

No. 655,040.

Patented July 31, 1900.

J. WILLISON.
COUPLING UNLOCKING DEVICE.

(Application filed May 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

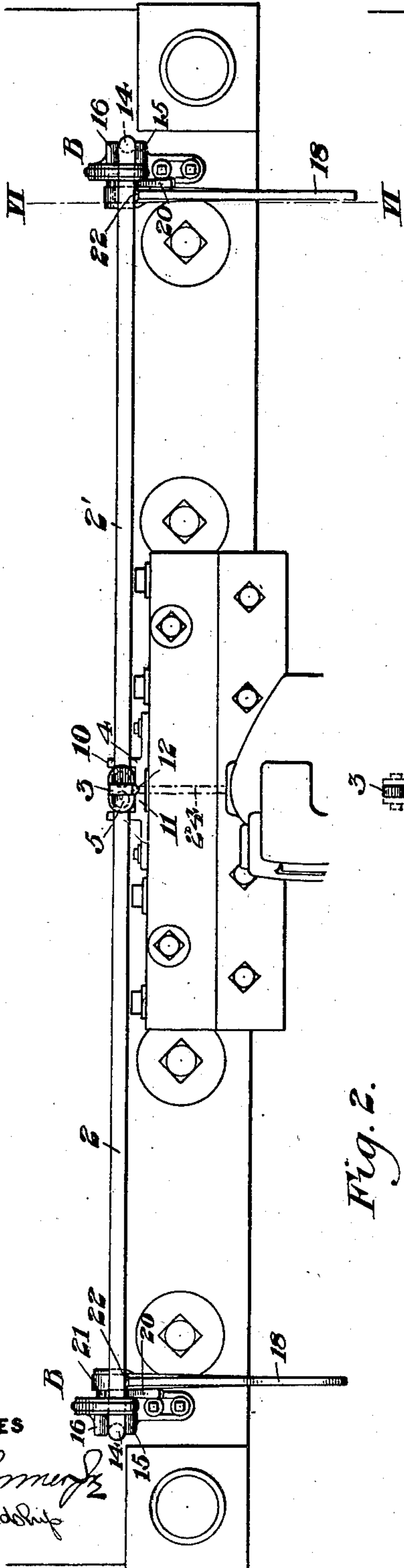


Fig. 2.

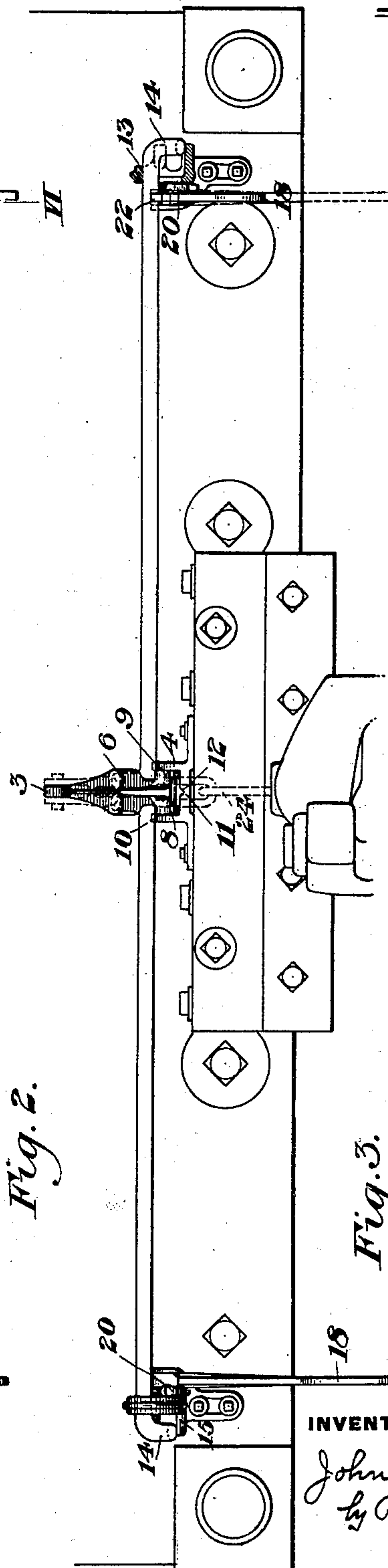
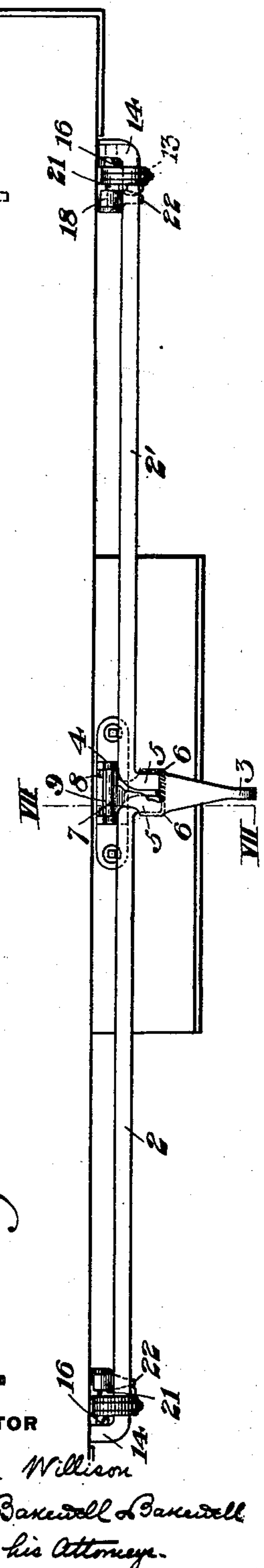


Fig. 3.



