

(No Model.)

2 Sheets—Sheet 1.

W. T. URIE.
DREDGING MACHINE.

No. 559,154.

Patented Apr. 28, 1896.

Fig. 3.

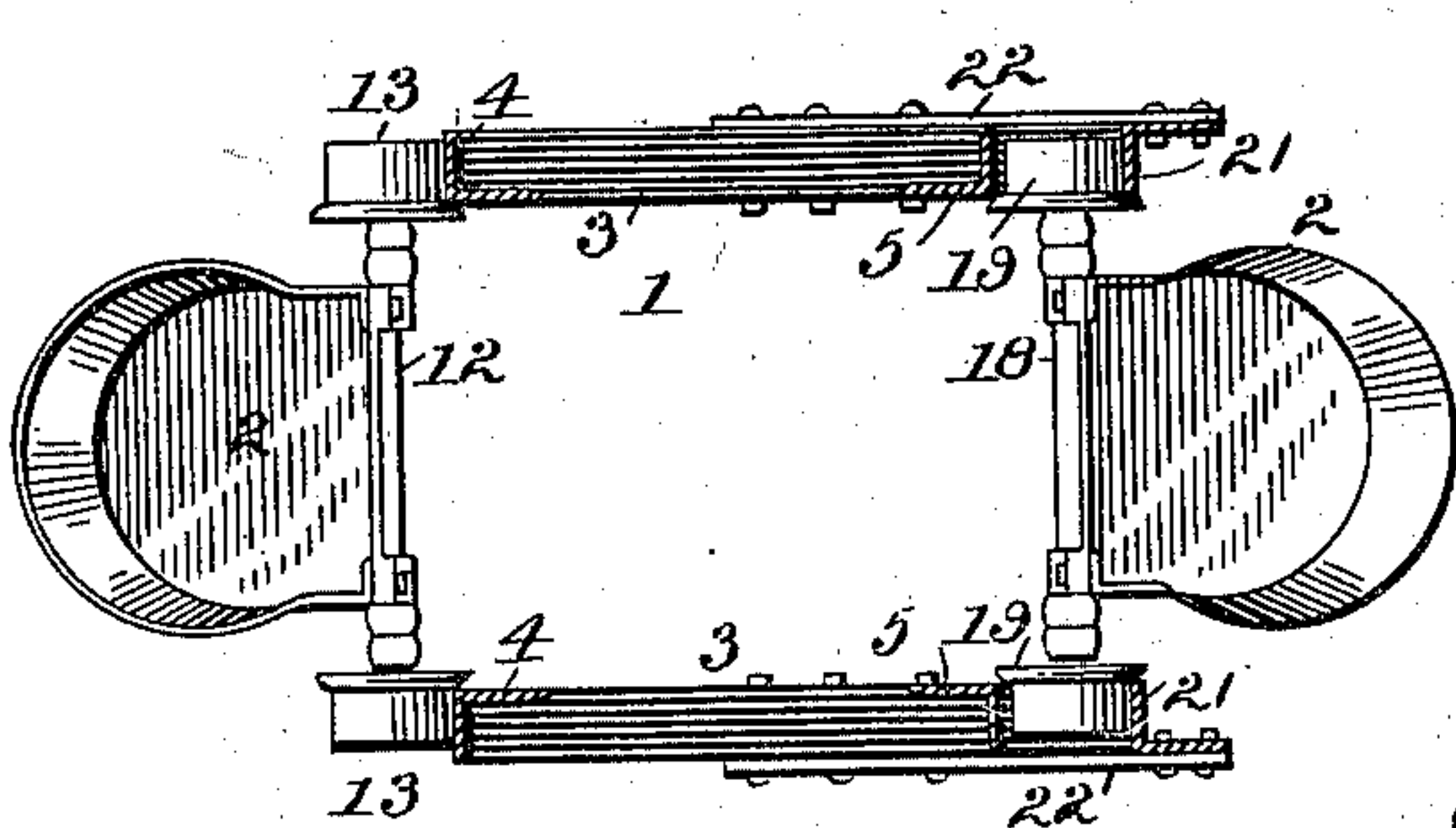
