

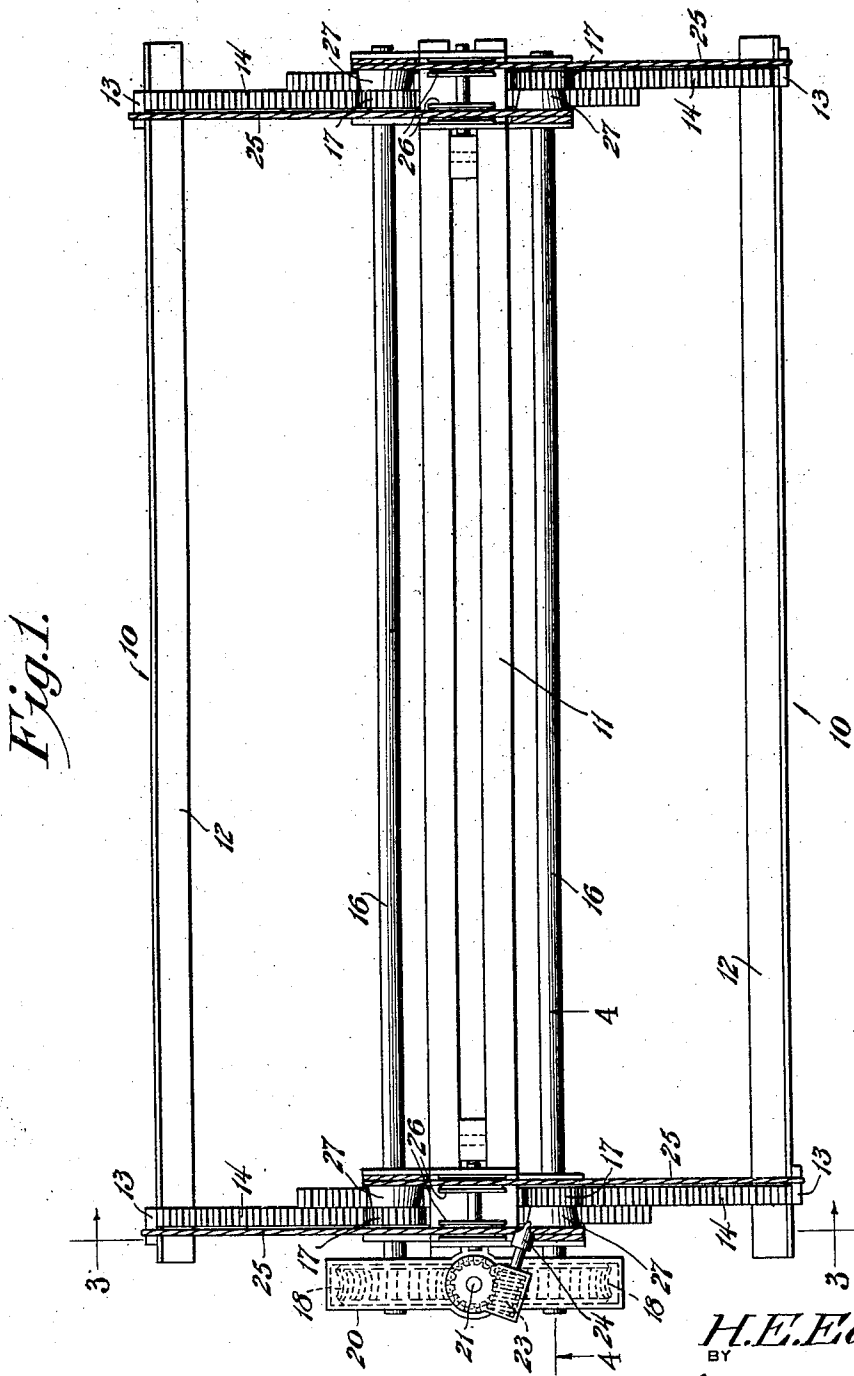
Nov. 3, 1931.

