

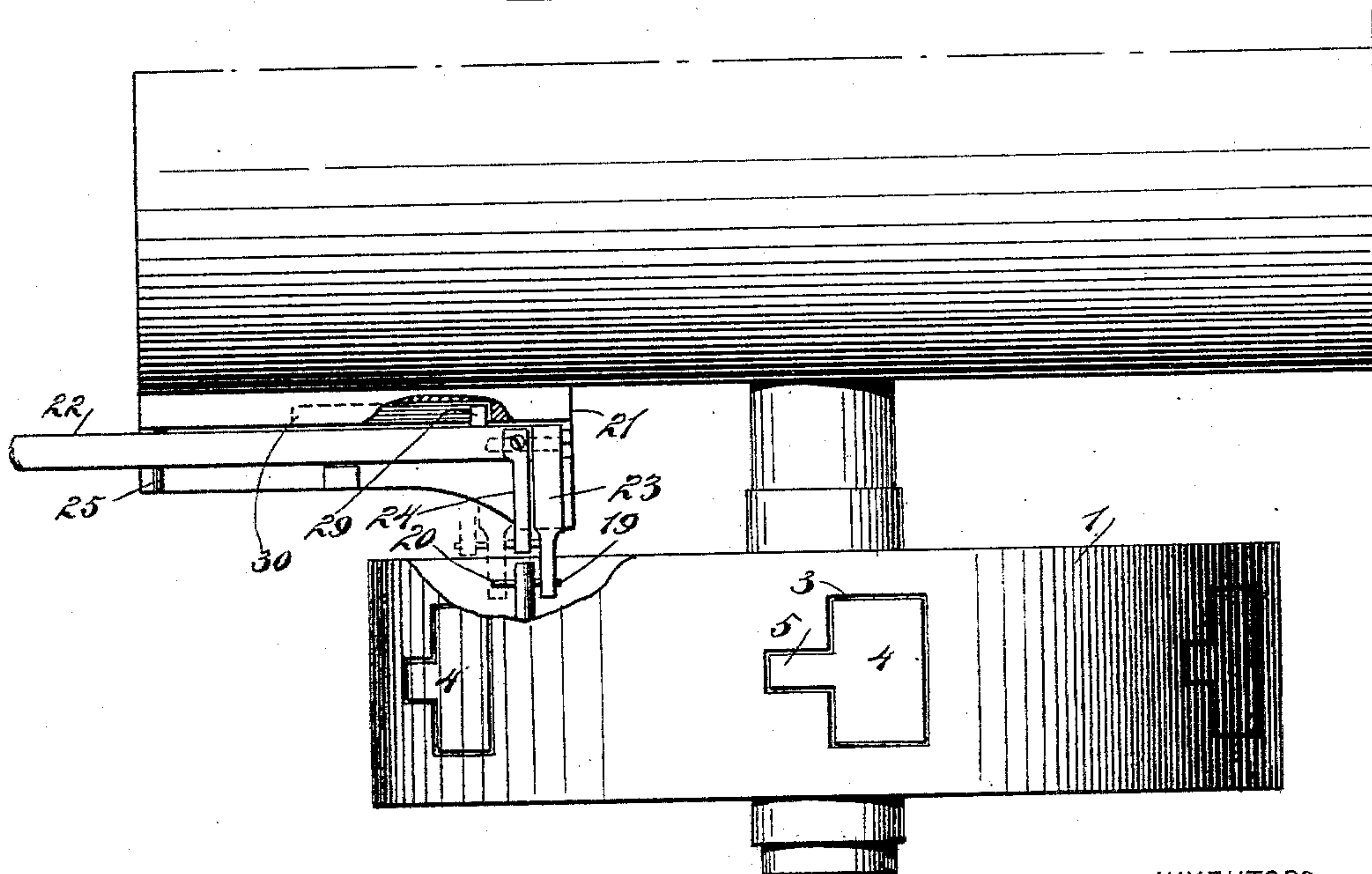