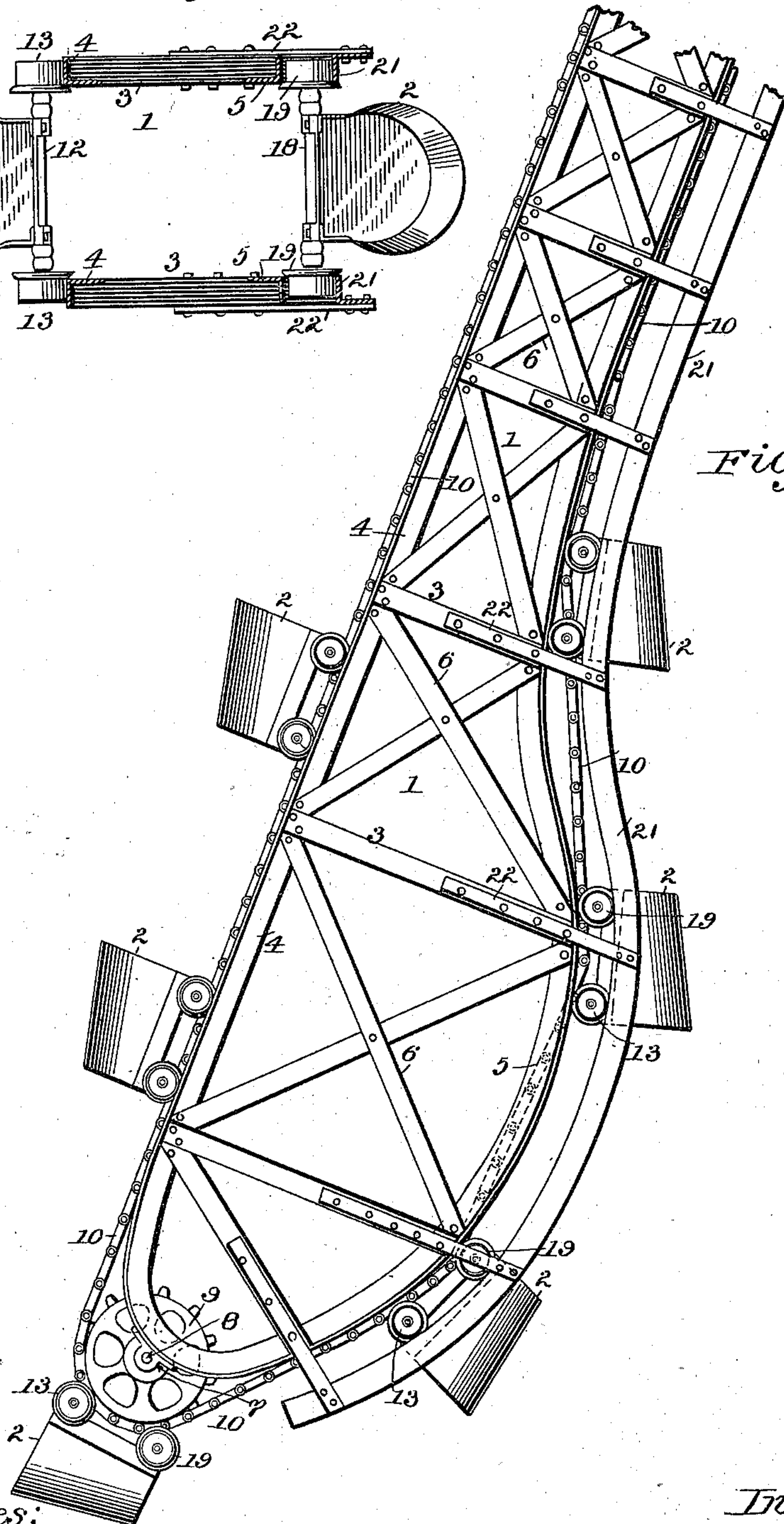


Fig. 1.



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Inventor:
William T. Urie
by *P. J. Dodge*
Att.