H. E. EDWARDS

1,830,264

SHEET CONVEYING RIG

Original Filed Nov. 27, 1928 2 Sheets-Sheet 1



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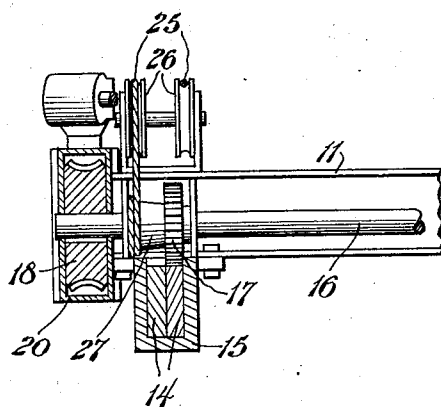
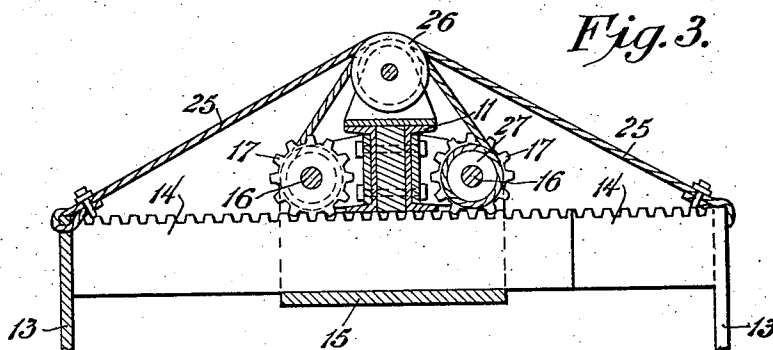
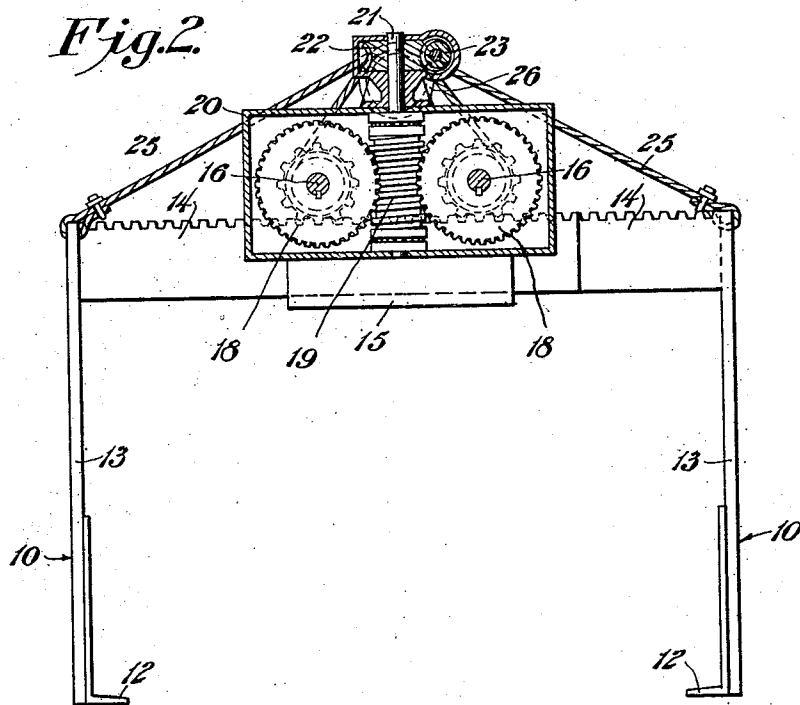
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2 Sheets-Sheet 2



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SHEET CONVEYING RIG

Original application filed November 27, 1928, Serial No. 322,195. Divided and this application filed November 27, 1928. Serial No. 322,196.

This invention relates to sheet conveyors for picking up and conveying stacks of rolled sheets, and aims to provide an improved rig adapted to be used with the conveyor shown and described in my co-pending application, Serial No. 322,195, filed November 27, 1928, of which this application is a division. Also, this application is a continuation in part of my co-pending application, Serial No. 200,192 filed June 20, 1927.

