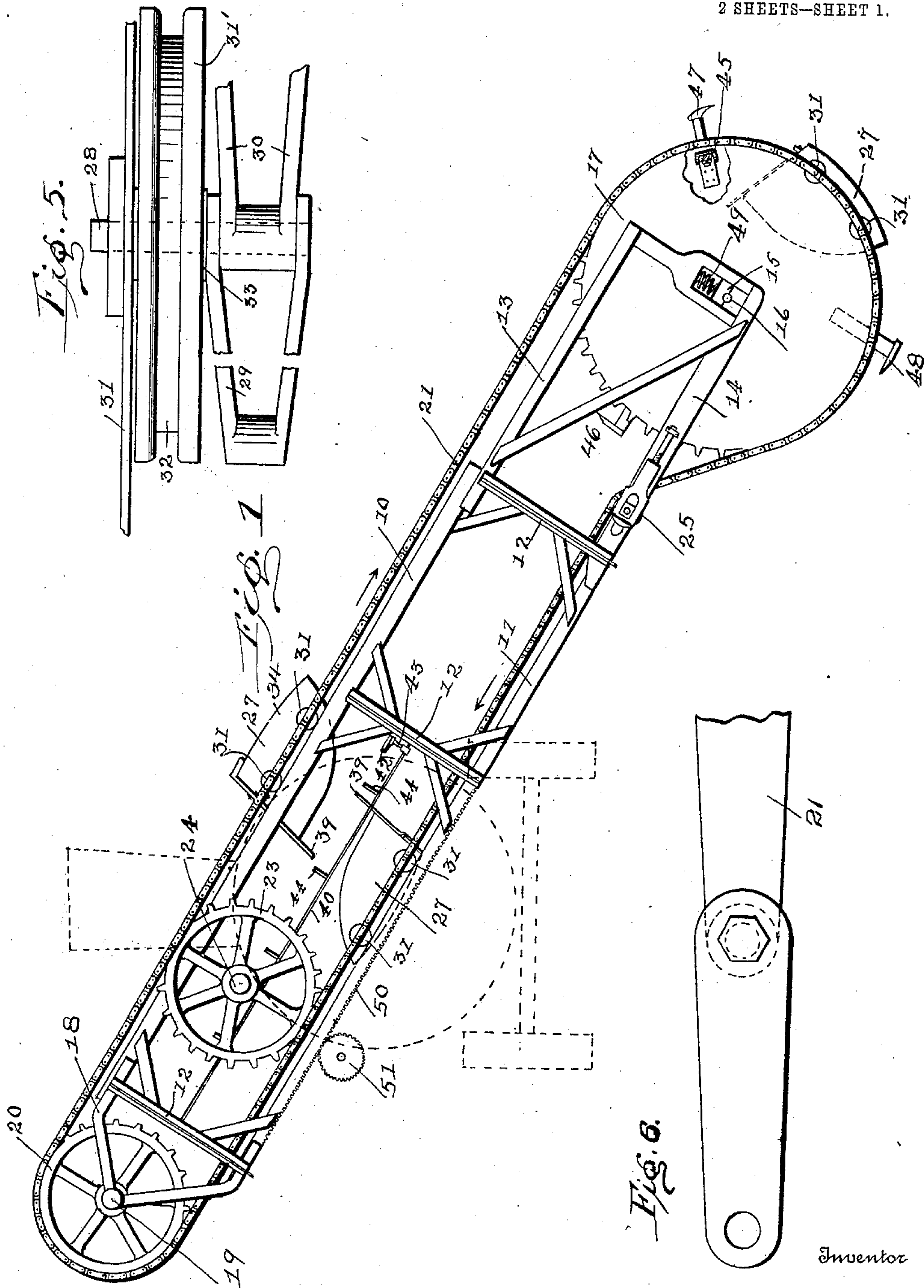


No. 839,949.

PATENTED JAN. 1, 1907.

S. OLSON.
EXCAVATING MACHINE.
APPLICATION FILED APR. 3, 1906.

2 SHEETS—SHEET 1.



Witnesses
W. C. Isel.
D. L. Merrill.

