No. 844,477. PATENTED FEB. 19, 1907.

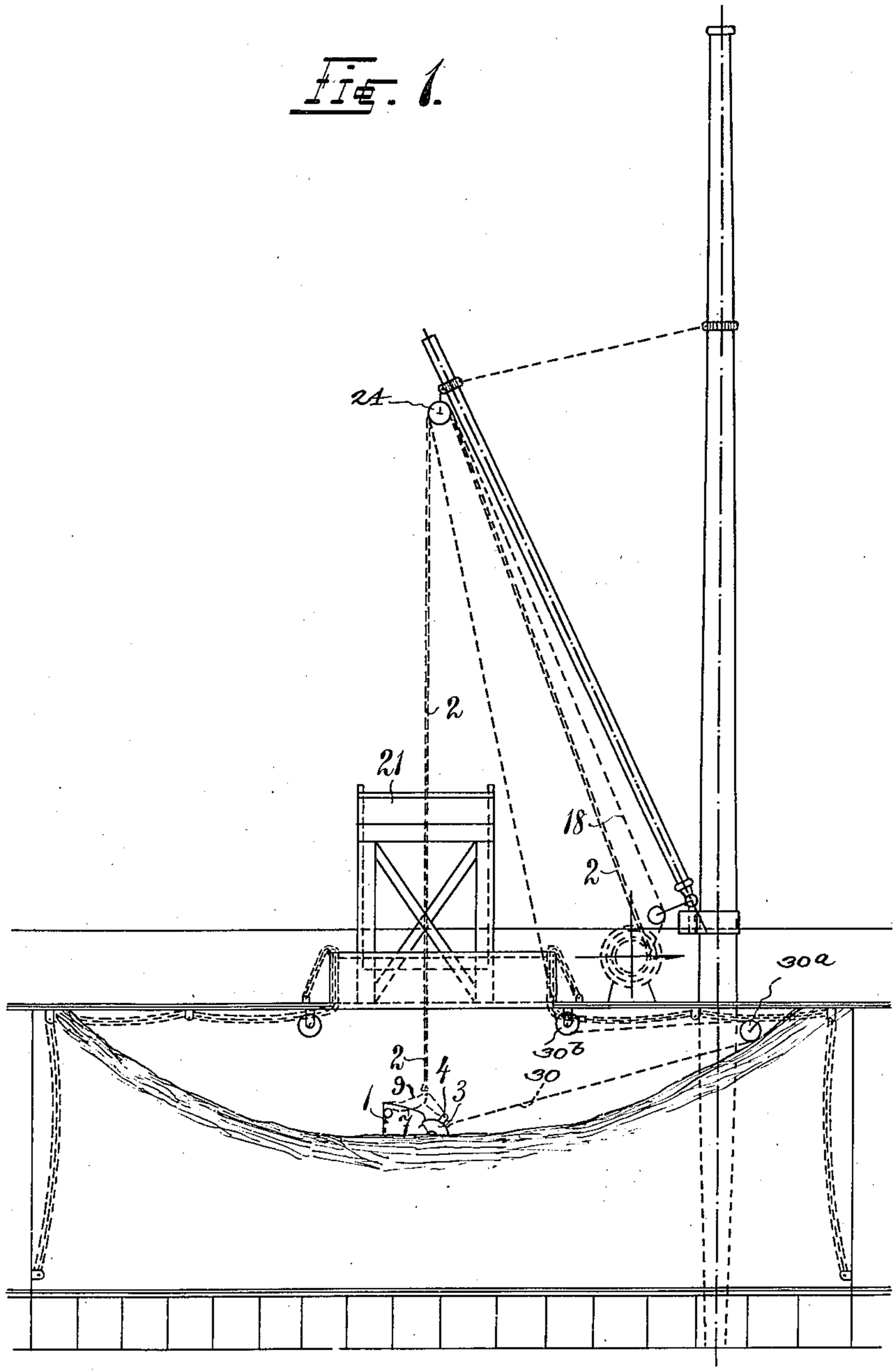
P. W. SIEURIN.

HOISTING APPARATUS.

APPLICATION FILED JUNE 10, 1905.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
L. Waldman
C. Heymann.

