barge or boat by hinges *d*. This frame or platform carries the two shafts or axes E E, upon the outer extremities of which are carried the guide-wheels G G, running in the grooved way A; the frame projects forward beyond the bow of the boat and at the foremost point carries the band-wheel or pulley H. An endless band or chain, I, passes from the wheel or pulley H to the drum C. This band is fit-

ted at regular intervals with loops K, and the tow-path, or rather the side of the grooved way A, is furnished with pegs or pins M, standing upright along its entire length, and arranged at such regular stated intervals that the loops K, as they pass over the periphery of the wheel or pulley H shall drop each one in succession over a peg, and the return or lower ply of the band will act to propel the boat.

The entire apparatus outside of the boat, excepting, of course, the grooved way and pegs which are attached to the shore, is carried upon the platform or frame, and this may be readily swung upon its hinges so as to disengage the boat from the shore at pleasure.

The grooved ways may be very cheaply made of ordinary planking, and may be applied to any ordinary tow-path without in any way interfering with the usual horse-drawn boats.

Where a large traffic exists it may be advisable to have a guide-way at each side for boats going in opposite directions, and this I have indicated in the drawing.

I do not limit myself to the precise construction shown, as my invention may be applied in many obvious ways; the idea being always to provide a guide-way along the tow-path to which the boat is connected so as to always keep at a fixed distance from the shore and appropriate mechanism operated by a power from within the boat, made to extend over to the tow-path from the boat and acting upon the shore, as a resisting point, to propel the boat along through the water.

It will be readily understood that instead of the grooved way an iron rail—as for example, an ordinary "T"-rail—may be laid along the shore, and grooved wheels used which will fit over the rail instead of the plain wheels rolling in a channel, as is above described.

Claim.

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

The combination of the endless band I, carrying loops K, with the boat B and pegs M fixed at regular stated intervals along the shore of the canal, substantially as specified.

JOHN L. NICOLAI.

Witnesses:
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