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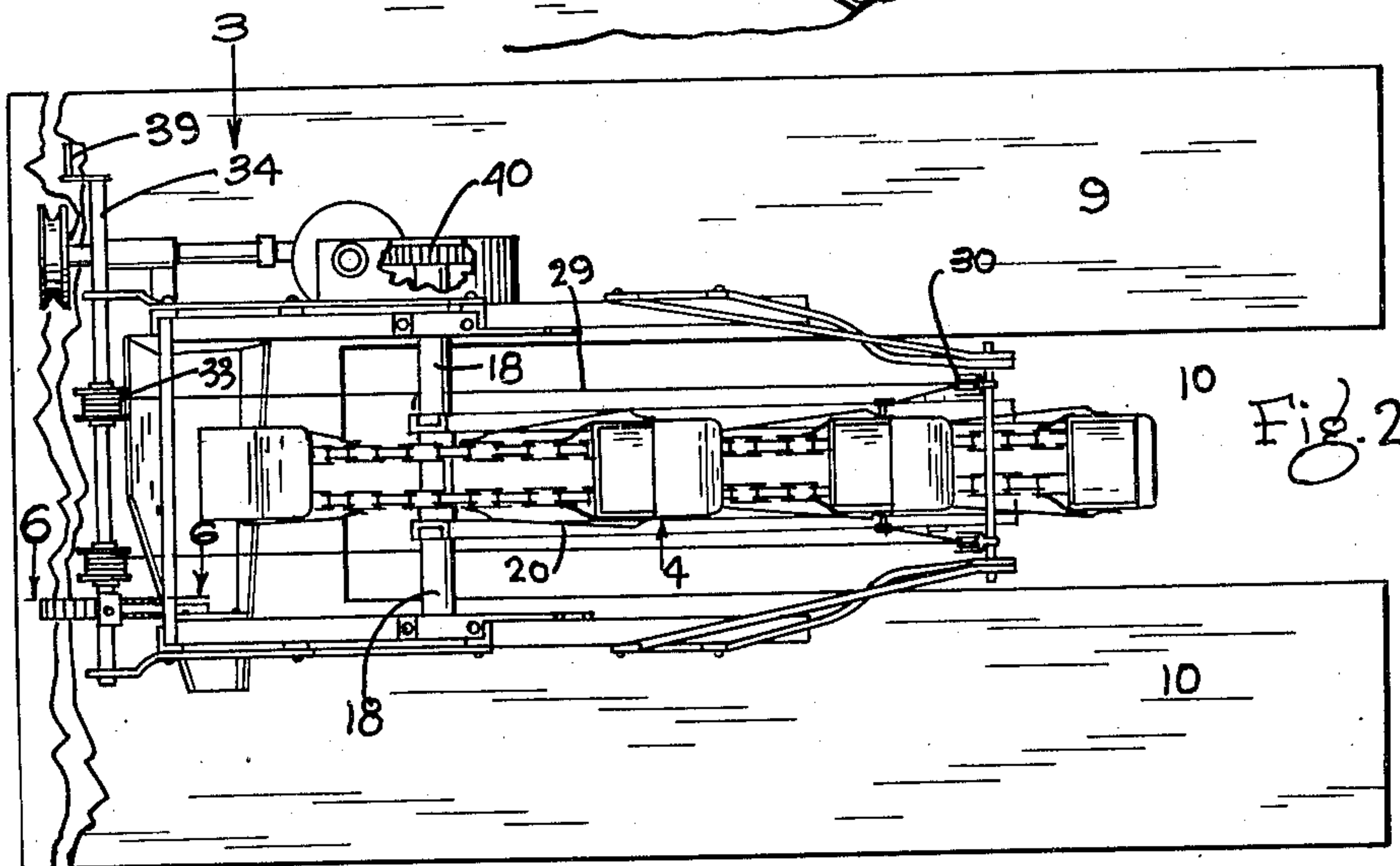