Inventor:
Paul Wilhelm Sieurin
by P. Singer
Attorney

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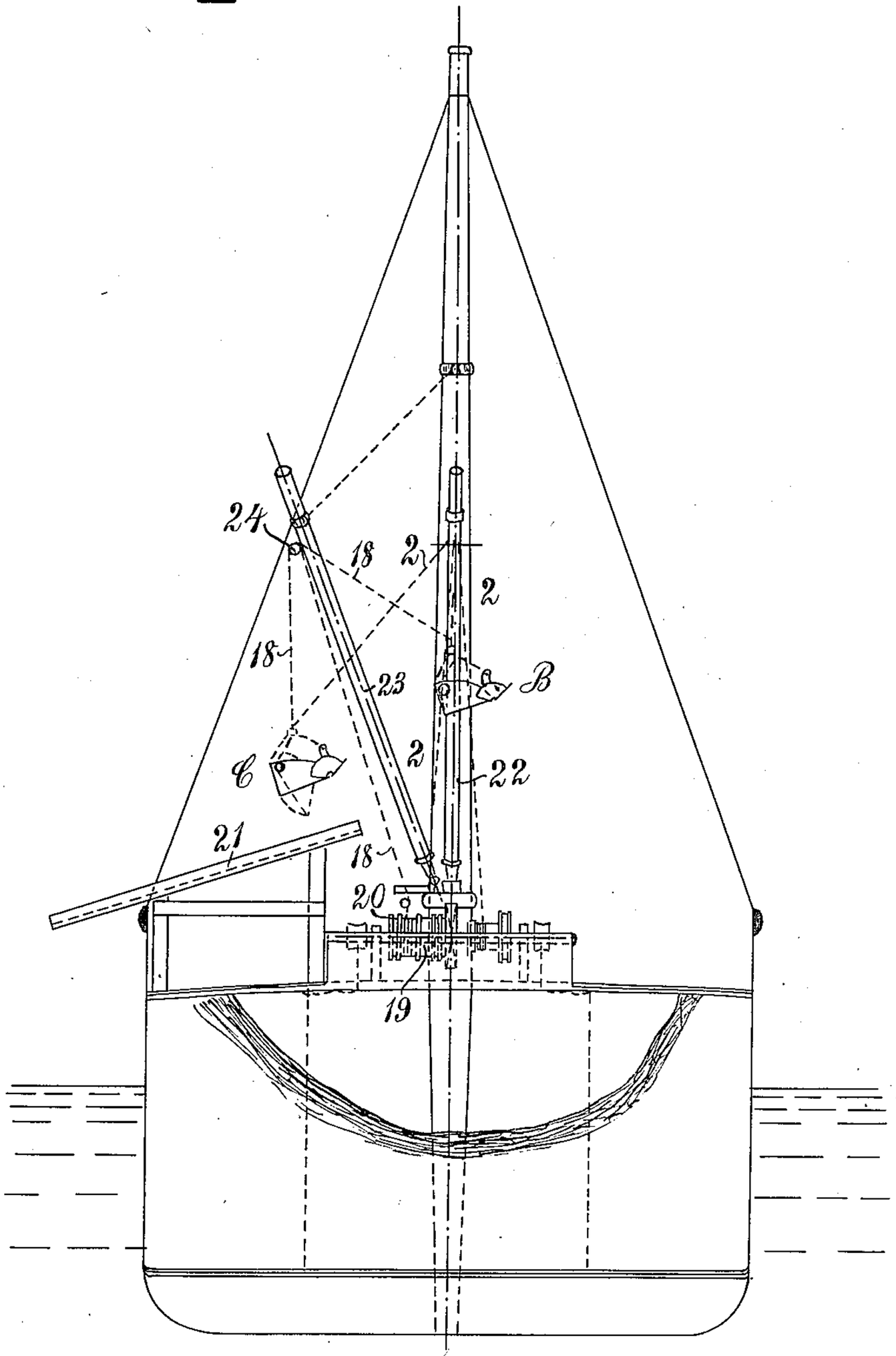
4 SHEETS—SHEET 2.

Fig. 2.



