

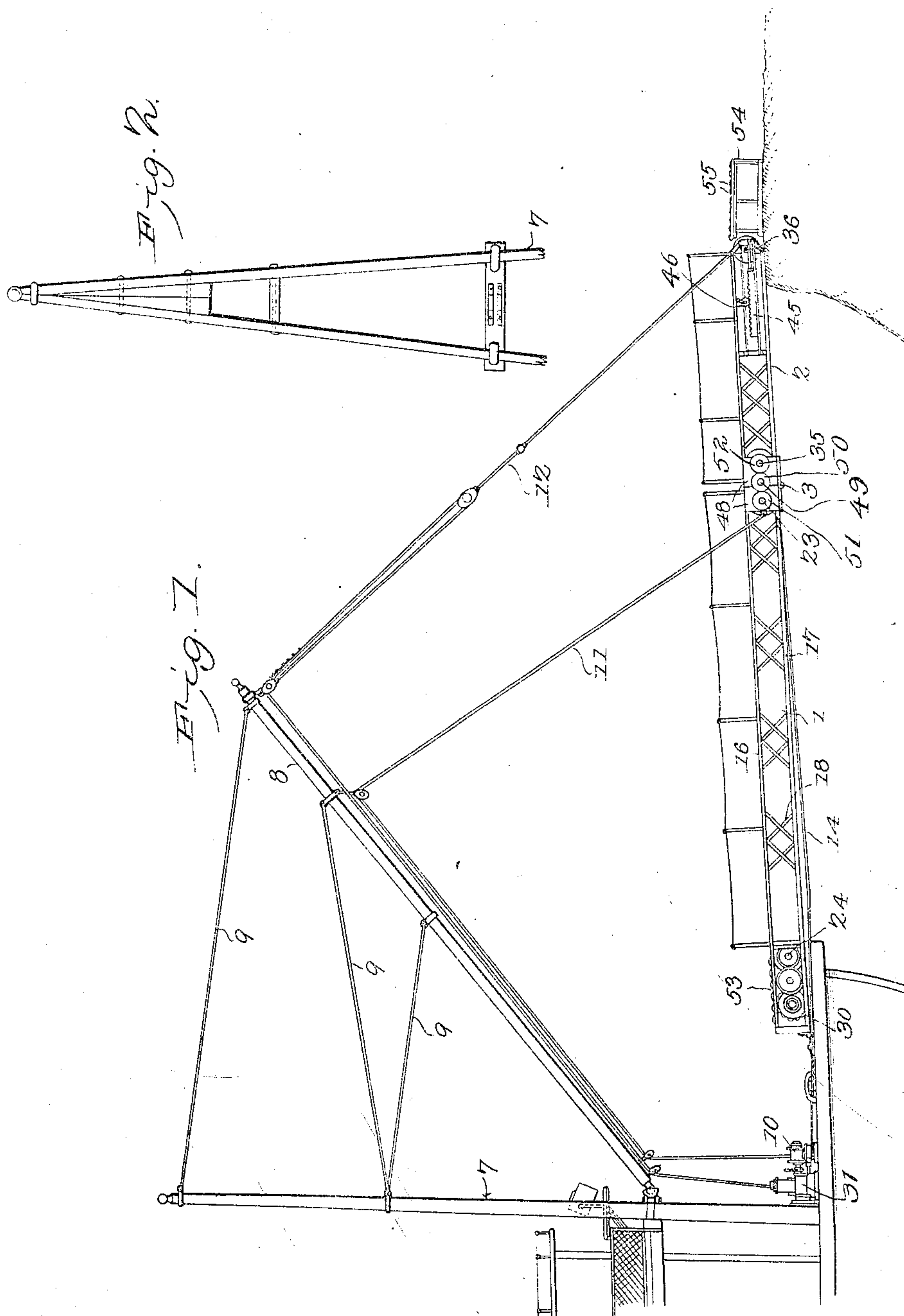
No. 785,400.

PATENTED MAR. 21, 1905.

J. D. BUCHANAN.
LOADING OR UNLOADING APPARATUS.

APPLICATION FILED JULY 29, 1904.