WITNESSES

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2 Sheets—Sheet 2.

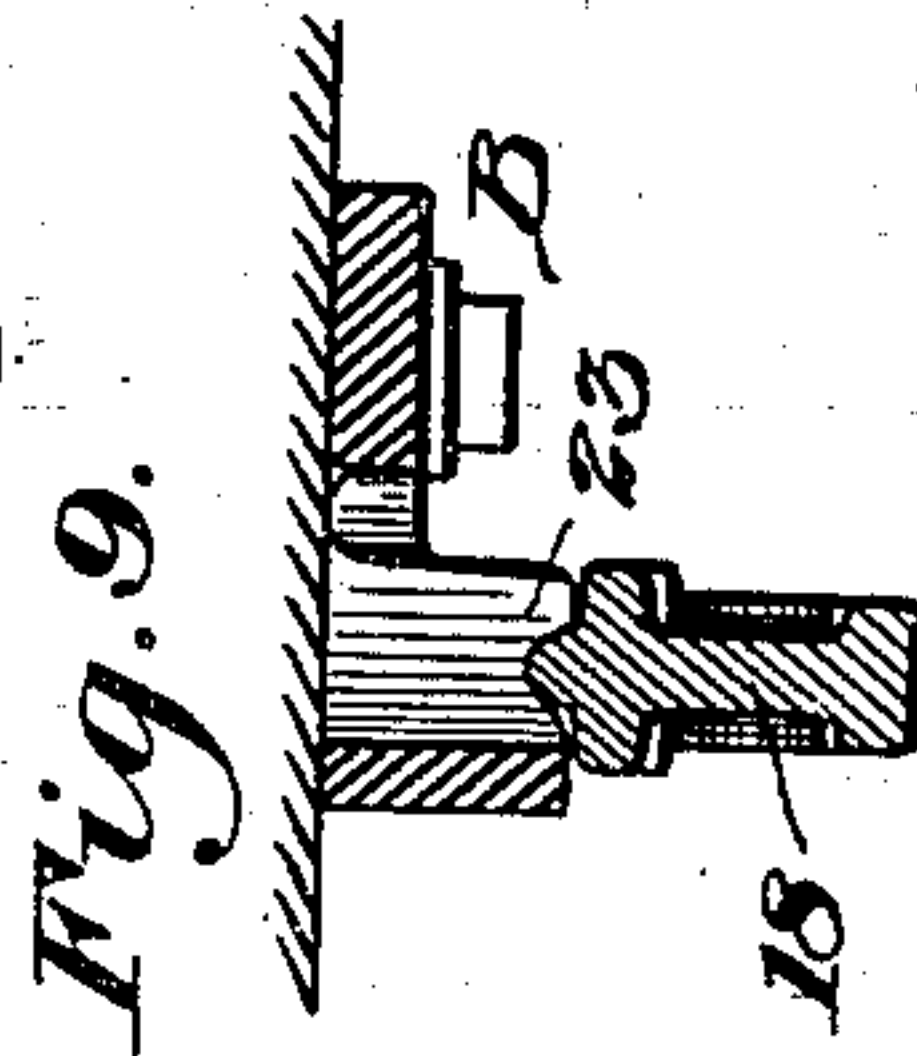