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C. Waldman
C. Heymann

Inventor:

Paul Wilhelm Sieurin
by B. Singer
Attorney

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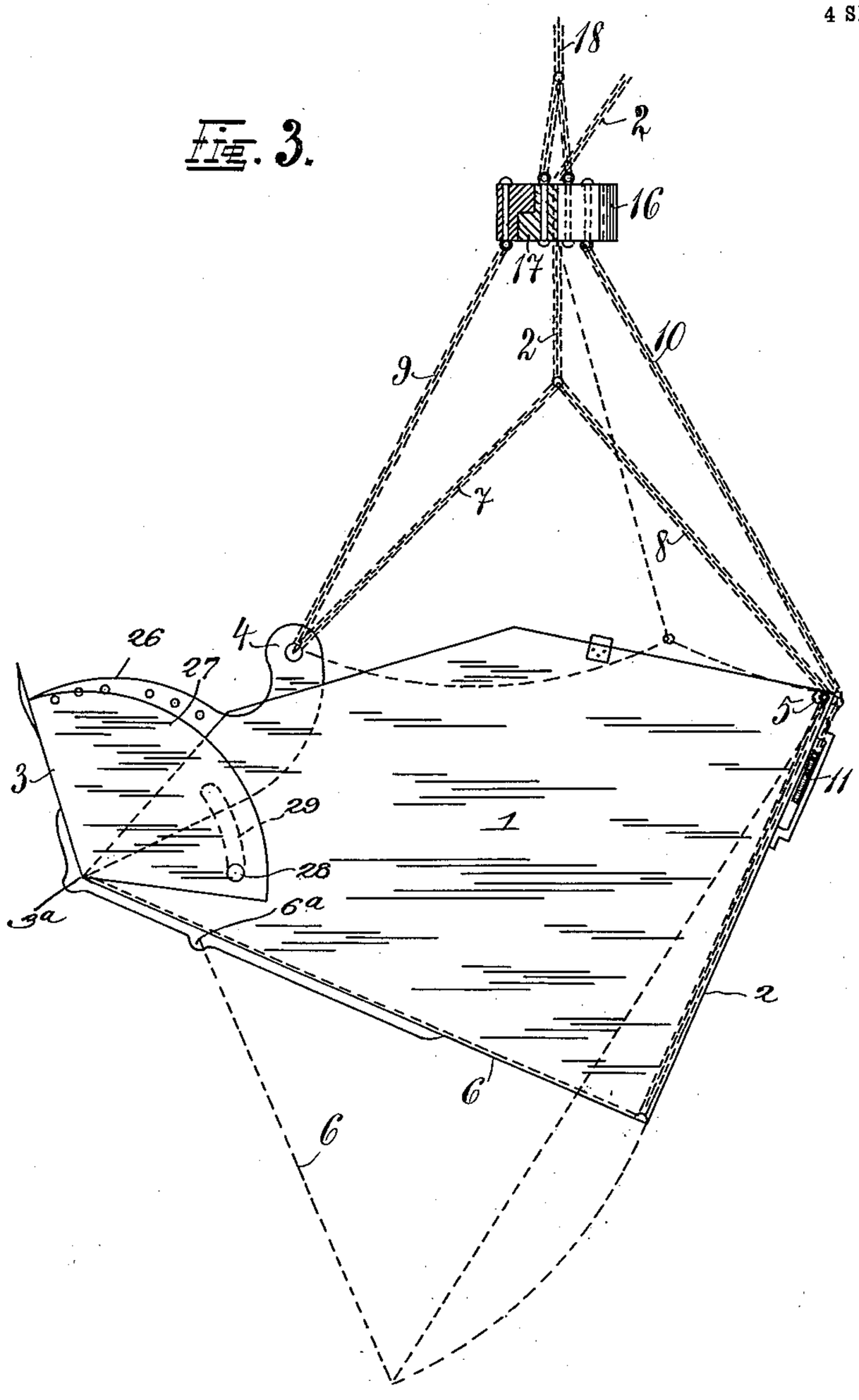
4 SHEETS—SHEET 3.

Fig. 3.



