

No. 638,001.

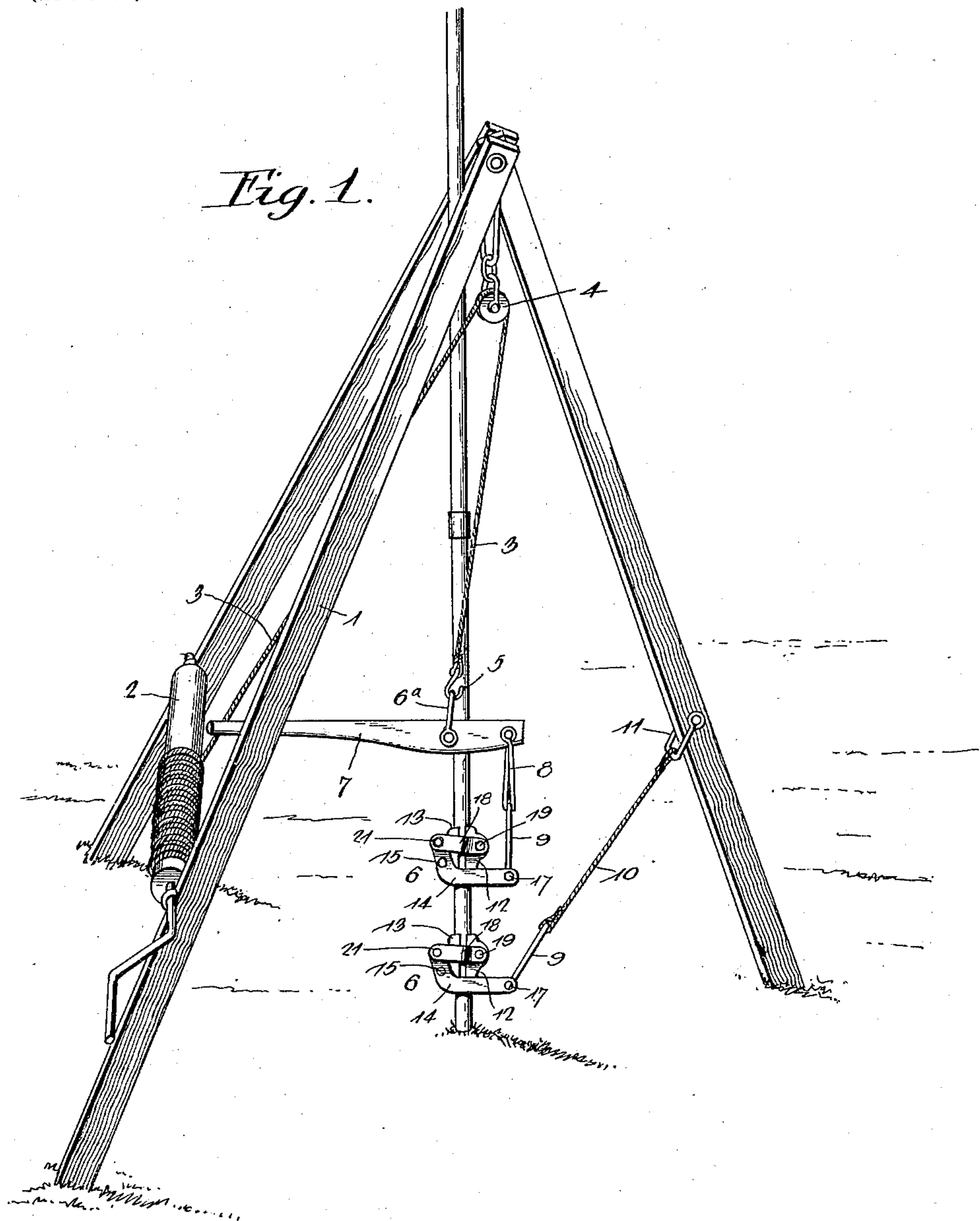
Patented Nov. 28, 1899.