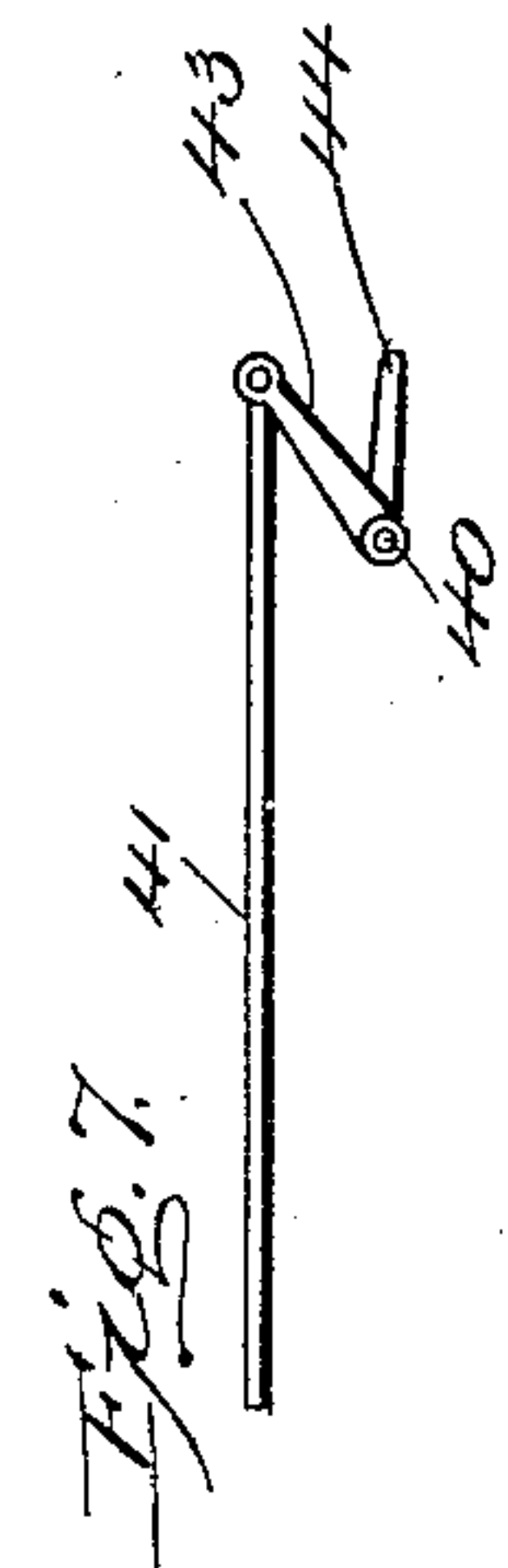
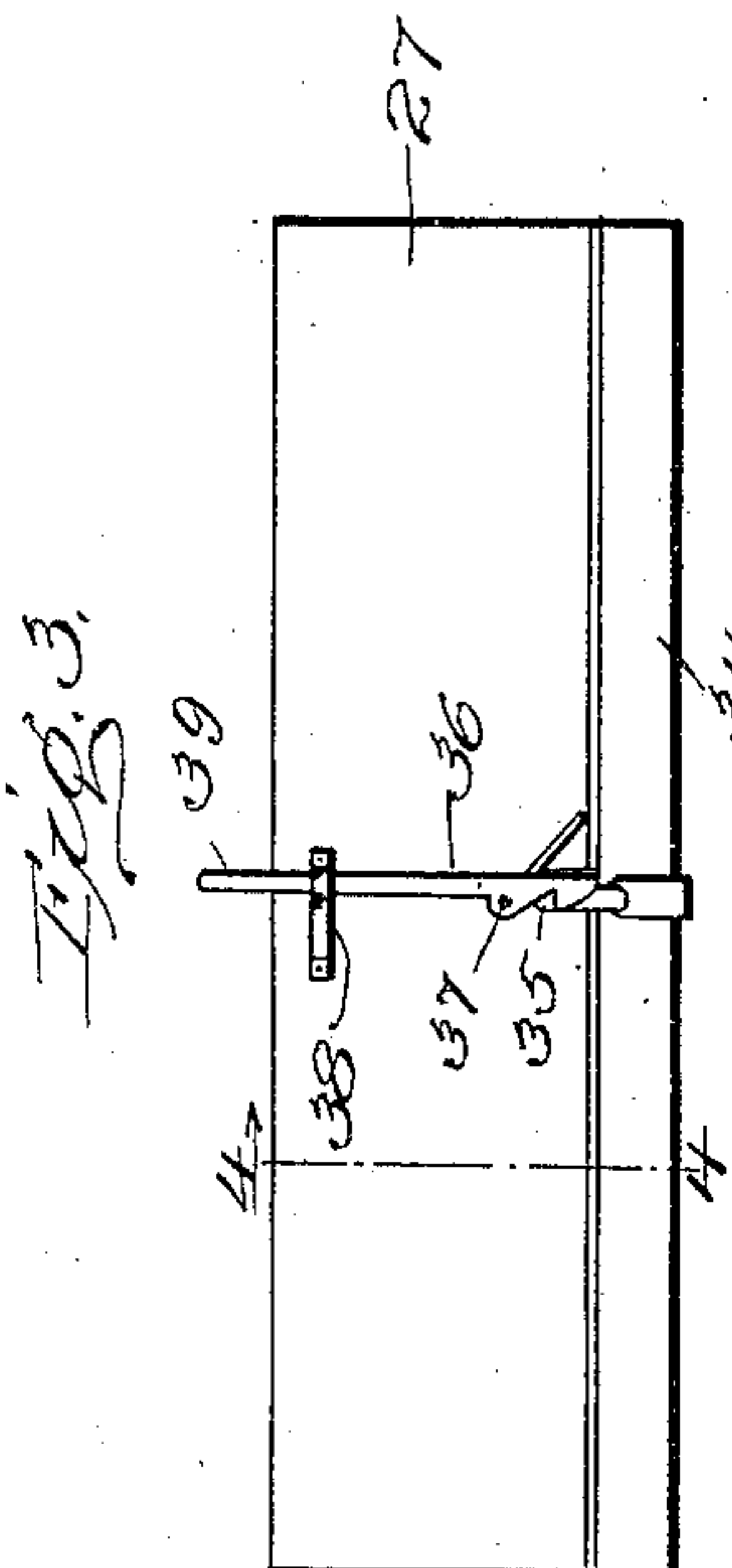
