Jan. 27, 1953 H. E. BALSIGER 2,626,492

CAR WHEEL GRINDER

Filed June 7, 1950 4 Sheets-Sheet 1

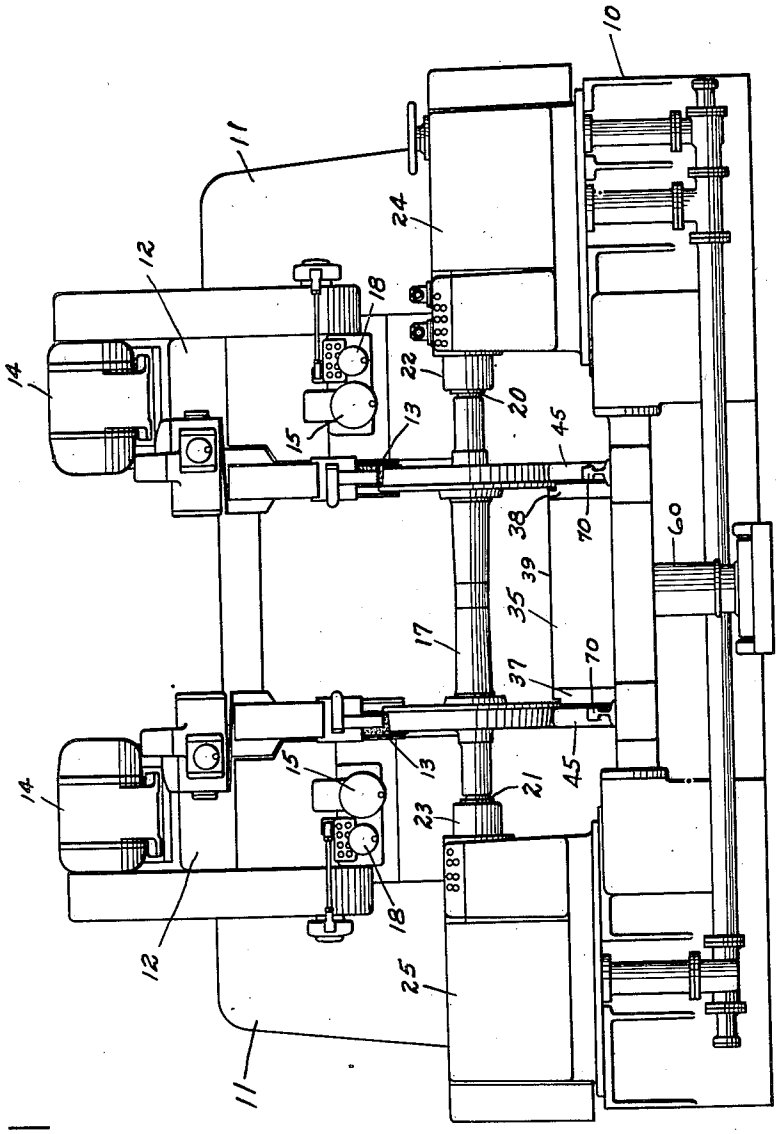

