

G. F. CONNER.
LIFTING JACK.
APPLICATION FILED JAN. 6, 1912.

1,043,070.

Patented Nov. 5, 1912.

3 SHEETS—SHEET 1.

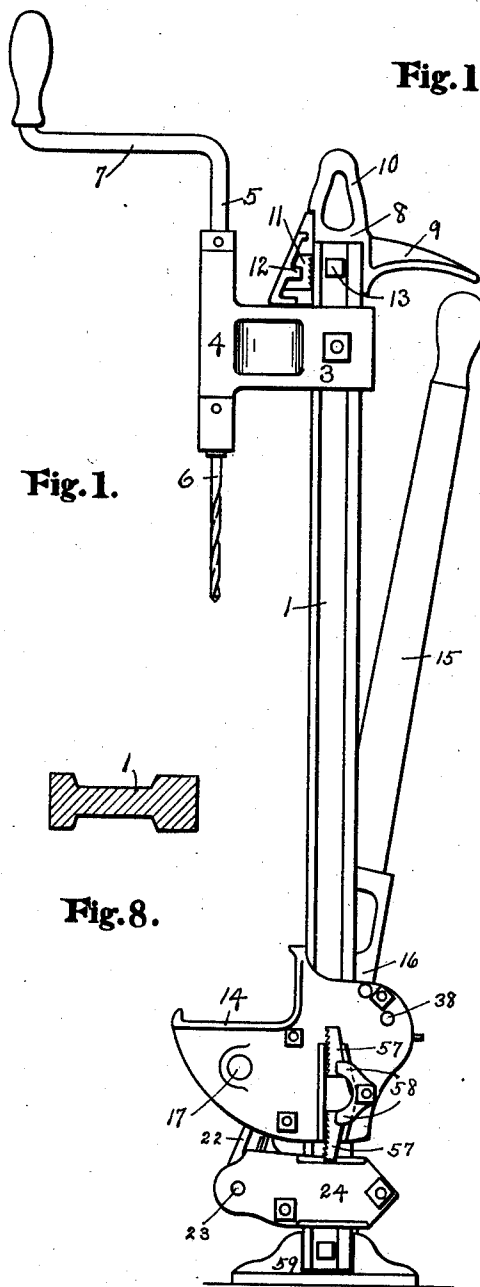


Fig. 1.

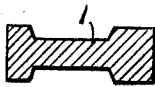


Fig. 8.

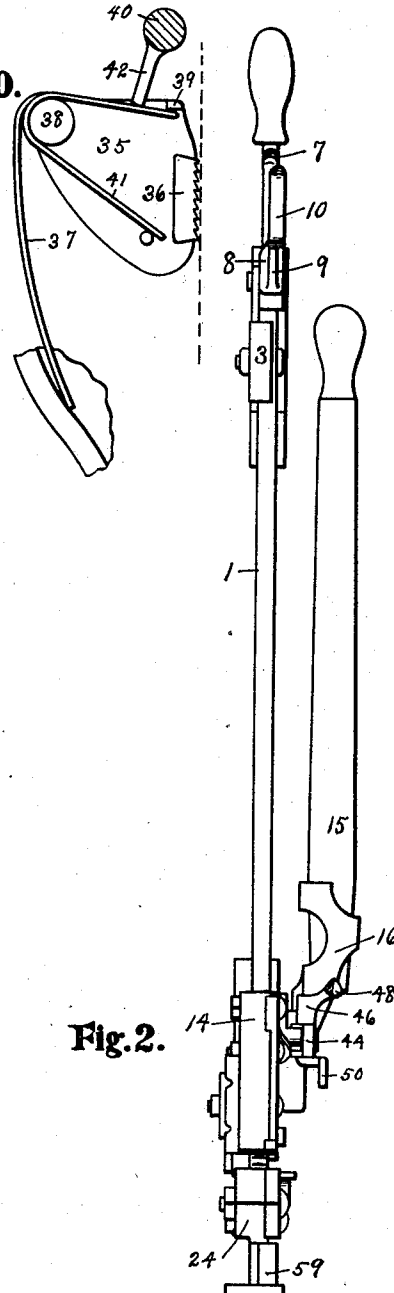


Fig. 2.

