967,573.

W. T. SEARS.

CAR WHEEL LATHE.

APPLICATION FILED APR. 6, 1910.

Patented Aug. 16, 1910.

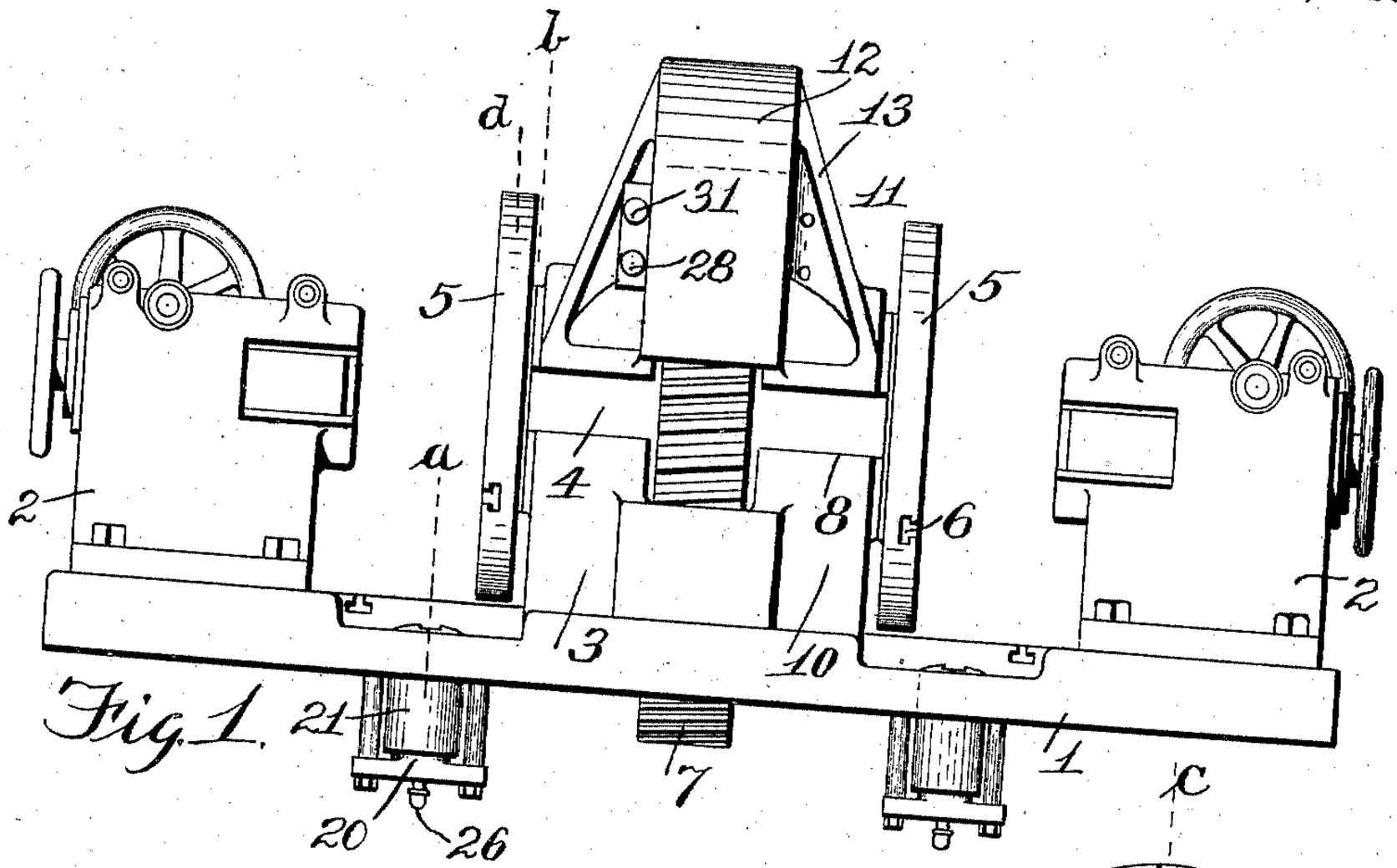

Fig. 1.

