

A. GOTTSCHALK.
CAR WHEEL LATHE.
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1,010,616.

Patented Dec. 5, 1911.

2 SHEETS-SHEET 1.

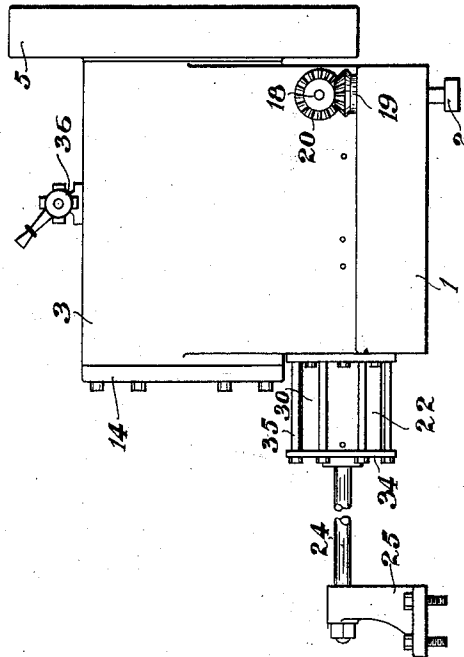


Fig. 1

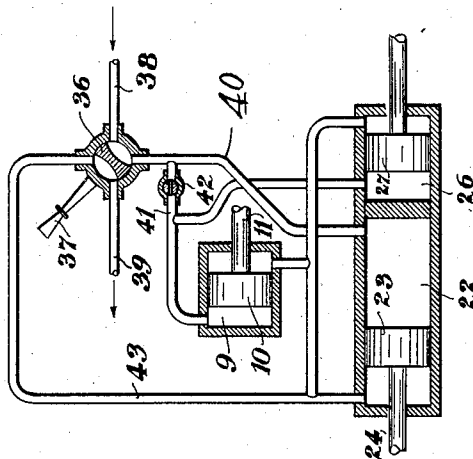


Fig. 2

Witnesses

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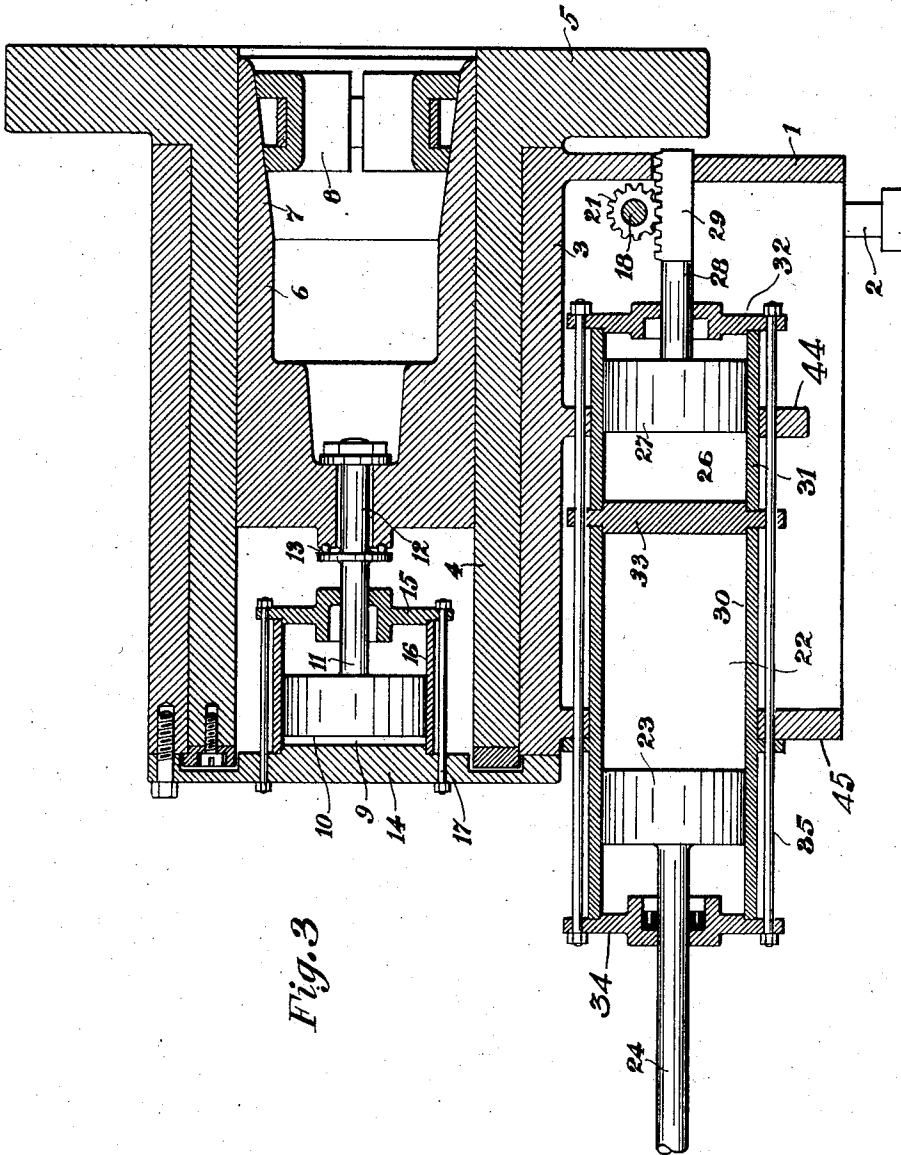