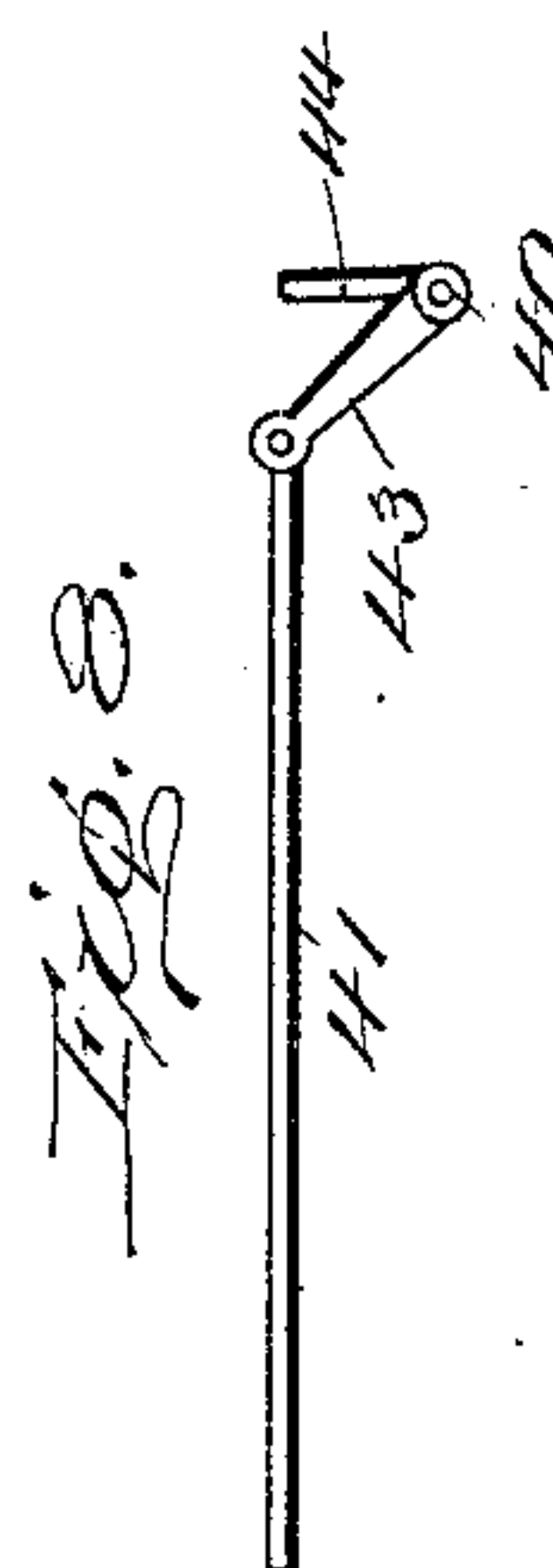