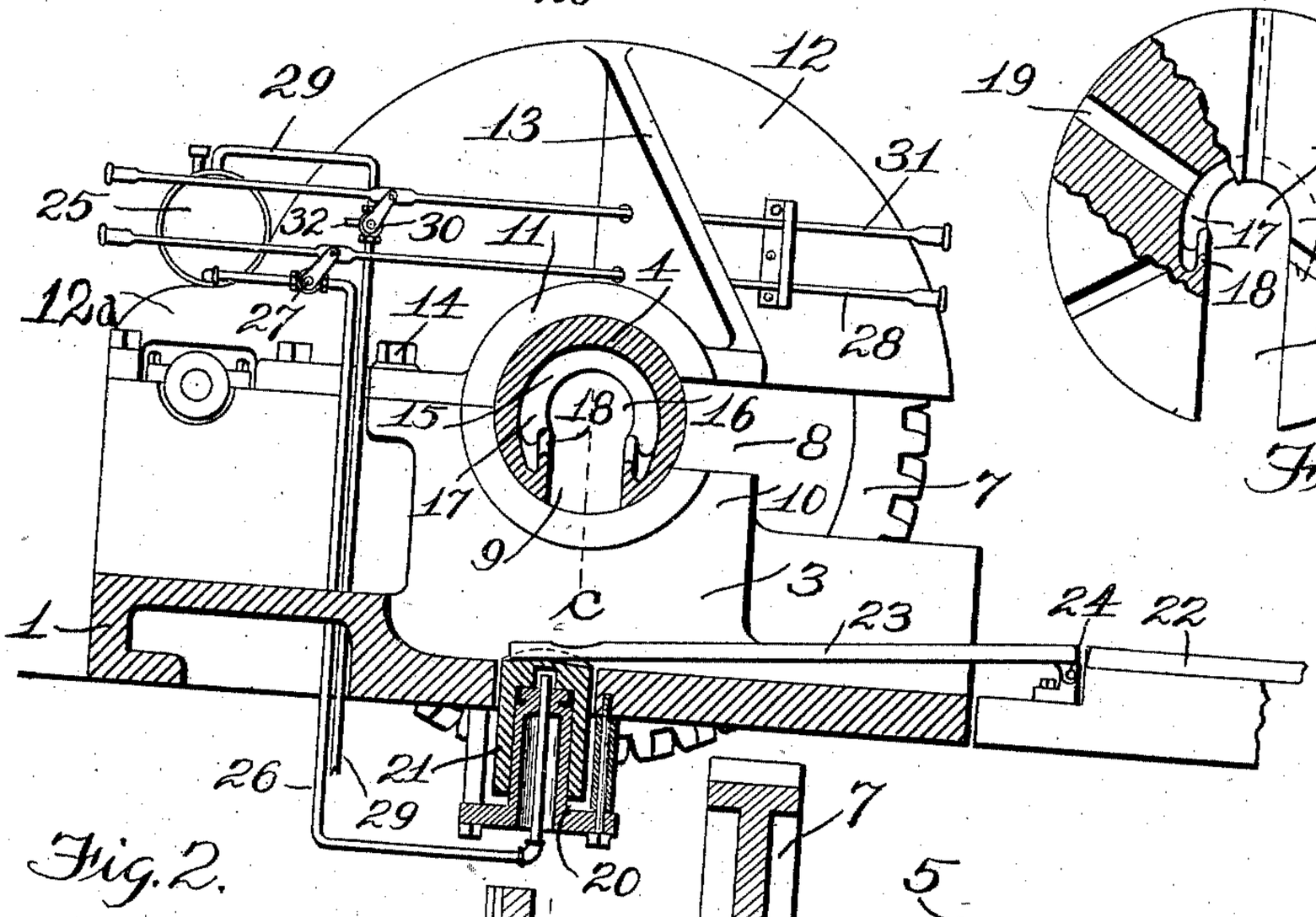

Fig. 2.

Fig. 4.

Fig. 3.