A. BERGERSON.
WELL TUBE LIFTING APPARATUS.

(Application filed May 20, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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By *this* Attorney

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2 Sheets—Sheet 2.

Fig. 2.

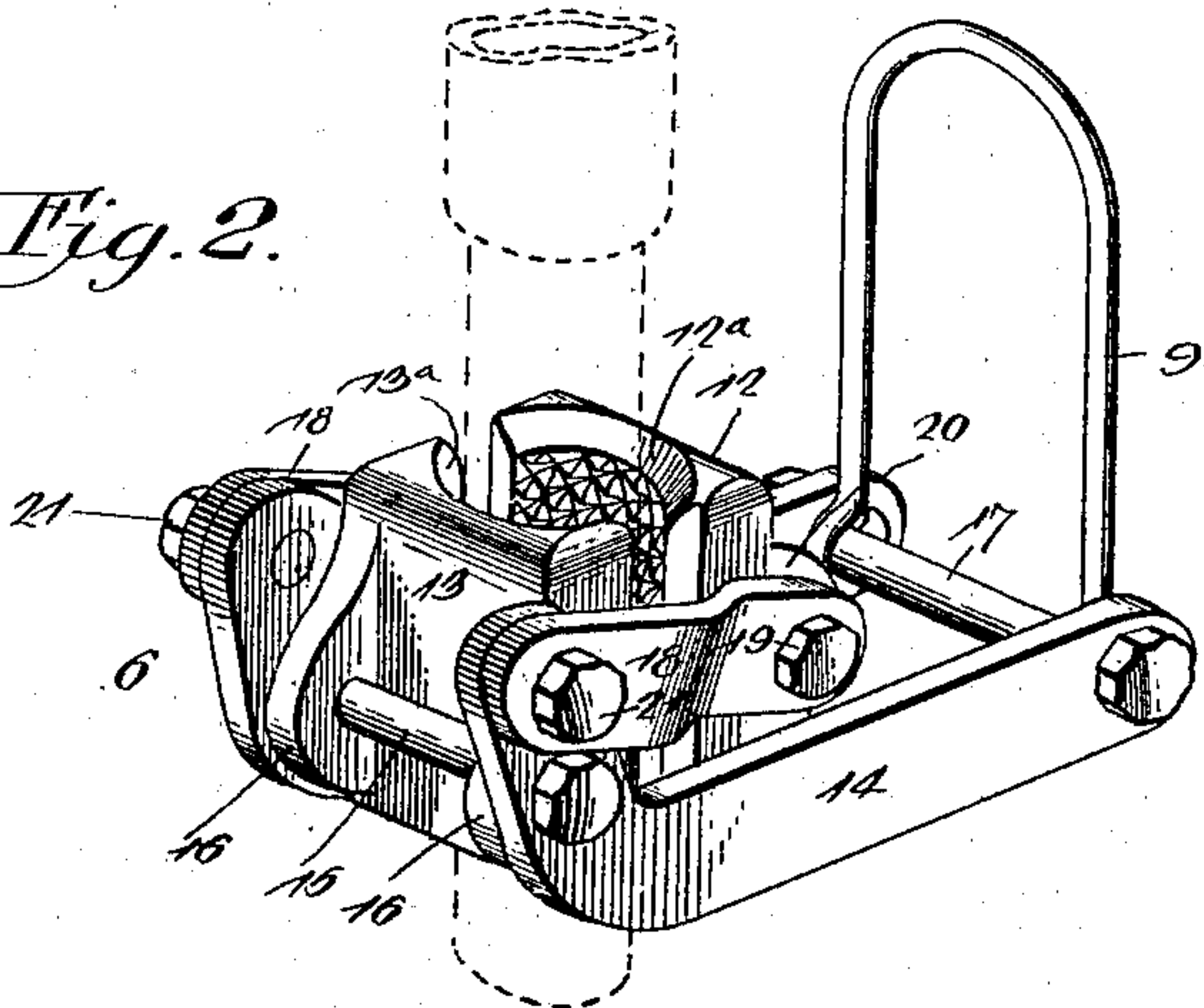


Fig. 4.