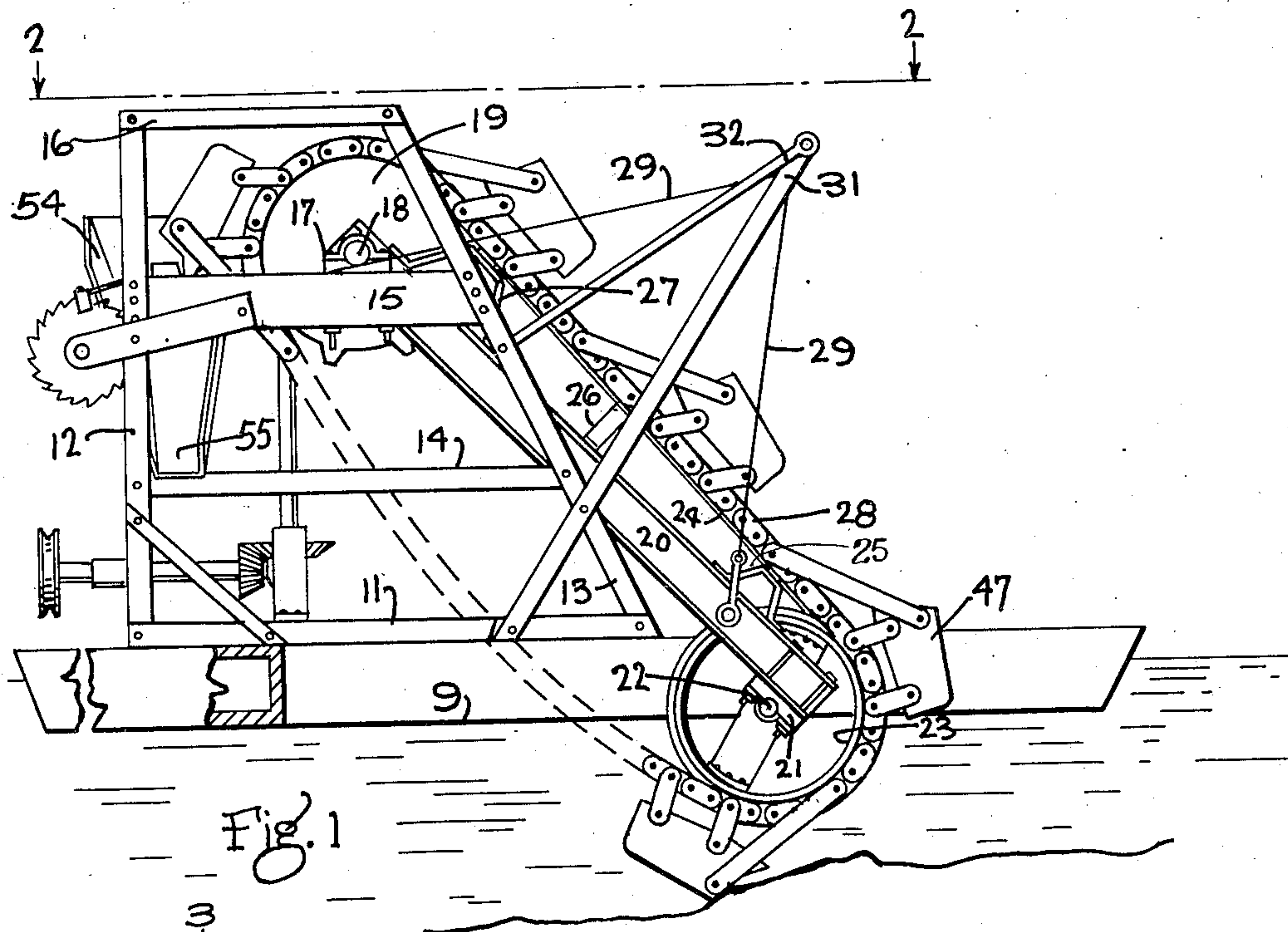
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2,022,300