In the accompanying drawings,

Fig. 1 is a top plan view showing the selected embodiment of the rig;

Fig. 2 is a rear end elevation of the rig shown in Fig. 1;

Fig. 3 is a sectional view taken on the line 3-3 of Fig. 1; and

Fig. 4 is a sectional view taken on the line 4-4 of Fig. 1.

Referring particularly to the drawings, the preferred embodiment of the rig, there shown, comprises jaw or hook members 10 carried by an elongated frame 11, conveniently made of spaced channel beams adapted to be suspended from a hoist (not shown). The construction and arrangement is such that the jaws or hooks may be power-operated to engage or disengage the side edges of a stack of sheets.

In the present example, the jaws or hooks are shown as comprising elongated, L-shaped structural members 12 conveniently made by cutting off one flange of a wide channel beam and utilizing the other flange to underlie the side edges of a stack of sheets. These jaws are preferably secured near their ends to vertical arms 13 each having a horizontal rack 14 slidably mounted in guides 15 (Fig. 4) on the frame. The racks are shown as being arranged in pairs and lie side by side in their respective guides, the teeth being provided on their upper edges.

To operate the jaws, a pair of shafts 16 are journaled in the frame on opposite sides and have pinions 17 meshing with the respective racks, the arrangement being such that the racks of each pair are moved in opposite directions.

In order that the pinion shafts may be operated by power through self-locking reduc-

tion gearing, each shaft is shown as having a worm wheel 18 near one end, the two wheels being spaced and a single worm 19 meshes with and drives both of them. Herein, the worm and wheels are enclosed in a housing 20 and the worm shaft 21 projects above the casing. This shaft is shown as having a worm wheel 22 meshing with a worm 23 on a joint 24 of a universal driving shaft (not shown).

To relieve the horizontal racks 14 and their guides of the bending strains exerted by a load of sheets, the upper end of each arm 13 has a cable 25 connected to it and extending upwardly over a sheave 26, the other end being wound on a tapered drum 27 fast on that shaft 16 at the opposite side of the frame. The arrangement is such that the cables are kept taut by the tapered drums as the racks are extended or retracted. The taper of the drums permits the cables to be paid out faster as the angle between them and the rack decreases. If the cables should hang vertically on nearly vertical, horizontal movement of the racks would require little or no tightening or slackening of the cables. Consequently, as the angularity of the cables with respect to the horizontal increases they are paid out less by virtue of being wound on the smaller parts of the drums.

While the sheet handling rig herein shown and described is especially useful in conjunction with a vehicle or tractor to load sheets on railway cars, as described in my aforesaid co-pending application, Serial No. 322,195, filed Nov. 27, 1928, it is to be distinctly understood that it may be employed advantageously with any suitable type of conveyor or crane having provision for hoisting the rig.

From the foregoing description, it will be seen that the rig may be made very largely of standard structural steel parts; that the operating mechanism for the jaws or sheet hooks is very simple and easy to apply; and that the whole thing may be manufactured very cheaply. Moreover, a very light rig of this character has a capacity of several tons of sheets, thereby eliminating unnecessary dead load on the carrier, and a resulting waste of power.

Obviously, the present invention is not re-

stricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since they may be employed advantageously in various combinations and sub-combinations.

What I claim is:—

1. A sheet conveying rig comprising, in combination, a carrier beam; sheet engaging members suspended from the beam and arranged to open and close transversely of the beam; means to open and close the sheet engaging members; cables connected to said members to sustain a portion of the load; and means to pay out and take up the cables as the sheet engaging members are opened and closed.

2. A sheet conveying rig comprising, in combination, a carrier beam; sheet engaging members suspended from the beam and arranged to open and close transversely of the beam; means to open and close the sheet engaging members; and cables operatively connected to said means to transfer a portion of the load on the sheet engaging members directly to the beam to relieve the operating mechanism of bending strains.