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Inventor:
Paul Wilhelm Sieurin
by P. Singer
Attorney

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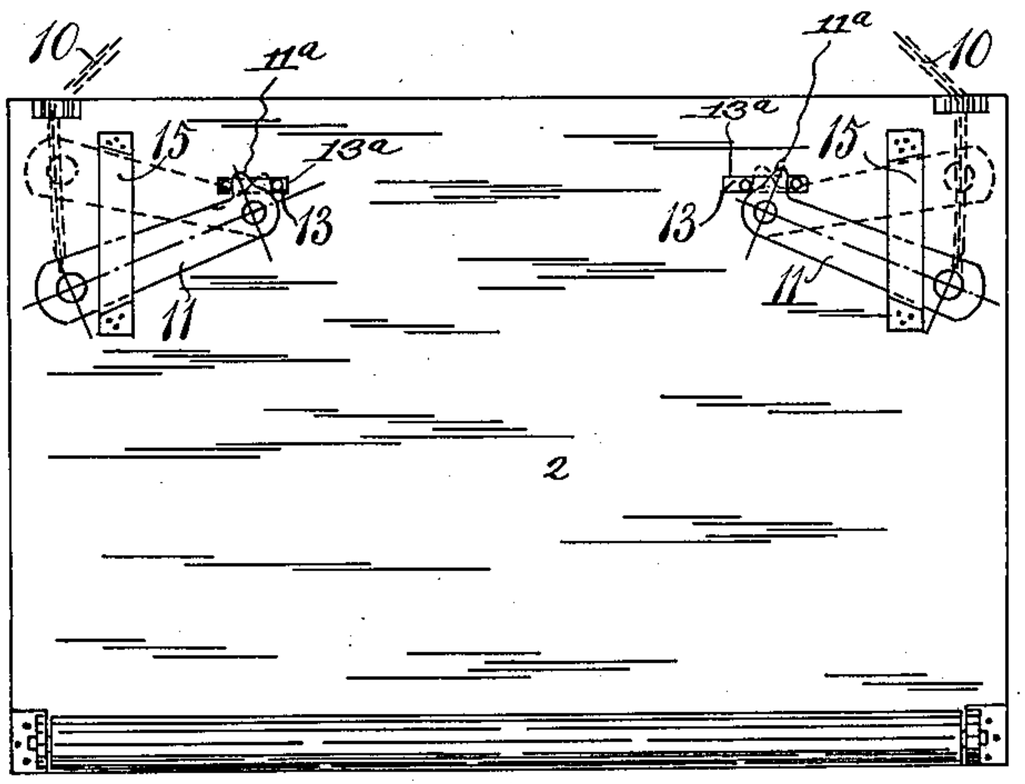
4 SHEETS—SHEET 4.

Fig. 4.



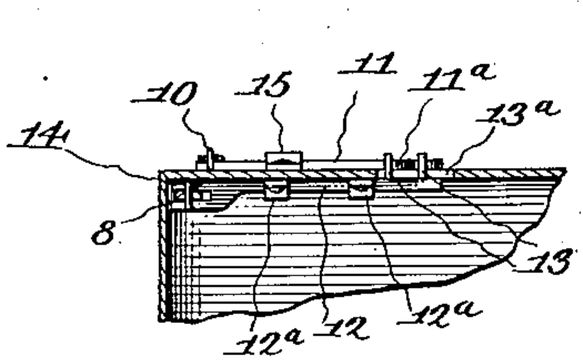


Fig. 6.

