

No. 841,078.

PATENTED JAN. 8, 1907.

P. M. EGAN.
LIFTING JACK.

APPLICATION FILED FEB. 23, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

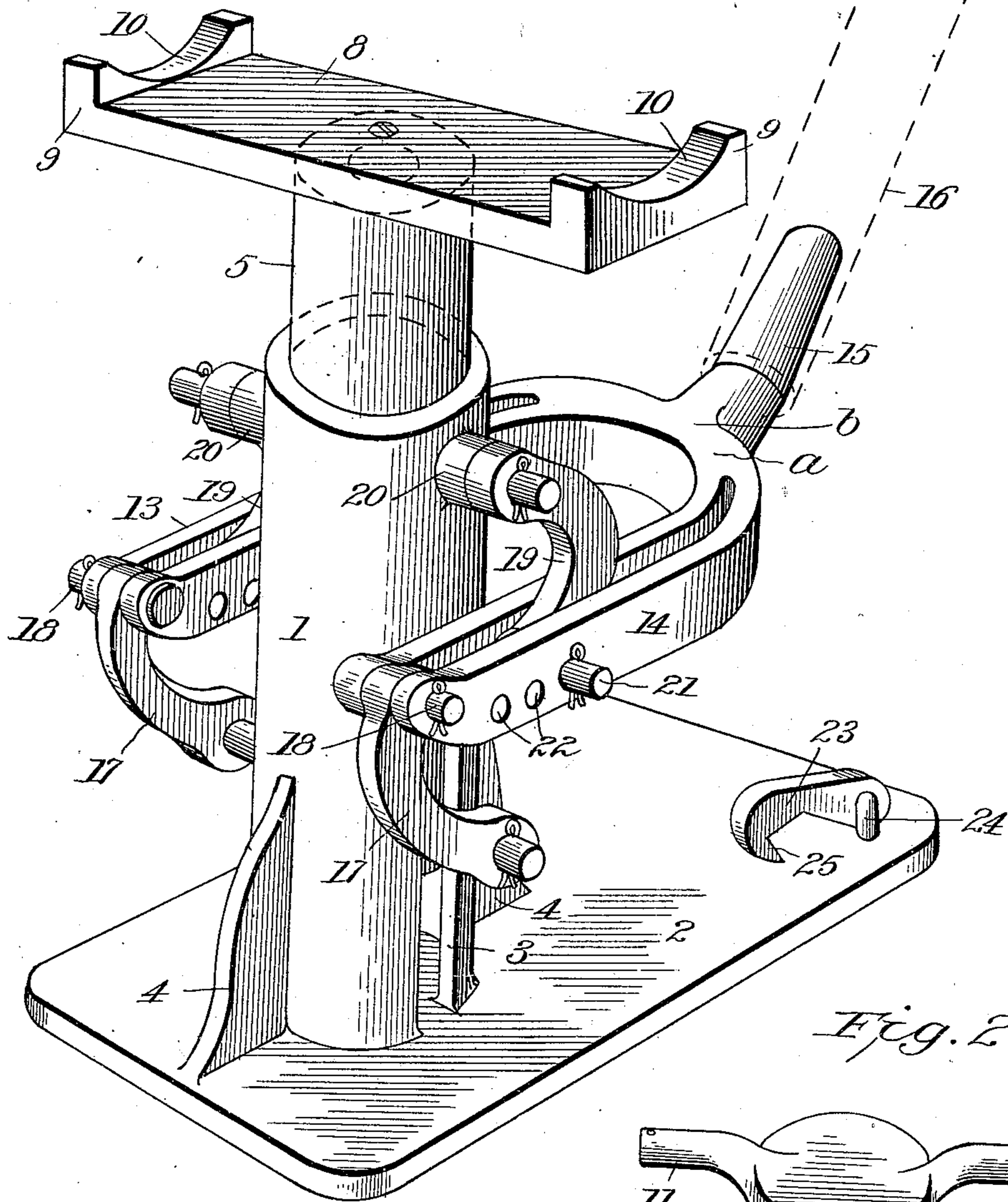
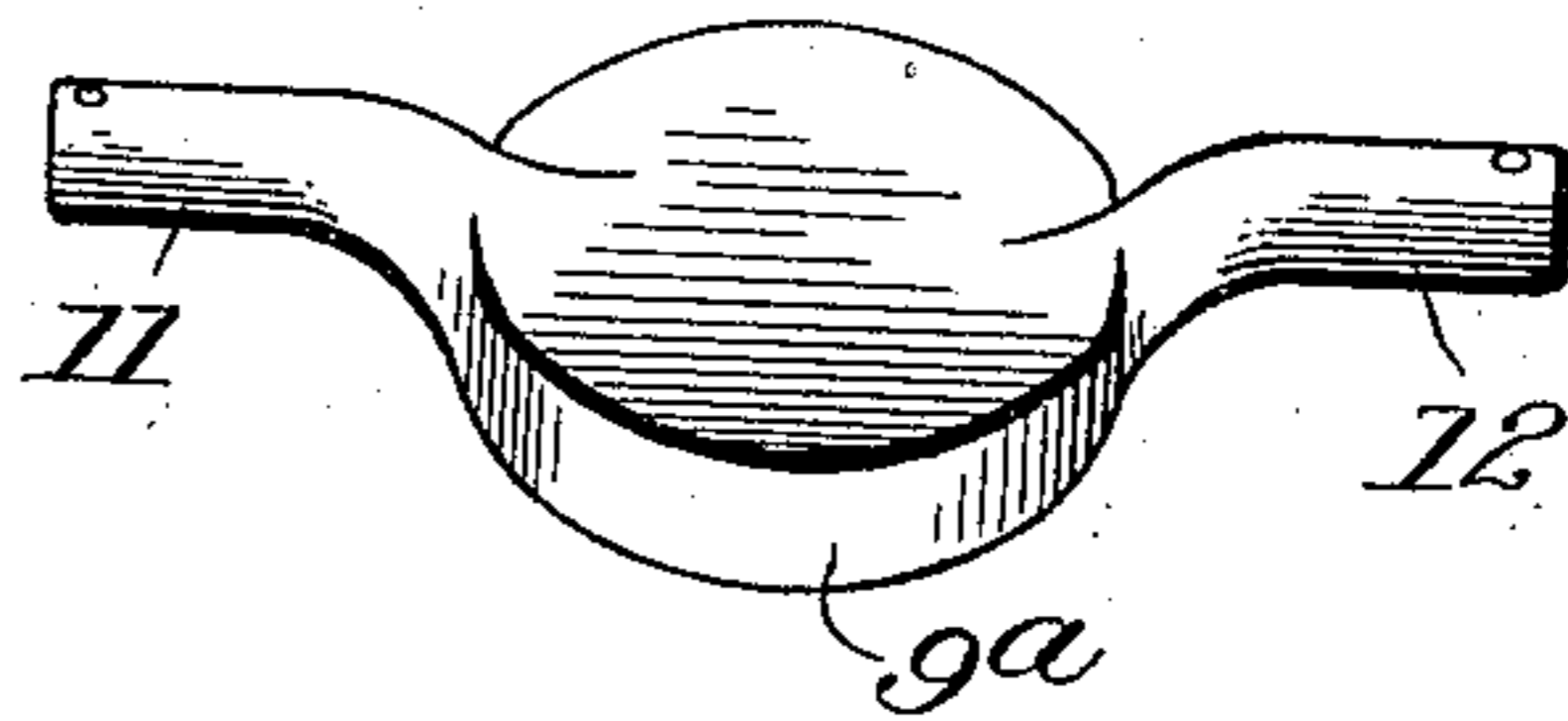