WITNESSES:

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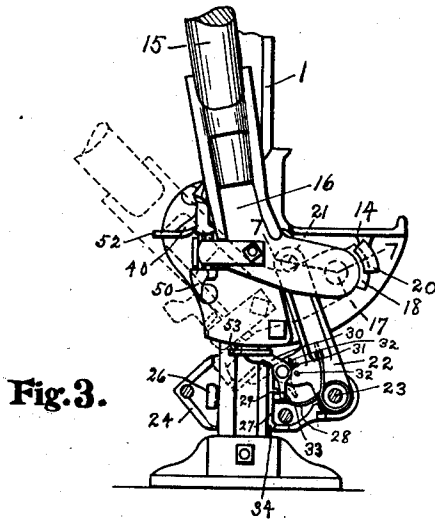


Fig. 3.

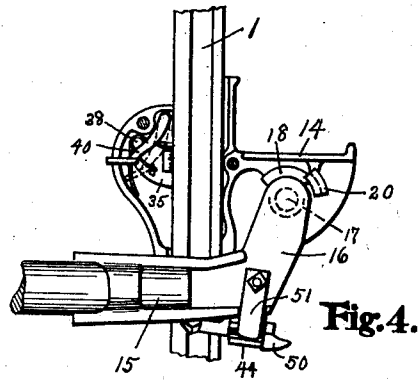


Fig. 4.

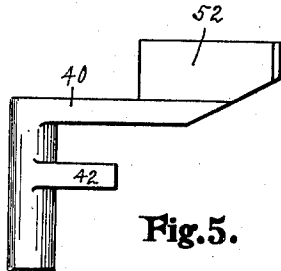


Fig. 5.

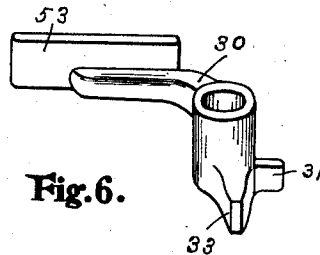


Fig. 6.

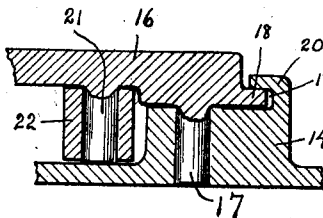


Fig. 7.

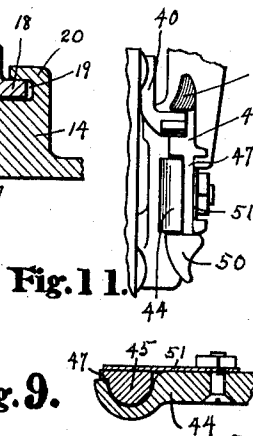


Fig. 9.

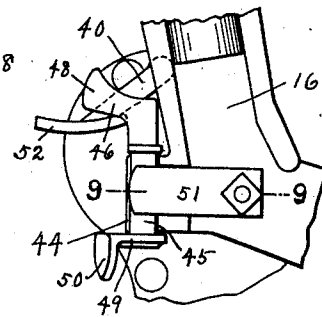


Fig. 12.