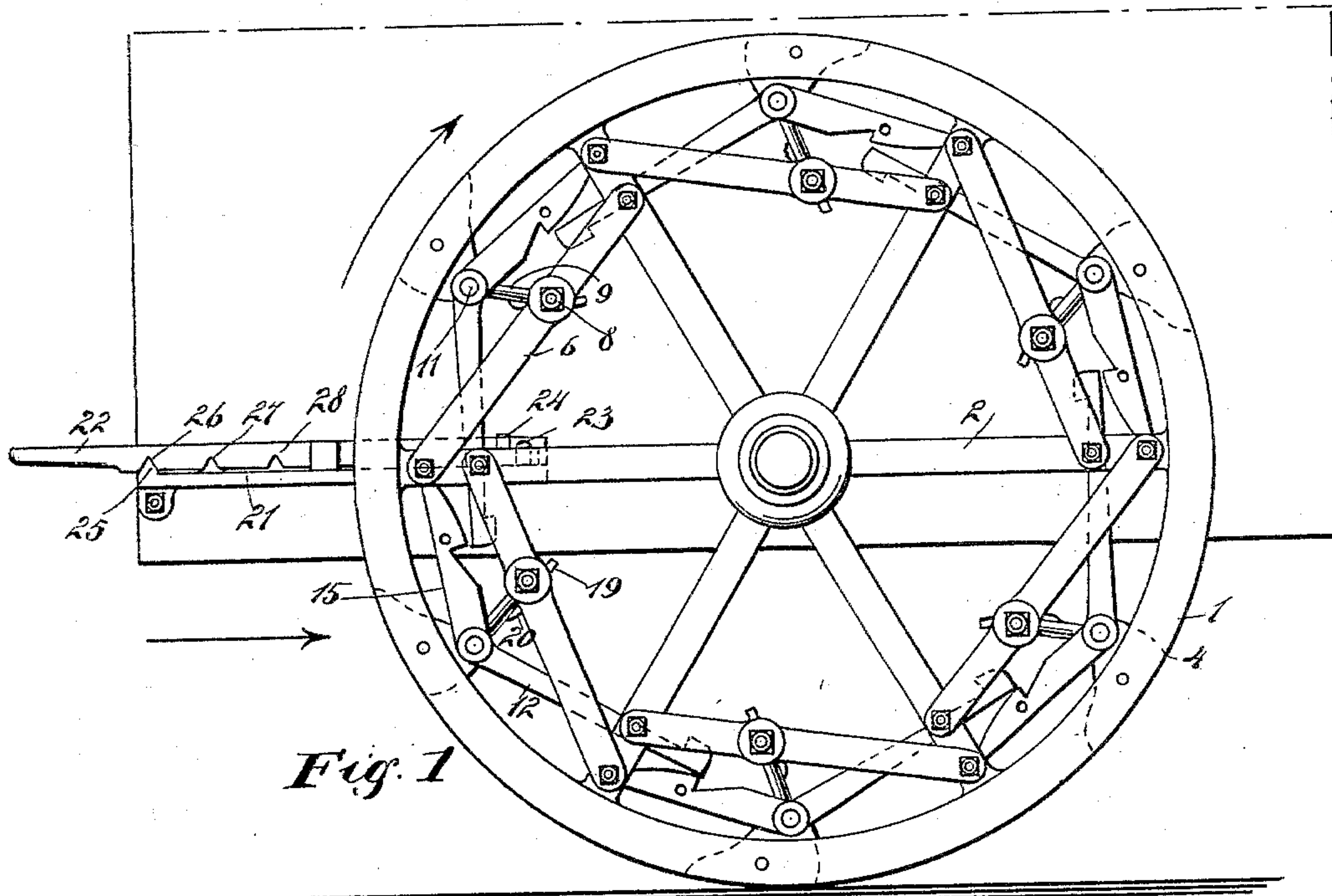
(No Model.)