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CAR-WHEEL LATHE.

967,573. Specification of Letters Patent. **Patented Aug. 16, 1910.**

Application filed April 6, 1910. Serial No. 553,783.

To all whom it may concern:

Be it known that I, WILLARD THOMAS SEARS, a citizen of the United States, residing at Philadelphia, Philadelphia county, Pennsylvania, have invented certain new and useful Improvements in Car-Wheel Lathes, of which the following is a specification.

This invention, pertaining to improvements in lathes designed for the turning of the treads of car wheels while the wheels are on their axle, will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a rear elevation of a car wheel lathe embodying an exemplification of my present improvements, tool-rests and piping being omitted: Fig. 2 a vertical transverse section of the same in the plane of line *a* of Fig. 1 and line *b* of Figs. 1 and 3: Fig. 3 a vertical longitudinal section of the arbor, in the plane of line *c* of Figs. 2 and 4: and Fig. 4 a face view of one of the driving-plates shown partly in vertical section in the plane of line *d* in Figs. 1 and 3.

In the drawing:—1, indicates the bed-plate of the lathe: 2, the heads thereon for the support of the bearings in which the journals of the axles are to turn: 3, the center bearing, considered as a whole, mounted on the bed between the two heads: 4, the hollow arbor mounted in the center bearing: 5, the driving-plates on opposite ends of the arbor: 6, the radial slots in the driving-plates to receive the usual drivers: 7, the driving gear fast on the arbor at its center of length: 8, the longitudinal gap in the rear of the center bearing to permit the inward and outward passage of the axles to the arbor: 9, the radial gap in the arbor, the driving-plates and the driving gear: and 10, the base portion of the center bearing.

As thus far mentioned the parts are or may be of construction usual in this type of car wheel lathes, a well known type in which, the gap in the arbor having been turned rearward to coincide with the gap in the center bearing, a patch-piece is removed from the gap in the driving-wheel, whereupon the wheeled axle may be placed in position, after which the patch-piece is replaced in the gap of the driving-wheel. In lathes of this type the gapping of the center bearing has introduced an element of structural weakness usually compensated for by removable tie-bolts at the gap. These tie-bolts are inconvenient and involve time in removing and replacing them. My present invention aims at securing adequate strength to the center bearing without them.

Proceeding with the drawing:—11, indicates the cap of the center bearing: 12, the gear-guard for the upper portion of the driving-gear, this gear-guard being integrally formed with the two end portions of the cap of the center bearing: 12^a a tail-like extension formed integrally with the gear-guard and projecting outwardly therefrom at the side of the arbor opposite gap 4, this extension taking a bearing downwardly on a rigid support carried by the bed-plate of the lathe: 13, braces extending from the sides of the gear-guard down to the rear outer portions of the cap: and 14, bolts rigidly uniting the bearing-cap and gear-guard to the base of the center-bearing, these bolts being disposed between the center-bearing and the extremity of projection 12^a.

In usual constructions of lathes of this type the gear-guard has been a guard only and made comparatively light, and the cap for the center-bearing has been formed with its two end portions separate from each other and from the gear-guard, each end portion of the cap being bolted rigidly to the base of the center bearing, the rear portions of the cap-parts being held from lifting under strain by tie-bolts crossing the gap. In that construction the gear-guard gave no strength to the cap portions. In my present construction the gear-guard becomes a strength element and, in conjunction with the braces 13 permits of the usual tie-bolts being dispensed with. The strains upon the arbor due to the cut are upward, tending to open gap 8, a tendency usually compensated for by tie-bolts crossing the gap, as heretofore stated. In the present case, where no tie-bolts are employed across the gap, bolts 14 are made efficient in holding the cap of the center-bearing down by reason of the extension 12^a of the gear-guard, the upward thrust of the arbor thus acting on the short end of a lever whose longer end is represented by the distance between bolts 14 and the extremity of exten-

sion 12^a, while the shorter end is represented by the distance between the bolts and the cap of the center-bearing.