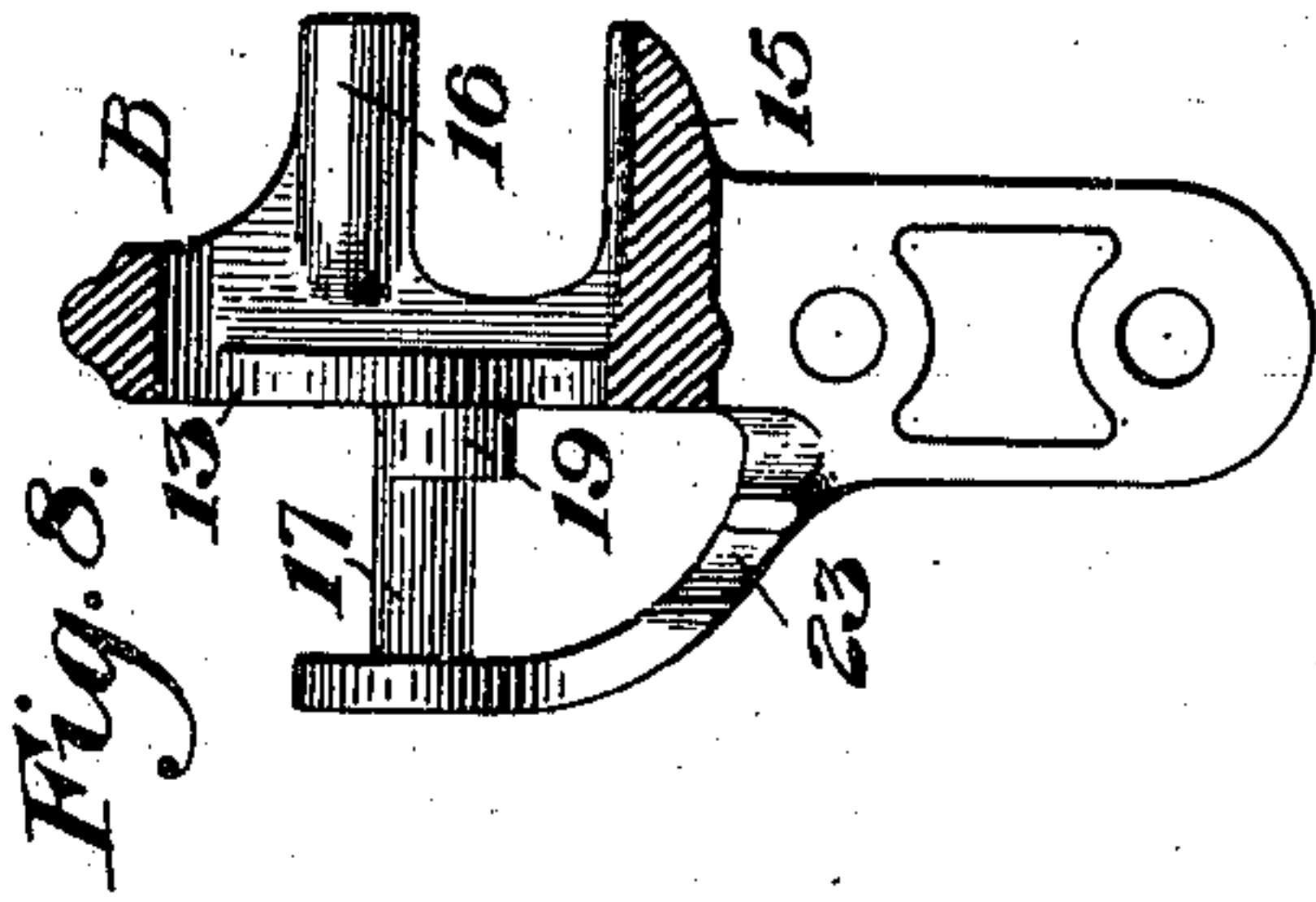
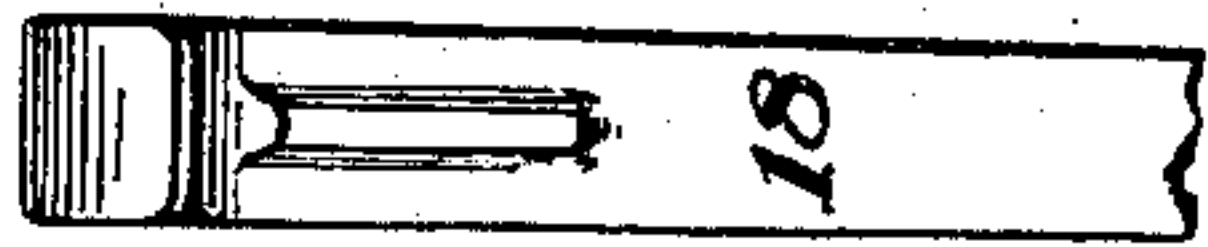
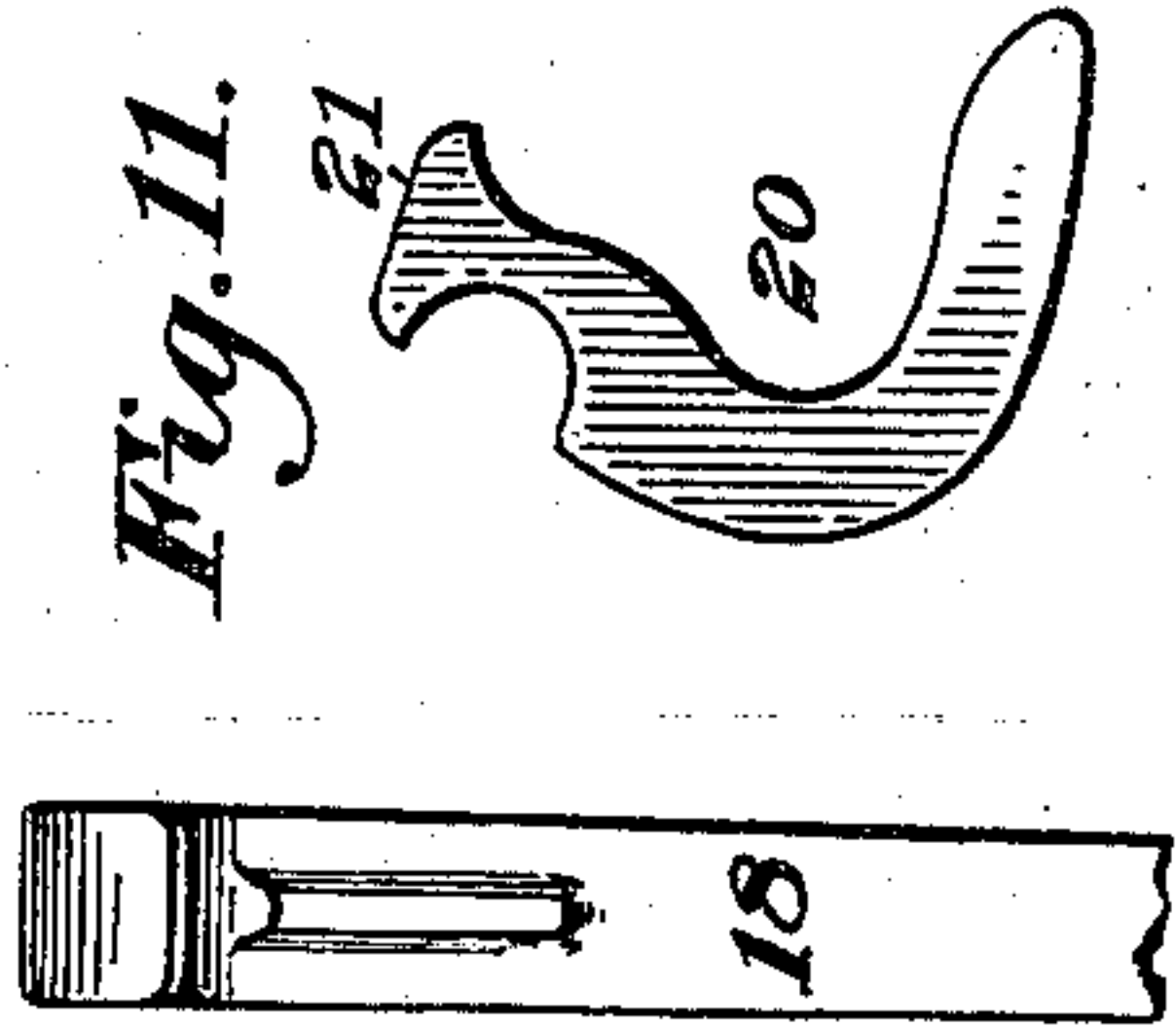


