

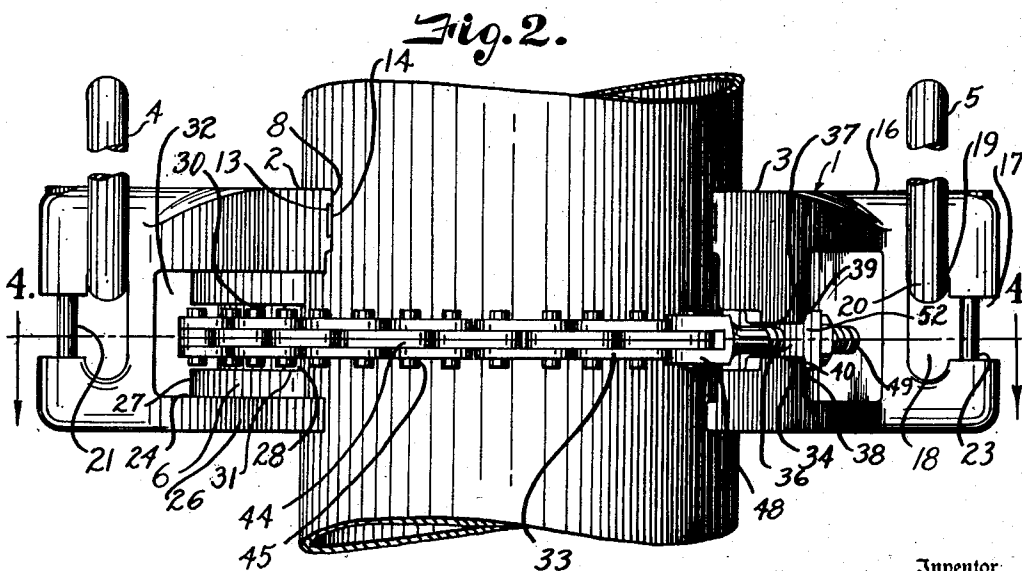
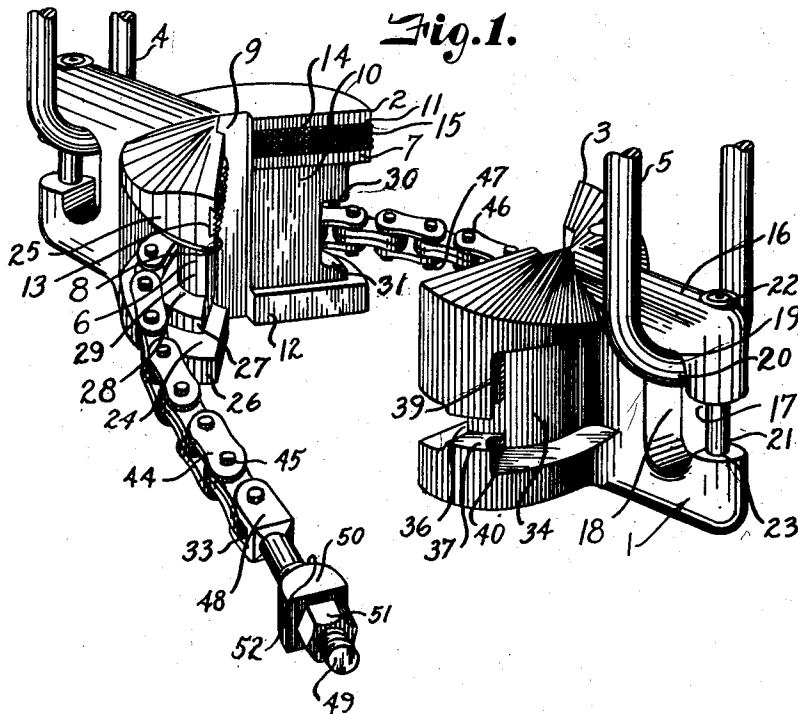
July 7, 1953