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2 Sheets—Sheet 2.

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Fig. 2.

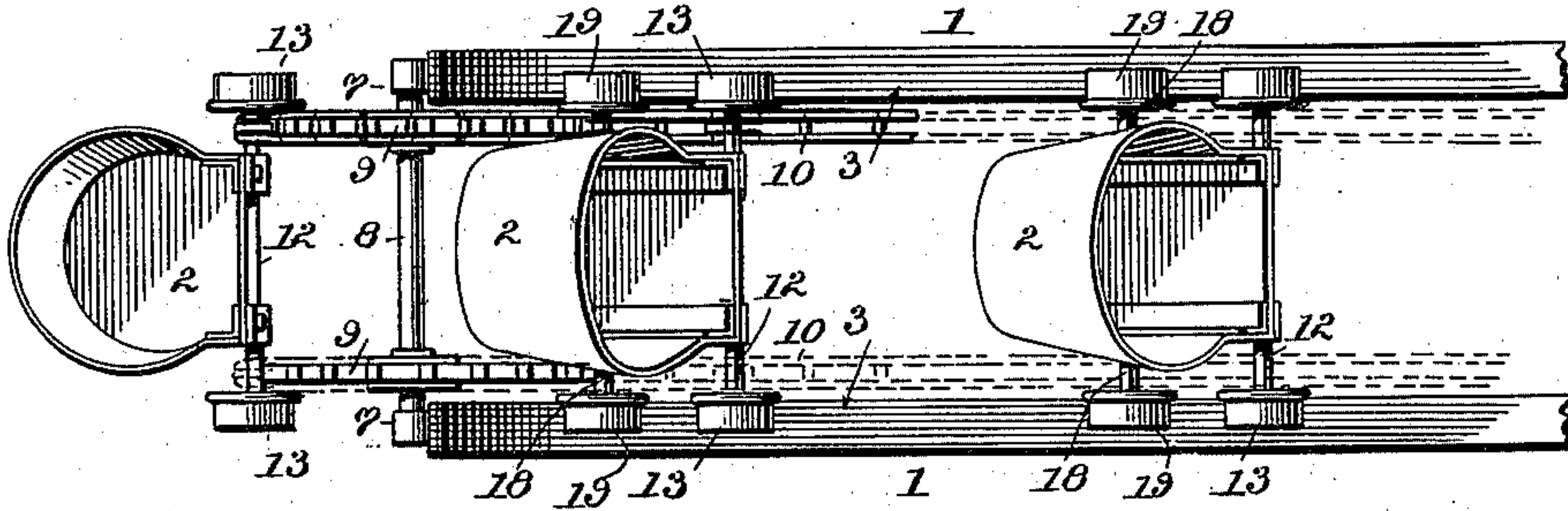
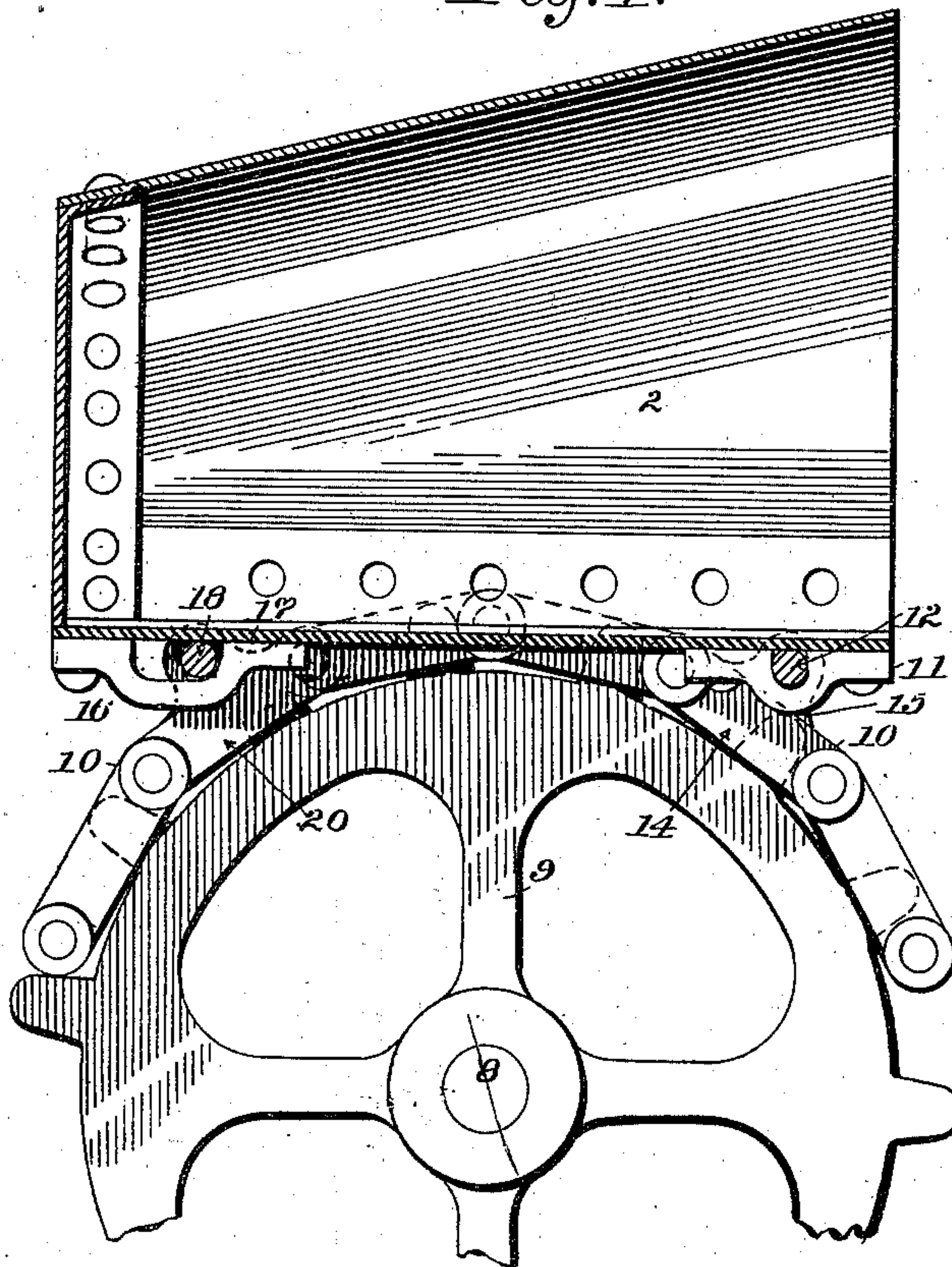