4 SHEETS—SHEET 1.



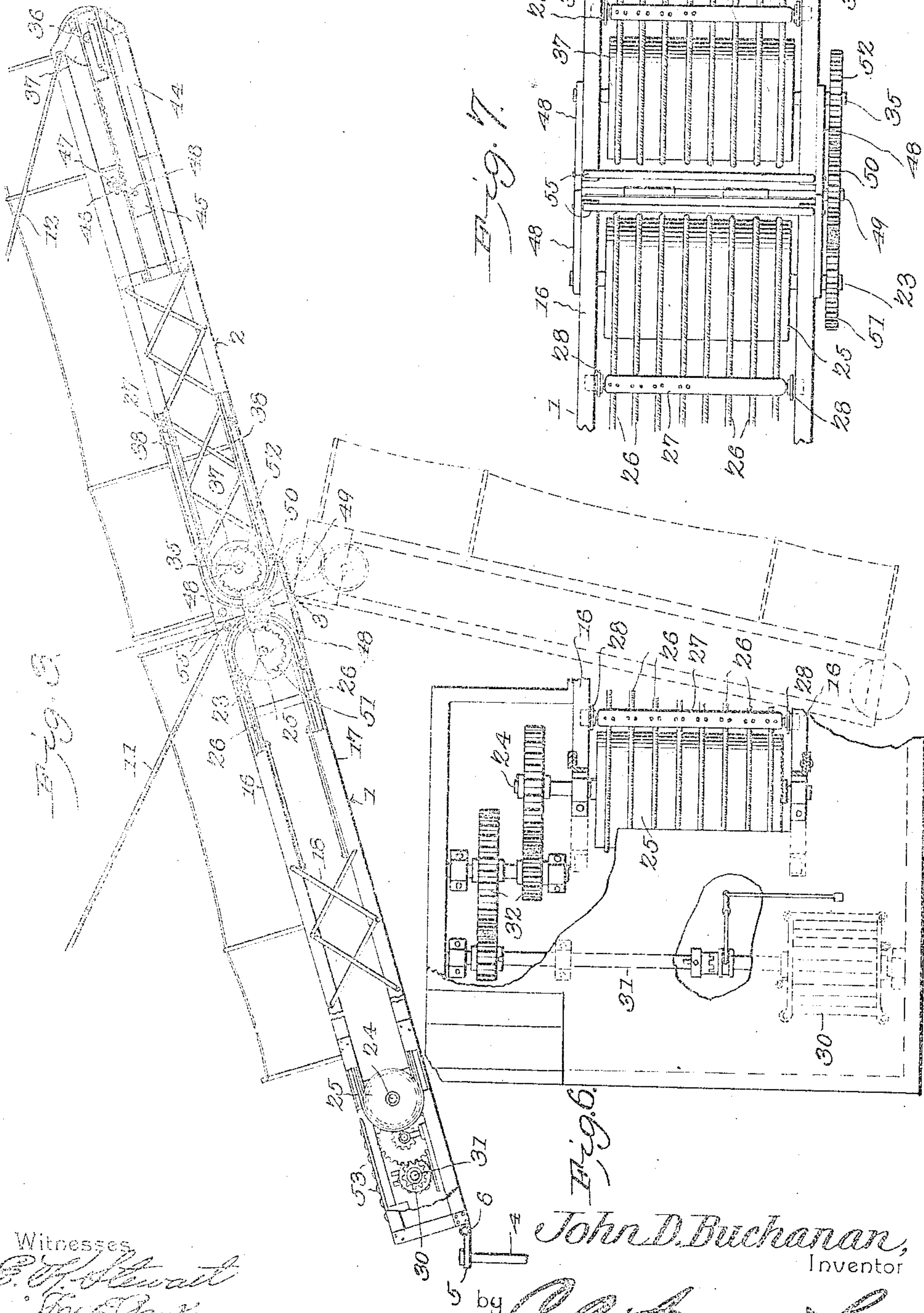
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4 SHEETS--SHEET 2



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4 SHEETS—SHEET 3.