Fig. 3

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UNITED STATES PATENT OFFICE.

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CAR-WHEEL LATHE.

1,010,616.

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To all whom it may concern:

Be it known that I, ALBERT GOTTSCHALK, a citizen of the United States, residing at New York, New York county, New York, have invented certain new and useful Improvements in Car-Wheel Lathes, of which the following is a specification.

There is a well known type of car wheel lathes designed for turning car wheels while upon their axles, which type may be briefly described as a pair of tail-stocks having rotary spindles in which are centered the journals of the axle, driving mechanism being connected with the axle between the wheels. There is no driving mechanism at the tail-stocks. In another type of car wheel lathes the axle-journals are centered in spindles, one in a tailstock and one in a headstock at which is provided the driving mechanism and, in some cases, driving mechanism is applied also at the tailstock which in such case becomes a second headstock. It is a characteristic of lathes of the types referred to that the axle-journals enter the hollow spindles of the lathe and are therein centered, and in most lathes of these types it is necessary that the tailstock or headstock, as the case may be, be shifted upon the lathe-bed in inserting and removing the work, and it is necessary that the shifting headstock or tailstock be firmly secured to the bed after being adjusted to the work.

My present invention aims at power provision for shifting the headstock or tailstock on the bed, and for clamping it to and unclamping it from the bed, and for operating the centering chuck.

To avoid repetition of the phrase "headstock or tailstock" I will employ the term stock as comprehending either.

The invention will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a side elevation of a tailstock exemplifying my invention, the piping being omitted: Fig. 2 a diagram illustrating an exemplifying piping system: and Fig. 3 a vertical longitudinal section of the tailstock.

In the drawings:—1, indicates the tailstock: 2, the bolts for clamping the tailstock in adjusted position upon the bed: 3, the spindle-bearing: 4, the main spindle: 5, the face-plate on the inner end of the spindle: 6, the hollow chuck-spindle sliding axi-

ally within the main spindle: 7, the flaring inner end of the bore of the chuck-spindle: 8, the circular series of centering jaws disposed within the flaring end of the chuck-spindle and adapted to engage an axle-journal and center the same within the chuck-spindle as the chuck-spindle is moved endwise of the jaws, all of the parts thus far referred to being without peculiarity: 9, an air-cylinder rigidly supported by the bearing and disposed concentrically in the outer end of the main spindle, which cylinder may be termed the chuck-cylinder: 10, the piston of the chuck-cylinder: 11, the piston-rod of the chuck-cylinder, the same reaching inward into loose connection with the end of the chuck-spindle: 12, the inner end of piston-rod 11, freely engaging an eye in the rear end of the chuck-spindle: 13, a thrust-bearing, illustrated as of ball-type, located between the chuck-spindle and a collar on piston-rod 11: 14, a disk secured to the outer end of bearing 3, this disk forming the outer cylinder-head of the chuck-cylinder: 15, the inner head of the chuck-cylinder: 16, the shell of the chuck-cylinder clamped endwise between its two cylinder-heads: and 17, a circular series of bolts clamping the chuck-cylinder and its two heads firmly together.