Fig. 6.

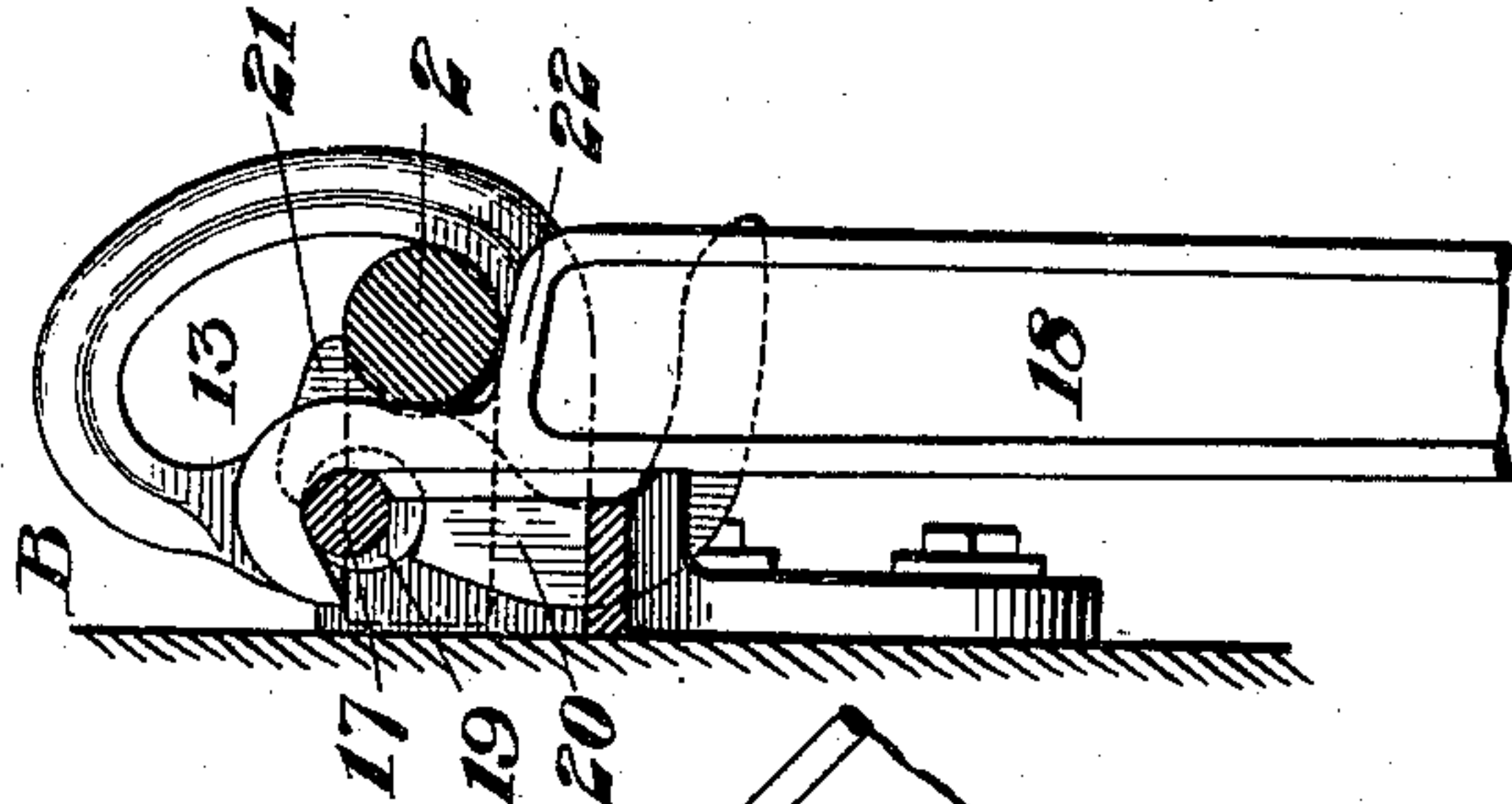


Fig. 5.