2 Sheets—Sheet 1.

A. & J. SMITH.
TRACTION WHEEL.

No. 597,594.

Patented Jan. 18, 1898.



WITNESSES:

John Bergstrom
C. R. Ferguson

Fig. 2

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(No Model.)

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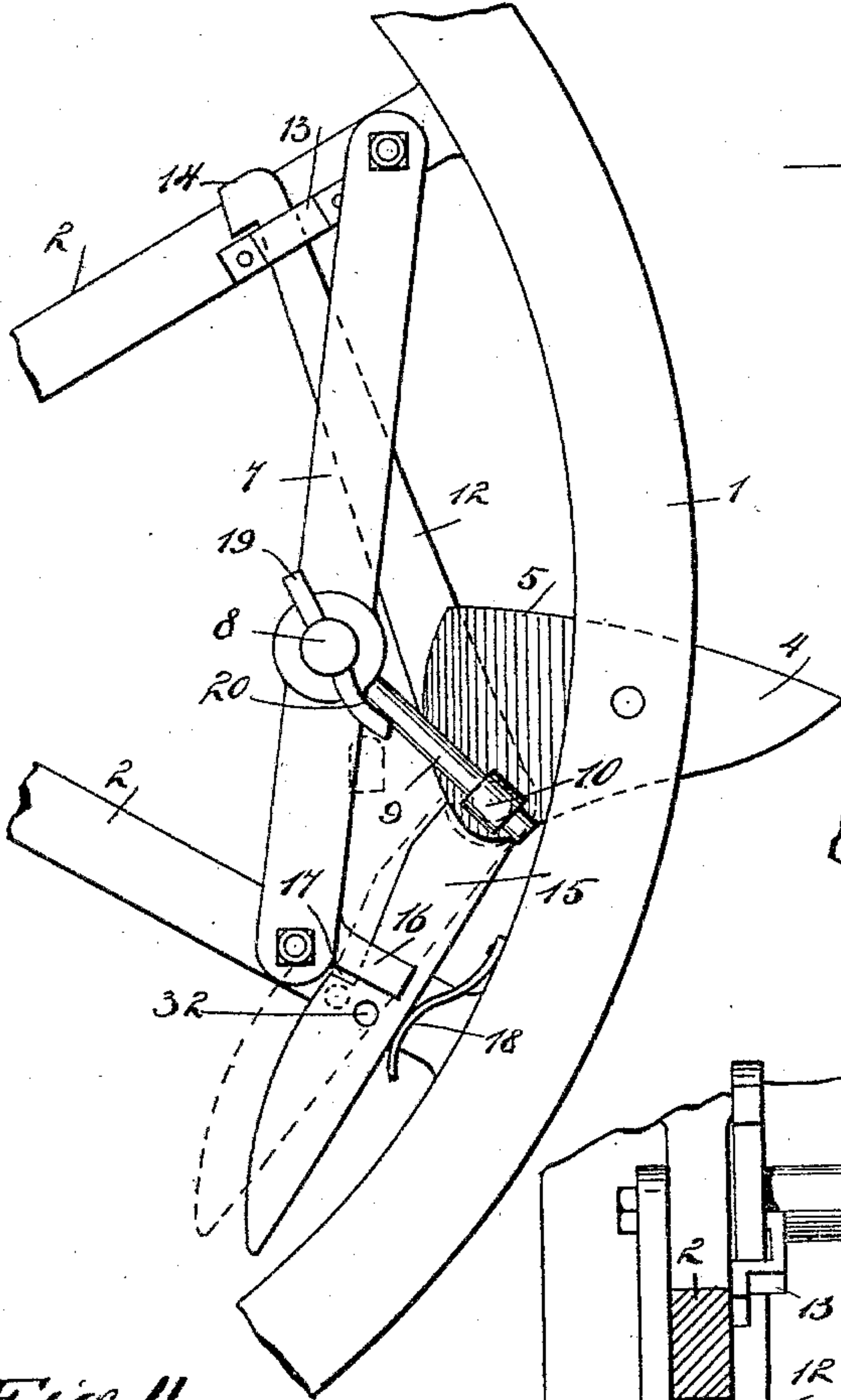