DREDGE CONVEYER

Filed Nov. 22, 1934

2 Sheets-Sheet 1



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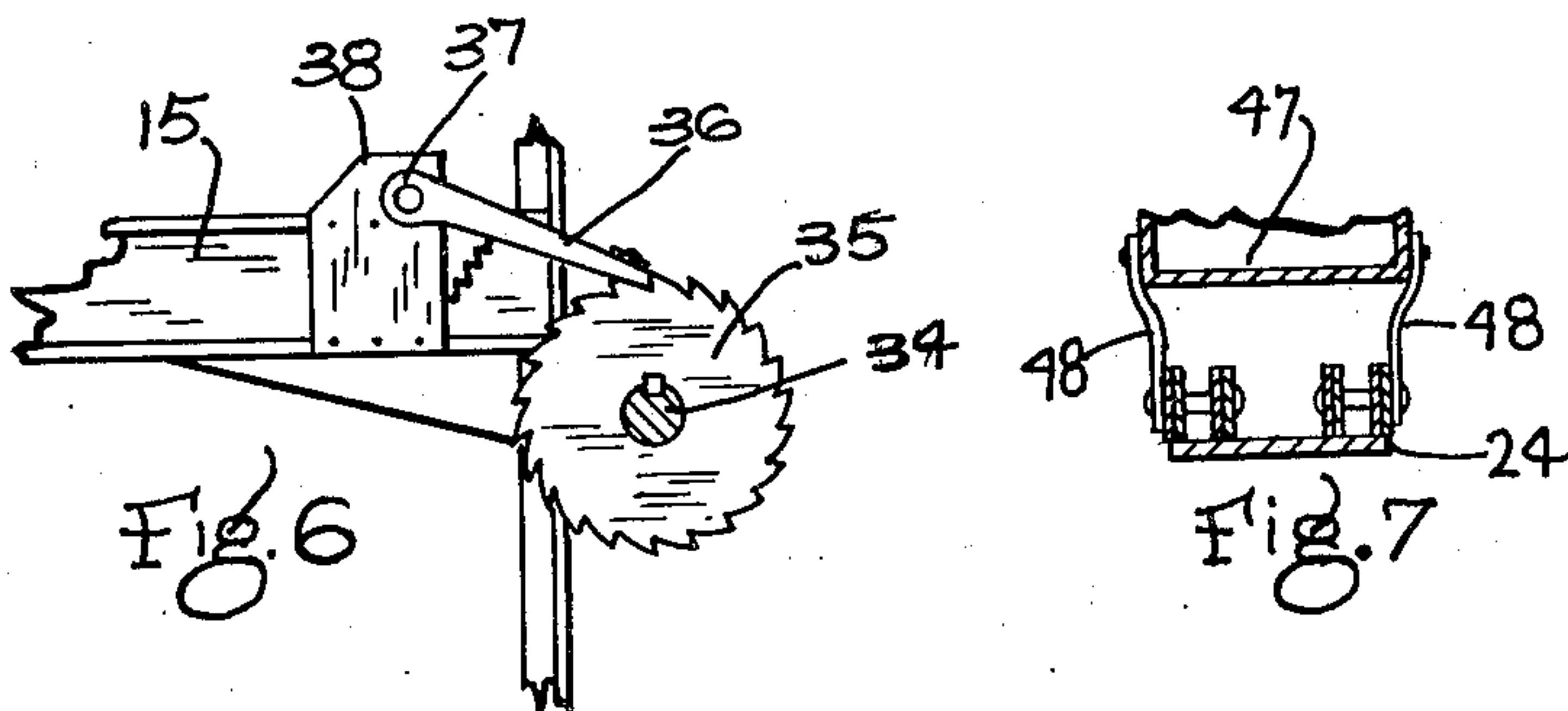