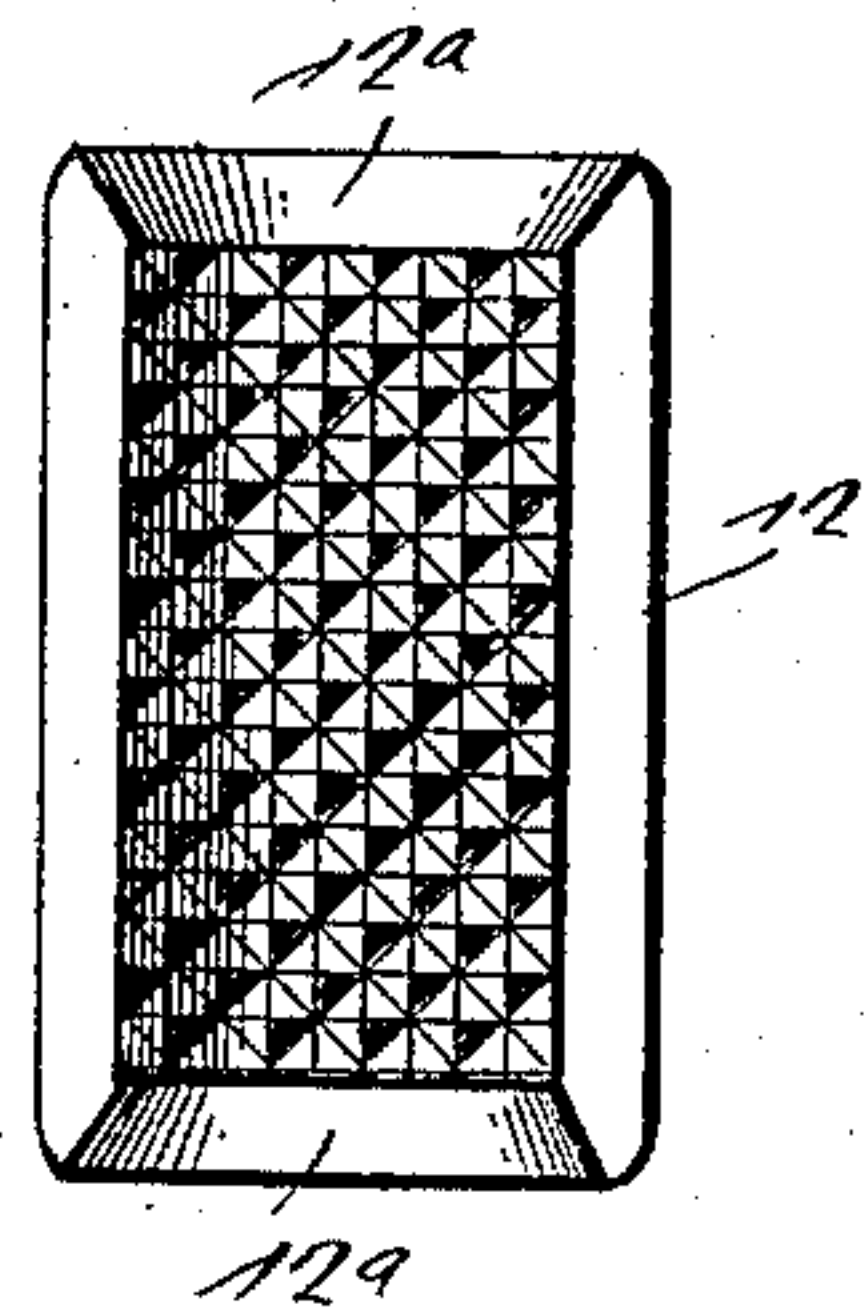


Fig. 3.