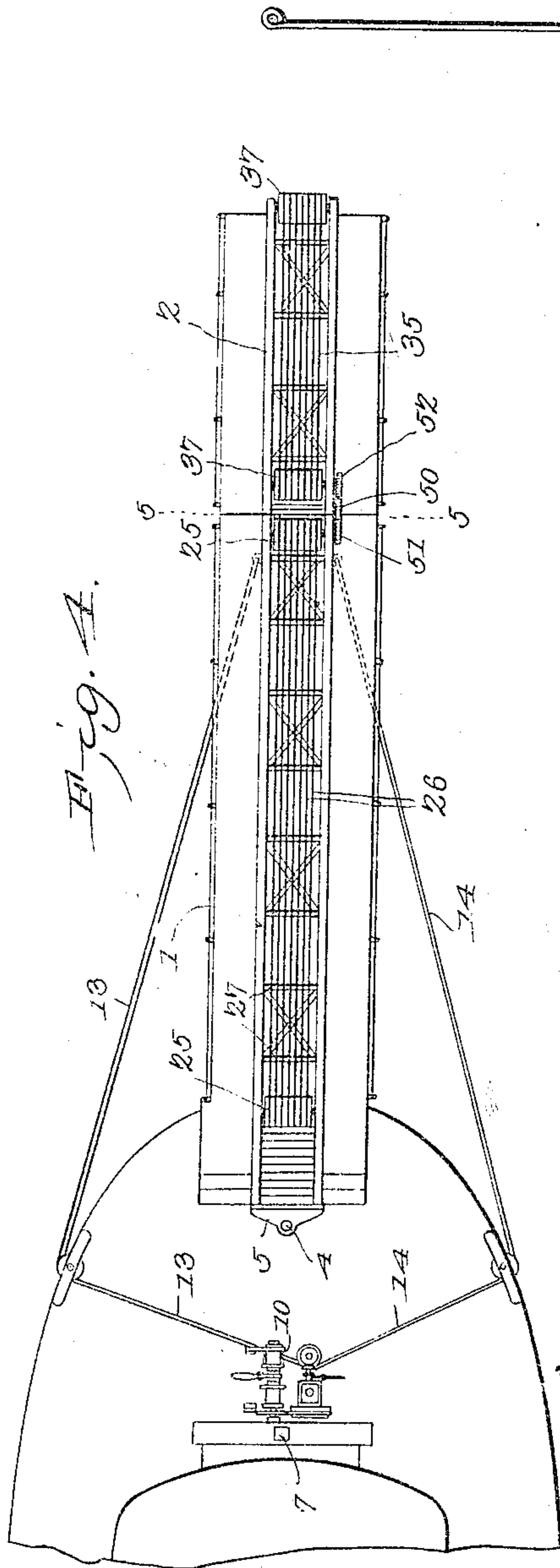


Fig. 4.