Fig. 2



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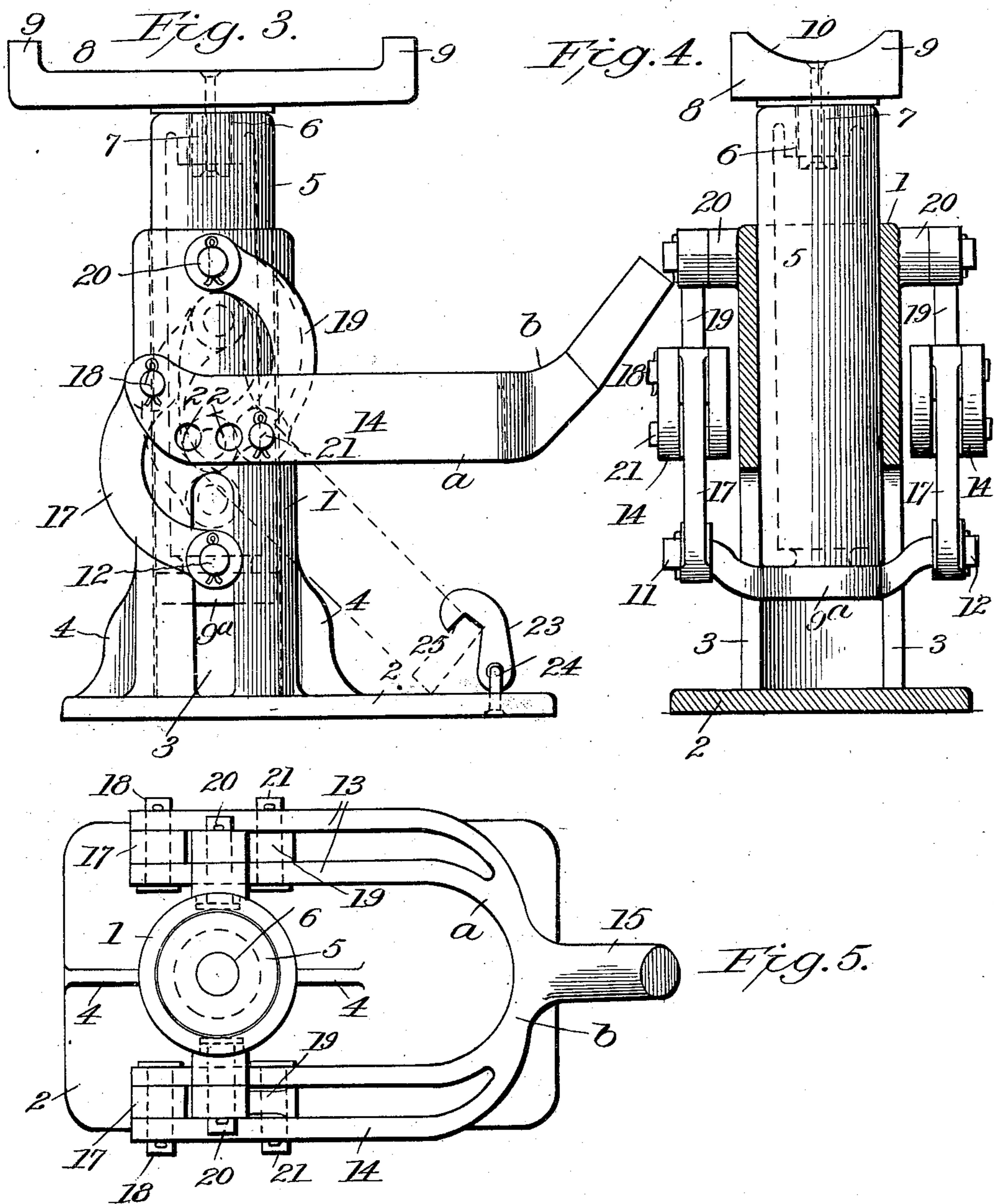
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UNITED STATES PATENT OFFICE.

PATRICK M. EGAN, OF COUNCIL BLUFFS, IOWA.

LIFTING-JACK.

No. 841,078.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed February 23, 1906. Serial No. 302,551.

To all whom it may concern:

Be it known that I, PATRICK M. EGAN, a citizen of the United States, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to lifting jacks.

One object of the invention is to provide a lifting jack particularly adapted to heavy work, such as the raising and lowering of railroad cars, engines, trucks or the like.

Another object of the invention resides in the provision of a lifting jack including interlocking lifting arms operated by a peculiarly formed operating lever.

A still further object embodies such characteristics that the interlocking of lifting arms will cause a pulling action upon the lifting bar in contradistinction to a pushing action common in devices of the present character.