Fig. 1

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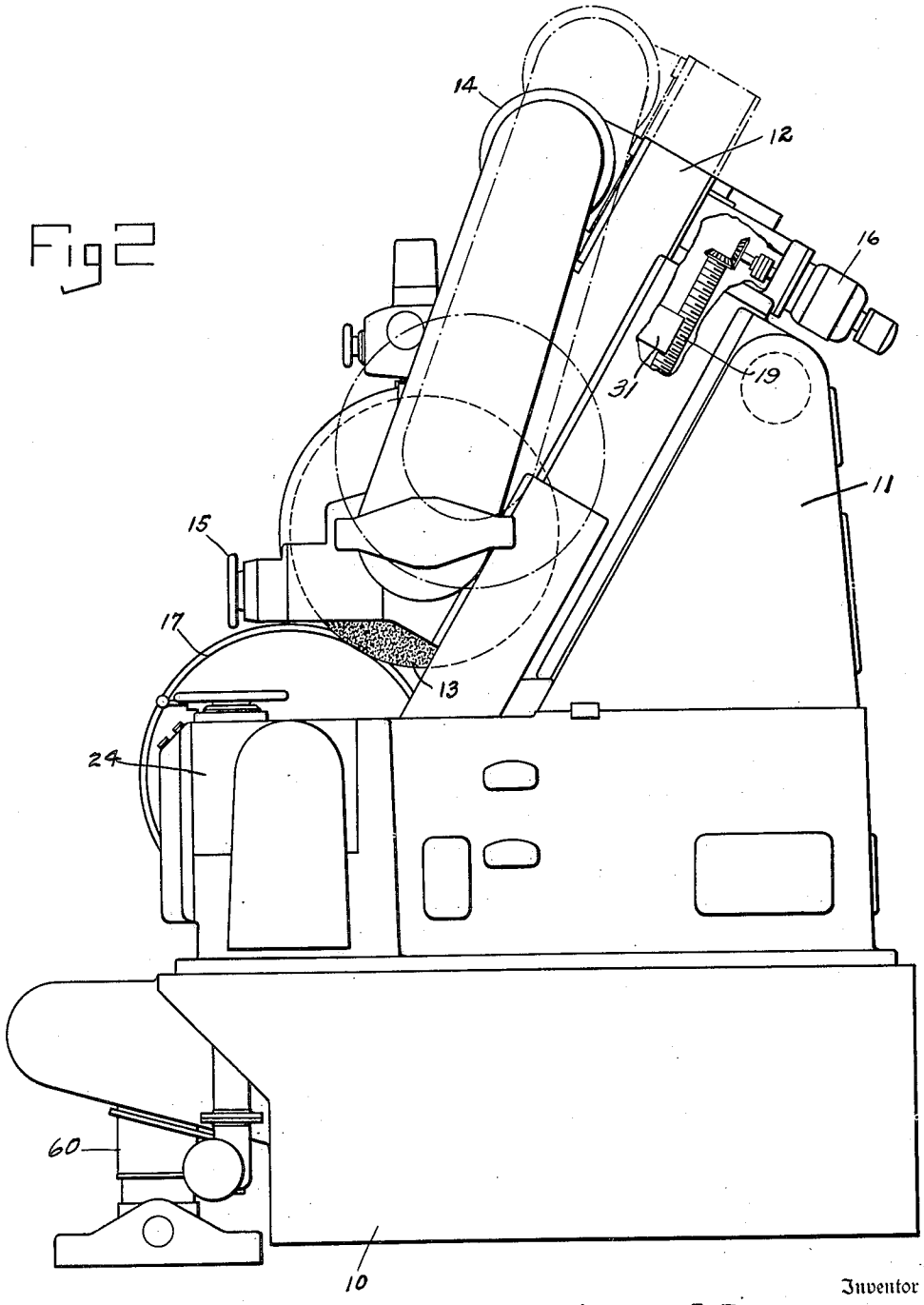
Fig 2