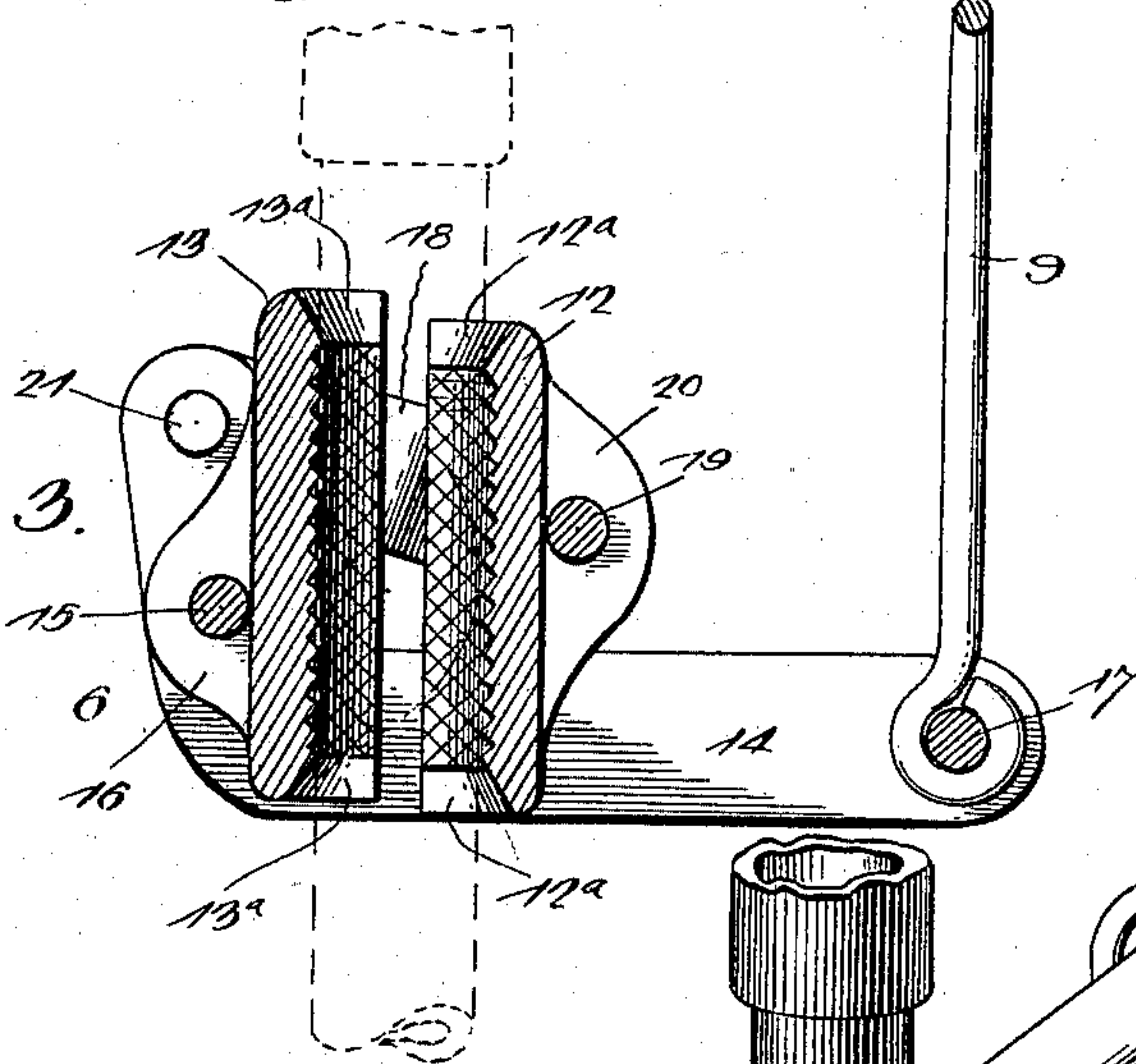