Fig. 4

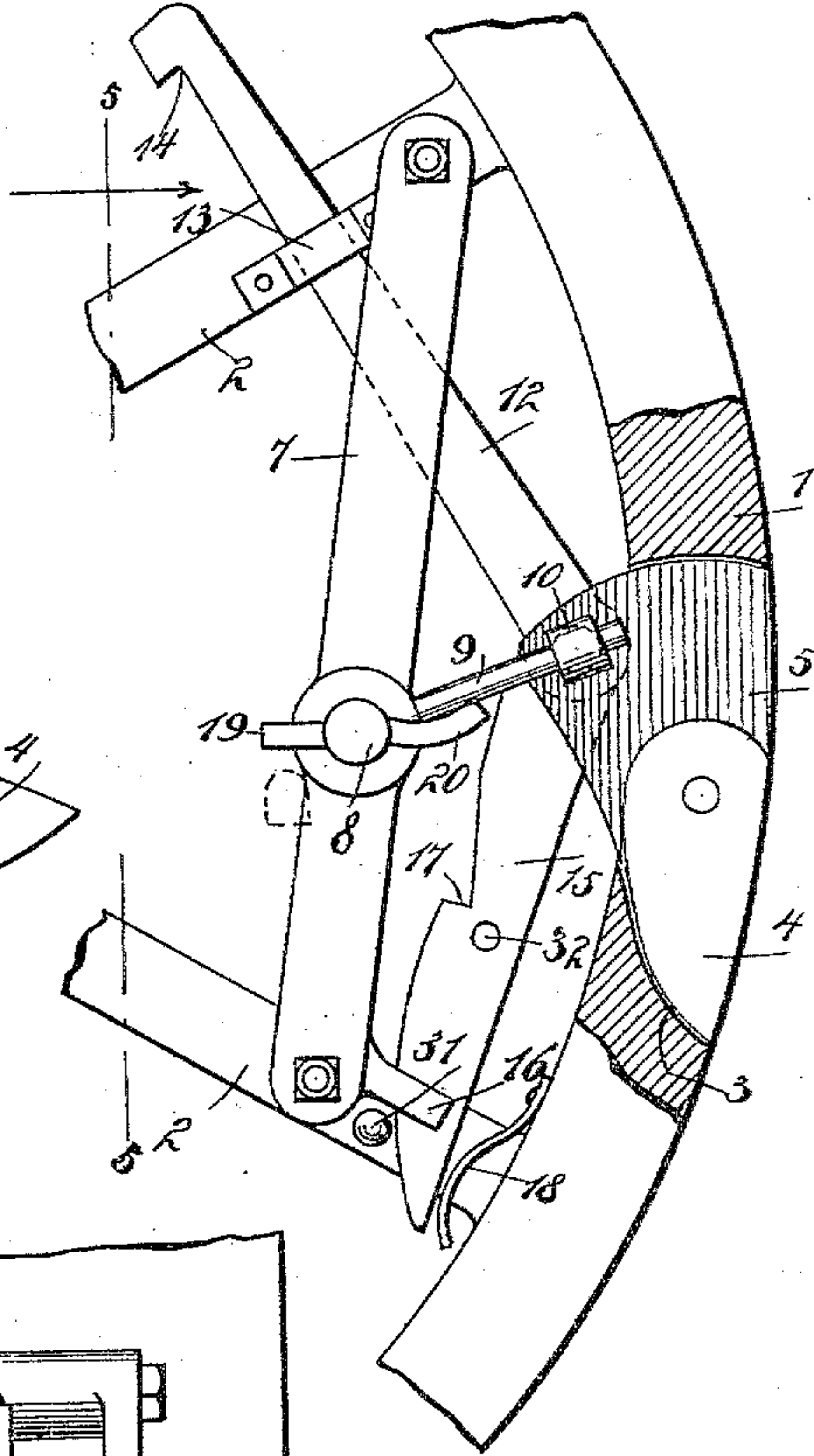


Fig. 3

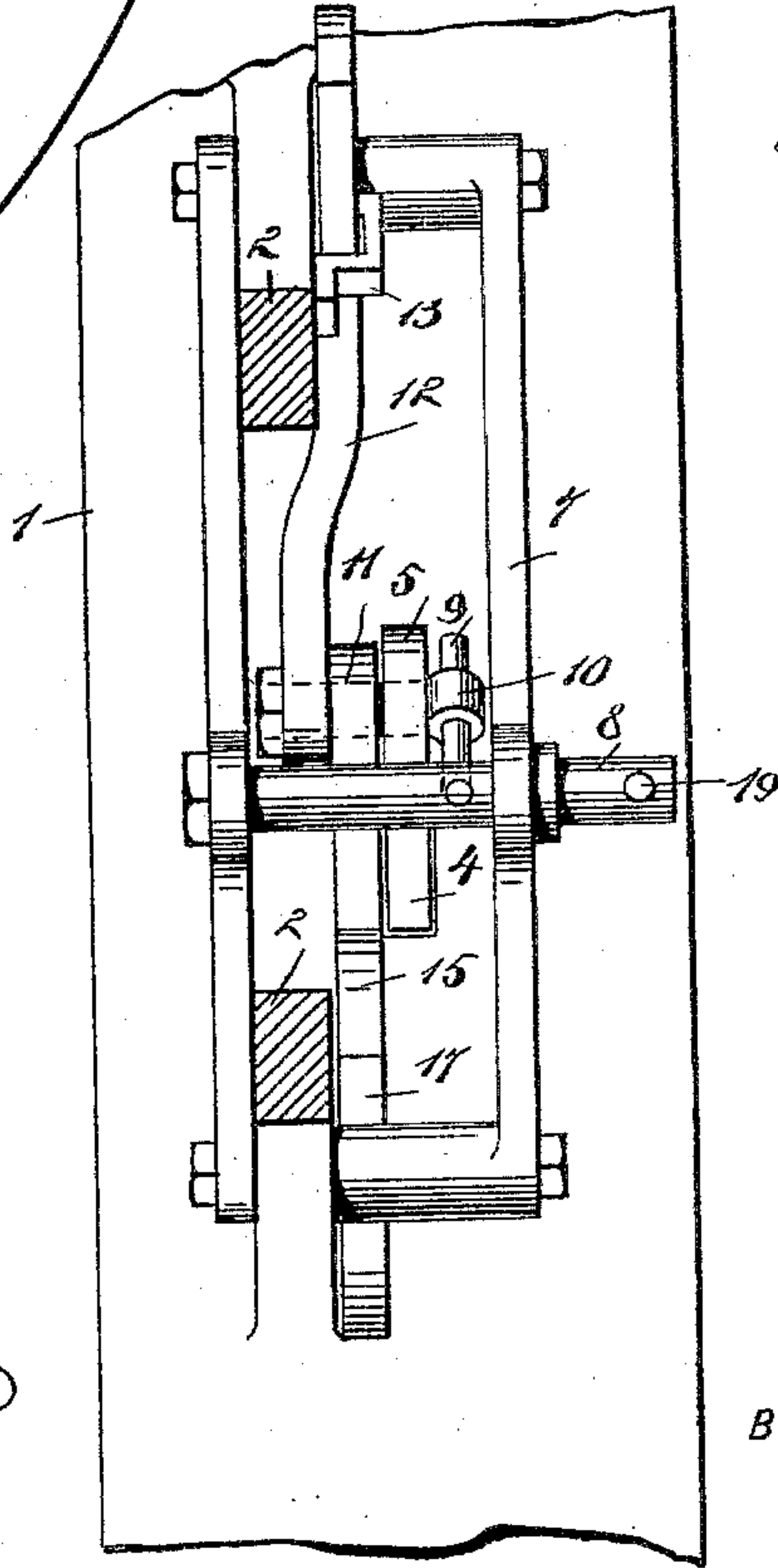


Fig. 5

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UNITED STATES PATENT OFFICE.

ADAM SMITH AND JOHN SMITH, OF BLISSVILLE, ILLINOIS.

TRACTION-WHEEL.

SPECIFICATION forming part of Letters Patent No. 597,594, dated January 18, 1898.

Application filed April 22, 1897. Serial No. 633,334. (No model.)

To all whom it may concern:

Be it known that we, ADAM SMITH and JOHN SMITH, both of Blissville township, in the county of Jefferson and State of Illinois, have
5 invented new and useful Improvements in Traction-Wheels, of which the following is a full, clear, and exact description.

This invention relates more particularly to wheels for traction-engines or similar vehicles; and the object is to provide a traction-wheel with mud-shoes and a simple means for automatically moving the shoes into position relatively to the rim of the wheel, to serve as
10 teeth for engaging in mud or soft roads, to prevent slipping of the wheels, and also to employ the same means, but in a different position, to move the shoes into the rim of the wheel while traveling over hard roads or bridges, thus preventing damage to the road
15 or bridge.

We will describe a traction-wheel embodying our invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying
25 drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a traction-wheel embodying our invention. Fig. 2 is a
30 top plan view thereof. Fig. 3 shows a portion of a wheel, drawn on an enlarged scale and partly in section, to show a mud-shoe in its closed position. Fig. 4 is a view of a portion of a wheel, showing a mud-shoe in its open
35 position; and Fig. 5 is a section through a wheel on the line 5 5 of Fig. 3.