It is still further designed to construct a lifting jack in such manner that the interlocking of lift arms will hold up the load upon the jack, there being auxiliary means for locking the jack in its supporting action.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter referred to, illustrated in the accompanying drawings and particularly pointed out in the appended claims, it being understood that changes may be made in the materials, form, size, proportions and minor details without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the accompanying drawings:

Fig. 1 is a perspective view of my invention.

Fig. 2 is a detail view of the lifting bar support.

Fig. 3 is a side elevation of the invention.

Fig. 4 is a vertical sectional view; and

Fig. 5 is a top plan view.

Referring now more particularly to the accompanying drawings, the reference character 1 indicates a hollow, metallic or other standard mounted upon a suitable base 2 and provided with oppositely disposed vertical slots 3 near its lower end for a purpose presently explained. The standard and base are formed preferably of a single piece of metal or other material and braced by the rib-like webs 4. However, the standard and base may be formed separately, if desired.

Mounted for sliding movement within the upright 1 is a hollow or other lifting bar 5 of any suitable material having its upper end provided with an opening 6 to receive the shank 7 of the cap 8 designed for use in the event it is desired to lift and revolve or partially revolve certain articles, such for instance, as a pair of car or engine wheels. Each end of this cap is preferably provided with a transverse rib 9 concaved intermediate its ends, as at 10, to prevent the article or object becoming accidentally displaced. Of course there are times when this cap 8 is not needed and it is for this latter reason that it has ready detachment with respect to the lifting bar. This lifting bar is mounted upon a slidable plate 9^a, within the standard 1 and which is separate from the bar. The plate 9^a has oppositely disposed upwardly and outwardly directed lugs 11 and 12 which are round in cross-section, and which protrude through the aforesaid slots 3 for a purpose presently explained.

In order to raise and lower the lifting bar 5, I provide a peculiarly shaped lever so constructed as to provide for great strength, to distribute the strain thereupon throughout a comparatively great area and to prevent any possible twisting of the jack arms hereinafter referred to. One form of lever *a* is shown in the accompanying drawings and is of U-shape, with a pair of legs 13 and 14 upon each side adapted to embrace the standard 1, the bight portion *b* of the lever having a short stub handle 15 cast or otherwise formed therewith or secured thereto to receive an iron pipe or the like 16, shown in dotted lines in Fig. 1, so that the desired leverage may be obtained. Obviously, however, the said short stub 15 may be elongated, if desired, to obviate the use of said connection 16.

A curved jack arm 17 is disposed upon each side of the standard 1 with its lower end pivotally connected upon the corresponding projection or lug of the aforesaid plate 9^a and its upper end disposed between and near the outer ends of the corresponding pair of legs of the operating lever *a* and pivotally secured therebetween by a suitable pivot 18 passed through said legs near the upper edge thereof. An upper curved jack arm 19 is disposed upon each side of the standard 1 with its upper end pivotally mounted upon the corresponding projection 20 formed upon each side of the standard near its upper end.

The lower end of each of these upper arms is disposed between the corresponding pair of legs of the operating lever *a* and pivotally secured therebetween near the lower edges thereof by a suitable pivot pin 21. It will thus be understood that there is an upper and a lower pair of curved arms cooperating with each other to pull the lifting bar upwardly, and reference to the accompanying drawings will disclose that the upper pair of arms is curved in a direction opposite to the curvature of the lower pair of arms, whereby the upper and lower pairs of arms are permitted to interlock so that when the operating lever is down the tops of the bottom arms are above the bottoms of the upper arms. This is an important feature of the present invention, in that the interlocking of the arms brings their pivotal connections into alinement to hold up the load. To accomplish this interlocking feature of the arms and the alining of their pivotal connections is one reason why the upper ends of the lower arms are secured to the upper edges of the legs of the operating lever and the lower ends of the upper arms to the lower edges thereof.

As clearly shown in Fig. 1 the opposite pairs of legs of the operating lever *a* are provided with a series of perforations 22 to permit of interchangeable connection therein of the aforesaid upper pair of jack-arms, thereby providing for an adjustment according to the weight of the load to be lifted.