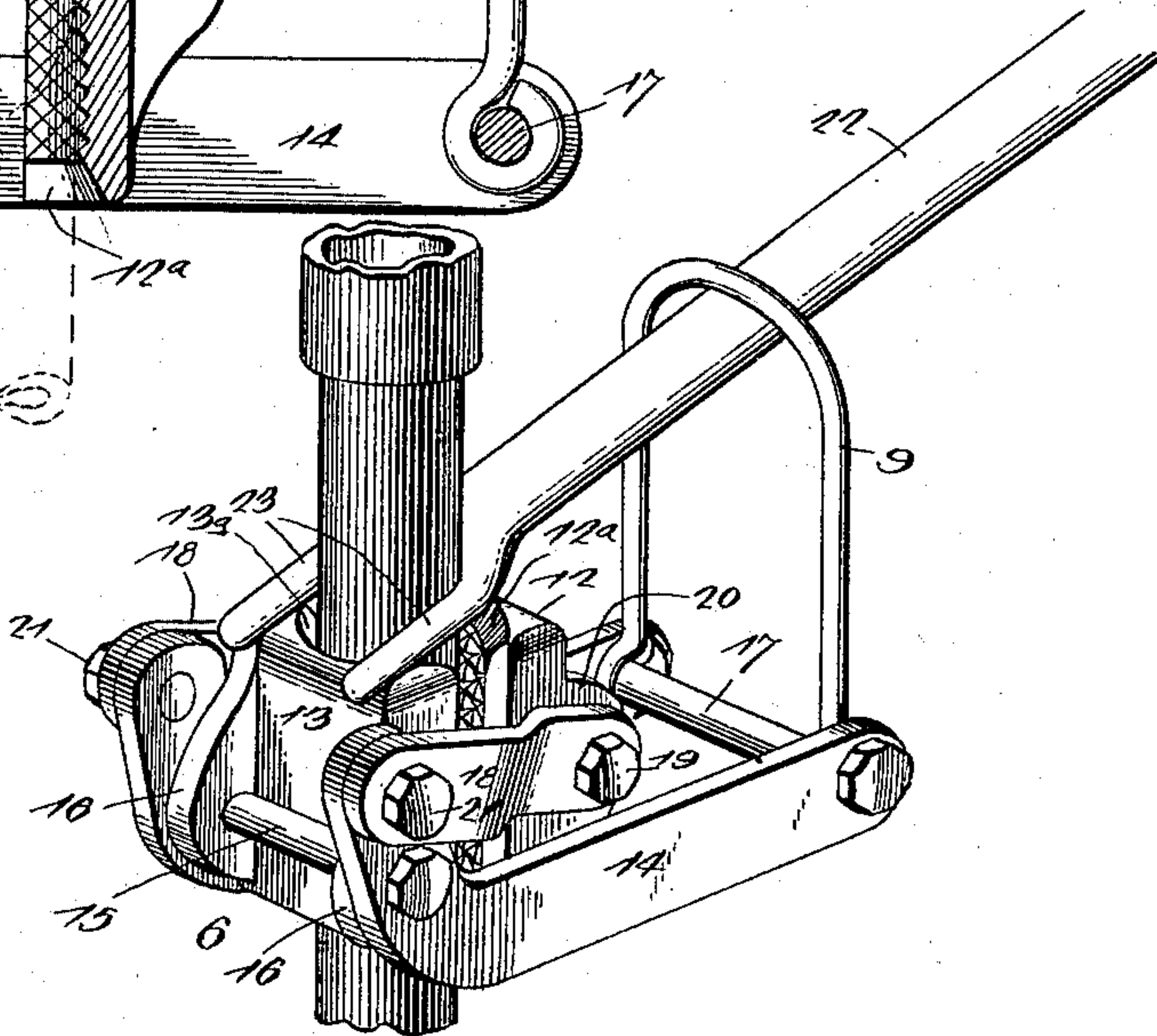