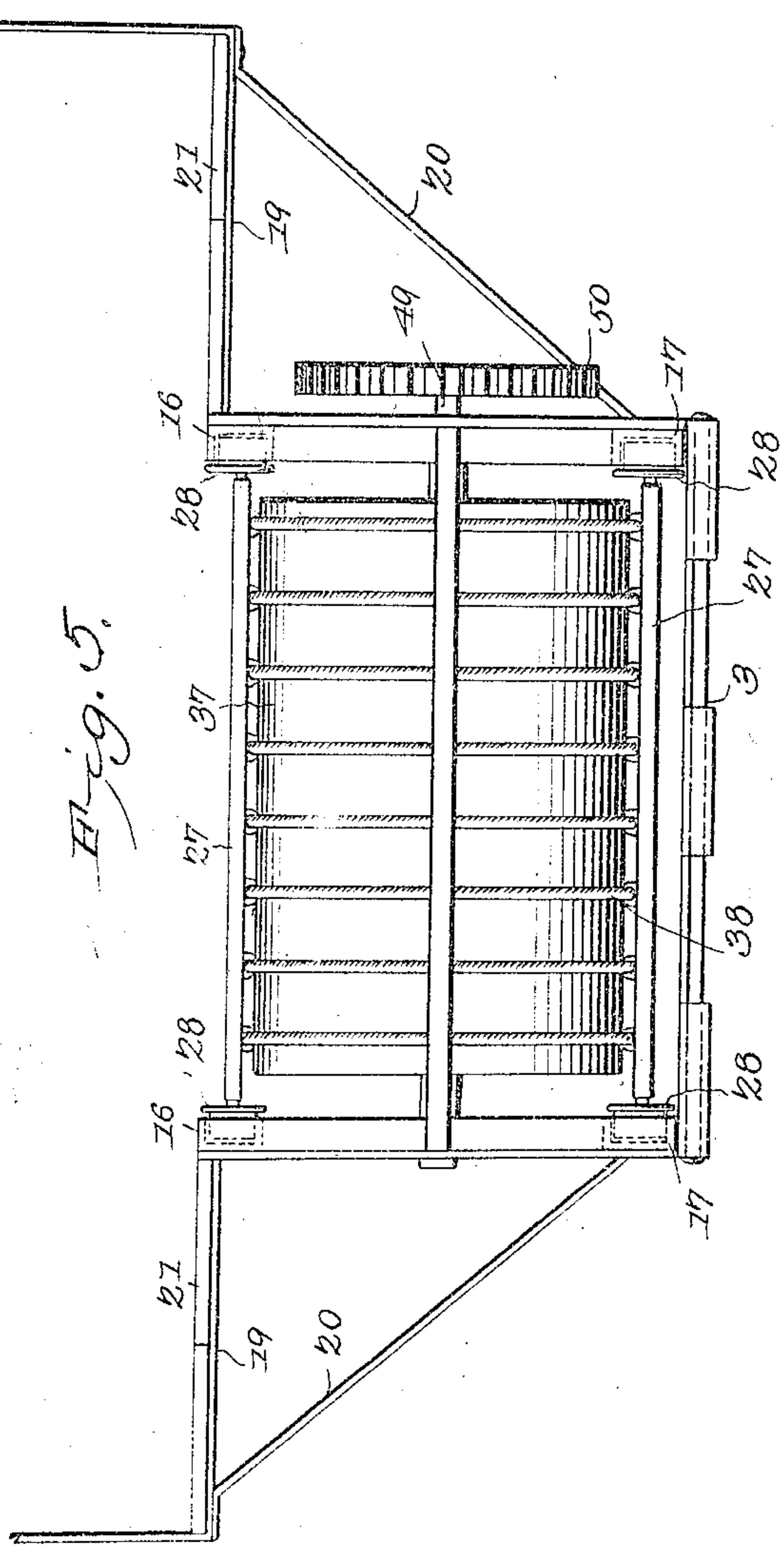


Fig. 5.