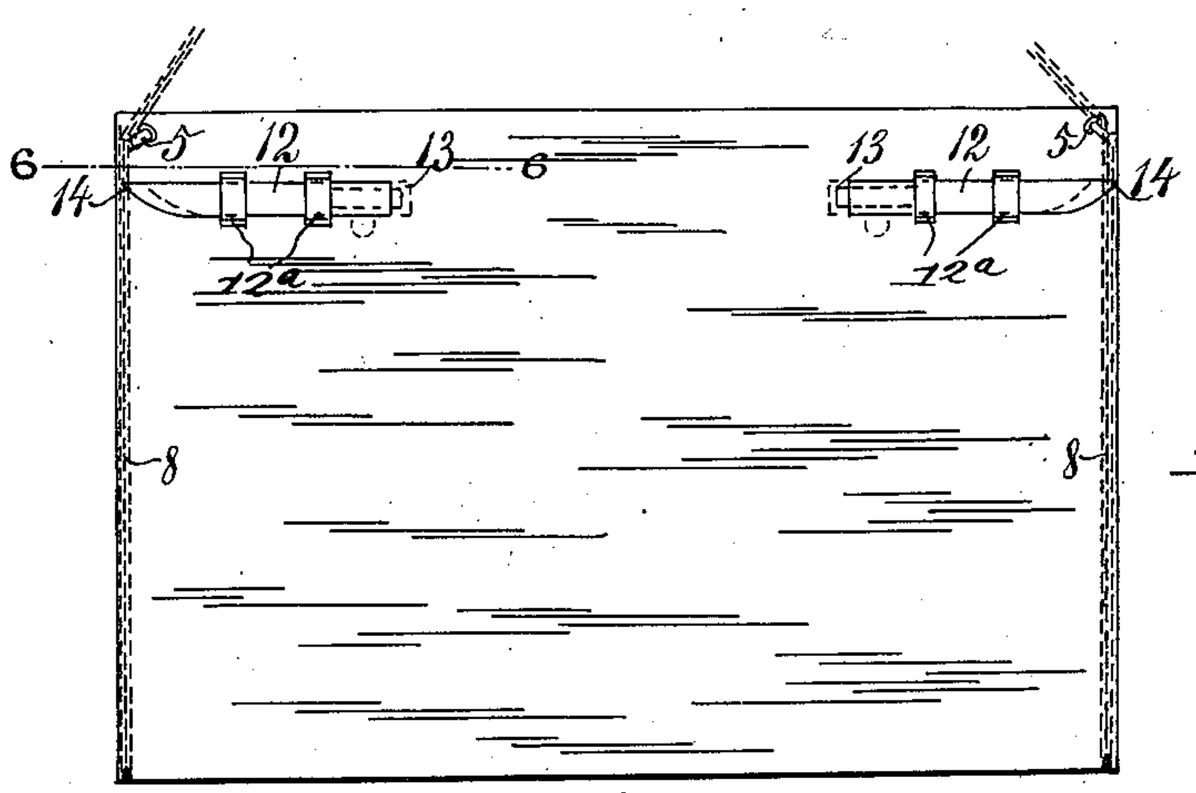


Fig. 5.

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Witnesses:
L. Waldman
C. Heymann

Inventor:
Paul Wilhelm Sieurin
by P. Singer Attorney

UNITED STATES PATENT OFFICE.

PAUL WILHELM SIEURIN, OF GOTHENBURG, SWEDEN.

HOISTING APPARATUS.

No. 844,477. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed June 10, 1905. Serial No. 264,728.

To all whom it may concern:

Be it known that I, PAUL WILHELM SIEURIN, sea captain, a subject of the King of Sweden, residing at Gothenburg, Sweden, and whose post-office address is Linnégatan 51, Gothenburg, Sweden, have invented certain new and useful Hoisting Apparatus; and I do 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, reference being had to the accompanying drawings.

This invention relates to improvements in self filling and dumping buckets designed to be used in loading and unloading boats and transporting material from loading to unloading points, and has to do both with the construction of the bucket and also to an improved means for manipulating the same.

The invention will be more fully described in connection with the accompanying drawings and will be more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a transverse view of the hold of a boat, an improved bucket, and devices for manipulating the same, the bucket and its operating device being shown in a loading or filling position. Fig. 2 is a like view showing the bucket and its operating device in a dumping position. Fig. 3 is a side elevation of the improved bucket in a closed position, showing its dumping position in dotted lines. Figs. 4 and 5 are rear views of the bucket. Fig. 6 is a sectional view on line 6 6 of Fig. 5.

Like characters of reference designate similar parts throughout the different figures of the drawings.

Generally, the invention relates to a form of bucket which is filled by being lowered upon the material and drawn across the surface thereof, the front wall opening to lie flat or parallel with the bottom wall of the bucket and acting in the manner of a drawn scoop-shovel.