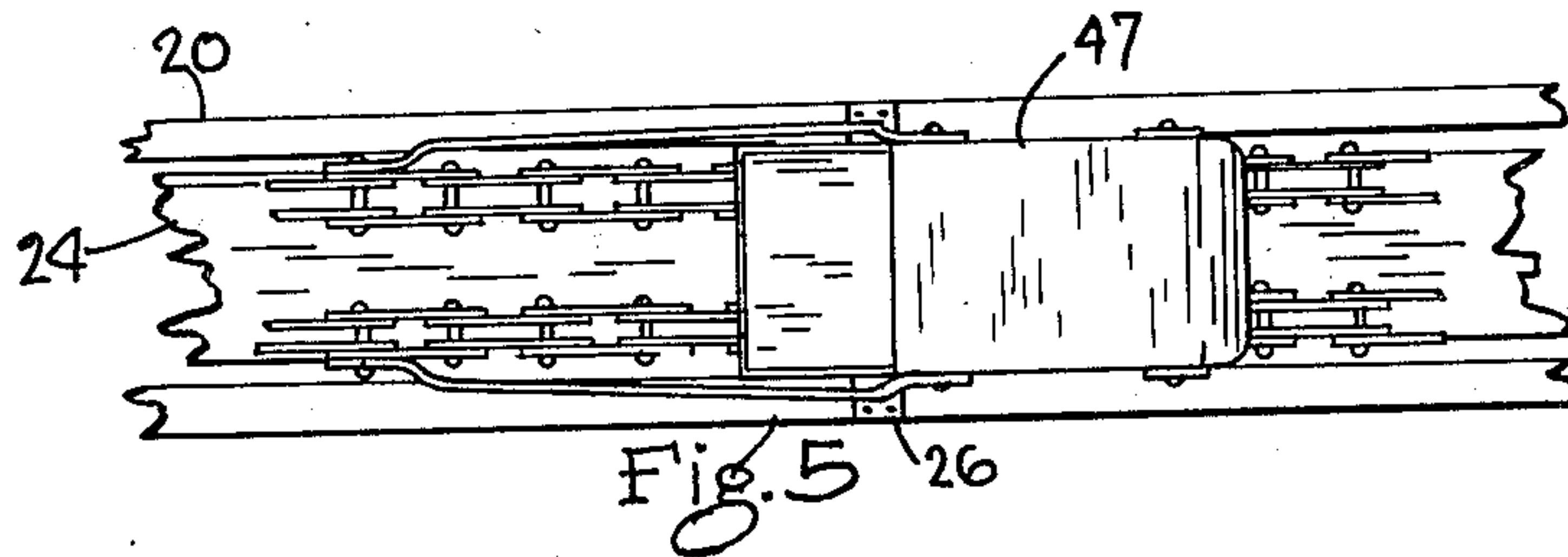
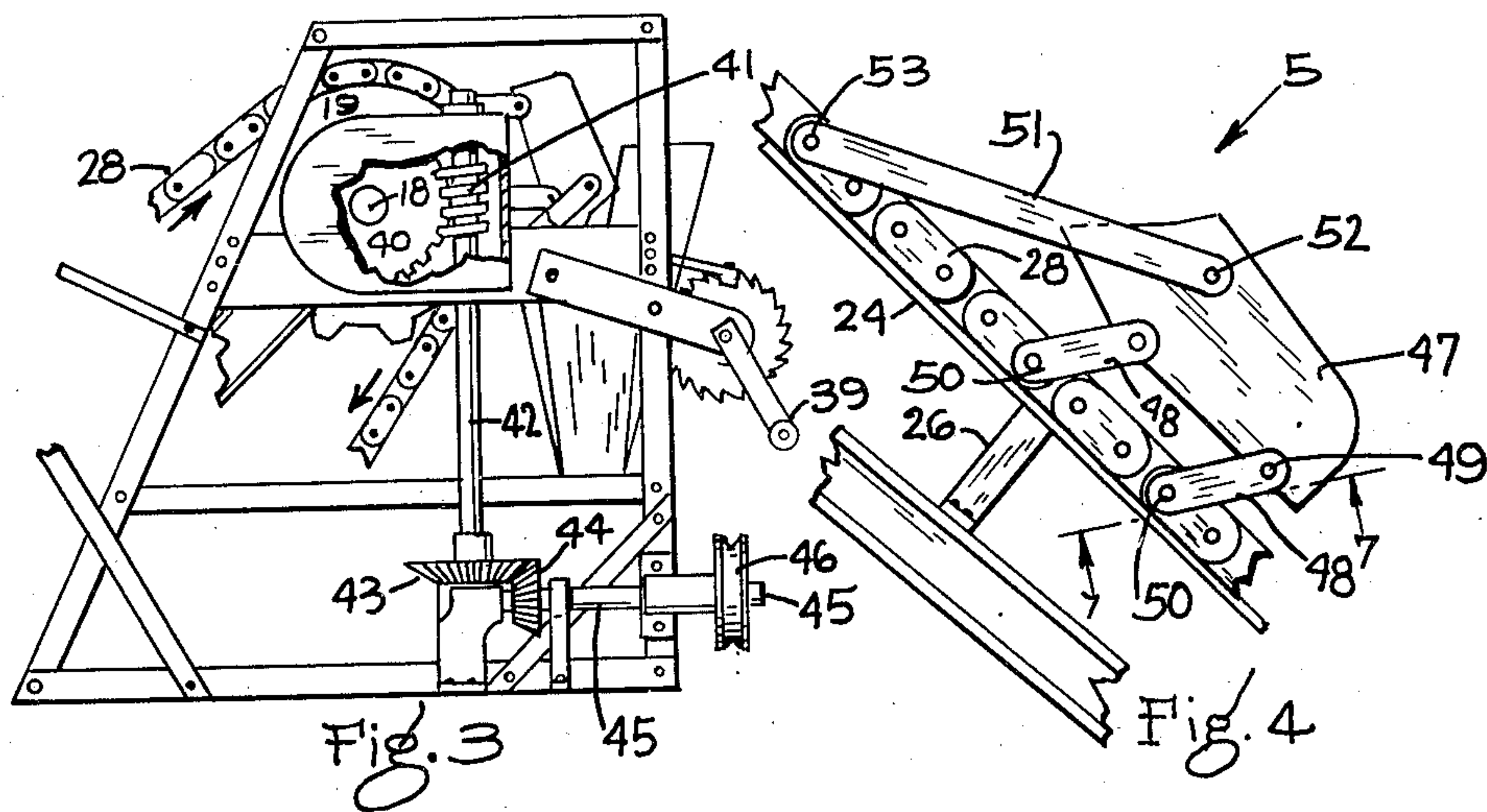
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DREDGE CONVEYER