G. E. FAILING
ELEVATOR GRAPPLE

2,644,713

Filed Sept. 10, 1949

2 Sheets-Sheet 1



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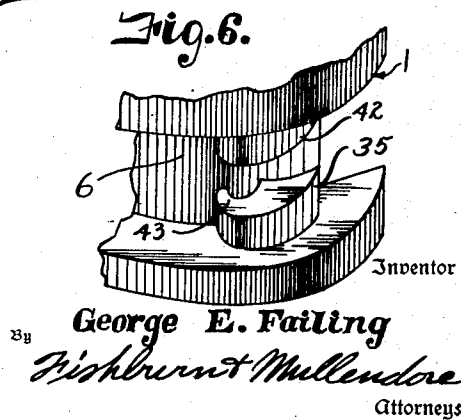
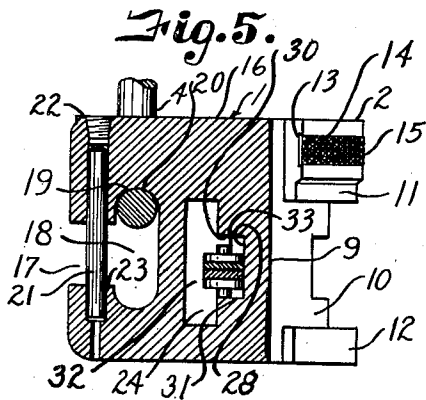
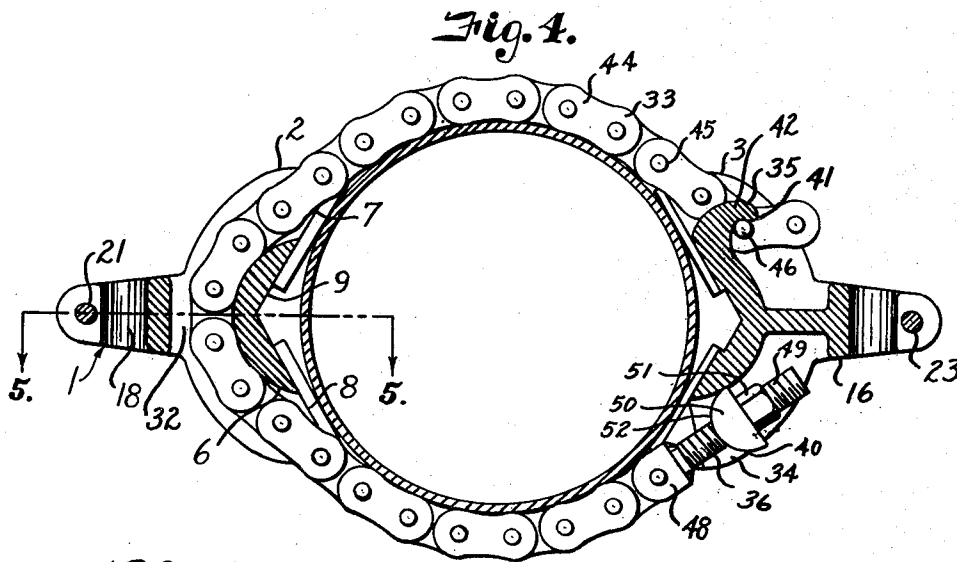
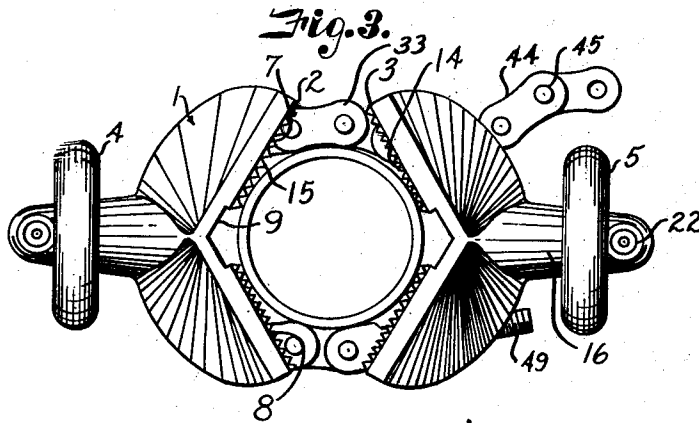
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UNITED STATES PATENT OFFICE

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ELEVATOR GRAPPLE

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5 Claims. (Cl. 294—86)

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This invention relates to elevators such as is used for handling pipe, casing and the like incidental to drilling and casing of bore holes. The principal object being to provide an elevator of this type that is adapted for various sizes of pipe or casing.

Other objects of the invention are to provide an elevator that is easily operated, positive in action and which has its grip enhanced by weight of the pipe or casing engaged thereby. A further object of the invention is to provide an elevator with flexibly connected jaws so that they are self aligning with respect to the pipe.

In accomplishing these and other objects of the invention that is hereinafter pointed out, I have provided improved structure the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a perspective view of an elevator constructed in accordance with the present invention, the jaws being shown in open position for gripping a pipe or casing.

Fig. 2 is a side elevational view showing the jaws in gripping engagement with a pipe or casing.

Fig. 3 is a plan view of the elevator showing the jaws gripping a pipe or casing of smaller diameter.

Fig. 4 is a horizontal section on the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary section on the line 5—5 of Fig. 4.

Fig. 6 is a fragmentary perspective view of one of the jaws showing the hook-like seats for engaging the toggle head of the adjusting chain.