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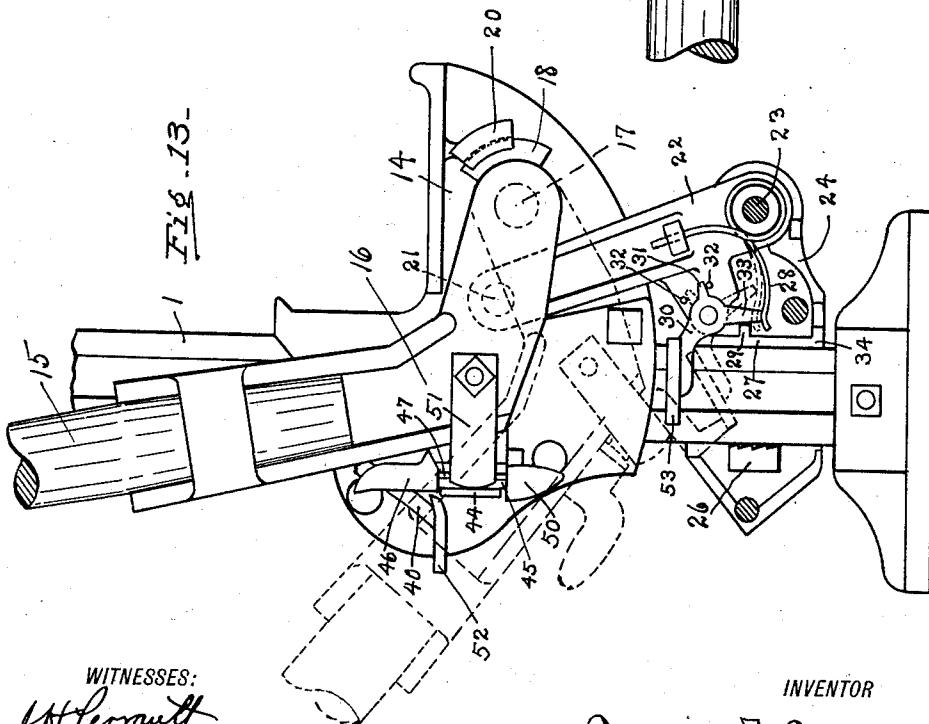
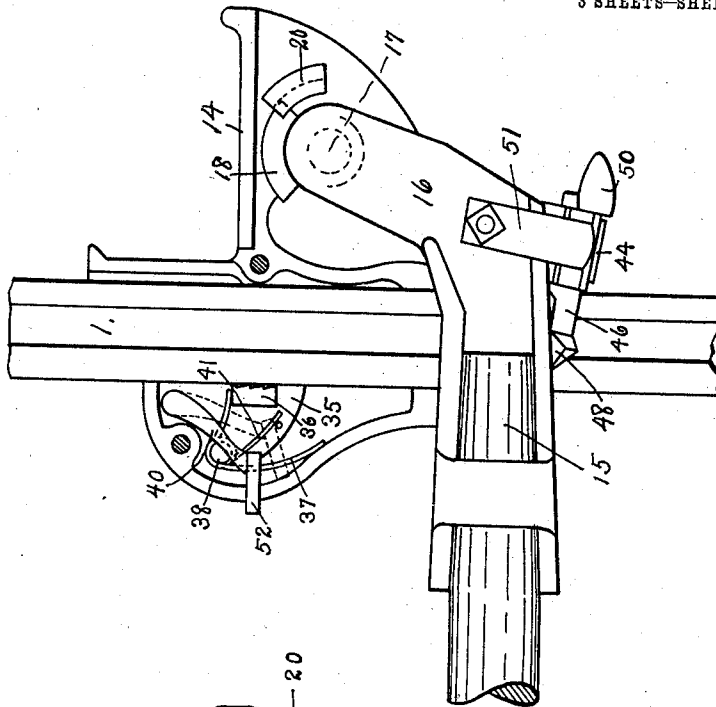
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INVENTOR

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APPLICATION FILED JAN. 6, 1912.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GEORGE F. CONNER, OF PORT HURON, MICHIGAN, ASSIGNOR TO HANDY JACK MANUFACTURING COMPANY, OF PORT HURON, MICHIGAN, A CORPORATION OF MICHIGAN.

LIFTING-JACK.

1,043,070.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed January 6, 1912. Serial No. 669,745.

To all whom it may concern:

Be it known that I, GEORGE F. CONNER, a citizen of the United States, and a resident of Port Huron, in the county of St. Clair and State of Michigan, have invented a new and useful Lifting-Jack, of which the following is a specification.