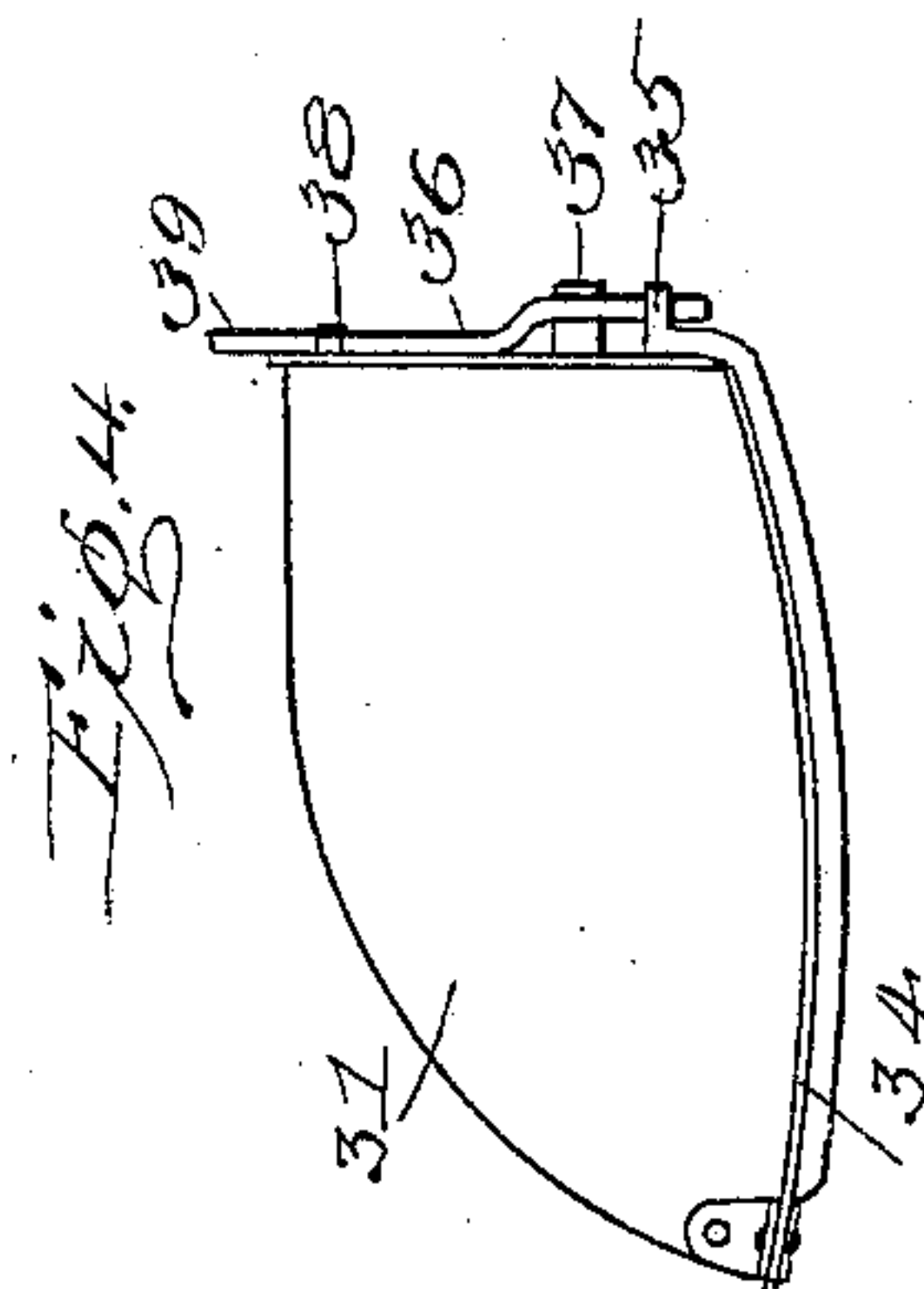
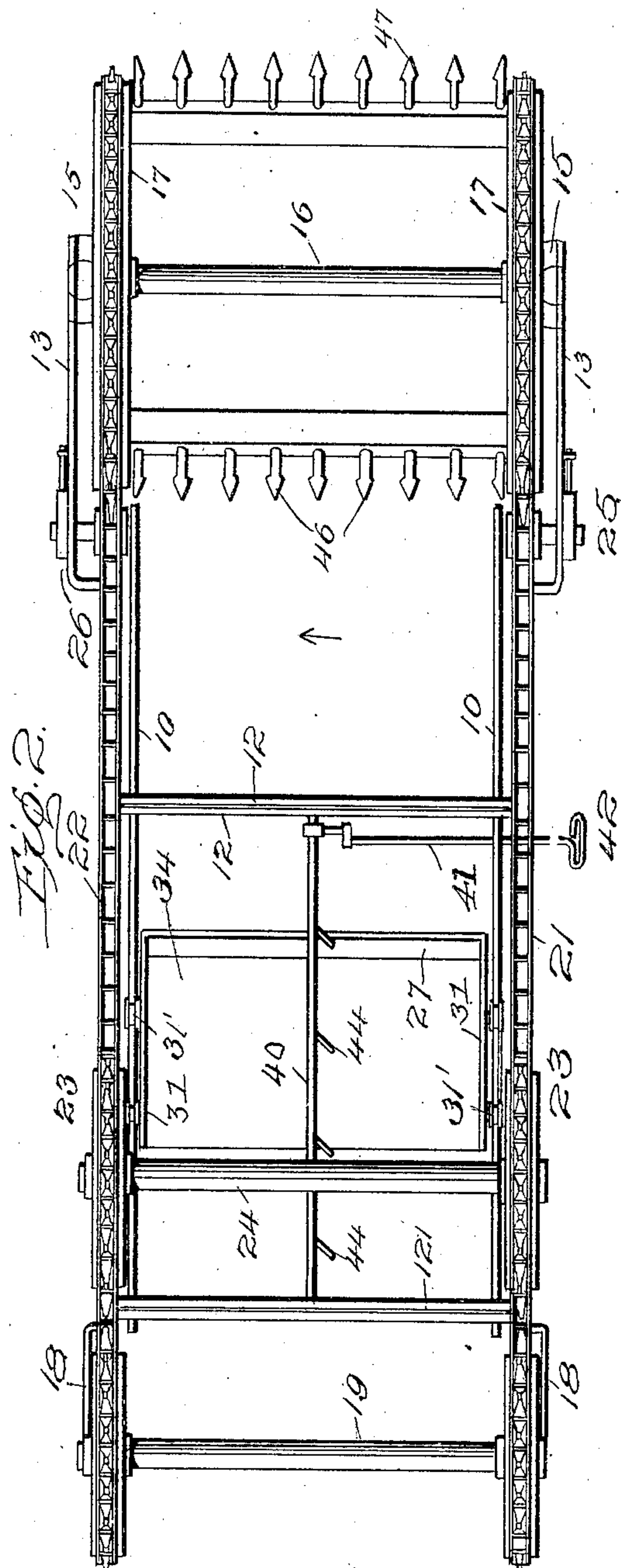
By
Sivert Olson.
Mason Fenwick & Lawrence,
Attorney