Referring to the drawings, 1 designates the rim of a traction-wheel, and 2 the spokes thereof. Between adjacent spokes the rim is
40 provided with a recess 3, in which is pivoted a mud-shoe 4. There will of course be a mud-shoe arranged between each pair of spokes; but a description of one will answer for all, as they are similar in construction, as are also
45 their operating devices. The shoe 4 is provided with a shank portion 5, which is somewhat narrower than the shoe itself, and therefore is movable in a narrow recess formed through the rim of the wheel.

50 Extended between adjacent spokes and rigidly connected thereto is a frame consisting of the side members 6 and 7, and in these

frame members is mounted a rock-shaft 8, having an arm 9 extended loosely through a sleeve 10 on a shaft 11, which extends loosely
55 through an opening in the shank portion 5 of the shoe. This shank portion, where the shank 11 extends through it, will at all times be projected within the inner periphery of the wheel-rim.

Mounted to swing on the shaft 11 is a holding-arm 12. This holding-arm extends through a guide 13, secured to one of the spokes 2, and at its free end the said arm is provided with a stop head or hook 14, adapted
60 to engage with the guide 13 when the shoe is in its outer position. Mounted to swing on the shaft 11 and extended in the opposite direction from that of the arm 12 is a latch-arm 15, having its lower portion at the inner edge
70 curved, as plainly indicated in the drawings, and movable through a guide 16 on the spoke next to that having the guide 13. The inner wall of the guide 16 forms a detent to be engaged by a shoulder 17, formed in the latch-arm 15. The latch-arm 15 is held yieldingly
75 in position within its guide by means of a spring 18, attached at one end to the inner surface of the wheel-rim and bearing at its free end against the outer edge of the arm 15. At one end the rock-shaft 8 is provided with
80 oppositely-extended fingers 19 and 20.

We have here shown a traction-wheel in connection with a traction-engine, and on a frame portion 21 is mounted to slide a shifting-rod 22. On the forward end of this shifting-rod 22 is pivotally mounted a tappet-finger 23, held yieldingly against the frame 21
85 by means of a spring 24, secured at one end to the rod 22 and bearing at its opposite end upon a pin extended laterally from the tappet-finger. This rod 22 is designed to be shifted to bring the tappet-finger 23 into position to either open or close the mud-shoes as the wheel revolves and also to move said
95 tappet-finger out of its operative position.

We provide means to hold the rod 22 in its adjusted position. As here shown, this means consists of a rib 25, adapted to be engaged in either one of the notches 26, 27, or 28, formed
100 in the lower side of the shifting-bar. To allow the shifting-bar 22 to be raised sufficiently to be moved over the rib 25, we mount said shifting-bar to rock vertically as well as to

slide longitudinally. For this purpose we provide the bar 22 near the end having the tappet-finger with a pin 29, which projects into a slot 30, formed longitudinally in a vertical portion of the frame 21.

In operation the several mud-shoes are moved to their mud-engaging position consecutively in the following manner: Assuming the engine to be moving forward—that is, with the wheel moving in the direction indicated by the arrow in Fig. 1 and with the rod 22 in the position indicated in Figs. 1 and 2—as the wheel revolves the finger 19 on the shaft 11 will engage with the tappet-finger 23, and by the continued movement of the wheel the shaft 11 will be rotated and the arm 9 will rock the shoe 4 on its pivot. During such rocking movement the arm 9 will move freely through the sleeve 10. During this movement of the shoe 4 the holding-arm 12 will be drawn upward to engage its stop end 14 with the guide 13, and the latch-arm 15 will be moved upward to engage its shoulder 17 with a pin 31, extended through a hole in the spoke against which said latch-arm engages. The spring 18 of course will move the latch-arm into an engaging position with the pin. Then, as the wheel proceeds, of course the several other shoes will be thrown outward in the same manner, and as the resistance on the shoe during the forward movement of the vehicle will be in a direction to draw upon the arms 12 it is obvious that said shoes will be held rigidly in their outer position.

Should it be desired to retain the shoes in their outer position while moving the vehicle in the reverse or backing position, the several pins 31 will be removed and the latch-arms 15 moved into the position indicated by dotted lines in Fig. 4, and then the pins will be inserted through the holes in the spokes and into holes 32 in the latch-arms.

When it is desired to move the mud-shoes to their normal position within the wheel-rim, of course the arms 15 must be released from the pins 31. Then the shifting-bar 22 will be drawn rearward to engage its notch 27 over the rib 25. When in this position, the tappet-finger 23 will be in a position to engage with the fingers 20 of the shafts 8 and thus reverse the movements of the parts and consequently move the shoes inward to the position indicated in Fig. 3. The springs 18 will serve to prevent the shoes from falling to an open position by gravity.