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4 SHEETS-SHEET 1

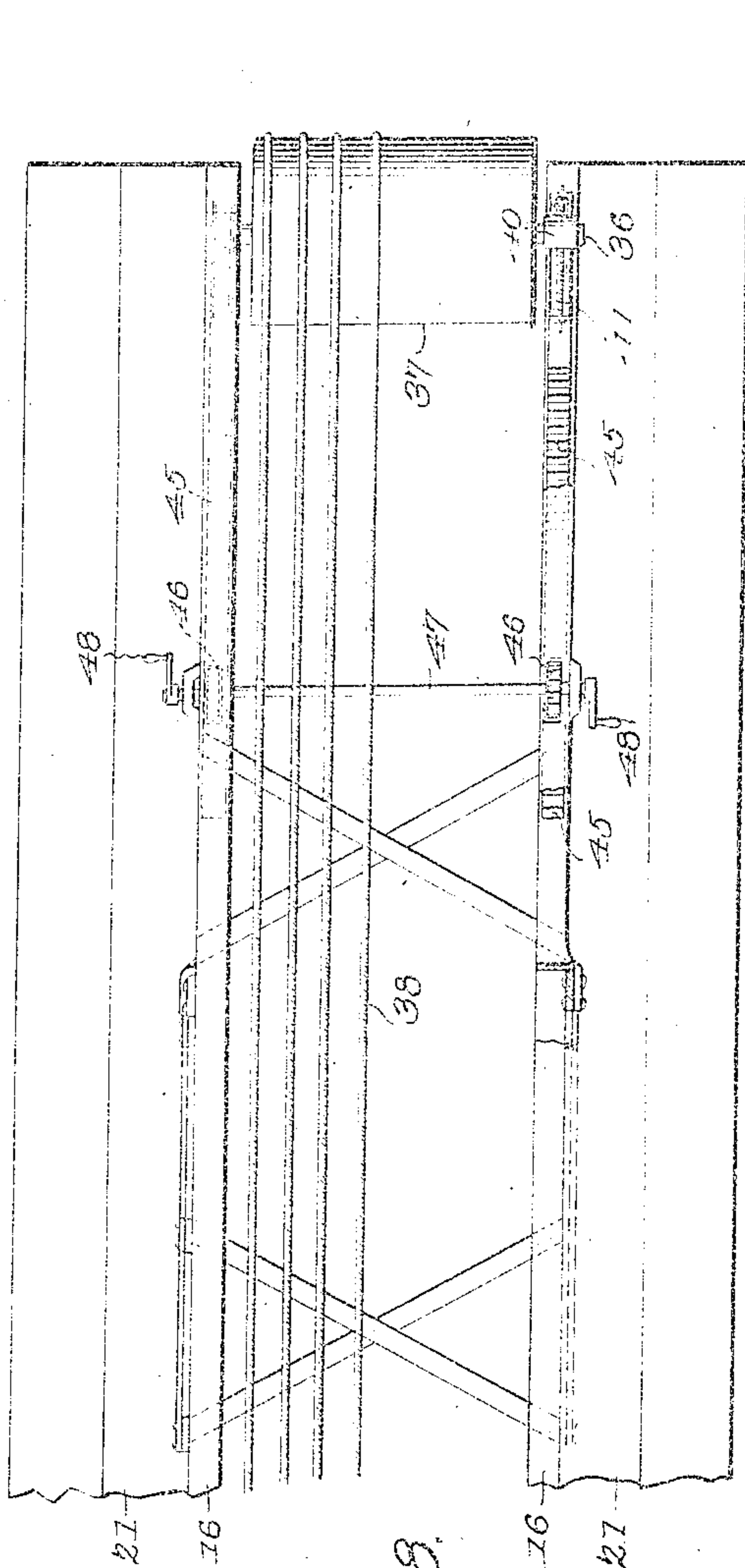


Fig. 8.