In this class of lathes, with longitudinal gapped arbors, there has often developed an annoying tendency for sand and scale from the axles to get into the bore of the arbor and from thence feed through the gap in the arbor directly into the center bearing, to its injury. My present invention aims to avoid this injury to the center bearing and to the journal-surface of the arbor.

Proceeding with the drawing:—15, indicates the general bore of the arbor with which the gap communicates: 16, three portions of the bore of contracted diameter, these portions being at the two ends of the arbor and at its center, the bore having a tapering enlargement from the center each way to the end contractions: 17, eccentric enlargements of the bore at the gapped side of the bore: 18, lips extending from each wall of the gap of the arbor inwardly toward the bore therein: and 19, ports or passages leading outwardly through the driving-plates from the bore of the arbor.

In the operation of the lathe the sand and scale will rattle off the axles as usual and be temporarily caught in the bore of the arbor, but instead of being dumped therefrom into the lower portion of the center-bearing as usual, it is retained by the lips 18 and, owing to the outward flare of the bore of the arbor, this material finds its way toward the ends of the arbor and finally discharges through the passages 19 to points where it can do no harm.

In lathes of this class it is usual to have track rails at the rear of the lathe for convenience in wheeling the work in and out and in my present construction I aim to facilitate the vertical adjustment of the work while it is being placed in and removed from the position in which the wheels are to be operated upon by the lathe. This particular feature of my construction is applicable to wheel lathes of other types.

Proceeding with the drawing:—20, indicates a pair of vertical pistons rigidly supported by the bed of the lathe below the axial line thereof and in such longitudinal position that one will be under each of the wheels of the job to be operated upon: 21, a vertically movable cylinder working on each piston, the pistons projecting upwardly, and the upper ends of the cylinders being closed: 22, the usual track rails leading to the rear of the lathe: 23, pivoted rail sections forming forward prolongations of the track rails, the forward ends of these track sections resting in notches in the tops of the cylinders: 24, the pivots at the heels of the rail sections: 25, a reservoir for liquid, oil for instance, and for air: 26, a pipe leading from the reservoir to the interior of one of the cylinders, each cylinder having such a pipe: 27, a valve for controlling the flow of oil through pipe 26: 28, a handle for manipulating valve 27: 29, an air pipe communicating with the reservoir and to lead from some suitable source of supply of air under pressure: 30, a three-way valve in this air-supply pipe: 31, a handle for manipulating valve 30: and 32, the outlet or waste of three-way valve 30.

Normally, cylinders 21 will be in lower position, as shown, valves 27 will be closed, valve 30 will be closed or in such position that air pressure is not going to the reservoir, outlet 32 will be open to the reservoir so that the reservoir is free from air pressure, and the reservoir will contain a supply of oil. The position of the arbor being such that its gap coincides with the gap in the center bearing, and the patch of the driving gear having been removed, the wheeled axle will be run in on the track and track sections, the axle passing loosely into the gaps and taking position in the bore of the arbor but downwardly concentric with it. Valve 30 is now to be actuated so as to close air-outlet 32 and put air pressure into the reservoir above the oil therein, thus putting the oil in the system under pressure. Valves 27 are now to be manipulated so as to admit the oil under pressure into the cylinders whereby the cylinders and front ends of the rail sections are caused to rise until the proper vertical adjustment has been given to the wheeled axle to permit the proper adjustment of its end supports, valves 27 then to be closed. In this operation, which requires some care and nicety, while the lifting force has been obtained from an elastic medium under pressure, the transmission of that force has been through the inelastic oil thoroughly under control by valves 27, thus avoiding any dancing of the work while being supported by the cylinders. When the wheeled axle has been properly positioned and secured in the lathe then valve 30 is to be put to such position as to close off the supply of compressed air and to open outlet 32 from the reservoir, and valves 27 are to be opened thus relieving the reservoir of pressure and permitting the cylinders and rail sections to drop down to normal position. When the wheeled axle is to be removed from the lathe then, by a repetition of the first-mentioned manipulation of the valves, the rail-sections are brought up to the wheels so that the wheeled axle may be rolled out rearwardly and if desired, the front ends of the rail-sections may be elevated above the normal so that the work may roll down declined rail sections.