Referring more in detail to the drawings:

1 designates an elevator constructed in accordance with the present invention and which includes a plurality of jaw members 2 and 3 that are carried by bails 4 and 5 that are adapted to suspend the jaw members from the hook of a traveling block or the like when running in or pulling the pipe or casing. Each jaw member includes a substantially semi-circular body 6 having angularly diverging faces 7 and 8 to engage spaced points on opposite sides of the pipe or casing. The jaws are provided at the juncture of the faces 7 and 8 with longitudinal grooves 9 to provide clearance and the faces have transverse recesses 10 to provide upper and lower flanges 11 and 12. The upper flange portions 11 are relatively wider and are provided with transversely arranged grooves 13 for receiving dies 14 having teeth 15 to engage the sides of the pipe.

Extending laterally from the outer side of each jaw member is an arm 16 having outwardly open-

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ing horizontal slots 17 intersecting vertical slots 18 for receiving and seats 19 for the cross bar portions 20 of the bails 4 and 5 whereby the jaw members are adapted to be freely movable on the bails. The bails are retained in the portions 18 of the slots by gate pins 21 that are inserted through openings 22 and have their lower ends engaged in recesses 23 as shown in Fig. 1, the pins being retained for example, by threading the heads thereof into the openings 22.

The exterior side of the jaw member 2 has a channel-like groove 24 that extends therearound from the face 7 to the intersect with the face 8 and provide upper and lower flanges 25 and 26 that register with the flanges 11 and 12 on the face sides of the jaws. Formed in the side wall 27 of the groove 24 is a narrower groove or way 28 located below the mid point of the height of the jaw member whereby the center of gravity of the jaw member is above the upper portion or above the way. The way 28 is of rectangular cross section and has a circular face 29 and upper and lower faces 30 and 31. Extending through the way is a flexible connector 33 for the jaw members as later described. The way 28 continues through the arm of the jaw member 2 by way of an opening 32 as shown in Fig. 2.

The outer face of the other jaw member is provided with recesses 34 and 35 on the respective sides of the arm 16 thereof to accommodate the ends of the member 33. The recess 34 connects through a slot 36 having a narrow portion 37 formed in the end 38 of the recess 34 on the respective sides of the constricted portion 37 of the slot 36 are concave seats 39 and 40. The opposite recess 35 has the corresponding end 41 shaped to provide spaced apart upper and lower hooks 42 and 43.

The member 33 preferably comprises a chain composed of a series of links 44 interconnected by transverse pins 45. The pins extend transversely through the links and have projecting ends 46 and 47 that engage the hooks 42 and 43 as best shown in Fig. 4. The opposite end of the chain carries a toggle bolt 48 having a threaded shank 49 that is adapted to be engaged in the slot 36 and which has a head 50 slidably mounted thereon and secured in position by a nut 51 that bears against a flat side of the head as shown in Fig. 1. The opposite side of the head 50 is rounded as at 52 to conform with the seats 39 and 40 of the jaw member previously described.

In assembling the chain 33 relatively to the jaw members 2 and 3 the end opposite the toggle bolt 48 is threaded through the opening 32 of the jaw member 2 and one of the end links is

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passed into the recess 35 of the jaw member 3, the projecting ends of the chain pins 45 are engaged with the hooks 42 and 43.

The shank 49 of the toggle bolt 48 is then passed through the slot 36 so that the head 50 engages in the concave seats 39 and 40 at the respective sides of the slot. The chain may then be readjusted so that the jaws are in position to engage the size of pipe to be handled. This is effected by disengaging the chain from the hooks 42 and 43 and re-engaging the chain at one of the other links so that when the jaws are engaged with the side of the pipe they are retained in substantially close contact therewith. The chain is tightened about jaws to bring the jaws into gripping contact with the pipe or casing by adjusting the nut 51 on the shank 49 of the toggle bolt 48.

When inserting casing in a bore hole two of the elevators are used, one serving as an elevator and the other as a spider. The bails 4 and 5 of one of the elevators being engaged with the hook of the traveling block (not shown) so that the elevator is connected therewith.

To grip a joint of well casing, the head 50 of that elevator is disengaged from the seats 39 and 40, to free that end of the chain so that the jaw members can be moved apart to pass them into engagement with the respective sides of a joint of casing with the dies 14 on the diverging faces contacting spaced points on opposite diametrical sides. The head on the toggle bolt is then re-engaged with the jaw 3 and the nut 51 is tightened. When the elevator is lifted, the jaws are held together by the chain, and the gripping action of the jaws is supplemented since the jaws may rock on the chain by reason of the lever action of the arms 16. The dies thus firmly grip the joint of casing as the traveling block moves toward the top of the derrick. When the casing is suspended over the bore hole it is lowered thereinto until the elevator seats upon a support provided over the bore hole. The traveling block hook is then released from the bails and the traveling block is moved to connect with the bails of the second elevator which has been applied to a second joint of casing to raise and lower the joint into coupling relation with the joint in the bore hole. After the coupling of the joints is completed the first elevator is removed and the coupled casings are lowered until the second elevator is in position to engage the support. The first elevator is then used for handling a succeeding joint and the operations are continued to complete the casing of the bore hole.