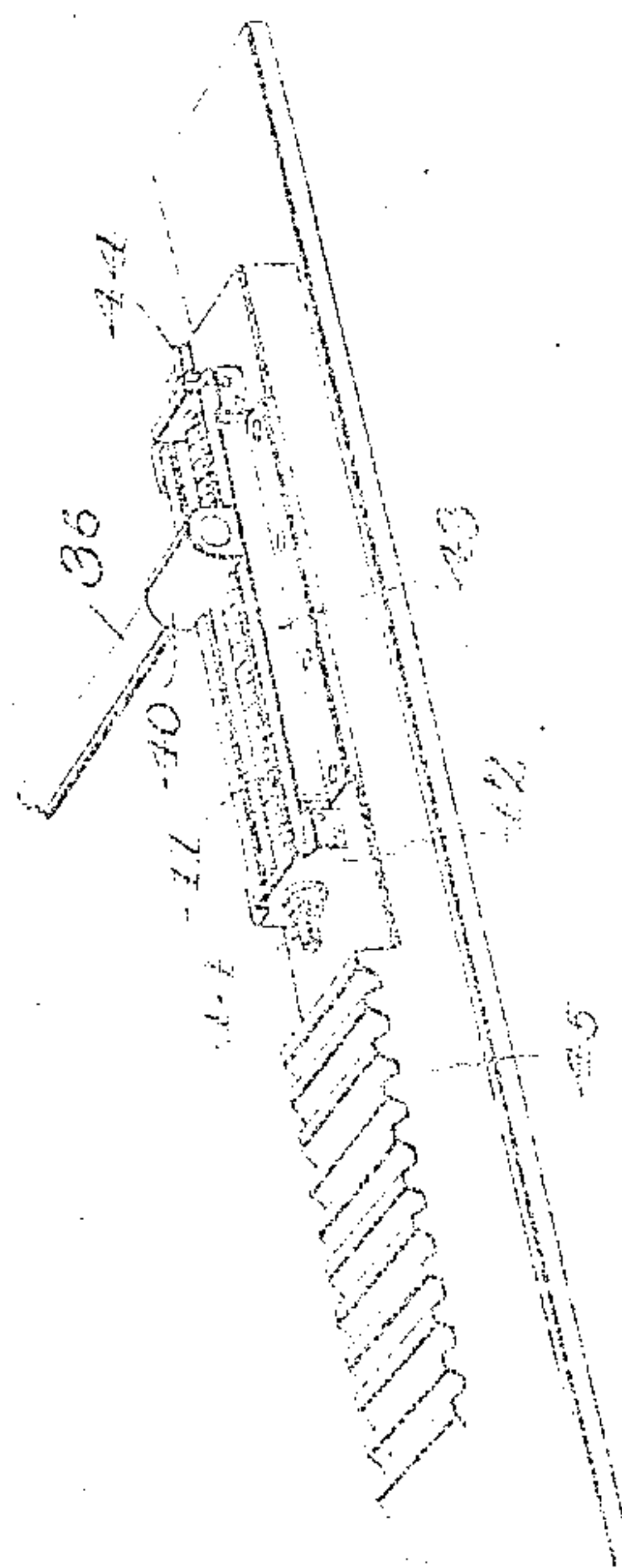


Fig. 9.

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UNITED STATES PATENT OFFICE.

JOHN D. BUCHANAN, OF MEMPHIS, TENNESSEE.

LOADING OR UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 785,400, dated March 21, 1905.

Application filed July 29, 1904. Serial No. 218,719.

To all whom it may concern:

Be it known that I, JOHN D. BUCHANAN, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Loading and Unloading Apparatus, of which the following is a specification.

This invention relates to apparatus of that general class employed for the loading and unloading of vessels, and particularly to devices employed for transferring freight to and from river-steamers.

The principal object of the invention is to provide a conveyer which may be carried by the vessel and readily adjusted to position for delivering goods to a wharf or landing or the reception of goods therefrom, the conveyer being located at any suitable point on the boat, preferably at the bow or stern, so that it may be swung for the landing of goods at either the port or starboard side.

A further object of the invention is to provide a device of this class in which the conveyer is collapsible or folding, so that a conveyer of considerable length may be readily carried by comparatively small vessels, thereby to avoid projection of the device to an objectionable extent or height while the boat is traveling.

A still further object of the invention is to provide a device with a gang-plank for the use of passengers, so that the passengers or boat-hands may walk ashore or aboard without interfering with the use of the conveyer.

A still further object of the invention is to provide a self-contained conveying device carrying its own motor mechanism and so arranged as to permit of convenient adjustment at any angle in accordance with the position of the boat and the state of the tide.

With these and other objects in view, as will more fully hereinafter appear, the invention consists of the novel construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made

without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation of a conveyer constructed in accordance with the invention, showing the same in position for use. Fig. 2 is front elevation of the derrick employed to support the conveyer. Fig. 3 is a longitudinal sectional elevation of the conveyer on a somewhat enlarged scale. Fig. 4 is a plan view of the conveyer, illustrating principally the mechanism for effecting its adjustment to port and starboard. Fig. 5 is a transverse sectional elevation, on an enlarged scale, on the line 5-5 of Fig. 4. Fig. 6 is a detail plan view of that end of the conveyer attached to the boat, showing principally the motor mechanism. Fig. 7 is a detail plan view illustrating the meeting ends of the sections of the conveyer. Fig. 8 is a plan view of the shore end of the conveyer illustrating the mechanism for adjusting the tension of the conveying mechanism. Fig. 9 is a detail perspective view of a portion of the tension-adjusting device.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In the majority of river-boats at the present time loading and unloading is accomplished by trucks, and in many cases this is found impossible or extremely difficult when the tide is low or during wet weather. In carrying out the present invention each boat is provided with a conveying device preferably located at a midship point and so arranged that it may be shifted to either port or starboard, in accordance with the location of the wharf or landing where goods are to be delivered or received. The mechanism is so arranged that it may be conveniently handled by steam, a suitable derrick being employed for the purpose of elevating the conveyer to an angle suitable for the purpose and other mechanism being provided for shifting the shore end of the device either to port or starboard, as required by circumstances. The frame of the conveyer is formed of a number of sections, two of such sections 1 and 2 being indicated in the present instance, and these

