

H. BERTRAM.
GAPPED GEAR.

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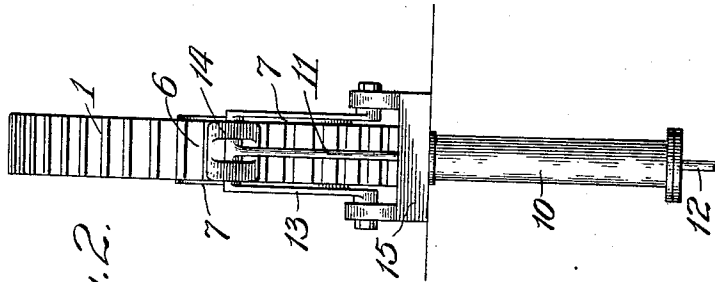


Fig. 2.

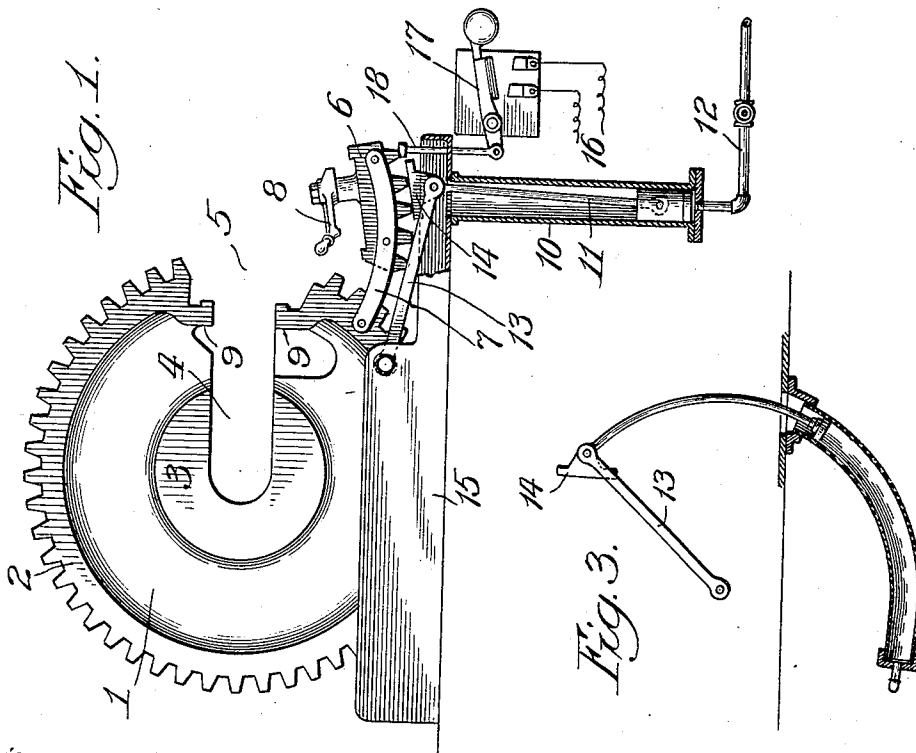


Fig. 1.

Fig. 3.

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To all whom it may concern:

Be it known that I, HENRY BERTRAM, a citizen of the Dominion of Canada, residing in Dundas, Ontario, Canada, have invented certain new and useful Improvements in Gapped Gears, of which the following is a specification.

Certain uses of gears require them to be gapped radially from the center, the gap at the rim being closed by a suitable patch. An example of the use of such gears may be found in car wheel lathes of that class in which driving mechanism, including a gear, surrounds the car-axle at a point between the wheels.

The present invention pertains to improvements in mechanism for closing the gap in the rim, and the invention will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a side elevation of a gapped gear provided with gap-closing mechanism exemplifying my present invention: Fig. 2, a rear elevation of the same: and Fig. 3, a side elevation, part vertical longitudinal section, of the device with a modified form of actuating cylinder.

In the drawing:—1, represents the gear: 2, its toothed rim: 3, the hub: 4, a gap extending radially from the center of the gear: 5, the gap in the toothed rim: 6, the patch, adapted to fit and bridge the gap in the rim and complete the toothed rim: 7, tail-bars projecting endwise from the patch and straddling the rim at one side of the gap and pivoted to the rim in such manner that the patch may swing to a position closing the gap in the rim or to a position leaving the gap open, Fig. 1 illustrating the patch as in open position, while Fig. 2 illustrates it in closed position: 8, a latch-lever pivoted to the back of the patch: 9, inner latching surfaces on the rim, at each side of the gap, and adapted to be engaged by the latch-lever when the patch is in closed position: 10, a cylinder disposed vertically below the patch, when the latter is in open position, this cylinder being provided with a piston: 11, a connecting-rod pivoted to and projecting upwardly from the piston: 12, a valved pipe connected to the lower end of the cylinder and adapted to supply pressure fluid thereto below the piston: 13, a pair of links having their free ends pivoted

to the upper end of the connecting rod and having their opposite ends mounted on a fixed pivotal axis disposed between the cylinder and the axis of the gear, the illustration showing the links as straddling the gear and the patch: 14, a pad carried at the juncture of the links with the upper end of the connecting rod, this pad having a surface adapted to bear against and shift endwise on the outer toothed surface of the patch: 15, a fixed member to support the pivots at the inner ends of the links, which fixed member may be the base of such a wheel guard as is usually employed in connection with gapped gears: 16, circuit wires adapted to form part of the electric circuit to control a motor which may be employed in giving rotation to the gear: 17, a switch adapted to open the circuit comprehending the wires 16: and 18, a shifter connected with the switch and adapted to be depressed so as to open the switch when the patch is in open position.

