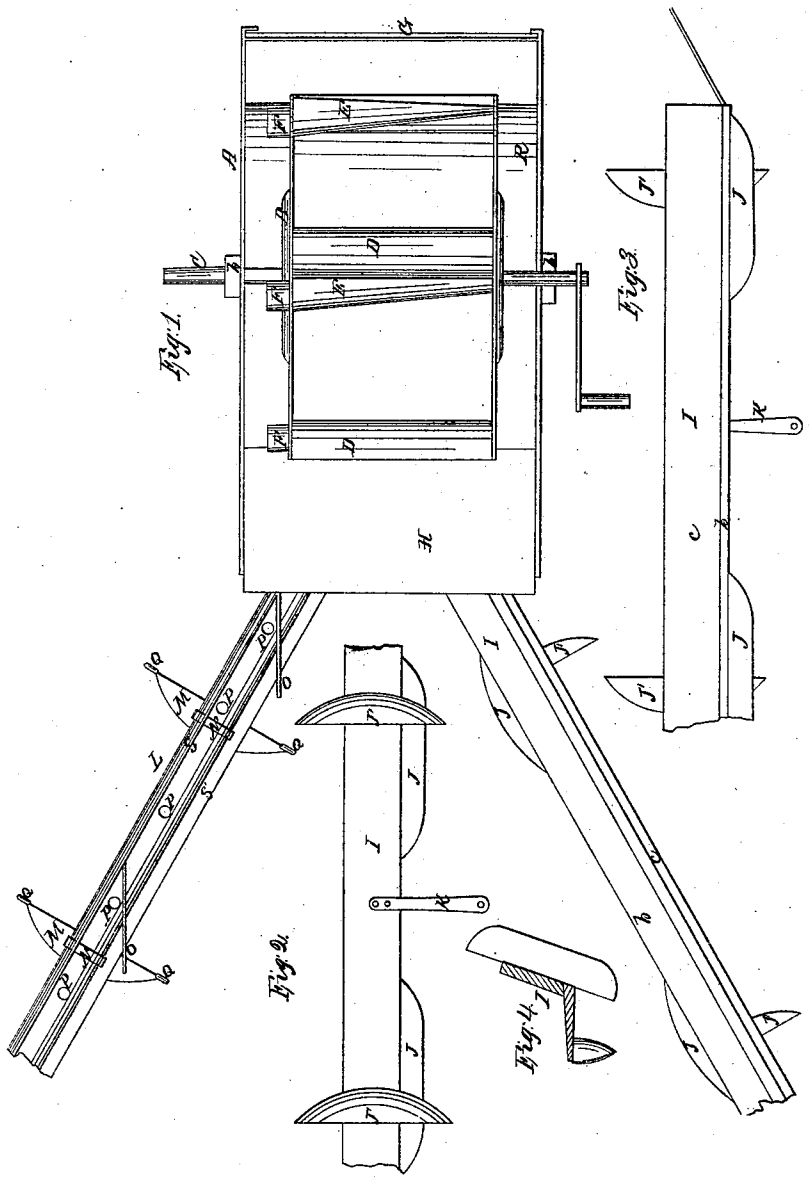
Sheet 1 - 3 Sheets.

A. Ralston,

Oil-Collecting Pump,

No. 54,014. Patented Apr. 17, 1866.