sections are hinged together, as at 3, and they are mounted on a swiveled bolt 4, located at a midship point at the bow or the stern of the vessel. The connection at the bow is such as to permit of the adjustment of the conveyer either to port or starboard, and to the bolt-head is pivoted a bracket 5, having a hinge or pivot connection 6 with the vessel end of the conveyer, so that the latter may be raised or lowered, in accordance with the height of the wharf or landing. In order to properly handle the conveyer, a derrick 7, preferably in the form of an A-derrick, is arranged on the deck, and to the lower portion of the derrick is swiveled a boom 8, preferably arranged to swing to either side, ball-bearings or other devices being arranged between the foot of the boom and the derrick and the peak of the boom being connected by guys 9 to the derrick. On the deck of the vessel are arranged winches 10, connected by tackle 11 12 to the sections 1 and 2, respectively, so that the conveyer may be readily elevated to any angle. In this connection it is to be observed that the two parts of the conveyer are hinged together, as at 3, so that when the conveyer is elevated and the boat about to cast off the outer section 2 may be allowed to drop to the position indicated by dotted lines in Fig. 3, and thence by a tackle 12 the outer section may be folded under and against the section 1 in parallel relation therewith, so that the conveyer will not project at an undesirable extent beyond the bow or stern. For the purpose of shifting the position of the conveyer for landings at either port or starboard guidelines 13 and 14 are employed connecting the conveyer to a deck-winch provided with either a vertical or horizontal winding-drum, so that the conveyer may be readily turned with the bolt 4 as a center and the device used for loading and unloading freight at both sides of the river.

The main section 1 of the conveyer comprises a framework consisting principally of a pair of upper channel-bars 16 and a pair of lower channel-bars 17, that are connected by diagonally-disposed truss-bars 18, arranged in any suitable manner to form a light skeleton frame, and from the opposite sides of the frame extend transversely-disposed bars 19, that are braced by diagonals 20, said bars serving as supports for footboards 21, forming gang-planks, and these may be arranged at one or at both sides of the main conveyer and provided with suitable hand-rails for the convenience of the passengers or deckhands.

At the outer end of the section 1 of the conveyer are bearings for the support of a transversely-disposed shaft 23, and near the inner end of the conveyer-frame are bearings for the support of a small shaft 24. These shafts carry drums 25, over which pass a plurality of cables 26, and to the cables are secured

transversely-extending shafts 27, at the opposite ends of which are flanged rollers 28, that enter the channel-bars 16 and 17 and are guided thereby in order to support the cables. These transverse shafts serve, further, to prevent the freight or other articles which may be deposited on the cables from sliding and serve as a positive means for moving such articles without regard to the angle at which the conveyer may be adjusted.

At the deck end or helm of the conveyer-section 1 the framework is arranged for the support of a suitable motor 30, which preferably takes the form of a rotary engine, that is connected by a shaft 31 and a suitable train of gearing 32 to the shaft 24 of the conveyer mechanism. The motor is preferably reversible, so that the conveyer may be driven in either direction in order to transfer freight either to or from the boat, and it forms a mechanism independent of the boat, so that the conveyer may be readily adjustable to any desired position, connection being made with the boiler or a main steam-pipe by means of a flexible tube or a similar slidable coupling connection for conveying steam, compressed air, or other actuating medium to the motor, or in some cases it may be convenient to employ an internal-combustion engine for the purpose, especially where the device is employed in connection with boats used for traffic on the Great Lakes or the coast, where the fires are drawn when the boat is docked and the usual steam-boiler cannot furnish sufficient steam for the purpose.