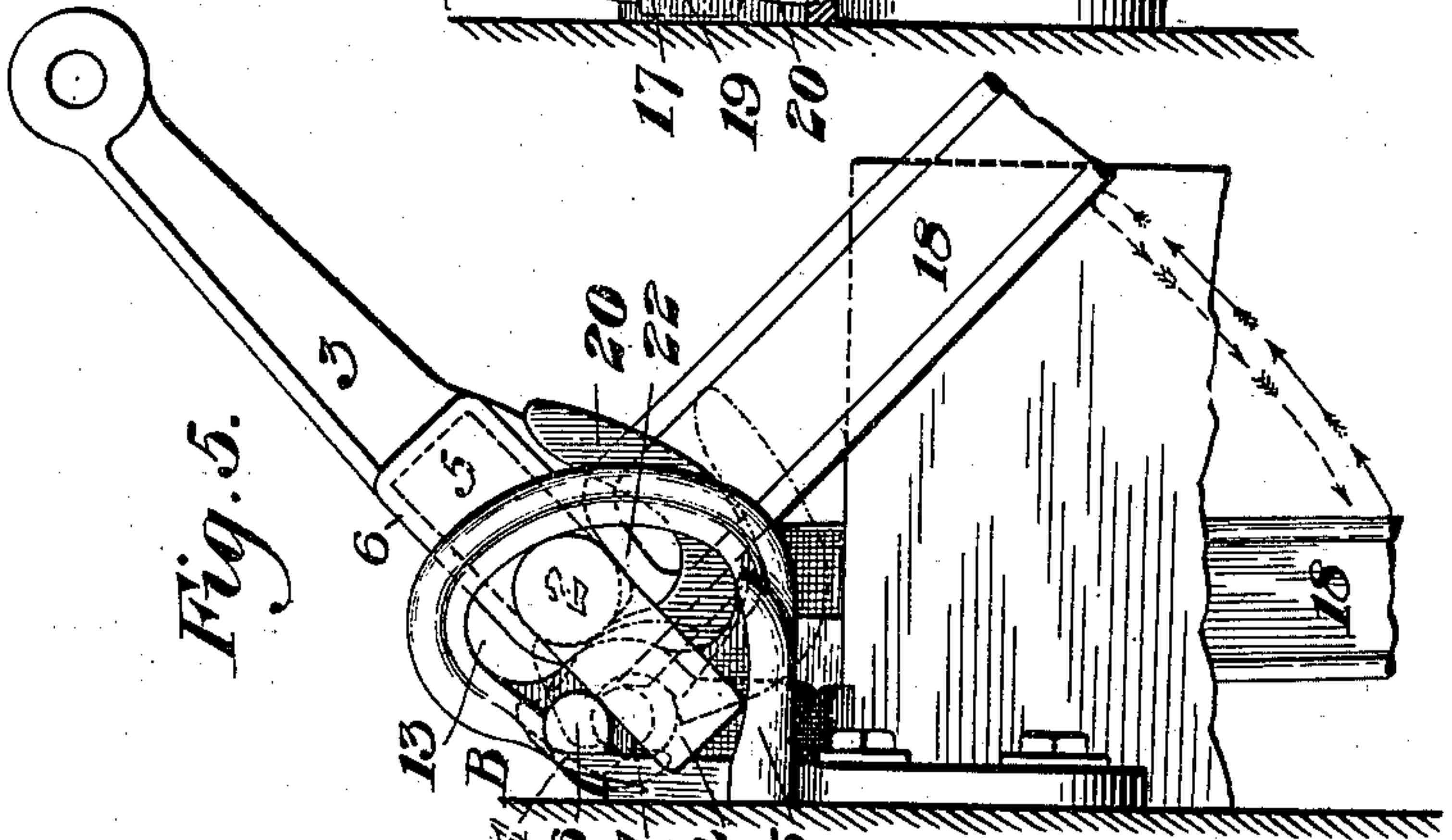


Fig. 7.