3. A sheet conveying rig comprising, in combination, a carrier beam adapted to be connected to a hoist; a pair of sheet engaging members carried by the beam; racks on the sheet engaging members mounted transversely of the beam; gearing co-operating with the racks to open and close the sheet engaging members; and load suspending cables connected to the outer ends of the racks to relieve the racks of bending or breaking strains.

4. A sheet conveying rig comprising, in combination, a carrier beam adapted to be connected to a hoist; a pair of sheet engaging members carried by the beam; racks on the sheet engaging members mounted transversely of the beam; gearing co-operating with the racks to open and close the sheet engaging members; and cables operatively connected to the sheet engaging members and arranged to relieve the racks of bending or strains.

5. A sheet conveying rig of the class described comprising, in combination, an elongated supporting frame; a pair of sheet engaging hook members depending from the frame at opposite sides; racks on the hook members slidably connected to the frame; guide members for the racks; spur gears co-operating with the racks to open and close the hook members; a pair of shafts carrying said spur gears; worm wheels on said shafts; and a single worm meshing with both of said worm wheels.

6. A sheet conveyor rig comprising, in combination, a carrier beam; spaced hook members carried by the beam; racks connected to the hooks and arranged transversely of the beam; longitudinal shafts mounted on the beam; spur gears carried by the shafts

and meshing with the racks; worm wheels on the shafts; and a single driving worm meshing with both of the wheels to turn the shafts and draw the hooks of each pair together.

7. A sheet carrier comprising, in combination, a carrier beam formed of a pair of spaced, elongated channel irons; spacing blocks secured between the angle irons and having opposite upstanding bearings at opposite sides of the beam and a transverse slide bearing below the beam; pairs of racks mounted in the slide bearing; hooks depending from opposite ends of the racks; shafts mounted in the aligned, upstanding bearings; gears mounted on the shafts and meshing with the racks; a gear casing carried by one end of the beam; worm wheels mounted on the ends of the shafts and within the casing; a worm located between the wheels and meshing therewith; and a shaft adapted to be connected to a source of power for actuating the worm to draw the hooks towards each other.

8. A sheet carrier comprising, in combination, a carrier beam; spaced pairs of racks mounted to slide transversely to and beneath the beam; sheet hooks depending from opposite ends of the racks to engage the load; rotatable shafts mounted at each side of the beam; gears secured to the shafts and meshing with the racks; means for rotating the shafts to simultaneously draw the hooks together or force the same apart; sheaves mounted on the beam; tapered drums mounted on the shafts; and cables passing from the drums over the sheaves and connected to the opposite hook ends of the racks to sustain the load.

9. A sheet carrier comprising, in combination, a carrier beam formed of spaced members; spacing blocks secured between the members and having bearings; racks mounted to slide in one of the bearings transversely of the beam; a pair of depending, substantially L-shaped depending hooks connected to the ends of the racks; longitudinal shafts rotatably mounted in the other bearings and having gears in mesh with the racks; means for rotating the shafts in opposite directions to simultaneously force the hooks together or apart; sheaves mounted on the spacing blocks above the racks; winding drums mounted on the shafts in line with the sheaves; and cables having one end secured to and wound around said drums and passing over the sheaves with their other ends secured to the opposite hook ends of the racks to sustain the load in all positions of the racks.

10. A sheet conveying rig comprising, in combination, a carrier beam; L-shaped sheet engaging plates suspended from the beam; horizontal racks guided to slide with respect to the beam; parallel shafts having pinions meshing with the racks; worm and wheel

gearing for the shafts; and a power delivering shaft to operate the gearing whereby to open and close the sheet engaging plates.

11. In a sheet handling rig of the class described, a longitudinal supporting frame; pairs of sheet engaging, hook members having arms slidably connected to and projecting from opposite sides of the frame and arranged to open and close the hooks; self-locking gearing connected to said arms; load sustaining elements connected to the outer ends of said arms and extending above the frame; and means actuated by said gearing automatically to keep the load sustaining elements taut as the sheet engaging hook members are opened and closed.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

HARRY E. EDWARDS.