Witnesses.
Wm. Spencer
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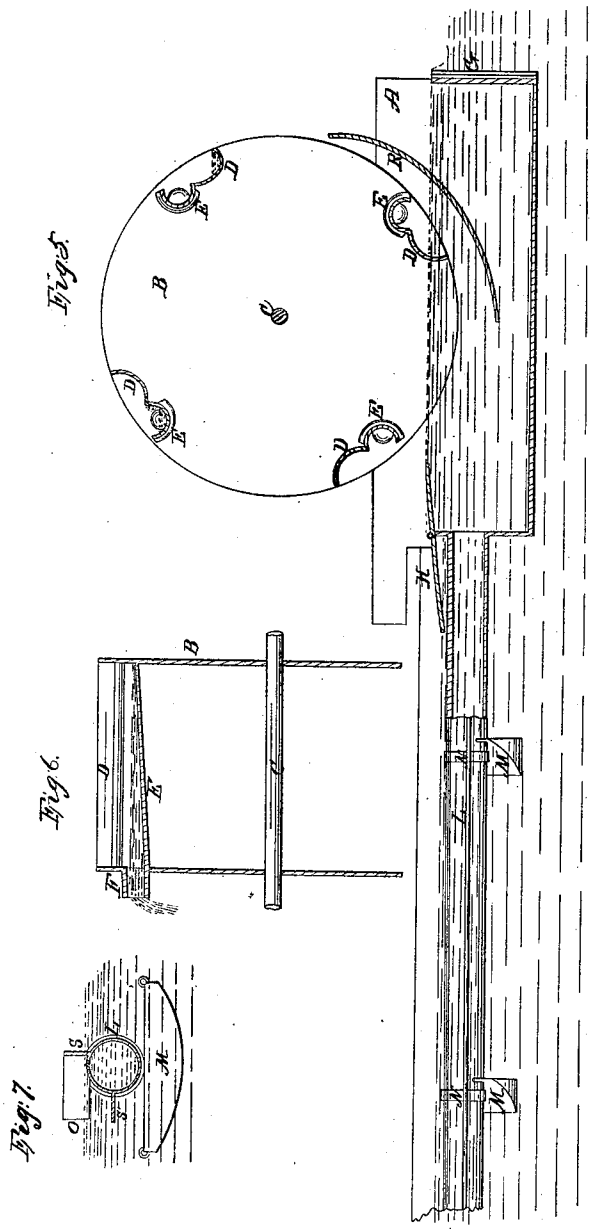
N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

Sheet 2-3 Sheets

A. Ralston,

Oil-Collecting Pump.

No. 54014. Patented Apr. 17, 1866.



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Sheet 3-3 Sheets.

A. Ralston,

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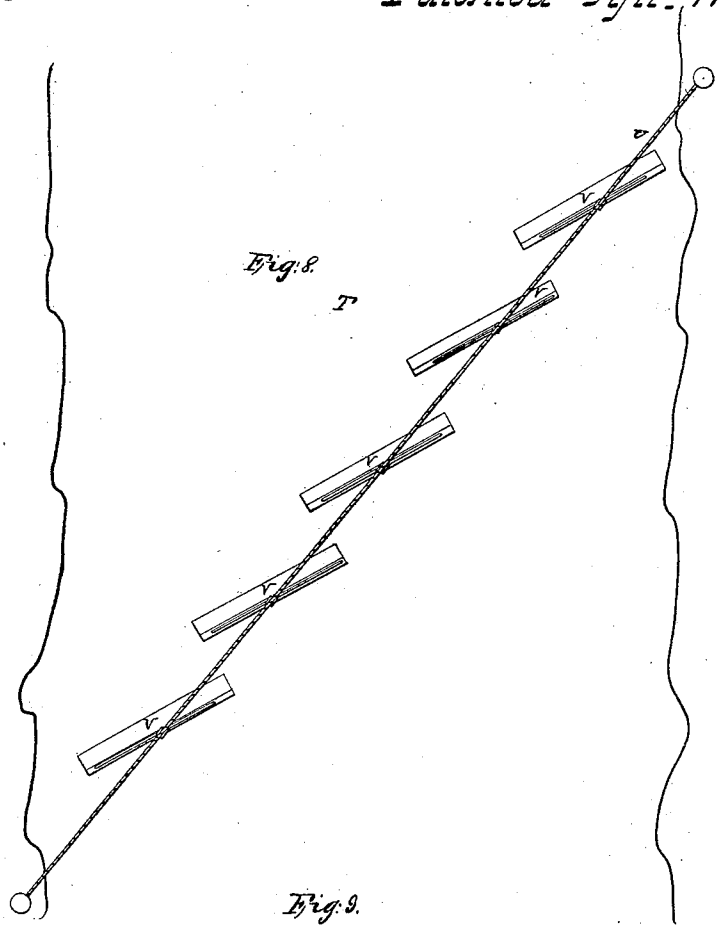
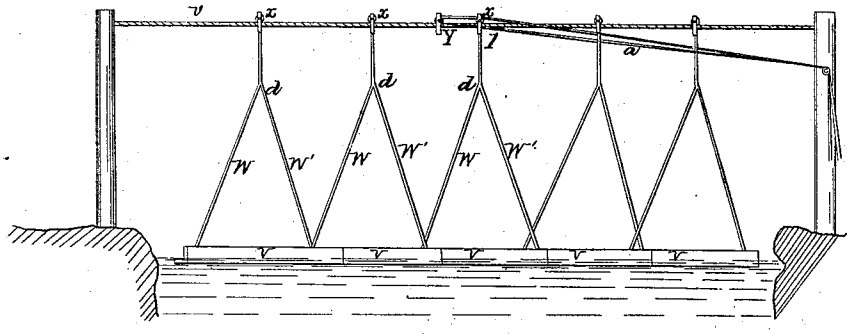