The elevators might also be used for handling stands of drill pipe and lowering the drill pipe when it is run into the well.

The elevators are used to withdraw the casing or drill pipe from the bore hole by reversing the operations.

When smaller or larger pipe or casing is used, the elevator is readily adapted by adjustment of the chain 33.

From the foregoing, it is obvious, that I have provided an elevator of simple and inexpensive construction and which is adapted for handling various size pipe or casing in an expeditious and safe manner.

What I claim and desire to secure by Letters Patent is:

1. An elevator including jaw members having opposed gripping faces for engaging opposite sides of a member to be axially supported by the elevator when the elevator is in use, arms project-

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ing from the jaws on sides thereof opposite said gripping faces, bails having connection with said arms and having transverse portions forming pivotal supports on which the jaw members rock into contact with said member to be lifted, one of said jaws having a way for passage of a chain around the arm side of said jaw member, hooks on one side of the other jaw member with the hooks being located with one hook above and the other below said way, said other jaw member having a slot on the opposite side in registry with said way and intersecting a shoulder of said other jaw member, a chain in said way having projections on opposite sides thereof for engagement with said hooks when a portion of one end of the chain is placed between said hooks, a toggle on the other end of said chain and having a shank portion extending through said slot, and a member on said shank portion of the toggle engaging said shoulder for retaining the jaws in contact with the member to be lifted.

2. An elevator including jaw members having opposed gripping faces for engaging opposite sides of a member to be axially supported by the elevator when the elevator is in use, arms projecting from the jaws on sides thereof opposite said gripping faces, bails having transverse portions connected with the arms and forming pivotal supports on which the jaw members rock into contact with said member to be lifted, one of said jaws having a way for passage of a chain around the arm side of said jaw member, hooks on one side of the other jaw member with the hooks being located with one hook above and the other below said way, said other jaw member having a slot on the opposite side in registry with said way and intersecting a shoulder of said other jaw member, a chain in said way having links and pins connecting the links, said pins having projecting ends on opposite sides of the chain for engagement with said hooks when a portion of one end of the chain is placed between said hooks, a toggle on the other end of said chain and a shank portion removably engageable in said slot, and a member on said shank portion of the toggle engaging said shoulder for retaining the jaws in contact with the member to be lifted.

3. An elevator including jaw members having opposed gripping faces for engaging opposite sides of a member to be axially supported by the elevator when the elevator is in use, arms projecting from the jaws on sides thereof opposite said gripping faces, bails having transverse portions connected with said arms and forming pivotal supports above centers of gravity of the jaw members and on which the jaw members rock into contact with said member to be lifted, one of said jaws having a way for passage of chain around the arm side of said jaw member below the centers of gravity of the jaw members, hooks on one side of the other jaw member with the hooks being located with one hook above and the other below said way, said other jaw member having a slot on the opposite side in registry with said way and intersecting a shoulder of said other jaw member, a chain in said way having links and pins connecting the links, said pins having projecting ends on opposite sides of the chain for engagement with said hooks when a portion of one end of the chain is placed between said hooks, a toggle on the other end of said chain and having a shank portion removably engageable in said slot, and a member on said shank portion for engaging said shoulder

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for retaining the jaws in contact with the member to be lifted.

4. An elevator including opposed jaw members having gripping faces for engaging respective opposite sides of a member to be elevated, one of said jaw members having a transverse way extending therethrough and the other jaw member having chain attaching means on respective sides thereof, a chain extending freely through the way of said one jaw member and having ends engaged with the connecting means of the other jaw member for retaining the jaw members in contact with the member to be elevated, arms projecting from the jaw members on sides thereof opposite said gripping faces, and bails having transverse portions connected with said arms.

5. An elevator including opposed jaw members having upper and lower portions for engaging the respective opposite sides of a member to be elevated, said jaw members having means below the center of gravity of the jaw members for connecting a flexible member, a flexible means engaging said connecting means of the jaw mem-

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bers for retaining said lower portions of the jaw members in contact with the member to be elevated, arms projecting from the jaw members on sides thereof opposite said upper and lower engaging portions and having bail seats, and bails having transverse portions engaged in said seats, said seats being located above the center of gravity of the jaw members to enhance engagement of the upper portions of the jaw members with the member to be lifted when weight of said member to be elevated is supported by said bails.

GEORGE E. FAILING.

15 References Cited in the file of this patent
UNITED STATES PATENTS

Number	Name	Date
827,079	Clark	July 31, 1906
909,909	Keller	Jan. 19, 1909
953,234	Rountree	Mar. 29, 1910
1,204,374	Benson	Nov. 14, 1916
1,967,517	Rogers	July 24, 1934