This invention consists in a combination tool so constructed that it can be used for a drill-press, a clamp, a wire tightener, a lifting jack, and similar purposes, and its object is to provide an easily operated device which will, upon the reciprocation of a lever, either raise or lower the table or movable member by a step-by-step movement.

In the accompanying drawings Figure 1 is a side elevation and Fig. 2 is a rear elevation of a machine embodying this invention when arranged as a drill-press. Fig. 3 is a side elevation of the lower end of the machine from the side opposite to Fig. 1. Fig. 4 is a similar elevation of the movable head or table with a side removed. Figs. 5 and 6 are details of the dog-releasing levers on a larger scale. Fig. 7 is a section on the line 7—7 of Fig. 3. Fig. 8 is a cross section of the shank of the machine. Fig. 9 is a cross section on the line 9—9 of Fig. 12. Fig. 10 is a detail of the gripping dog of the table on a larger scale. Fig. 11 is a detail of Fig. 2 on a larger scale showing the controller in a different position. Fig. 12 is a detail of Fig. 3 on a larger scale showing this controller. Figs. 13 and 14 are views on a larger scale of the mechanism shown in Figs. 3 and 4.

Similar reference characters refer to like parts throughout the several views.

The shank 1 of this machine is preferably a section of rolled bar, preferably with grooved sides. At the upper end of this bar may be secured a removable plate 3, on which is formed a sleeve 4, in which sleeve is revoluble the spindle 5. In the lower end of the spindle any desired revoluble tool, such as a drill 6 may be secured, while a crank 7 at the upper end of the spindle may be employed to turn the tool. A fixed head 8 may also be secured to the upper end of the shank and be provided with a jaw 9, which may be used as a handle to carry the tool, while an eye 10 may be employed for suspending it. A small gripping dog 11 of hard steel, preferably formed with teeth, is held in slidable po-

sition in a depression in the fixed head by means of the finger 12, so that a wire may be gripped between this jaw and the shank, when this machine is to be used as a wire stretcher. It will readily be seen that the bolt 13 may be removed and this head secured to the opposite side of the shank so that the jaw 9 will be on the same side as the movable head or table 14, so that then this machine may be used as a clamp. This movable head 14 is slidable on the shank 1 and may be moved up or down on the shank, step by step, by means of the operating handle 15. This handle is secured in the free end of the lever 16, which is mounted on the pivot 17 preferably integral with the lever 16. A small rib 18 projects from the pivot end of this lever 16 and normally engages in a slot 19 in the projecting lug 20 formed on the head 14, whereby the pivot 17 of the lever is prevented from slipping out of its journal. The lever carries a pin 21 which extends into an eye in the upper end of the link 22. The lower end of this link is mounted on a pin 23 which is carried by the follower 24. It will be apparent therefore, that when the operating handle is swung down, the distance between the movable head 14 and follower 24 is increased, and when the handle is swung up, this distance is diminished. Means are provided for holding the table and follower from descending, and also for releasing these holding means as desired, so that the table and follower will rise step by step or descend step by step as desired. These engaging members are automatic and provided with ratchet teeth to engage the rear edge of the shank, and the teeth are pointed downward so that, unless disengaged from the shank, they will permit only upward movement of the follower and the table.

The follower is formed of two connected parts so that it can be readily mounted on the shank. It has a chamber in the rear of the shank in which is mounted a serrated block 26 of steel, whose teeth point down so that they will engage the rear edge of the shank. This block is set in the middle of the rear portion of the follower. A bearing strip 27 is formed in the follower to bear against the front edge of the shank. A spring 28 is mounted on a hub of the link 22 and connects to the link, and normally bears against the shoulder 29 on this

strip 27. A small releasing lever 30 is pivoted on this link and has a downwardly extending finger 33 which may engage the free end of this spring and move it away from the shoulder 29. A small laterally projecting pin 31 on this lever extends between the stop-pins 32 on the link, which pins thus limit the movement of this lever 30.