The outer section 2 of the conveyer is in general construction similar to section 1 of the conveyer, and it is provided with bearings for the support of suitable transverse shafts 35 and 36, carrying drums 37 for the support of a conveyer member 38 that preferably is of the same construction as that carried by the section 1. The outer section 2 of the conveyer being placed on landings is naturally more exposed and the conveyer is more likely to become loosened or disarranged than the conveyer of the inner section, and in order to adjust the parts and keep the members of the conveyer sufficiently taut for the purpose desired the outer shaft 36 is mounted in bearings 40 in the form of blocks provided with openings for the passage of adjusting-screws 41, the opposite unthreaded ends of which are supported by brackets 42, carried by plates 43. One or both of the ends of the screw have non-circular ends 44 for the reception of cranks or similar devices by means of which the screws may be turned in order to adjust the position of the shaft and tighten the conveyer. For the purpose of more rapid adjustment the plates 43 are carried by racks 45, that are guided and supported by the frame members of the outer section 2 of the conveyer, and with these racks engage

pinions 46, carried by a transversely-disposed shaft 47, that is provided at its opposite ends with rectangular or non-circular portions to which suitable cranks 48 may be applied when the conveyer is to be tightened. In the operation of this portion of the mechanism the cranks 48 are first operated in order to quickly take up all of the slack possible and then the screws 41 are turned in order to secure the final adjustment essential to the successful operation of the mechanism.

The adjacent ends of the conveyer-sections 1 and 2 are provided with side plates 48, connected by the hinge member 3, previously referred to, and in one set of plates are bearings for the reception of a transversely-disposed shaft 49, carrying a gear 50, that intermeshes with gears 51 and 52, carried by the shafts 23 and 35, respectively, and serving to transmit movement from the shaft 23 to said shaft 35 when the parts are arranged in operative position. When the outer section 2 of the conveyer is lowered to the dotted-line position illustrated in Fig. 3 or is folded back into parallel relation with the section 1 of the conveyer, the gears are thrown out of mesh, so that movement will not be transmitted from the section 1 to the section 2 of the conveyer, and this is accomplished where it is not necessary to employ the section 1 of the conveyer for the transfer of goods to a platform located within a short distance of the side of the boat.

In order to facilitate the transfer of freight, the lower portion of the conveyer, or that portion which contains the motor mechanism, is provided with a plurality of idler-rollers 53, on which the deck hands will deposit the freight and push the same forward until caught by the conveyer, and at the shore end is arranged a similar platform 54, also provided with idler-rollers 55, on which the freight may be received or deposited for transfer to the boat. The tilting of the packages while being transferred from section 1 to section 2 of the conveyer is prevented by the employment of one or more sets of idlers 55, carried by the side plates 48, which form the connections between the conveyer-sections.

With a device of this character it is possible to readily load and unload freight of any kind or character at minimum expense of time and labor, and the device furthermore may be used as a gang-plank for the convenience of the passengers and members of the crew. When taken aboard, the sections of the conveyer may be folded, so that they will not pro-

ject to an objectionable extent beyond the bow or stern, and the weight will be transferred to a point near the center of gravity of the vessel. By providing the conveyer with an independent motor mechanism it may be readily swung clear of any cargo located on the fore-castle or stern of the boat and quickly adjusted to convenient position for use.

Having thus described the invention, what is claimed is—

1. In a device of the class described, a frame formed of pivotally-connected sections, a conveyer carried by each section, and gearing connections between the conveyer-sections, said gearing connections being automatically disconnected when the sections of the frame are folded.

2. In a device of the class described, a foldable frame formed of a plurality of sections, a conveyer mechanism for each section, and gearing carried by the sections, the gearing being automatically disconnected when the sections are folded.

3. The combination in a conveyer, of a frame formed of channel-iron having curved or semi-circular end portions, shafts extending between the channel-irons, flanged rollers carried by the shafts and entering the channel-irons, and an endless load-conveyer connecting the several shafts.

4. The combination with a derrick, of a boom connected to the derrick, a pivotally-mounted sectional conveyer, a conveyer carried by the frame, and independent connections between the sections of the conveyer and the boom.

5. The combination with a derrick, of a boom supported thereby, a sectional conveyer-frame, independent conveyers carried by the sections thereof, and independent tackle connections between the sections and the boom thereby to permit independent adjustment of the positions of said sections.

6. In a device of the class specified, a frame having upper and lower sets of bars or rails, an endless conveyer carried by the frame and having rails resting on said bars, gang-planks arranged at opposite sides of the frame, and diagonal supports extending from said frame and carrying said gang-planks.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN D. BUCHANAN.

Witnesses:

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J. M. WALKER.