Fig. 8.

T

Fig. 9.



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UNITED STATES PATENT OFFICE.

ANDREW RALSTON, OF WEST MIDDLETOWN, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR COLLECTING FLOATING OIL.

Specification forming part of Letters Patent No. 54,014, dated April 17, 1866.

To all whom it may concern:

Be it known that I, ANDREW RALSTON, of West Middletown, in the county of Washington and State of Pennsylvania, have invented a new and useful Improvement in Collecting Oil from the Surface of Streams; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a plan view of an apparatus made according to the principle of my invention, showing, also, booms of two different forms. Fig. 2 is a detailed back view of a portion of the boom marked I. Fig. 3 is a front view of the said boom. Fig. 4 is a cross-section thereof. Fig. 5, Sheet No. 2, is a sectional view of the apparatus. Fig. 6 is a detailed view of part of the noria B. Fig. 7 is a cross-section of the boom L. Fig. 8, Sheet No. 3, shows a mode of arranging booms in sections. Fig. 9 shows how the sectional booms may be drawn to one side to make way for the passage of a boat, or a raft, or any other object drifting down the stream.

Similar letters of reference indicate like parts.

The object of this invention is to collect and save the petroleum which floats down on the surface of streams in the oil regions. It consists in an apparatus for guiding the oil towards a lifting-wheel or noria, by whose revolution it is lifted up from the level of the stream and discharged into a receptacle.

A designates a platform with raised sides and ends, whose joints are tight, so that it will float on water. It may be in the form of a flat-boat, and is to be anchored out in the stream or near one of its banks, as convenience suggests. Vessels containing receptacles and tanks are placed alongside to receive the oil which is taken up by the noria.

B is a machine for raking up and lifting the oil. It operates after the manner of the ancient noria used for irrigating land and for raising water from lower to higher levels. Its sides are disks fixed on a central shaft whose ends are supported in standards *b b*, which rise from the platform or boat A.

The letters D designate troughs placed near the peripheries of the disks, and extending from one to the other in lines parallel to the shaft C. The outer edges or lips of the troughs are brought out into line with the peripheries of the disks, but their inner edges are some distance below said peripheries, and are, moreover, joined severally to the edges of discharging-troughs E, which also extend from disk to disk.

The troughs E become wider and deeper as they extend toward the disk on the left-hand side, (observing Fig. 5,) thereby tending to deliver any oil and water which may be collected therein toward their left-hand ends, where they are discharged of their contents through spouts F, beneath whose *debouchures* may be placed tanks or other receptacles. There are as many troughs on the disks as can be conveniently driven, and their number may be varied according to the quantity of oil to be raised.

The boat or platform A has a curved or vertical plate across it, between its end G and the disks. It extends from the front of the disks to a point beneath the shaft C, but does not rest on the bottom of the boat.

The opposite end of the boat or platform has an apron, H, hinged on its under side to the edge of the boat, its inner end projecting inwardly toward the disks. The office of the apron is to lead the oil from the surface of the stream into the boat.

The front side of the boat A has openings which receive or connect with the inner ends of booms extending at proper angles against the current, wholly or partly across the stream. These openings are a little below the level of the apron, but the boat or platform A is to be ballasted, so that their upper sides will be about on a level with the surface of the stream.

I have shown two booms, I L, in Fig. 1, extending in opposite directions. Only one need be used if the lifting apparatus is placed next to one of the shores of a stream. I have shown booms of two different constructions—one, I, consisting of a guiding edge or surface, and the other, L, combining with such an edge a hollow cylinder, perforated at intervals along its top to receive oil from the surface of the stream and conduct it into the boat. They are both shown in plan view in Fig. 1.