If desired an auxiliary means may be provided to hold up the load when the operating lever *a* is thrown down. One form of auxiliary means may reside in a hook 23, pivoted, as at 24, upon the base 2, so that its bill 25 may engage over bight portion *b* or other part of the operating lever *a*, as shown in the drawings. This auxiliary means doubly insures against possibility of the arms flying up under many tons of pressure which may be resting upon the head of the jack.

From the foregoing it will be understood that while my jack is designed principally for heavy work it is capable of doing light work, I providing means of adjustment according to the weight of the load. It will also be noted that the upper and lower sets of arms work between the corresponding pairs of legs of the operating lever to prevent twisting of the arms. It will also be seen that the lifting bar is absolutely free of direct leverage connections, the bar being lifted by the plate 9 interposed therebetween and the leverage connections, permitting the bar to drop of its own weight when the said plate is lowered by the leverage connections.

What is claimed is—

1. A lifting jack comprising a hollow standard, a lifting bar disposed within the standard, an operating lever, and a plate

confined within the standard to lift said bar upon movement of the operating lever in one direction.

2. A lifting jack comprising a hollow standard provided with oppositely disposed slots, a lifting bar disposed within the standard, an operating lever, a plate confined within the standard and provided with oppositely disposed lugs protruding through the slots of the standard, and connections between the said lugs of said plate and the operating lever to lift the plate and pull the said bar upwardly upon movement of the operating lever in one direction.

3. A lifting jack comprising a hollow standard, a lifting bar disposed within the standard, the latter having oppositely disposed slots, a plate disposed within the standard beneath said bar and provided with oppositely disposed lugs protruding through the slots of the standard, an operating lever, and interlocking connections between the lugs of said plate and the operating lever.

4. A lifting jack comprising a hollow standard, a lifting bar disposed within the standard, a plate disposed within the standard, an operating lever, and interlocking connections between the operating lever and said plate.

5. A lifting jack comprising a hollow standard, a lifting bar disposed within the standard and having an opening in one end, a cap removably disposed within the said opening of the lifting bar, a plate disposed within the standard for the support of the lifting bar, and connections between the operating lever and the said plate.

6. A lifting jack comprising a standard, a lifting bar, a plate for the support of the lifting bar, a cap removably mounted with respect to the lifting bar, an operating lever, and connections between the operating lever and the said plate.

7. A lifting jack comprising a standard, a lifting bar, a plate for the support of the lifting bar, a cap removably mounted with respect to the lifting bar, an operating lever, and interlocking connections between the lever and said plate.

8. A lifting jack comprising a standard, a lifting bar, a plate arranged for the support of the lifting bar, a cap removably mounted with respect to the lifting bar, an operating lever, and pairs of curved arms connecting the standard, the lever and said plate.

9. A lifting jack comprising a lifting bar, means for guiding the bar, a plate for the support of the lifting bar, and means having connection with the plate to raise it and lift the bar.

10. A lifting jack comprising a standard, a lifting bar, a plate for the support of the lifting bar, and an operating lever having connection with the plate to lift the bar.

11. A lifting jack comprising a standard, a

lifting bar, a plate for the support of the lifting bar, an operating lever, and curved, interlocking arms between the lever and plate.

12. A lever for lifting jacks comprising a U-shaped member having a pair of spaced legs upon each side.

13. A lifting jack comprising a standard, a lifting bar, a plate for the support of the lifting bar, a lever, a pair of arms having pivotal connection with the standard and the lower edges of the lever, and another pair of arms having connection with said plate and the upper edges of said lever.

14. A lifting jack comprising a hollow standard, a lifting bar, an operating lever, a pair of arms having connection with the standard and the lower edges of the lever; and another pair of arms having connection with the interior of the standard and with the upper edges of the operating lever.