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CAR WHEEL GRINDER

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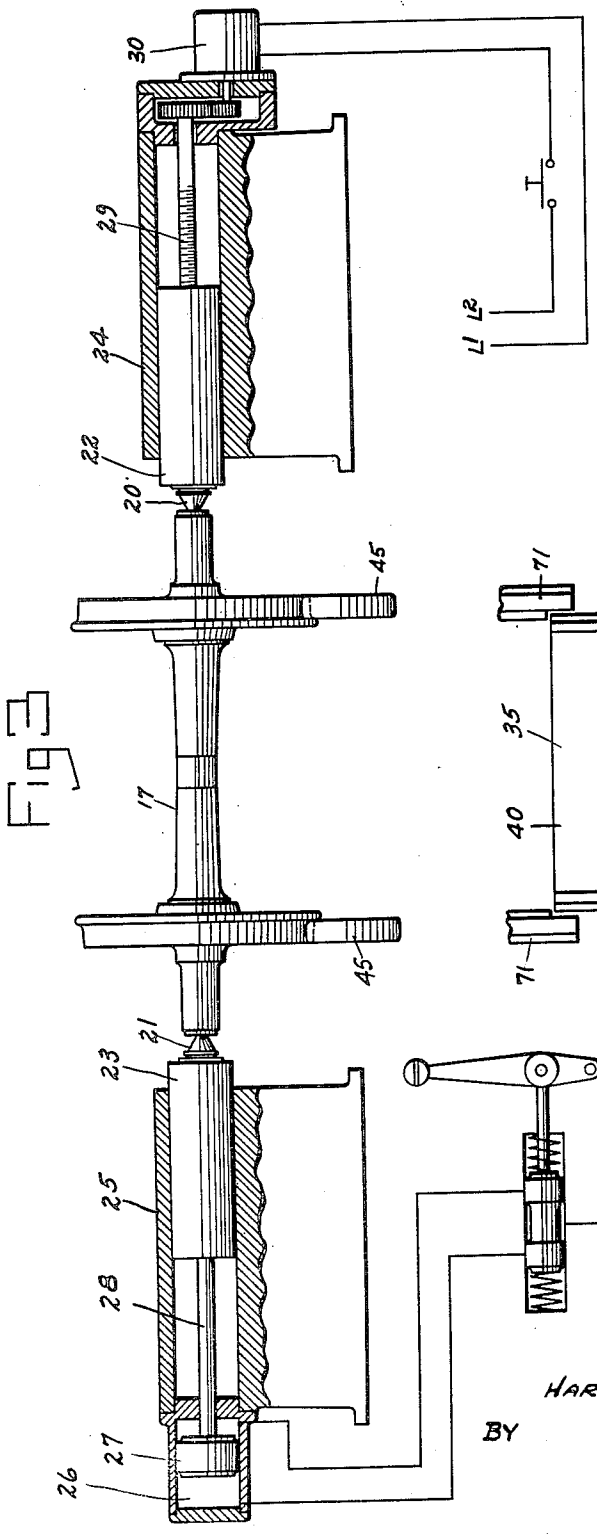