In the particular construction chosen for examplification the pistons are the fixed elements and the cylinders are the movable ones, but equivalents may be found in any

suitable piston and cylinder arrangement. Again, it is to be understood that where oil is referred to in connection with the compressed air, any equivalent liquid is in contemplation.

It is to be observed that the bed-plate, at points below the positions which will be occupied by the wheels being turned, presents a plain upper surface. The cylinders 21 which move vertically through perforations in the bed-plate under the car wheels have their upper ends, when the cylinders are down, substantially even with the upper surface of the bed-plate. This relation of parts permits of a ready cleaning away of chips which accumulate in large quantities on the portions of the bed-plate under the car-wheels.

I claim:—

1. A wheel lathe of gapped arbor type comprising, a gapped center bearing, a gear-guard formed integrally with the cap of the center bearing, an integral rigid projection from the gear-guard outwardly in the direction opposite the gap in the center-bearing, a rigid support under the outer extremity of said projection, bolts securing the cap of the center-bearing to the base of the center-bearing and disposed between the center-bearing and said projection, and braces extending from the sides of the gear-guard down to the ends of the cap at the gap in the center bearing, combined substantially as set forth.

2. A wheel lathe of gapped arbor-type comprising an arbor having a gapped bore with a tapering enlargement and with an outlet for foreign matters at the larger portion of the bore, substantially as set forth.

3. A wheel lathe of gapped arbor-type comprising, an arbor having a gapped bore with a tapering enlargement and with an outlet for foreign matters at the larger portion of the bore, and lips extending longitudinally at said bore in the gap therein, combined substantially as set forth.

4. A wheel-lathe of gapped arbor type comprising an arbor having a gapped bore enlarging from its center toward the ends and having outlets for foreign matters at the ends of the bore, substantially as set forth.

5. A wheel lathe of gapped arbor type comprising, an arbor having a gapped bore enlarging from its center toward the ends and having outlets for foreign matters at the ends of the bore, and lips extending longitudinally in said bore at the gap therein, combined substantially as set forth.

6. A wheel-lathe of gapped arbor type comprising, an arbor having a gapped bore enlarging from its center toward the ends of the arbor and having radial outlets for foreign matter at the ends of the bore, contractions to the bore at the ends of the arbor endwise beyond said radial outlets, and lips extending from end to end of the bore at the gap therein, combined substantially as set forth.

7. A wheel lathe comprising, a bed, axle-carrying and driving mechanism supported thereby, a vertical cylinder and piston disposed below the axis of the lathe under each wheel-position, movable rail-sections adapted to the wheels on an axle and having their free ends supported by said cylinders and pistons, a reservoir for oil and air, oil-pipes from said reservoir to said cylinders, valves in said oil-pipes to control the flow of oil back and forth between the reservoir and cylinders, an air-pipe leading to said reservoir and adapted for connection with a source of supply of air under pressure, an air outlet, and valvular mechanism adapted to place the reservoir alternatively in communication with the air supply or the air outlet, combined substantially as set forth.

8. A wheel lathe of gapped arbor type comprising, a gapped center-bearing, an arbor mounted within the bearing and having a gapped bore, a cap for the center-bearing, a gear-guard formed integrally with the cap and having a rigid projection outwardly from the center-bearing in a direction opposite the gap, a rigid support below the outer extremity of said projection, and bolts securing the cap to the base of the center-bearing and disposed between the center-bearing and said projection, combined substantially as set forth.

9. A wheel lathe comprising, a bed-plate having a flat upper surface under the positions of the car-wheels, supports and driving apparatus mounted on the bed-plate for the support and driving of a wheel and axle-structure, lifting members working vertically through perforations in the bed-plate and adapted to engage under and vertically adjust the car-wheels, and mechanism for vertically adjusting said lifting-members, the upper ends of the lifting-members being normally at substantially the level of the upper surface of the portions of the bed-plate through which they work, combined substantially as set forth.

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Witnesses:
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