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2 Sheets-Sheet 2



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DREDGE CONVEYER

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5 Claims. (Cl. 37—69)

This invention relates to improvements in dredges and has reference more particularly to the construction of the conveyer and dredging buckets and the manner in which the latter are connected with the conveyer chain.

In dredging operations for the purpose of obtaining placer gravel for placer mining and for increasing the depths of streams and harbors, as well as in many other places, it is customary to provide an endless conveyer belt which is mounted on sprocket wheels and rollers carried by a pivoted arm and to attach to such belt a number of buckets in such a way that when the conveyer belt is moved, the buckets will dig into the bottom of the river or other body of water and fill themselves with material from the bottom and will then carry the material upwardly and empty it into a hopper from which it can be directed into a placer mining machine, if the apparatus is used for placer mining, or into a scow, if the apparatus is used for deepening the bottoms of harbors or rivers so as to facilitate navigation.

Having thus briefly described the objects of the invention, the construction of the apparatus will now be described in detail, and for this purpose reference will be had to the accompanying drawings in which the apparatus has been illustrated in its preferred form, and in which:

Fig. 1 is a side elevation, partly in section, showing the apparatus that forms the subject of this invention;

Fig. 2 is a top plan view of the apparatus;

Fig. 3 is a side elevation of a portion of the apparatus looking in the direction of arrow 3, Fig. 2;

Fig. 4 is a side elevation to a somewhat enlarged scale of the section of the conveyer and shows one of the buckets connected therewith;

Fig. 5 is a view looking in the direction of arrow 5 in Fig. 4;

Fig. 6 is a view taken along line 6—6, in Fig. 2, and shows the construction of the pawl associated with the winch employed for adjusting the conveyer; and

Fig. 7 is a section taken on line 7—7, Fig. 4.