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2 SHEETS—SHEET 2.



Inventor

Witnesses

W. C. Isel.
L. C. Merrill.

By Siver Olson.
Masou Furwick & Lawrence,
Attorney.

UNITED STATES PATENT OFFICE.

SIVERT OLSON, OF PETERSBURG, NORTH DAKOTA.

EXCAVATING-MACHINE.

No. 839,949.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed April 3, 1906. Serial No. 309,676.

To all whom it may concern:

Be it known that I, SIVERT OLSON, a citizen of the United States, residing at Petersburg, in the county of Nelson and State of North Dakota, have invented certain new and useful Improvements in Excavating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to excavating-machines, and has for an object to provide a machine of the class adapted for attachment to and use upon a traction-engine of the usual and ordinary construction.

A further object of the invention is to provide a device of the class especially adapted for constructing ditches and embankments and for grading and constructing dumps and highways and embodying new and improved features of convenience, utility, and efficiency.

A further object of the invention is to provide a machine of the class embodying a rotating cylinder carrying a plurality of digging points and knives adapted to loosen the earth and serving as a drum upon which operates an endless conveyer provided with buckets.

A further object of the invention is to provide in an excavator of the class improved means for dumping the conveyer-buckets at any predetermined and desired place or at such place or places as may be determined upon by the operator while the machine is in operation.

A further object of the invention is to provide a bucket of improved form for operation upon a conveyer of the class and provided with a hinged bottom for dumping and improved means for releasing the engagement by which the bottom is held in closed position upon the bucket.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a view of the improved excavating-machine in side elevation. Fig. 2 is a top plan view of the excavating-machine. Fig. 3 is a rear end elevation of the bucket, showing the means for engaging and retaining the hinged bottom in closed position. Fig. 4 is a longitudinal sec-

tional view through the improved bucket, taken on line 4 4 of Fig. 3. Fig. 5 is a detail view of the conveyer-chain and one of the carrier-wheels. Fig. 6 is a detail view of the conveyer-chain in side elevation. Fig. 7 is a detail view, in side elevation, of the means for releasing the bottom of the bucket, shown in operative position. Fig. 8 is a detail view, in side elevation, of the bottom-releasing means shown in inoperative position.

Like characters of reference designate corresponding parts throughout the several views.

In its preferred embodiment the excavator forming the subject-matter of this application comprises spaced guide or track pieces 10 and 11, rigidly connected in any approved manner, as by the braces 12. At their lower ends the track-pieces 10 and 11 are provided with extensions 13 and 14, offset laterally from the pieces 10 and 11 and provided with bearings 15, in which is mounted a shaft 16, carrying rigidly mounted thereupon sprocket-wheels 17. At their upper ends the track-pieces 10 and 11 are continued by brackets 18, offset laterally from the said track in alinement with the brackets 13 and 14 and forming bearings for the shaft 19. Upon the shaft 19 are mounted the sprocket-wheels 20, and over the said sprocket-wheels are passed the chains 21 and 22.

The chains 21 and 22 are operated and given rotary movement by means of sprockets 23, rigidly mounted upon a shaft 24, which extends rearwardly beyond the lines of the machine and adapted for connection in any approved manner with a rotating part upon a traction-engine upon which the device may be mounted. It will be noted that the chains 21 and 22 engage the sprocket-wheel 23 upon opposite sides and that the chains pass over the chain-tighteners 25 and 26, by means of which the proper tension is maintained upon the chain. The chains 21 and 22 are provided with buckets 27, preferably three in number, although it is obvious that any approved number may be employed. The buckets 27 are attached to the chains 21 and 22 by means of bolts 28, extended through registering openings in engaging ends of links, as 29 and 30, of the said chain and also inserted through the side wall, as 31, of the said bucket. Between each of the chains and its adjacent side wall is interposed a bearing-wheel 31', provided

with a groove, as 32, proportioned and arranged to operate upon the track-pieces 10 and 11 and between the chain and wheel, and between the wheel and bucket side are interposed spacing-washers 33.

The buckets 27 are constructed with the side walls 31 and a bottom 34, preferably curved upon an arc to correspond approximately with the arc of the sprocket-wheel 17, which said bottom is hinged at the forward end of the side walls 31 and is provided at its rearward end with a lug 35, positioned for engagement by a spring-actuated detent 36, pivoted, as at 37, upon the rearward wall 15 of the bucket. The detent 36 extends upwardly through a keeper 38 and is provided with an extended end 39 above the lines of the bucket in normal position.

Extending longitudinally of the device 20 and substantially midway between the track-pieces 10 and 11 is mounted a rod 40, arranged to be moved rotatably through an arc of substantially ninety degrees by means of the rod 41, extending rearwardly of the device and provided with a handhold 42 and connected with the rod 40 by means of the lever 43. Spaced at any desired intervals along the rod 40 are a plurality of fingers 44, arranged when in operative position to engage the upper extended end 39 of the detent 36 to move the said detent against the tension of its spring to release the lug 35 and the hinged bottom 34. The sprocket-wheels 17 are provided with a plurality—35 preferably three—of bars, as 45, carrying diggers, as the teeth 46 and 47 and the cutting edge 48, arranged and adapted to loosen the earth with which they come into contact. To prevent breakage of the machine, the bearings 15 are provided with springs, as 49, which permit a movement of the shaft 16 transversely of the frame, so that the diggers carried by the sprockets 17 when they encounter an obstacle may rise and pass above 45 said obstacle without breaking the machine. The device may be mounted in any approved manner upon the forward end of a traction-engine and will preferably be provided along the lower side of the track-pieces 11 with 50 cogs 50, engaged by a pinion 51, which may be in any approved manner rotated to move the entire device longitudinally relative to the engine, the sprocket-wheel 23 remaining stationary relative to the engine and the 55 device moving in relation thereto.