The endwise movement of chuck-spindle 6 serves in the usual manner in gripping and releasing the axle-journal engaged by the centering-jaws. If compressed air, or other pressure fluid be admitted to the left of piston 10 the chuck-spindle will be pushed to the right and the centering-jaws will be closed upon the axle-journal, while if the fluid be admitted to the right of the piston the chuck-spindle will be retracted and the axle-journal released from the forceful grip of the centering-jaws.

Proceeding with the drawings:—18, indicates a shaft extending across the tailstock over the clamping-bolts 2: 19, the nuts of the clamping-bolts, these nuts being in the form of bevel-gears: 20, bevel-gears fast on shaft 18 and engaging the nut-gears: 21, a pinion fast on the cross-shaft: 22, a cylinder secured to the tailstock below and parallel with the main spindle, which cylinder will be termed the shifting-cylinder: 23, the stationary piston of the shifting cylinder: 24, the piston-rod of the shifting-cylinder, the same projecting outwardly from the shifting-cylinder: and 25, an anchor for se-

curing piston-rod 24 against endwise motion, this anchor being adapted to be secured to the bed of the lathe.

Piston 23 being fixed it follows that if pressure-fluid be admitted to the righthand end of the shifting cylinder the shifting-cylinder, and with it the tail-stock, will be shifted to the right upon the lathe-bed, while if the fluid be admitted into the lefthand end of the shifting-cylinder the tailstock will be shifted to the left upon the lathe-bed.

Proceeding with the drawings:—26, indicates a cylinder inward of and in alinement with the shifting-cylinder, cylinder 26 being hereinafter termed the clamping-cylinder: 27, the piston of the clamping-cylinder: 28, the piston-rod of the clamping-cylinder: and 29, a rack carried by piston-rod 28 and engaging the pinion of the cross-shaft.

The movement of piston 27 in the clamping-cylinder serves, in an obvious manner, in loosening and tightening the nuts of the clamping-bolts.

Proceeding with the drawings:—30, indicates the shell of the shifting-cylinder, the same being rigidly secured to the tailstock and a portion of it projecting inside the tailstock: 31, the shell of the clamping-cylinder: 32, the right-hand head of the clamping-cylinder: 33, the partition separating the clamping-cylinder from the shifting-cylinder and forming one cylinder-head for each of these cylinders: 34, the outer head of the shifting-cylinder: and 35, a circular series of bolts extending along the shifting and clamping cylinders and passing through their cylinder-heads and partitions and clamping these parts and their shells firmly together.

The stock is preferably provided with an interior partition 44. The bolts 35 pass through the outer wall 45 and the interior partition 44 in order to rigidly secure the shifting and clamping cylinders in the stock.

The built-up system of cylinder construction employed in the three cylinders permits of ready construction without the use of complicated cylinder patterns, and permits of the structure being readily taken apart, and well provides for incorporating the improvements into appropriate lathes already constructed.

The pipe system to be employed in connection with the cylinders may be subject to any variation consistent with the control of the flow of fluid to and from the cylinders. Preference is to be given to the exemplifying system of piping to be described.

Proceeding with the drawings:—36, indicates a valve: 37, a handle for actuating the valve: 38, a supply connection to convey pressure fluid to the valve, the fluid being brought to the valve preferably through a hose: 39, fluid exhaust connection from the valve: 40, a pipe leading from the valve to

the right-hand end of shifting-cylinder 22: 41, a pipe leading from the valve to the lefthand end of chuck-cylinder 9 and to the lefthand end of clamping-cylinder 26: 42, a cock disposed in the pipe 41 between the valve and the two cylinders supplied by pipe 41: and 43, a pipe leading from the valve to the lefthand end of shifting-cylinder 22 and to the right-hand ends of chuck-cylinder 9 and clamping-cylinder 26. The function of the valve is to admit pressure-fluid to an end of each cylinder while permitting the flow to exhaust from the opposite end of each cylinder. With the valve in the position indicated in Fig. 2, and the cock 42 being open, pressure-fluid is urging the chuck-piston to the right, to center the axle-journal, and is urging the tailstock to the right, and is urging the clamping-bolts into tightness. If the valve be given a quarter turn, thus putting the supply to pipe 43 and putting pipe 40 to exhaust, fluid pressure will urge the chuck-piston to the left to release the centering jaws, and will urge the clamping-piston to the left to release the clamping-bolts, and will urge the tailstock to the left and free of the axle-journal. The employment of cock 42 permits the tailstock to be shifted to the right before air is admitted to the clamping-cylinder to tighten the clamping-bolts, and before air is admitted to the chuck-cylinder to tighten the centering jaws.