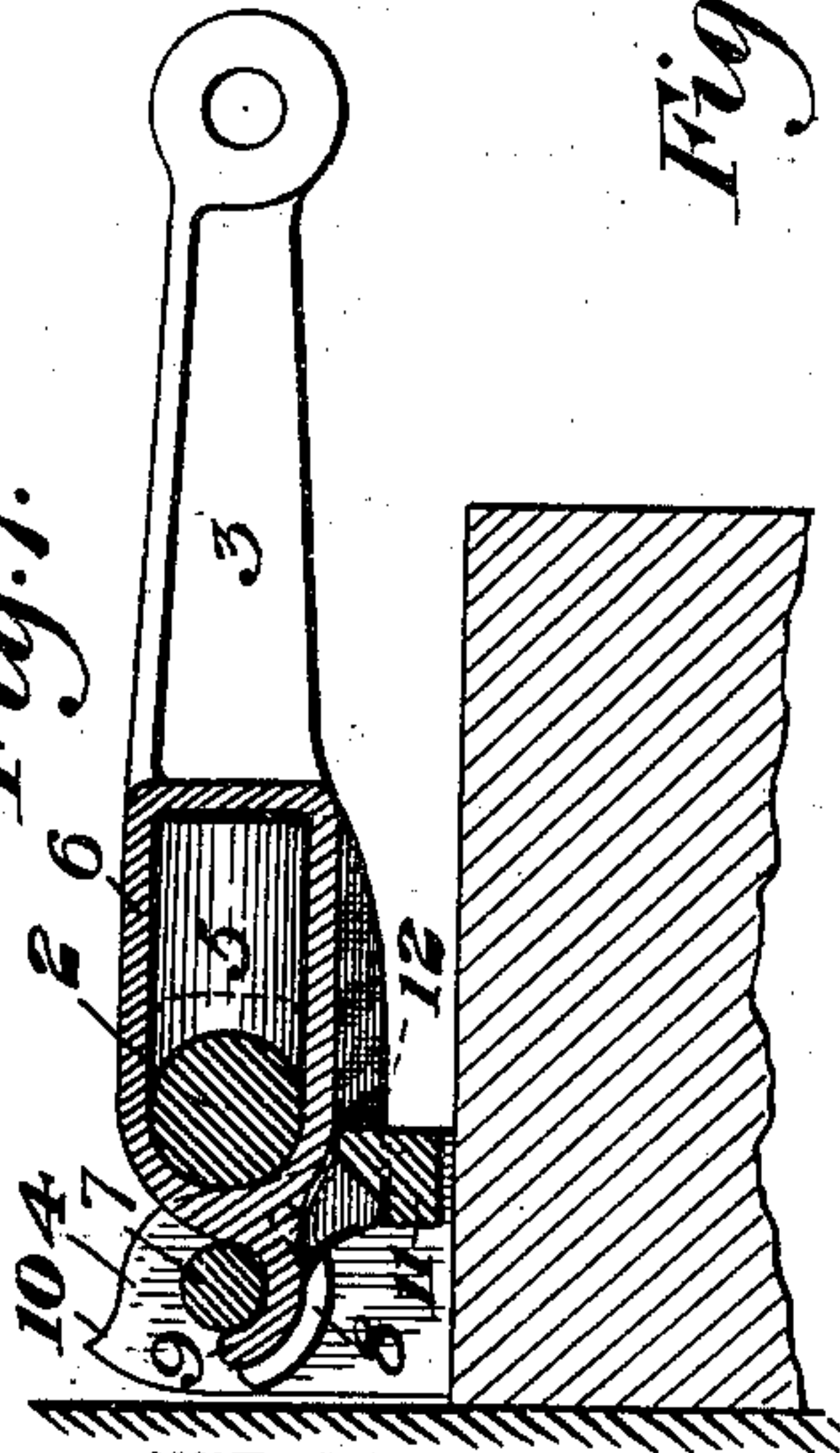


Fig. 4.