In operation the device is mounted upon the forward end of the traction-engine at an angle and moves as a whole, as indicated by the arrow in Fig. 2, and, as indicated in Fig. 60 1, with the diggers carried upon sprocket 17 in operative contact with the ground. As the sprockets 23 are positively driven the chains 21 and 22 are moved thereby and in turn move the sprockets 17 and their associated diggers. The diggers, as shown,

loosen and prepare the earth for engagement by the buckets 27, which are so spaced upon the chains 21 and 22 that they pass over and about the sprockets 17 between the diggers. The bottoms 34 of the buckets being curved 70 to correspond substantially with the curvature of the sprockets, the said buckets will properly engage the earth and by reason of their movement will become filled with the earth and move, as indicated, upon the inclination to a position beneath the rod 40. 75 When the buckets have reached the position above the point at which the contents is to be dumped, the operator manually moves the rod 41 to rotate the rod 40 from the position 80 shown in Fig. 8 to that shown in Fig. 7, thereby moving the fingers 44 into position for engaging the end 39 of the detent 36. The fingers 44, being disposed obliquely to the rod 40, force the detent 36 to release the lug 35, and 85 the weight of the material contained in the bucket forces the bottom 34 to move upon its hinges, and the contents are thereby discharged and permitted to fall. The bucket then passes about the sprockets 21, and by 90 reason of being inverted the bottom is again closed and engaged by the detent 36, the bucket passing downwardly along the track-piece 10, as shown, and over the sprocket 17 to engage and carry another load, the operation being thereby continuously repeated. 95

What I claim is—

1. In an excavator, a frame arranged to extend transversely of the line of travel and inclined to a vertical, an endless conveyer 100 operating upon said frame, a drum at the lower end of said frame arranged to carry the conveyer, and diggers carried by the drum and in position for engagement with the ground. 105

2. In an excavator, a frame arranged to be disposed in an inclined position, a drum at the lower end of said frame, an endless conveyer passing about said drum and moving 110 upon the frame, means at the upper end of said frame for carrying the conveyer, a bucket mounted upon and moved by said conveyer, and diggers spaced about the drum and in position for contact with and loosening the earth. 115

3. In an excavator, a frame arranged to be disposed in an inclined position, and provided with track-pieces, a drum mounted to rotate at the lower end of said frame-pieces, an endless conveyer provided with buckets 120 mounted to move about said drum and frame-pieces, means at the upper end of said frame-pieces for carrying the conveyer, and means carried by the conveyer adjacent the buckets for engagement with and operation 125 upon the track-pieces.

4. In an excavator, a frame arranged to be disposed in an inclined position, an endless conveyer including a bucket having a hinged bottom operating about the frame, means at 130

the opposite ends of said frame for carrying the conveyer, means carried by the bucket for holding the bottom in a closed position, and means carried by the frame for releasing
5 the bottom-holding means, at a desired point of its movement.

5. In an excavator, a frame arranged to extend transversely of the line of travel and in an inclined position, a conveyer operating
10 about said frame and a digger at the lower end of said frame arranged and positioned for contact with the earth.

6. In an excavator, a frame arranged to be disposed in an inclined position, means car-
15 ried by said frame for connection with a source of power, an endless conveyer passed about and upon said frame and arranged for engagement with the power-exerting means and embodying buckets arranged to move
20 about the frame, and a digger rotatably mounted at the lower end of said frame.

7. In an excavator, a frame arranged to be

disposed in an inclined position, a drum mounted at the lower end, an endless con-
veyer extending about the frame and the 25 drum embodying a bucket, means at the upper end of the frame for carrying the conveyer, means for connecting the conveyer with the source of power, means carried by
said conveyer and arranged for engagement 30 with and movement upon the frame, bottoms hinged to the buckets, means for holding the bottoms in closed position, means carried by the frame for releasing the bot-
tom-holding means at a desired point in its 35 movement, and diggers carried by the frame and positioned for engagement with the earth.

In testimony whereof I affix my signature in presence of two witnesses.

SIVERT OLSON.

Witnesses:

L. B. ROY,

MARTIN BROTON