Fig. 4

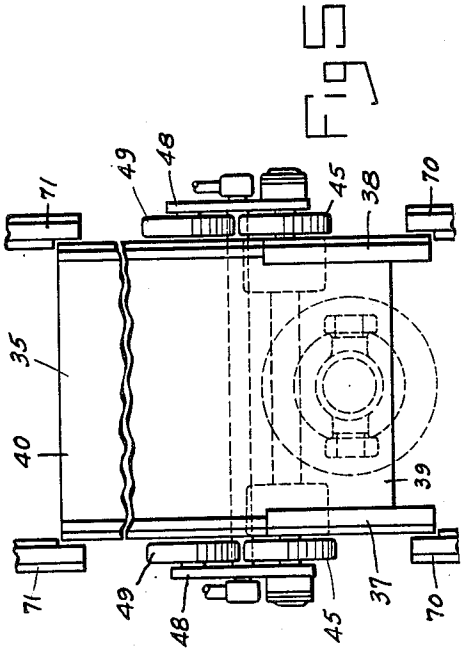

Fig. 5

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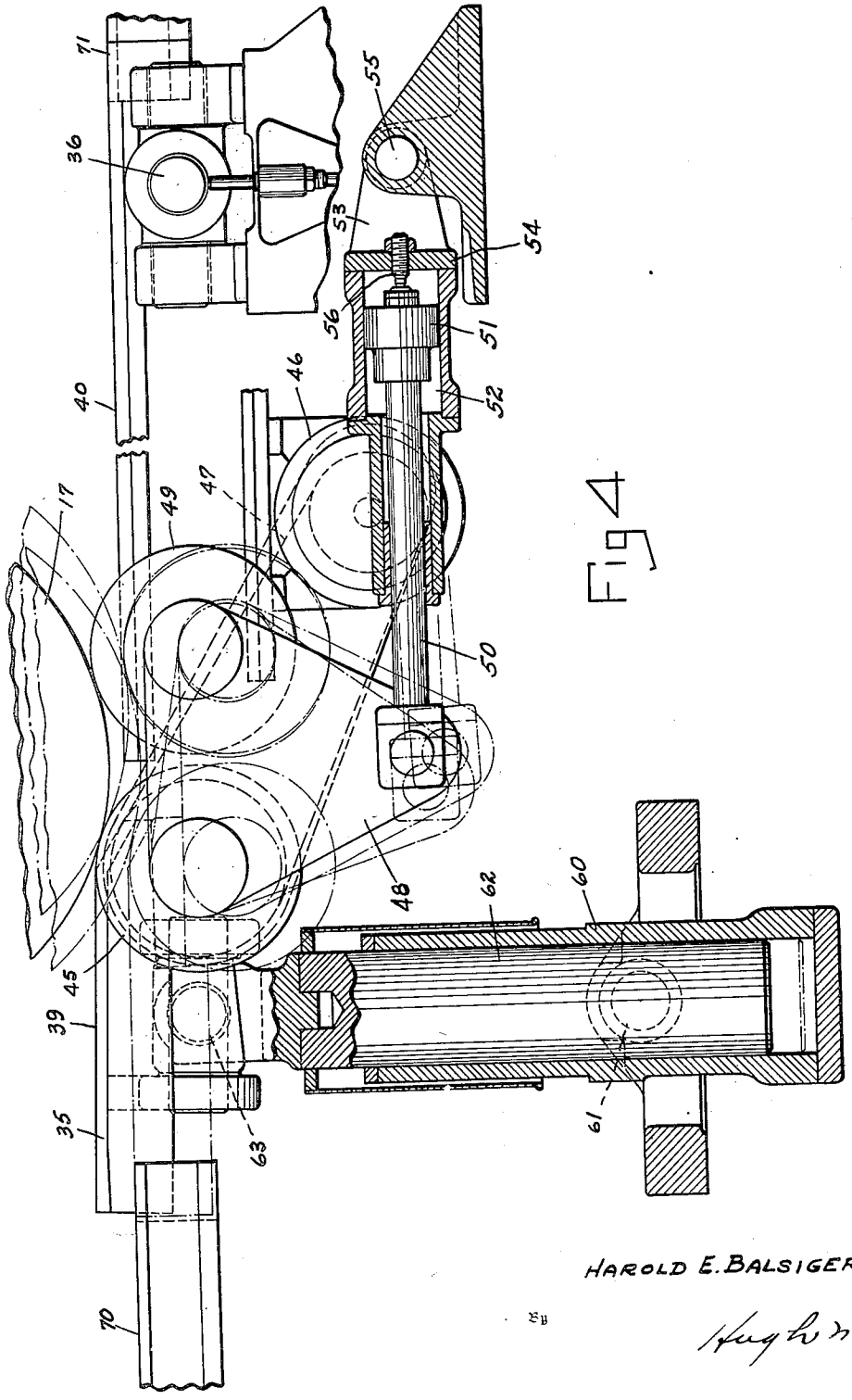

Fig 4

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Patented Jan. 27, 1953 2,626,492

UNITED STATES PATENT OFFICE

2,626,492

CAR WHEEL GRINDER

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Application June 7, 1950, Serial No. 166,560

3 Claims. (Cl. 51—236)

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This invention relates to grinding machines, particularly to machines for grinding the wheels of railway cars.

In the past, car wheel grinders have been little different from other grinding machines, except for the fact that they usually had separate wheel supports and grinding wheels for each of the wheels in the wheel and axle assembly. Placing the car wheels in the machine for a grinding operation and removing them afterward necessitated a great deal of handling by cranes or other lifting devices.