The boom I consists of two boards connected along their edges at an obtuse angle, the board *b* being provided with bouys J to keep the boom

at the proper level. The board *c* is the back of the boom, and is provided with an arm, K, which extends down into the water when the boom is in the position seen in Fig. 1. A rope is connected to the end of the arm K, and its free end is to be carried to the shore. The use of the rope is to cant the boom when it is necessary to get it out of the way of a boat or other object in the stream. When this is done the boom is made to lie on its side *c*, and the buoys J are raised out of the water, and the buoys J′, which are fixed transversely to the side *c*, will be brought down into the stream, their direction being such as to enable the person who draws the rope to haul the boom toward the shore with ease. The boom L can be hauled in and out to and from the shore in like manner by means of ropes to be passed through rings Q in the ends of the buoys M. These buoys are connected to the boom L by means of rings N, within which the cylinder is free to rotate, so that when the buoys are drawn upon by the ropes they are free to stand vertically in the water without disturbing the position of the cylinder. That side of the cylinder which is to be uppermost is perforated with holes P, through which water and oil are free to pass into the cylinder.

S is a plate, which extends from end to end of the boom, being secured along one of its edges to the cylinder behind the holes P. S′ is a like plate, which is placed at the other side of the holes P, but at a considerable distance from them, so as to be near the buoys M. Flat plates O extend from the inside of the plate S, at an angle of about forty-five degrees, toward the upper end of the boom. Their office is to arrest the oil on the stream and direct it toward the holes P. The sectional Fig. 7 shows the relative position of the plates on the cylinder.

Sheet No. 3 of the drawings shows another mode of arranging a boom. Fig. 8 is a plan, and Fig. 9 an end view, of a boom made in several sections, and united so as to be operated together or separately by means of ropes and pulleys. The sections may be of any style of boom—that is, like that marked I or like that marked L, save that they are short, and are arranged to lap past the ends of each other, but each a little behind another. A rope, U, is extended from shore to shore, or from a lifting apparatus to the shore.

V designates the sections of the boom. Ropes pass through the ends of each of the sections and beneath them, being united at a point, *d*, above, and are thence carried up to the rope U, where they are united to sheaves or pulley-blocks *x*, or to any other devices which are free to move along on the rope U.

The letter *a* designates a rope, both the ends of which are held on the shore, and which is carried around a pulley fixed at any point, Y, which is beyond the sheave *x* of the section to be operated on. One strand of the rope *a* is to be fastened at 1 to the rope of the said section, or to its sheave, when it is evident that upon drawing against one end of the rope, *a*, the section will be drawn in one direction, and by slacking that end and drawing against the other end it will be drawn in the opposite direction—that is, it will be thereby moved to and from the point Y. Each section may be arranged and operated in like manner. The object of this arrangement is to enable one to remove one of the sections at pleasure to make way for the passage of a boat or other object without disturbing the others. The angular position of the sections in the stream is effected by making the portions W W′ of the rope which passes beneath them either longer or shorter than the other, the part W being made the shorter if that end of the section is to be headed up stream.

The lifting device may be constructed in a different manner from that here shown, since there are many devices for lifting water which embrace the principle of the noria, and a pump may be used for that purpose.

The boom L is also made in sections, but the ends of the adjoining sections are connected by flexible tubes, so that one part of the boom can be deflected to permit the passage of a boat.

The lifting-wheel may be driven by means of a water-wheel fixed on the same shaft *c*, or by any other power. It will be observed that the oil is stopped by the curved plate, so as to present it in good position to be seized by the trough D of the lifting-wheel.

I do not claim, broadly, the hinged or swinging boom.

I claim as new and desire to secure by Letters Patent—

1. The lifting-wheel, with its troughs, as arranged in relation to the descending plate R, whether curved or vertical, all substantially as shown and described.

2. The arrangement of the sections V and ropes W W′, as described, pulleys *x*, ropes *a*, pulley Y, in combination with the rope U, suitably elevated, and operating in the manner and for the purpose herein described.

The above specification of my invention signed by me this 18th day of May, 1865.

ANDREW RALSTON.

Witnesses:
M. M. LIVINGSTON,
C. L. TOPLIFF.