The invention consists in providing a bucket of this character with a dumping bottom wall adapted to open and discharge the contents of the bucket, the scoop and said bottom wall being normally held in closed positions by a hoist chain or cable with which they are connected. According to my invention the bucket is also provided with a dump-chain secured, preferably, to the scoop and to devices for locking the hoist-chain to hold the dumping bottom wall in a closed position. In raising the loaded bucket the hoist-chain closes the scoop and bottom wall and the dump-chain is taken up slack and at a speed equal to the hoist-chain, the weight of the loaded bucket being sustained by the hoist-chain until it is desired to unload, when the weight is shifted from the hoist to the dump chain, the hoist-chain being paid out or slackened to permit the dumping bottom wall to open.

First referring to the specific construction of the bucket the same consists of a structure comprising side walls 1, rear wall 2, a front wall in the form of a scoop 3, and a bottom wall 25, provided with a dumping-section 6, hinged at 6^a. The front wall or scoop 3 is provided with end walls 26 and 27, adapted to straddle the side walls 1, the outermost end walls 27 and the side walls 1 being provided with pin-and-slot connections 28 and 29 to limit movement of the scoop 3 in open and closed positions. The end walls 26 are provided with arms 4, to which the hoist and dump chains are secured in a manner to be hereinafter more fully described. The rear wall 2 is provided with locking devices adapted to engage and lock the dump-chains, so that the dumping-wall 6 will be normally held in a closed position even when the chains are slack. Said locking devices, as shown, comprise reciprocating locking-bars 12, provided with forked ends 14, the forked ends being preferably equal to the thickness of the chain-links and serving when engaged with the chain to pass beneath the link immediately above the link embraced by the jaw or bifurcated point 14, as clearly shown in Fig. 6.

The locking movement of the bars 12 is outwardly or toward the side walls 1, and when the chains are gripped the bifurcated ends 14 engage the side walls 1, completely encircling the chains, thereby precluding the possibility of the chain slipping off from the end of the fork. Said guide-bars 12 are located on the inner side of the end wall 2 and are movable in guides 12^a. Each bar is provided with pins 13, which project through slots 13^a in the wall 2, as clearly shown in Fig. 4. Said bars are so arranged that they are normally held in a locking position and are unlocked only when the weight of the bucket is shifted from the hoist-chain to the dump-chain, the means for releasing or locking the bars and holding them in a locking

position comprising levers 11, pivoted on the outer face of the end wall 2. Said levers are provided with lugs 11ª, which project between the pins 13, engaging the same in shifting the bars 12 from locking to unlocking positions, and vice versa. Ordinarily the weight of the lever 11 will normally keep the bars 12 in the position shown in Fig. 4, in which position the bars 12 are held in a locking engagement with the chains. When the levers 11 are raised to the position shown in dotted lines, the bars 12 are shifted to an unlocking position. Said levers 11 are provided with guides 15, which limit their movement in opposite directions.

I will next refer to the hoist and dump chains and the manner in which the same are connected to the bucket. The hoist-chain 2 is provided with branches 7 and 8, the former of which is connected with arms 4 and the latter of which is connected with the opposite rear corners of the dump-wall 6. Said hoist-chain is operated from the drum 19. The dump-chain 18, as shown, is connected with the bucket through the medium of a two-part suspension-ring comprising outer and inner members 16 and 17. The dump-chain 18 is branched near its lower end and connected with the inner member 17 of said ring, and the outer member 16 is provided with branch extensions 9 and 10 of the dump-chain, which are connected, respectively, with the arms 4 and the levers 11. The dump-chain is operated from a drum 20, and power is applied to said drums 19 and 20 to operate the same either together or independently of each other. The dump-chain 18 and hoist-chain 2 pass over a pulley 24, secured to the swinging beam 23.