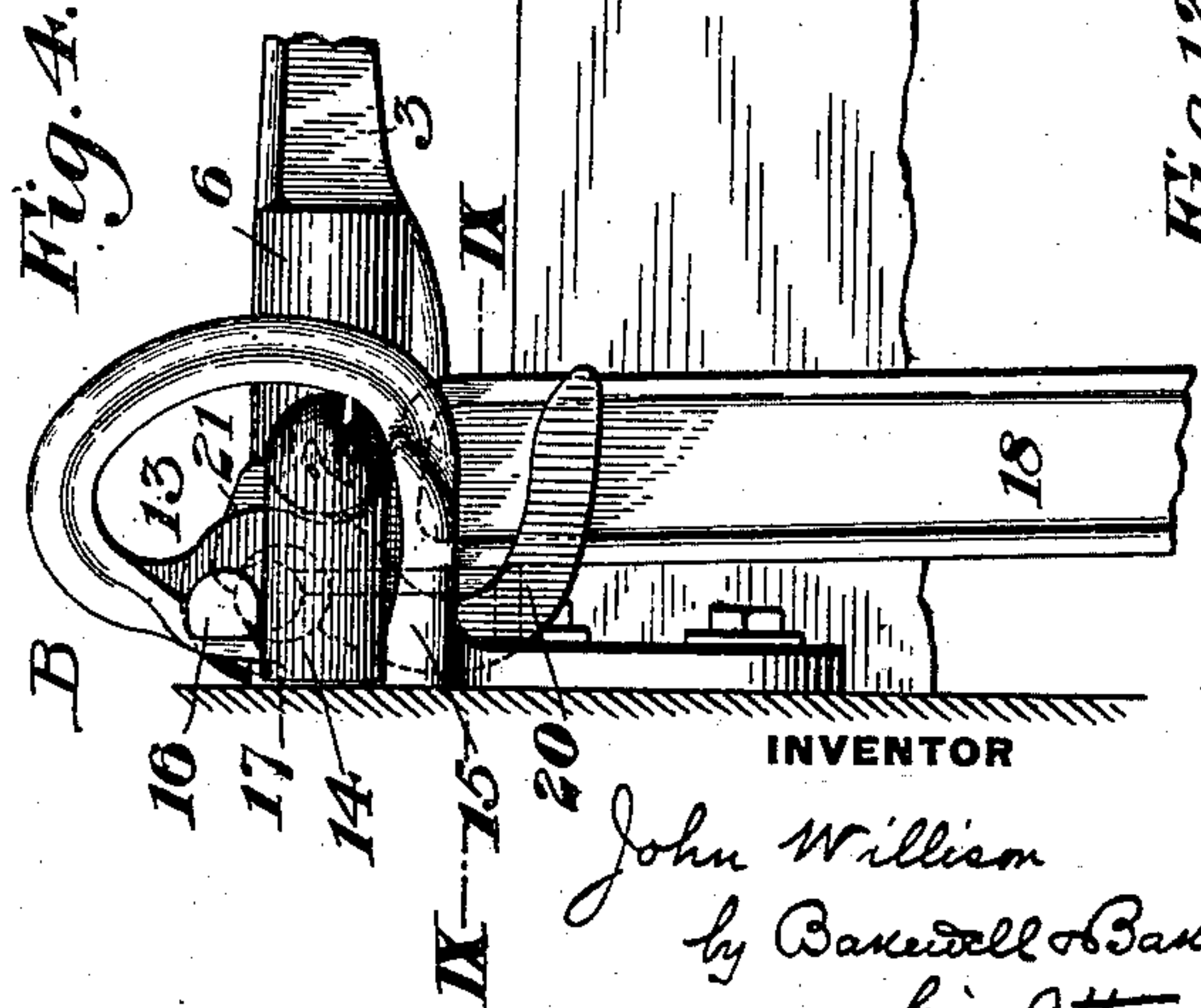


Fig. 12.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

JOHN WILLISON, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF SAME PLACE.

COUPLING-UNLOCKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 655,040, dated July 31, 1900.

Application filed May 12, 1898. Serial No. 680,512. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILLISON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Coupler-Unlocking Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 shows in front elevation my improved coupler-unlocking apparatus applied to a railway-car, the lock-lifting arm or lever being in its lowered and horizontal position. Fig. 2 is a like view showing the lock-lifting arm elevated and the hand-lever at the right also in its temporarily-elevated position. Fig. 3 is a plan view of Fig. 1, a part of the lock-lifting arm being broken away to show the manner in which I prefer to connect the shaft with the lock-lifting arm. Fig. 4 is an end elevation of the hand lifting-lever and its cam or latch at the left of Fig. 1. Fig. 5 is a similar view with the lifting-lever and lifting-arm in elevated position, the lifting-lever being temporarily elevated in the act of raising the lifting-arm. The latch is shown by full lines in its upholding position and by dotted lines in its released position. Fig. 6 is a vertical section on the line VI VI of Fig. 1, looking toward the right, the parts being in the same position as in Fig. 4. Fig. 7 is a vertical section of the lifting-lever on the line VII VII of Fig. 3. Fig. 8 is a detail front elevation of one of the brackets for the lifting-lever, a portion being broken away. Fig. 9 is a horizontal section on the line IX IX of Fig. 6. Fig. 10 is a rear view of a portion of the hand lifting-lever. Fig. 11 is a detail view of the cam or latch, and Fig. 12 is a detail view of the crank-arm.

45 In the drawings, 2 2' are the parts of the crank-shafts connected at their inner ends to a lifting-arm 3, which is journaled to a central bracket 4 in the manner described below. To connect the parts of the crank-shaft with said arm, I bend their inner ends at right angles, as at 5, and fit the same in lateral sockets 6, which extend lengthwise of the arm and are open laterally at their inner ends.

To journal the arm 3 in the bracket 4, there is formed on said bracket a cross-pin 7 and circular ribs 8, concentric with said pin. The ribs 8 perform the function of trunnion-bearings, so that the lock-lifting arm is upheld in its engagement with the pivot-pin 7 in such a way that it may be operated with one crank-shaft as well as with two. The rear end of the lifting-arm is formed with a hook portion 9, which fits between the pin and the ribs and constitutes the journal of the arm, and there are stops 10 and 11 on the bracket, between which the motion of the lifting-arm is limited. The lower stop 11 has a notch 12, adapted to fit a small projection or rib on the lifting-arm, by which it is held steady from lateral motion when the lifting-arm is in its lower position. The lower stop 11 is formed to engage with a shoulder on the lock-lifting arm and is so arranged as to resist a pulling-out action in case of breakage of the coupler.

70 The lifting-arm is connected with the lock of the coupler by a chain or other connection 24, and by lifting said arm the lock is raised and the coupler-knuckle unlocked.

As above stated, the inner ends of the parts 2 2' of the crank-shaft are attached to and supported by the lifting-arm. Their outer ends are supported by brackets B B, which I will now describe. Each of these brackets has an arc-shaped slot 13, through which extends the end of the crank-shaft, and said end is of angled form, so as to constitute a short arm 14 on the outer side of the bracket. The bracket is formed with a ledge 15, directly beneath said arm, and with a projecting shoulder 16, directly above the shelf and over the end of the angled portion of the arm when the latter is lying in horizontal position. On the inner side of the bracket is a pin 17, on which is journaled a hand-lever 18, the said arm having preferably a hooked end which engages and fits on the pin. Adjacent to or on said pin is a bearing 19, which is eccentric to the axis of the pin and to the arc of the slot 13, and on it is journaled the cam 20 for upholding the lifting-arm 3. Said cam has a hook portion 21, which is fitted on the bearing 19 inside of the lifting-lever, between the

lifting-lever and the side of the bracket, and the crank-shaft being outside of said cam, as shown in Fig. 6, holds it in place.