Fig. 5.



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UNITED STATES PATENT OFFICE.

ANTON BERGERSON, OF CHASEBURG, WISCONSIN.

WELL-TUBE-LIFTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 638,001, dated November 28, 1899.

Application filed May 20, 1899. Serial No. 717,655. (No model.)

To all whom it may concern:

Be it known that I, ANTON BERGERSON, a citizen of the United States, residing at Chaseburg, in the county of Vernon and State of Wisconsin, have invented a new and useful Well-Tube-Lifting Apparatus, of which the following is a specification.

My invention relates to devices for raising and lowering well-tubes, and particularly to a pipe and rod grab or grip; and the object in view is to provide a simple and efficient construction and arrangement of parts whereby a firm hold of a smooth-surfaced pipe may be obtained without indenting or marring the surface of the object which is grasped, and, furthermore, to provide a clamp or grip which may be used as a pipe-wrench in the operation of coupling the sections or members of a well-tube.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view of a well-tube raising and lowering apparatus constructed in accordance with my invention, the parts being arranged for actuation by lever-power. Fig. 2 is a detail view in perspective of one of the pipe clutches or grips. Fig. 3 is a longitudinal section of the same. Fig. 4 is a face view of one of the jaws of the clutch. Fig. 5 is a perspective view of the clutch, showing a lever in connection therewith to adapt the device for use as a wrench.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

1 represents the standards of a derrick, and from a windlass 2, mounted thereon, extends a hoisting rope or cable 3, which passes over a direction-pulley 4 and terminates in a grappling-hook 5. In raising or lowering a well-tube or other pipe two cooperating grips or clutches 6 embodying my invention are employed, the upper or operating clutch being connected with the hoisting rope or cable either directly or through the medium of a lifting-lever 7, (shown in Fig. 1,) said lever having its fulcrum 5 connected by a clevis 6^a with the grappling-hook or other terminal device of the hoisting rope or cable and hav-

ing its terminal clevis 8 connected with a clevis 9 of the clutch. The lower or holding clutch, on the other hand, is connected by a stay-rope 10 with a loop or clevis 11 on one of the standards of the derrick. The construction of the two clutches, however, is identical, and hence the specific description of one will be sufficient.

The improved clutch consists, essentially, of two oppositely-located cooperating jaws 12 and 13, having concaved gripping-faces, which are provided with oblique intersecting grooves or cuts forming diamond-shaped inwardly-tapered spurs or serrations, which I have found in practice to be adapted to grip the surface of the pipe without marring or defacing the same. To the jaw 13 is pivotally connected a bell-crank lever 14, preferably of double construction and having parallel side members connected by a fulcrum-pin 15, which is mounted in bearings formed in outwardly-extending ears 16 on the jaw 13, the long arms of the members of the bell-crank lever being connected by a transverse rod or pin 17, to which is attached the clevis 9 for connection with the lifting devices. The short arms of the bell-crank members are connected by links 18 with the jaw 12, a transverse fulcrum-pin 19 being arranged to connect the extremities of said links at the rear side of the jaw 12 and extending through bearings formed in outwardly-projecting ears 20 on said jaw. When an upward strain is applied to the long arms of the bell-crank members, the effect thereof is to force the jaws inward or toward each other by the pressure of the fulcrum-pin 15 in one direction and the draft of the links 18 in the opposite direction, and as both of the jaws are intermediately fulcrumed by means of the pins 15 and 19 for tilting or rocking movement and as the links 18 are free to swing downward it will be seen that this lever action of the member 14 will be supplemented by the toggle action of the links 18 as they drop at their free ends below the horizontal plane of the pivots 21 (which connect the outer ends of the links to the short arms of the bell-crank members) and also by a tendency upon the part of the jaws to rock toward each other at their upper ends. Thus a clutch constructed as described exerts a compressive action upon an interposed pipe,

which effectually prevents the slipping thereof, while the peculiar contour of the faces of the jaws avoids puncturing or indenting the surface of the pipe. The device as described
 5 operates solely through friction and without necessitating the indentation of the surface of a pipe in order to obtain an efficient grip of the object which is being raised or lowered.