When it is desired to raise the table, the lower releasing lever 30 is swung to the position shown in dotted lines in Fig. 3, thus releasing the spring 28 and permitting it to bear against the shoulder 29. The spring will then swing up the block 26 into engagement with the rear edge of the shank and cause the corner 34 at the lower edge of the bearing strip 27 to press against the front edge of the shank. When the lever 16 is swung down, the downward pressure of the link 22 on the pin 23 increases the pressure between the block 26 and the shank, and thus assists in holding the follower in position. The result will be to raise the table. At the end of the down-stroke of the lever the table will be held in position by its dog, (hereinafter described), and the lever in rising will lift the pin 23, and with it the follower, the dog 26 being swung out away from the shank. At the end of the up stroke, the spring 28 will again move the dog 26 against the rear edge of the shank.

The dog 35, which holds the table from moving down, is pivotally mounted in a chamber in the movable head. This dog is shown in Fig. 10, and has a block 36 of hard steel, provided with teeth, inserted in the face adjacent the rear edge of the shank. A spring 37, mounted on the pivot 38 of this dog, engages the lug 39 on the dog and the inner face of the pocket in the head in which the dog is mounted. As the load on the table always holds the dog toward the shank, the dog will hold the table in its elevated position until the dog is swung away from the shank.

When it is desired to lower the table and its load, the lever 40 is employed to hold the dog 35 away from the shank. This lever is pivoted in the table and has a finger 42 within the chamber in line with the spring 37 and the second spring 41. When this lever is depressed, as shown in dotted lines in Fig. 4, the finger 42 will press down the springs 37 and 41, and will thereby swing the dog away from the shank as shown in Fig. 10, as soon as the table is raised and the dog relieved of its load.

The controller which determines the direction of movement of the table and follower is mounted in a grooved lug 44 projecting rearwardly from the main operating lever 16, as shown in Figs. 11, 12 and 13. It consists of a bar 45 having a rib 47, an upper arm 46 having a beveled hook 48, and a lower arm 49 having a beveled hook 50. A

spring 51 is secured to the main lever and holds the controller in either of the two positions shown in Figs. 2 and 3 or in Figs. 11 and 12, as desired, the former being its position when the table is to be raised and the latter when the table is lowered. When the table is being raised, the controller has no effect on the small levers 30 and 40, for during this movement, the controller is in the position shown in Figs. 2 and 3, and the hooks 48 and 50 pass the levers 30 and 40 without contacting. But when the controller is swung to the position shown in Figs. 11 and 12, the outer curved end 52 of the lever 40 will be in the path of the hook 48, the flat arm 53 of the lower lever 30 will be in the path of the hook 50, and the engagement of these hooks and levers will cause alternate engagement and disengagement of the dogs 26 and 35 and the shank 1. Therefore, to lower the table, the lever 30 is first swung to the position shown in Fig. 3. As the operative handle is swung up, the hook 48 engages the arm 52 and swings this lever 40, (if in its lower position) upwardly to disengage the finger 42 from the springs 37 and 41, and then passes over this arm 52, whereupon the dog 35 is left free to engage the shank. The further upward movement of the main lever will cause the follower 24 to rise, but at the end of this upward movement of the handle, the follower will still be supported by the link 22 and pin 23 with the dog 26 out of engagement with the shank. Therefore, when the handle is swung down, the follower descends. At the beginning of the downward movement of the main lever, the hook 48 pulls down the arm 52 and causes the finger 42 to engage the springs 37 and 41 and endeavor to disengage the upper dog from the shank, but because of the weight of the head and the engagement of the teeth of the dog with the shank, particularly when the table is loaded, the dog will remain in engagement with the shank until relieved of the load. When the handle approaches the lower end of its stroke, the hook 50 will first engage the arm 53 of the lever 30 and swing it until the spring 28 is released, as indicated in dotted lines in Fig. 3, which spring immediately swings up the dog 26 into engagement with the shank and thus locks the follower from further movement. The hook 50 then passes over the arm 53, being yieldably mounted as before explained. As the handle can no longer force down the follower, it must raise the table, relieving the dog 35 of its load and permitting the springs 37—41 under pressure of the finger 42, to swing out the dog, which is done during the last portion of the downward movement of the handle. Upward movement of the handle will now permit the table to slide down until the hook 48 again