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM T. URIE, OF KANSAS CITY, MISSOURI.

DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,154, dated April 28, 1896.

Application filed August 17, 1895. Serial No. 559,581. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. URIE, of Kansas City, county of Jackson, and State of Missouri, have invented a new and useful Improvement in Dredging-Machines, of which the following is a specification.

My invention has reference to that type of excavating or dredging machines in which an endless chain of excavating-buckets is mounted on a frame or scow and which act to dig and elevate the soil to the same.

The invention consists in a ladder or frame of peculiar form and adapted to cause the excavator-buckets to operate with a true digging effect and to travel in a path most favorable for the effective dredging of the earth.

In the accompanying drawings, Figure 1 is a side elevation of the lower portion of a ladder and an endless chain of buckets passing around the same, said parts being constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a transverse section of the same. Fig. 4 is a longitudinal sectional elevation, on an enlarged scale, through one of the buckets, its carrying-chain, and the sprocket-wheel around which the chain passes.

In the drawings, 1 represents a ladder or frame around which travels an endless chain of excavating-buckets 2, which frame is sustained by a scow or like structure (not shown) in such manner as to be projected to the soil or earth to be dug. This ladder is preferably constructed of iron and comprises two side frames 3, suitably connected rigidly together a short distance apart and each consisting of an upper member 4 and a lower member 5 of angle-iron extending side by side and connected together at their ends, thus forming continuous tracks from one end of the ladder to the other at opposite sides. The two members of the side frames are suitably strengthened and held in fixed relations by braces 6. At their lower ends the two frames are each provided with a bearing 7, bolted thereto, in which is mounted a transverse shaft 8, carrying near its opposite ends two sprocket-wheels 9, around which pass two endless chains 10, the said chains being connected at intervals to the series of excavating-buckets 2, before alluded to. The buckets are formed flat on the side nearest the chains, and at their front

on opposite sides they are each provided with two bearings 11, in which a transverse shaft 12 is mounted, the end of the said shaft being provided with carrying-wheels 13, adapted to travel on the endless tracks of the side frames. The chains are connected to this shaft by means of links 14, formed on one edge with a projecting portion 15, having an opening through which the shaft passes. At its rear each bucket is provided with two bearings 16, each containing an elongated slot 17, in which a transverse shaft 18 is mounted, carrying on its ends wheels 19, adapted to travel on the tracks around the ladder. The chains are connected to this shaft in a manner similar to their connection to the forward shaft, by means of links 20, having projections with openings through which the shaft extends.

From the foregoing description it will be seen that the buckets are connected at their front and rear ends to the chains, and as a consequence they will be presented by the chains positively and without any tipping to the soil to be dug, the result being that they will act on the soil in the most effective manner. It will further be observed that by mounting the rear shaft in elongated slots or bearings the bucket is permitted to move to a limited extent independently of the shaft. This is of advantage in that it permits the use of long buckets, which when carried by the chains around the comparatively small sprocket-wheels at the ends of the ladder will tip upward slightly at their rear ends, the shaft moving to the forward ends of the slots, as shown in Fig. 4.

In order that the buckets as they are carried downward to dig the soil may move in a long sweeping path, which is the most favorable for effective action, I extend the lower members or tracks of the side frames in a gradual curve downward at the lower end of the ladder, as shown in Fig. 1, and then curve the members up again and join the upper members in a more abrupt curve. At these points are located the two bearings 7 before alluded to, in which the shaft carrying the sprocket-wheels is mounted. The size of these sprocket-wheels and their relative location are such that the chains in passing from the lower members around the wheels will extend in a nearly straight line, forming in effect a

continuation of the long downward curvature of the said members. From this description it will be seen that the buckets are carried downward to their work in a long, easy, gradual curve until they arrive at the end of their effective stroke, when they will pass abruptly and suddenly over the sprocket-wheels, and will be carried upward along the ladder to discharge the contents. This long sweeping action of the buckets causes them to act with a true digging effect, which gradually deepens as the lower end of the ladder is approached, the result being that the buckets are filled easily and are not subjected to the severe tugging and violent strains which follow the use of buckets where the digging is effected on a sudden curvature.

In order that the buckets may be positively guided as they are carried along the lower members or tracks, and in order that when in action their carrying-wheels will be prevented from leaving the tracks, I provide secondary tracks 21, which are sustained a slight distance from the lower tracks, the two forming in effect a channel in which the wheels travel, as shown in Fig. 3. The secondary tracks are formed of angle-iron and are firmly bolted to the inner sides of the lower ends of bars 22, extending downward from the side frames, as

shown in Figs. 1 and 3. The carrying-wheels of the buckets travel on these secondary tracks as they are carried along the lower side of the ladder, and passing between the two tracks they are guided truly and positively and held firmly to their work.

Having thus described my invention, what I claim is—

The improved ladder for a dredge having a straight, or substantially straight, upper edge or track and a lower edge or track extending parallel, or substantially so, to the upper edge for a portion of its length, then extending outward and downward from the same in an easy sweeping curve and finally returning to the upper edge at its end by a similar curve, in combination with a chain of excavators sustained by said ladder and adapted to travel around the track; whereby the descending buckets will be caused to act with a long continuous curved stroke at the lower end of the ladder.

In testimony whereof I hereunto set my hand, this 25th day of June, 1895, in the presence of two attesting witnesses.

WILLIAM T. URIE.

Witnesses:

JOHN A. BRANIFF,
JOHN W. GISH.