I claim:—

1. A car wheel lathe comprising, a stock adapted to slide upon a bed, a clamping-bolt for securing the stock in adjusted position upon the bed, an anchor adapted for connection with the bed, a cylinder and piston coöperating between said anchor and stock and serving to shift the stock upon the bed, and means for controlling the flow of pressure-fluid to and from said cylinder, combined substantially as set forth.

2. A car wheel lathe comprising, a stock adapted to slide upon a bed, a clamping bolt for securing the stock in adjusted position upon the bed, an anchor adapted for connection with the bed, a cylinder carried by the stock, a piston therein, a piston-rod connecting said piston with said anchor, and means for controlling the flow of pressure-fluid to and from said cylinder, combined substantially as set forth.

3. A car wheel lathe comprising, a stock adapted to slide upon a bed, a clamping bolt for securing the stock in adjusted position upon the bed, a nut-gear upon said bolt, a shaft extending across the stock and geared to said nut-gear, a pinion on said shaft, a cylinder carried by the stock, a piston in said cylinder, a piston-rod connected with said piston, a rack carried by said piston-rod and engaging the last-mentioned gear, and means for controlling the flow of pres-

sure-fluid to and from said cylinder, combined substantially as set forth.

4. A car wheel lathe comprising, a stock adapted to slide upon a bed, a clamping-bolt 5 for securing the stock in adjusted position upon the bed, an anchor adapted for connection with the bed, a shifting-cylinder carried by the stock, a piston in said shifting-cylinder, a piston-rod connecting said piston 10 and anchor, a clamping-cylinder in line with the shifting cylinder, a piston in the clamping-cylinder, a piston-rod for the last-mentioned piston, a rack carried by the last-mentioned piston-rod, a shaft journaled 15 across the stock, a gear fast on said shaft and engaging said rack, nut-gears on the clamping-bolts, gears connecting said nut-gears and shaft, and means for controlling the flow of pressure-fluid to and from said 20 cylinders, combined substantially as set forth.

5. A car wheel lathe comprising, a stock adapted to slide upon a bed, a clamping-bolt 25 for securing the stock in adjusted position upon the bed, a spindle mounted for rotation in the stock, a chuck-spindle adapted to slide axially in the first-mentioned spindle, a chucking-cylinder supported by the stock in axial alinement with said spindles, a piston 30 in the chucking-cylinder, a piston-rod connecting said piston with the chuck-spindle, and means for controlling the flow of pressure-fluid to and from said cylinder, combined substantially as set forth.

35 6. A car wheel lathe comprising, a stock adapted to slide upon a bed, a clamping-bolt for securing the stock in adjusted position upon the bed, a spindle mounted for rotation in the stock, a chuck-spindle adapted 40 to slide axially in the first-mentioned spindle, a chucking-cylinder supported by the stock in axial alinement with said spindles and disposed within the rear end of the first-

mentioned spindle, a piston in the chucking-cylinder, a piston-rod connecting said piston 45 with the chuck-spindle, and means for controlling the flow of pressure-fluid to and from said cylinder, combined substantially as set forth.

7. A car wheel lathe comprising, a stock 50 adapted to slide upon a bed, a clamping-bolt for securing the stock in adjusted position upon the bed, a pair of cylinder-heads, a cylinder-shell clamped endwise between said cylinder-heads, a circular series of bolts extending 55 along the cylinder shell from one cylinder-head to the other, means connecting the cylinder-shell with the stock to serve in rigidly supporting the cylinder-shell and head, a piston in the cylinder-shell, a piston-rod 60 connected with said piston and with a movable part of the stock, and means for controlling the flow of pressure-fluid to and from said cylinder, combined substantially as set forth.

8. A lathe comprising, a stock adapted to 65 slide upon a bed, a clamping bolt for securing the stock in adjusted position upon the bed, a cylinder carried by said stock, a piston in said cylinder, a piston rod connected 70 with said piston, mechanism connecting said piston rod with said clamping bolt, and means for controlling the flow of pressure fluid to and from said cylinder.

9. A lathe comprising, a stock adapted to 75 slide upon a bed, a chuck mounted in said stock, a cylinder and piston cooperating between said stock and chuck and serving to shift said chuck, and means for controlling 80 the flow of pressure fluid to and from said cylinder.

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Witnesses:

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