For the purpose of holding the lifting-levers steady when they are in vertical position I prefer to provide them with stops 23, having notches in which ribs on the levers fit.

When the coupler is locked, the lifting-arm lies in horizontal position and the lifting-levers and crank-shaft are in the positions shown in Figs. 4 and 6, the angled ends 14 of the crank-shaft lying horizontally along the ledges 15. If now it is desired to raise the lifting-arm 3 and to unlock the coupler, the trainman grasps the lifting-lever at either side of the car and raises it, whereupon a shoulder 22 at the inner end of the lifting-lever engages the crank-shaft and raises it in the slot 13, thereby bringing the angled portion 14 of the shaft into engagement with the projection 16. This projection then acts as a fulcrum on which the extension 14 of the arm tips, and the result of so lifting the shaft by the shoulder and the bearing of its extension against the fulcrum 16 gives to the end of the arm a rolling motion and turns the crank-shaft axially, with the effect that the lifting-arm is raised and the coupler unlocked.

If at any point of elevation of the crank-shaft it is desired to fasten it in elevated position, the operator raises the cam or latch 20. The edge or face of said cam is formed eccentrically to its inner bearing. Its turning causes it to engage with the crank-shaft, so that when the hand-lever is dropped to its vertical position the crank-shaft wedges between the outer face of the cam and the inner face of the arc-shaped slot 13, the bearing 19, on which the cam rotates, being placed eccentrically to the arc of the slot 13, so that the gravity movement of the cam and of the upheld crank-shaft causes the crank-shaft and the lock-lifting arm to be held rigidly at whatever elevation of the arm may be desired. After the lifting-arm has been raised the lifting-lever can be released and suffered to drop into a vertical position; but the lifting-arm will continue to remain elevated and the coupler-lock held in unlocked position until released, as I am now about to describe. If now it is desired to release the lock and for this purpose to cause the lifting-arm to drop, the trainman standing at either side of the car seizes the lifting-lever and raises it until its shoulder 22 engages the crank-shaft. If the lever which is raised be the lever on the same side of the car as that on which the latch has been applied, the lifting of the crank-arm caused by the raising of the lever will ease the pressure of the crank-arm upon the latch and will permit the latch to drop, thereby releasing the crank-arm. If, however, the lever raised by the trainman be on the opposite side of the car, its engagement with the crank-

shaft will cause the shaft to turn slightly through its length, and in turning the angled extension 14 on the far side of the car will engage its ledge 15, which will lift it slightly and by raising the crank-shaft will in that manner effect the release of the latch.

It will be noticed that in the use of my apparatus the coupler may be latched in unlocked position by a man standing at either side of the car and that when latched it may be released at either side of the car; also, that the latch may be set to uphold the lifting-arm at any degree of elevation. My invention is therefore adapted to draw-bars of any height. When the levers are released, they will drop into dependent position, and therefore do not obstruct the motions of the trainmen.

The parts are extremely simple and easily fitted. The parts 2 2' are interchangeable and may be used at either side of the car. The crank-shaft need not extend from the lifting-arm at any certain angle. It is therefore easy to adjust, since the parts of the shaft need not be accurately in line with each other.

It will be noticed that the lock-lifting arm is so pivoted and trunnioned in its bearings that the operation of unlocking the coupler may be performed equally well with a single crank-shaft and end bracket as with double shafts and brackets. The lock-lifting arm and brackets illustrated in Fig. 7 are not essential to the holding of the coupler-lock in any unlocked position, as broadly claimed. The mechanism shown in Figs. 4, 5, 6, and 8 used with any of the existing forms of lock-lifting arm may be substituted and will hold the coupler-lock in an unlocked position if desired.

The lifting-lever shown in the accompanying drawings is a drop-lever; but, unlike other drop-levers, it is not attached to the shaft, but to the bracket. In this respect, as in others, I believe my improved device to possess substantial novelty.

I claim—

1. The combination of a crank-shaft, a lifting-lever journaled adjacently to the shaft and adapted to engage and raise the same, a gravity cam or latch, and a fulcrum against which an angled portion or extension of the shaft bears, and which causes the shaft to turn; substantially as described.

2. The combination of a crank-shaft, a lifting-lever journaled adjacently to the shaft, a gravity cam or latch, a fulcrum against which an angled portion or extension of the shaft bears, and a ledge or shelf adjacent to said extension; substantially as described.

3. The combination of a crank-shaft, a lifting-lever journaled adjacently to the shaft, a gravity cam or latch, a fulcrum against which an angled portion or extension of the shaft

bears, a ledge or shelf adjacent to said extension, and an arc-shaped slot through which the shaft passes; substantially as described.

4. The combination of a crank-shaft having
5 an angled portion or extension 14, a bracket having a slot through which the shaft passes; a ledge 15, a fulcrum 16 and a latch and lifting-lever journaled adjacently; substantially as described.

10 5. A lifting-arm having a hooked end, and

a bracket having a fulcrum and an adjacent rib or shelf between which and the fulcrum the hook fits; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN WILLISON.

Witnesses:

A. P. BURCH,
D. W. CALL.