For the purpose of this description the apparatus has been shown as supported on a scow 9. This scow is constructed so as to float on the water in the usual way and has a central opening 10 through which the conveyer extends. The conveyer consists of a framework having two parallel bottom members 11 from one end of which vertical corner posts 12 extend. From the other ends of members 11, inclined corner posts 13 extend upwardly. The posts 12 and 13 are connected by means of beams 14, 15 and 16. The

beam indicated by reference numeral 16 is a channel beam of a considerable width. The two sides of the frame are connected in a manner customary with such framework, but which has not been shown here as it is considered to be immaterial as the invention relates to other features of the apparatus. Supported on the upper flanges of beams 15 are bearings 17 in which is journaled a shaft 18. Attached to the shaft are two sprocket wheels 19. Pivotaly connected with the shaft 18, are two channel irons 20 that are interconnected by suitable transverse braces which have not been shown. Secured to the outer ends of the channel beams 20, and resting against the lower flanges, are bearing blocks 21 in which the shaft 22 is rotatably mounted. Carried by the shaft 22 are two spaced rollers 23. The rollers are so positioned that they lie in the same plane as the corresponding sprocket wheel on shaft 18. A plate 24 is supported from the upper flanges of the beams 20 by means of brackets 25, 26, and 27. The plate 24 is preferably of the same width as the distance between the outer surfaces of the sprocket wheels 19. Two link conveyer chains 28 are provided, one for each sprocket wheel. Each conveyer chain extends around a sprocket wheel and around a roller 23. The chains are made up of iron plates as shown in Figs. 4 and 5. When the shaft 18 rotates, it also rotates the sprocket wheels 19 and moves the two conveyer belts or chains 28. The beams 20 have their free ends supported by means of two steel cables 29. These cables pass over pulleys 30 supported by the frame work comprising the compression member 31 and the tension member 32. The steel cables extend rearwardly and are wrapped onto drums 33 that are secured to the shaft 34.

Referring now to Fig. 6, it will be seen that the shaft 34 is also provided with a ratchet wheel 35 with which a pawl 36 cooperates. This pawl is pivoted at 37 to a plate 38 carried by one of the channel beams 15. The shaft 34 can be rotated in any suitable way and a crank 39 has been shown as the means for rotating this shaft, although in actual operation mechanism will be provided for turning it by power derived from the same prime mover that operates the conveyer.

For the purpose of operating the conveyer and rotating the shaft 18, the latter has been provided at one end with a worm gear 40 that cooperates with a worm 41 carried on the vertical shaft 42. The shaft 42 is provided at its lower end with a bevel gear 43 that cooperates with

a pinion 44 on the shaft 45. A pulley 46 is also secured to the shaft 45 and can be driven from an internal combustion engine or any other form of motor. Whenever the shaft 45 is rotated, the shaft 18 will also be rotated and during operation the direction of rotation is such that the conveyer belt or chains travel in the direction indicated by the arrows in Fig. 3.

Secured to the conveyer chains are buckets 47. These buckets are made from steel plates and are provided on each side with a pair of links 48 which are pivoted to the bucket as indicated at 49 and have their other ends pivotally connected with the pivots of the chain as indicated by reference numeral 50. Elongated links 51 have one of their ends pivoted to the bucket at 52 and the other end pivoted to the chain at 53, all as shown in Fig. 4. It will be seen from Fig. 4 that the buckets are connected to the sprocket chains in such a way that they will not interfere with the bending of the chain as it passes around the sprocket wheels and the rollers and at the same time the buckets will be firmly anchored to the chains by means of the links 51 so as to resist the strains to which they will be subjected when contacting with the bottom of the river or other body of water in the manner shown in Fig. 1. After the buckets have been filled they will move upwardly with the movement of the sprocket chains and finally pass over the highest portion of the sprocket wheels 19, after which they will begin to tilt downwardly and the contents will then be emptied into the hopper 54. The hopper has a spout 55 from which alunders can extend to any machine or any other apparatus to which the contents of the buckets are to be conveyed for further treatment.