In the use of gapped gears in car wheel lathes of the class previously referred to it is customary to open the gap while the gap is at the rear of the lathe, and when the lathe is motor-driven, as is very common, the motor-controlling mechanism is disposed at the front of the lathe. In Fig. 1 the patch is shown in open position and the switch in open position, and held in such position by the patch. It follows that the workman at the front of the lathe cannot effectively operate his motor-controlling devices while the patch is in open position.

Looking at the parts as shown in Fig. 1, if pressure fluid be admitted below the piston, the piston will be forced up and the pad will force the patch into the gap of the rim and the latch-lever may then be turned to lock the patch in working position. The rising of the patch has permitted the switch to close so that the motor-driven devices may be used effectively. After the patch has been locked in the gear the piston and pad may be allowed to descend by permitting the fluid to exhaust from under the piston. When the patch is to be opened the gear is to be stopped with the gap in proper angular position and, by admitting fluid below the piston, the pad is to be brought against the exterior of the patch and, after the patch is unlatched and the fluid permitted to exhaust, the patch will swing

down to open position and the switch will be opened.

The modification illustrated in Fig. 3 will be readily understood without explanation, as it simply substitutes a curved cylinder for the straight cylinder shown in Fig. 1.

It is to be understood that the particular construction set forth in the drawing, illustrating two plans by which the system of operating the patch through the medium of a fixed cylinder, are mere exemplifications. I have simply set forth the principle of my invention and the best forms in which I at present contemplate applying that principle.

I claim:—

1. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge the gap in the rim and complete the rim and to move to and from closed position, a latch to hold the patch in closed position, a pad adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, a cylinder fixed relatively to the gear, a piston in the cylinder, a connection between the piston and the pad, and means for controlling the flow of pressure-fluid to and from the cylinder, combined substantially as set forth.

2. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge the gap in the rim and complete the rim and to move to and from closed position, a latch to hold the patch in closed position, a pad adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, a cylinder fixed relatively to the gear, a piston in the cylinder, a pivoted connection between the piston and the pad, and means for controlling the flow of pressure-fluid to and from the cylinder, combined substantially as set forth.

3. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge the gap in the rim and complete the rim and to move to and from closed position, a latch to hold the patch in closed position, a pad adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, a cylinder fixed relatively to the gear, a piston in the cylinder, a pivoted connection between the piston and the pad, a link pivoted to the pad and to a fixed point inwardly of the pad, and means for controlling the flow of pressure-fluid to and from the cylinder, combined substantially as set forth.

4. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge

the gap in the rim and complete the rim and to move to and from closed position, a latch to hold the patch in closed position, a pad adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, a cylinder fixed relatively to the gear, a piston in the cylinder, a pivoted connection between the piston and the pad, a pair of links straddling the patch and gear and having their free ends in pivotal connection with the pad and having their opposite ends pivoted at an axial point inwardly of the pad, and means for controlling the flow of pressure-fluid to and from the cylinder, combined substantially as set forth.

5. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge the gap in the rim and complete the rim and to move to and from closed position, a latch to hold the patch in closed position, a pad adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, a cylinder fixed relatively to the gear, a piston in the cylinder, a connection between the piston and the pad, circuit wires adapted to serve in connection with a motor for driving the gear, a switch in said circuit wires, and a part connected with the switch and adapted to be engaged by the patch to open the switch when the patch is in open position, combined substantially as set forth.

6. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge the gap in the rim and complete the rim and to move to and from closed position, a locking device to hold the patch in closed position, a pad separate from but adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, and mechanism unconnected with and independent of the gear and connected with the pad to serve in moving the pad to and from the positions corresponding with the open and closed positions of the patch, combined substantially as set forth.

7. A gapped gear mechanism comprising, a gear gapped through its rim, a patch connected with the gear and adapted to bridge the gap in the rim and complete the rim and to move to and from closed position, a locking device to hold the patch in closed position, a pad separate from but adapted to bear against the outer surface of the patch in all positions incident to the opening and closing movements of the patch, mechanism unconnected with and independent of the gear and connected with the pad to serve in moving the pad to and from the positions corresponding with the open and closed po-

sitions of the patch, circuit wires adapted to serve in connection with a motor for driving the gear, a switch in said circuit wires, and a part connected with the switch and adapted to be engaged by the patch to open the switch when the patch is in open position, combined substantially as set forth.

8. In gapped gear mechanism, the combination of a gear, a patch constituting a movable portion of the gear periphery, means holding the patch in movable relation to the gear body, a stationary power lifting device, a pad connected by said device and adapted to engage the patch, and means for directing the movement of the pad so that in all positions of opening and closing the patch the pad will properly engage the patch.

9. In gapped gear mechanism, the combination of a gear, a patch constituting a removable portion of the gear periphery, a projecting member carried by the patch and pivoted to the gear at a point adjacent to the gap whereby the patch is moved to and

from the gap in an arcuate path, a stationary cylinder, a piston therein, a pitman connected to the piston and carrying a pivoted pad to engage the patch, and a guiding link pivoted to the stationary point and to the pad whereby the pad is properly guided in engagement with the patch for moving same to and from operative position.

10. In gapped gear mechanism, the combination of a gapped gear, a patch pivoted at one side of the gap to open and close the same, a stationary cylinder, a piston therein, a pitman, a pad pivoted to the pitman, guiding means, and means for supplying energizing fluid to the cylinder below the piston, the cylinder, pitman, pad and guiding means being constructed and arranged to follow the arcuate opening and closing movement of the patch.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."