In raising pipes of short length or comparatively light weight I prefer to employ the lever 7; but it will be understood that with objects of greater weight the clevis 9 may be attached directly to the hoisting rope or cable.

In Fig. 5 I have shown in connection with
 15 the clutch embodying my invention a handle or lever 22, which is adapted to be engaged with the clevis 9 and terminally arranged in contact with the upper ends of the jaws to adapt the device for use as a wrench, said
 20 lever having the function of applying strain in one direction to the extremities of the long arms of the bell-crank members, while the extremity thereof applies pressure in the opposite direction to the jaws. Preferably the
 25 jaw-engaging extremity of the lever is forked, as shown at 23. The described clutch in connection with the handle or lever, as shown, forms a convenient wrench for connecting the sections of a well-tube.

30 In the construction of the improved clutch I preferably provide the jaws with flared or beveled terminal portions 12^a and 13^a for facilitating the passage through the interval between the jaws of enlargements, such as couplings on the pipe-sections. It will be seen
 35 that these flared portions serve as cams to open the clutch-jaws as the enlargements come in contact therewith, and the relation between the parts is such that the clutch will
 40 receive the coupling of any pipe which it may be adapted to engage. It will be understood, furthermore, that in practice various changes in the form, proportion, size, and minor details of construction within the scope of the
 45 appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described my invention, what I claim is—

50 1. A clutch comprising cooperating oppositely-located jaws, a bell-crank lever mounted upon one of the jaws and provided at the extremity of its long arm with a suspending device, and a link connecting the short arm of
 55 the lever with the other jaw, substantially as specified.

2. A clutch comprising cooperating oppositely-located jaws, a bell-crank lever comprising parallel cheeks or members arranged at opposite sides of the jaws and fulcrumed
 60 upon one of the jaws, a suspending device connected with the long arms of the bell-crank members, and links connecting the short arms of the levers with the other jaw, substantially as specified. 65

3. A clutch having cooperating oppositely-located jaws, a bell-crank lever having side members connected by a fulcrum-pin upon which one of the jaws is pivoted for rocking movement, a suspending device connected
 70 with the long arms of the bell-crank members, and links connected with the short arms of the bell-crank members and provided with a transverse fulcrum-pin upon which the other jaw is pivoted for rocking movement, substantially as specified. 75

4. A clutch having oppositely-located cooperating jaws provided with concaved faces which are diagonally grooved or cut to form diamond-shaped inwardly-tapered projections or serrations, a bell-crank lever having
 80 parallel side members connected by a transverse fulcrum-pin upon which one of the jaws is mounted for rocking movement, a transverse pin connecting the extremities of the
 85 long arms of the bell-crank members, a suspending-clevis connected with said pin, and links pivotally mounted at one end upon the short arms of the bell-crank members, and connected at the opposite end by a transverse
 90 fulcrum-pin upon which the other jaw is mounted for rocking movement, substantially as specified.

5. In a pipe-lifting apparatus, the combination with a derrick, a hoisting rope or cable,
 95 a lifting-lever suspended at its fulcrum upon the hoisting rope or cable, and lifting and holding clutches, the former of which is connected with said lever, and the latter of which is connected with a fixed part of the derrick,
 100 each clutch comprising oppositely-located pipe-engaging jaws and a bell-crank-lever connection between the jaws and provided at the extremity of its long arm with a suspending device, substantially as specified. 105

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

ANTON BERGERSON.

Witnesses:

CHAS. P. WHITE,
 VINNIE WHITE.