It will be seen from the above description that the apparatus that forms the subject of this invention is so constructed that it will have great strength and a large capacity and that it is admirably suited for use wherever any dredging operations are to be performed.

If the apparatus is to be used for digging a trench or in places where water is not available for floating the same, the apparatus can be fastened to runners and supported from the surface of the ground while the dredging apparatus is at work digging a trench or performing some other useful operation. The whole apparatus can be moved forward on the ground by means of a tractor or some other powerful traction device.

Particular attention is called to the manner in which the buckets are secured to the conveyer chains as this has been found to be especially desirable as it produces a movement of the bucket at the time of filling, which has a tendency to decrease the power required to operate the machine and also to make it possible to fill the buckets to capacity. This action of the buckets is due to the sudden tilting produced as the buckets start rotating about the center of shaft 22.

Having described the invention what is claimed as new is:

1. A dredging device comprising, in combination, a supporting frame formed from two spaced members, a shaft extending between the frame members and mounted for rotation, a sprocket wheel on the shaft, a pair of beams having one end pivoted to the shaft, a drum rotatably connected with the beams near their outer ends, a chain encircling the sprocket wheel and the drum,

means for adjusting the beams about the shaft as a pivot, a plurality of dredge buckets carried by the chain, means for attaching the buckets to the chain comprising two pairs of short links, one pair on each side, the said links being pivotally connected to the bucket at one end and to the chain at the other end, and a pair of long links extending forwardly from the open end of each bucket, one end of each long link being pivoted to the chain and the other to the bucket.

2. A dredging device comprising, in combination, a supporting frame formed from two spaced members, a shaft extending between the frame members and mounted for rotation, a sprocket wheel on the shaft, a pair of beams having one end pivoted to the shaft, a drum rotatably connected with the beams near their outer ends, a chain encircling the sprocket wheel and the drum, means for adjusting the beams about the shaft as a pivot, a plurality of dredge buckets carried by the chain, means for attaching the buckets to the chain comprising two pairs of short links, one pair on each side, the said links being pivotally connected to the bucket at one end and to the chain at the other end, a pair of long links extending forwardly from the open end of each bucket, one end of each long link being pivoted to the chain and the other to the bucket, and means for rotating the shaft.

3. A dredging device comprising, in combination, a supporting frame formed from two spaced members, a shaft extending between the frame members and mounted for rotation, a sprocket wheel on the shaft, a pair of beams having one end pivoted to the shaft, a drum rotatably connected with the beams near their outer ends, a chain encircling the sprocket wheel and the drum, means for adjusting the beams about the shaft as a pivot, a plurality of dredge buckets carried by the chain, means for attaching the buckets to the chain comprising two pairs of short links, one pair on each side, the said links being pivotally connected to the bucket at one end and to the chain at the other end, a pair of long links extending forwardly from the open end of each bucket, one end of each long link being pivoted to the chain and the other to the bucket, and a chain supporting plate located above the beams and supported from the latter by means of suitable brackets.

4. A bucket conveyer for use with a dredging device comprising a chain, a plurality of buckets carried by the chain, and means for attaching the buckets to the chain, said means comprising a pair of short links on each side of the bucket, one end of each link being pivoted to the chain and the other to the bucket, and a long link pivoted to each side of the bucket and extending forwardly from the open end thereof, the other ends of the long links being pivotally connected to the chain.

5. A bucket conveyer for use with a dredging device comprising a chain, a plurality of buckets carried by the chain, and means for attaching the buckets to the chain, said means comprising a pair of short links on each side of the bucket, one end of each link being pivoted to the chain and the other to the bucket, and a long link having one end pivotally connected with the open end of the bucket and the other pivotally connected with the chain in front of the bucket.

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