15. A lifting jack comprising a hollow standard having oppositely disposed slots therein, a lifting bar disposed within the standard, a plate arranged within the standard for the support of the lifting bar and provided with oppositely disposed lugs protruding through the aforesaid slots, a U-shaped operating lever provided with a pair of spaced legs upon each side, an arm disposed upon each side of the standard and pivotally connected therewith at its upper end, the lower end of each arm being disposed between the corresponding legs of the operating lever and pivoted therebetween near the lower edges thereof, another arm disposed upon each side of the standard beneath the aforesaid arms and pivoted at its upper end between the corresponding pair of legs of the operating lever and near the upper edges of said legs with its opposite end pivotally connected with the corresponding lug of said plate, and means permitting of adjustment of leverage.

16. A lifting jack comprising a lifting bar, means for guiding the bar, a plate for the support of the lifting bar, a cap removably mounted upon the bar, and means having connection with the plate to raise it and lift the bar.

17. A lifting jack comprising a standard, a lifting bar, a plate for the support of the lifting bar, an operating lever, and interlocking elements between the standard, the plate and the lever to exert a pulling action upon the bar upon movement of the lever in one direction.

18. A lifting jack comprising a standard, a lifting bar, a member arranged within the standard for the support of the bar, arms having connection with the standard, arms having connection with said member, and a lever supported by said arms.

19. A lifting jack comprising a standard, a lifting bar, arms having operative connection with the standard and bar, and a lever

having connection with the arms, said arms being constructed and arranged to exert a pull upon the bar when the lever is moved in one direction and to interlock to hold the bar in its elevated position.

20. A lifting jack comprising a standard, a lifting bar arranged within the standard, arms having operative connection with the bar, and means supported by the arms for movement to pull upon the bar and interlock the arms.

21. A lifting jack comprising a lifting bar, means for guiding the bar, arms having operative connection with the bar, and means supported by the arms for movement to pull upon the bar and interlock the arms.

22. A lifting jack comprising a lifting bar, means for guiding the bar, arms having operative connection with the bar, and a lever supported by the arms for movement to pull the bar upwardly.

23. A lifting jack comprising a lifting bar, means for guiding the bar, arms having operative connection with the bar, a lever supported by the arms for movement to pull upon the bar, and means to lock the lever at one limit of its movement.

24. A lifting jack comprising a lifting bar, means for guiding the bar, means for supporting the bar, arms having operative connection with said means and arranged to interlock, a lever supported by the arms for movement to pull upon the bar and interlock said arms, and means for locking the lever in one of its positions.

25. A lifting jack comprising a lifting bar, means for guiding the bar, means for supporting the bar, an operating lever, and interlocking arms arranged upon each side of the bar and having connection with said means.

26. A lifting jack comprising a lifting bar, means for guiding the bar, interlocking arms arranged upon opposite sides of the bar, and an operating lever.

27. A lifting jack comprising a lifting bar, means for guiding the bar, interlocking arms arranged upon opposite sides of the bar, and an operating lever supported by the arms.

28. A lifting jack comprising a lifting bar, means for guiding the bar, arms upon opposite sides of the bar, and an operating lever having connection with said arms.

29. A lifting jack comprising a lifting bar, means for guiding the bar, means for supporting the bar, an upper arm, a lower arm, and an operating lever having connection with the arms, the upper arm having connection with the lever beneath the connection therewith and the connection of the upper end of the lower arm.

30. A lifting jack comprising a lifting bar, means for guiding the bar, means for supporting the bar, means for lifting the bar, and interlocking connections between the

second and third means, and a cap removably mounted with respect to the bar.

31. A lifting jack comprising a standard, a lifting bar guided thereby, an operating lever, a supporting link pivoted at its upper end to the standard and at its lower end to the operating lever, and a second link having a pivotal connection at its lower end with the lifting bar and at its upper end with the operating lever at a point removed from the pivotal connection with the first link.

32. A lifting jack comprising a standard, a lifting bar guided thereby, an operating lever, a supporting link pivoted at its upper end to the standard and at its lower end to the operating lever, and a second link having

a pivotal connection at its lower end with the lifting bar and at its upper end with the operating lever at a point removed from the pivotal connection with the first link, the two links being reversely curved and so positioned that their points of pivotal connection with the lever pass each other and the links interlock on a downward movement of the lever.

In testimony whereof I hereunto set my hand this 13th day of February, 1906.

PATRICK M. EGAN.

In presence of—

J. M. GALVIN,

THOMAS GALVIN.