causes the dog 35 to engage the shank. At the beginning of the upward movement of the handle, the hook 50 will swing up the arm 53 and the spring 28 will be forced
 5 down, but because of the load on the pin 23, the follower will remain locked to the shank by means of the dog 26 until at the end of the up-stroke of the handle the table is again locked to the shank and the follower
 10 is lifted sufficiently to disengage the dog 26.

Jaws 57 are mounted on the movable head and held in position by the fingers 58. By the use of these jaws and the jaw 11 on the stationary head, this machine becomes a
 15 good wire stretcher. A foot 59 may be secured to the lower end of the shank if desired.

Many changes in the details of construction may be made by those skilled in the art
 20 without departing from the spirit of my invention.

While this invention is claimed generally as a lifting jack, it will be understood that it covers all types of machines in which a
 25 movable head and follower are slidably mounted on a post and are provided with engaging and releasing devices as set forth in the claims.

I claim—

30 1. The combination of a shank or post, a foot for said shank, a head slidable on the shank, a shank-engaging dog mounted in the head, a lever to swing the dog out of engaging position, a main operating lever mounted
 35 on the head, a follower, a link connecting the operating lever and follower, a shank-engaging dog in the follower, a spring in the follower to cause the dog to engage, and a lever to swing the spring to inoperative
 40 position.

2. The combination of a shank or post, a foot for said shank, a head slidable on the shank, a shank-engaging dog mounted in the head, a lever to swing the dog out of en-
 45 gaging position, a main operating lever mounted on the head, a follower, a link connecting the operating lever and follower, a shank-engaging dog in the follower, a spring in the follower to cause the dog to
 50 engage, a lever to swing the spring to inoperative position, and means mounted on the operating lever to control the action of the shank-engaging dogs.

3. The combination of a shank or post, a
 55 foot for said shank, a head slidable on the shank, a shank-engaging dog mounted in

the head, a lever to swing the dog out of engaging position, a main operating lever mounted on the head, a follower, a link connecting the operating lever and follower, a
 60 shank-engaging dog in the follower, a spring in the follower to cause the dog to engage, a lever to swing the spring to inoperative position, and a controller pivotally mounted on said operating lever and comprising an arm
 65 to govern the operation of each of said shank-engaging dogs.

4. In a lifting jack, the combination with the shank, a head slidable thereon and having a recess, a shank engaging dog pivoted
 70 in the recess, means to swing the dog out of engagement, an operating lever pivoted on the head, a lug formed on the head adjacent the pivot of said lever and having a slot, a flange on said lever extending into said slot
 75 to hold the lever in position, a follower slidably mounted on the shank and having a recess, shank engaging means mounted in the recess, and a link connecting the main operating lever and follower.

5. In a lifting jack, the combination of a
 80 shank, a head slidable thereon and having a recess, a shank engaging dog mounted in said recess, a spring to cause the dog to engage the shank, a follower having a recess,
 85 a shank-engaging dog mounted in said recess, a spring to cause the dog to engage the shank, a main lever mounted on the slidable head, a link connecting said lever and follower, a controller mounted on the lever,
 90 and means in the path of said controller to engage the springs and permit the dogs to disengage the shank.

6. The combination of a shank or post, a head slidable thereon, a movable shank-en-
 95 gaging dog carried by the head, means to move the dog into and out of engaging position, a main operating lever mounted on the head, a follower, a link connecting the lever and follower, a shank-engaging dog mounted
 100 on the follower, means to cause said dog to disengage and to engage said shank, and an adjustable device mounted on the lever for controlling the action of both shank-engaging dogs.

105 In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE F. CONNER.

Witnesses:

J. F. WILSON,
 ALEX. MOORE.