When it is not desired to operate the shoes in either direction, the bar 22 will be drawn rearward to engage its notch 28 with the rib 25, and then of course the tappet-finger will be out of line of movement with either one of the fingers 19 or 20. The outer surfaces of the shoes and ribs will of course be of the same radius as the wheels, and therefore when in their inner position they will be flush with the tire or outer surface of the rim.

It is to be understood that any desired number of these wheels may be employed on

a vehicle. In practice, however, in a traction-engine we contemplate employing but two, and these will be placed on the rear or driving shaft.

A wheel embodying our invention may be used in connection with a mowing-machine, reapers, and bicycles or similar machines.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A traction-wheel, comprising a rim having recesses or openings formed through it, mud-shoes pivoted in said recesses or openings, frames supported by the wheel, rock-shafts mounted in the frames, tappet-fingers extended from said rock-shafts, connections between the rock-shafts and mud-shoes, holding-arms extended from the mud-shoes, and a tappet adapted to be engaged with the tappet-fingers for moving the shoe in either of its directions, substantially as specified.

2. A traction-wheel, comprising a rim having recesses or openings formed through it, mud-shoes pivoted in said recesses or openings, frames secured to spokes of the wheel, rock-shafts mounted in said frames, rods or arms extended from said rock-shafts loosely through sleeves on shafts extended through shank portions of the mud-shoes, latch-arms extended from said shafts, detents with which said latch-arms engage, springs for moving the latch-arms inward, fingers extended in opposite directions from the shafts through the frames, and an adjustable detent on the frame of the vehicle supported by the wheel, the said adjustable detent being adapted for engagement with the fingers extended from the shafts, substantially as specified.

3. A traction-wheel, comprising a rim having openings through it, mud-shoes pivoted in said openings and having shank portions extended within the inner periphery of the rim, frames extended between and attached to adjacent spokes of the wheel, rock-shafts mounted in said frames, rods or arms extended from the rock-shafts, shafts extended loosely through the shank portions of the mud-shoes and having sleeves through which the rods from the rock-shafts may move, holding-arms mounted to swing on the shafts extended through the shank portions of the shoes, and having their free ends provided with heads or hooks, guides on spokes through which said holding-arms may move, latch-arms mounted to swing on the shafts extended through the shank portions and having shoulders to engage with a detent on a spoke, and means for rocking the rock-shafts to move the shoes into either their outer or inner position, substantially as specified.

4. A traction-wheel, having openings through its rim, mud-shoes pivoted in said openings, frames extended between and fastened to adjacent spokes of the wheel, rock-shafts mounted in said frames, shafts extended through shank portions of the mud-

shoes and provided with sleeves, rods extended from the rock-shafts through said sleeves, holding-arms extended in one direction from the shafts through the shanks of the shoes, latch-arms extended in the opposite direction from said shafts, pins adapted to extend through spokes of the wheel and also through holes formed in the latch-arms, and means for rocking the rock-shafts in either direction, substantially as specified.

5. A traction-wheel, comprising a rim, a series of mud-shoes pivoted to said rim, rock-shafts having connection with said shoes, tappet-fingers extended from opposite sides of said shafts, a shifting-bar mounted to slide on the vehicle supported by the frame, means for holding said bar as adjusted, and a yielding tappet-finger on said bar adapted for engagement with the tappet-fingers extended from the rock-shafts, substantially as specified.

6. A traction-wheel, comprising a rim, a series of mud-shoes pivoted to said rim, rock-

shafts having connection with said shoes, tappet-fingers extended from opposite sides of said shafts, a shifting-bar mounted to slide and swing on the frame of a vehicle supported by the wheel, a series of notches formed in said bar and adapted to engage respectively with a rib formed on the frame, and a yielding tappet on said bar and adapted for engagement with either one of the tappet-fingers extended from the rock-shafts, substantially as specified.

7. A traction-wheel, comprising a rim, a series of mud-shoes mounted to swing relatively to the rim, rock-shafts connected to the shoes, and means for operating the rock-shafts to swing the mud-shoes, substantially as specified.

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Witnesses:

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ROLLIN M. BROWNE.