In loading, the bucket is lowered into the hold and upon the material, as shown in Fig. 1, and both the hoist and dump chains are slack to permit the scoop 3 to open. The bottom wall 6 is maintained in a closed position by the locking-bars 12. A chain 30, which is attached and detached by an operative to the scoop 3, may be operated in any desired manner to draw the bucket across the surface of the material and scoop the same therein. As herein shown, the chain 30 is trained about pulleys 30ª 30ᵇ, pulley 24, and downwardly therefrom to any suitable operating-drum. When the bucket has been filled, the chain 30 is disconnected, and the dump-chain 18 and the hoist-chain 2 are taken up by the drums 19 and 20 at equal speed, the hoist-chain 2 being taut and the dump-chain 18 being slack, which operation results in closing the scoop 3 and raising the bucket, as shown at B in Fig. 2. When it is desired to dump, the beam 23 is swung upon its mounting until the bucket is suspended above the dumping-point, which in the present instance consists of a chute 21, at which point the drums 19 and 20 are so operated that the weight of the bucket is shifted from the hoist-chain 2 to the dump-chain 18. This operation serves to hold the bucket in substantially the same position as illustrated in Fig. 3 by means of chains 8 and 9 and the dump-chain 18. However, it will be obvious that when the load is shifted from the hoist-chain 2 and its branches 7 and 8 the weight of the bucket will cause the chains 10 to raise the levers 11 and release the gripping-bars 12 from the chains 8, permitting the bottom wall 6 to open, as shown at C in Fig. 2 and in dotted lines in Fig. 3.

Having thus described my invention, what I claim is—

1. An improved bucket of the class described provided with a pivotally-mounted lower wall or bottom and a pivotally-mounted forward lip or nose, a dump-chain secured to said nose and bucket, and a hoist-chain connected with said lower wall, substantially as described.

2. An improved bucket of the class described provided with a pivotally-mounted lower wall or bottom and chain-locking devices, a dump-chain having branches secured to said bucket and said locking devices and serving to operate the latter, and a hoist-chain secured to said lower wall and located in operative relation with respect to said locking devices, substantially as described.

3. An improved bucket of the class described provided with a pivotally-mounted lower wall or bottom and a pivotally-mounted lip, chain-locking devices for said bucket, a dump-chain having branches secured to said lip and locking devices and serving to operate the latter, and a hoist-chain having branches secured to said lip and said bottom wall and located in operative relation with respect to said locking devices, substantially as described.

4. An improved bucket of the class described provided with a pivotally-mounted lower wall or bottom, a dump-chain secured to said bucket, a revoluble suspension-ring interposed in said chain adjacent the bucket, said ring comprising inner and outer revoluble members, the chain extending from the bucket being secured to one member, the remainder of the chain extending from the ring being secured to the other member, and a hoist-chain passing through said ring and connected with the lower wall, substantially as described.

5. An improved bucket of the class described provided with a pivotally-mounted lower wall or bottom, a pivotally-mounted forward nose and chain-locking devices, a revoluble suspension-ring comprising inner and outer revoluble members, a dump-chain secured to one of said members and having branches secured to the other of said members, said branches being secured to said nose and locking devices, and a hoist-chain pass-

ing through said ring and having branches secured to said nose and said lower wall, said last-mentioned branch being in operative relation with said locking devices, substantially as described.

6. An improved bucket of the class described provided with a pivotally-mounted lower wall or bottom, a dump-chain secured to said bucket, means interposed in said chain for permitting the bucket to revolve, and a hoist-chain secured to said lower wall, substantially as described.

7. An improved bucket provided with a bottom wall adapted to be opened and closed in combination with a hoist-chain connected with and serving to close said wall, a dump-chain, and gripping devices connected with said dump-chain and serving to grip and release said hoist-chain.

8. An improved bucket provided with a movable lip or nose, a bottom wall adapted to be opened and closed, a hoist-chain connected with said movable lip and bottom, gripping devices for said hoist-chain, and a dump-chain connected with said movable nose and said gripping devices.

9. An improved bucket provided with a bottom wall adapted to be opened and closed, hoisting means and dumping means, and mechanism whereby the weight of said bucket may be shifted from one means to the other.

10. An improved bucket provided with a bottom wall adapted to be opened and closed, a movable nose or lip, hoisting and dumping means secured to said bucket, lip and bottom wall, and mechanism for shifting the weight of said bucket from one of said means to the other.

11. An improved bucket provided with a bottom wall adapted to be opened and closed, a movable nose or lip, hoisting and dumping means secured to said bottom wall and said nose and bucket, and devices for said chains permitting said bucket to revolve.

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

PAUL WILHELM SIEURIN.

Witnesses:
ERNST NARDLINDLE,
HILDUE HÄKANSON.