The first improvement in this type of machine so far as handling was concerned involved means for moving the grinding wheel supports longitudinally of the machine to an inoperative position such that the wheel assembly could be rolled on tracks into the front of the machine and, after a grinding operation, the assembly could pass on through the machine and be removed at the rear. This arrangement required a rather expensive wheel mounting structure, since each wheel support required a longitudinal as well as a transverse slide.

The present invention represents an improvement over this apparatus in that it requires only a transverse slide for each grinding wheel. The work supports and wheel supports are spaced axially a distance greater than the length of the axis. A short transverse backoff movement of the wheel supports then provides a clear passage through the machine for inserting and removing the work. The slight axial movement of the wheels required for adjustment may be effected by shifting the wheel spindle axially.

It is an object of this invention to provide a car wheel grinder in which the wheel and axle assembly may be rolled into the front of the machine on a track and removed at the rear of the machine on the same track.

A further object is to provide a machine for grinding car wheels in which the vertical space between the surface of the grinding wheels and the track may be enlarged by transverse movement of the grinding wheel supports to permit the wheel and axle assembly to pass through the machine.

A further object is to provide means for supporting a wheel and axle assembly on the flanges of the wheels as said assembly enters and leaves the machine.

A further object is to provide means for effecting axial adjustment of the wheel assembly in the machine.

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Figure 1 is a front elevation of a car wheel grinder.

Figure 2 is an end elevation.

Figure 3 is a front elevation of the work supporting heads, showing means for effecting axial adjustment of the work.

Figure 4 is an end elevation showing the work driving apparatus and the platform tilting means.

Figure 5 is a partial plan view of the platform and work driving means.

In the drawings, numeral 10 indicates the bed of the machine; 11, a triangular slide member having an inclined surface on which are formed suitable guides, slidably supporting wheel base 12. The grinding wheel 13 is rotatably mounted in said wheel base and driven by motor 14. Said wheel base may be moved on slide 11 manually by handwheel 15 operating through suitable gearing, or it may be moved by power in the form of a motor 16 through suitable gearing to feed screw 19. Said screw is connected to wheel base 12 through nut 31. Said wheel may also be adjusted axially by shifting its spindle endwise by means of handwheel 18 acting through suitable gearing. Since the design and mounting of both grinding wheel supports is identical, it is necessary to describe only one.

During a grinding operation, the car wheel assembly 17 is carried rotatably on a pair of work centers 20 and 21 in spindles 22 and 23 which are axially adjustable in work support heads 24 and 25. At the outer end of the left-hand head 25 is a cylinder 26 in which is slidably mounted a piston 27 connected to center 21 by means of piston rod 28. The center 20 in the right-hand head may be adjusted axially by screw 29, which may be rotated either manually or by power. In this case, a gear motor 30 is provided for rotating said screw. Constant pressure from any suitable source is maintained in the left end of cylinder 26 during grinding so that piston 27, along with the work piece and the work centers, will follow any adjustment of screw 29.

The space between the work supports is occupied by a platform 35 substantially flush with the floor level. Said platform extends the entire width of the machine and is pivotally mounted at the rear thereof on a trunnion 36. Spaced guides 37 and 38 support and guide the car wheels on their flanges when said car wheels are introduced into the machine and again when they are removed. The front portion 39 of said platform is slightly higher than the rear portion 40. By supporting the car wheels on the flanges, it is

not necessary to make a break in the tracks in order to engage the treads of the wheels for rotating them.

The means for rotating the car wheels during a grinding operation consists of friction rollers **45** mounted at a point underneath the front portion of the platform **35** and projecting through an opening in said platform to engage the tread of said car wheels. Said rollers are driven by motor **46** through chain belt **47**. A triangular bracket **48**, pivotally mounted about the same center as roller **45** and having its base adjacent said platform, supports an auxiliary roller **49** in tandem relation to said roller **45**. The bottom corner of said bracket is connected to one end of a piston rod **50** attached to a piston **51** in cylinder **52**. A bracket **53** forming a part of the head end **54** of said cylinder is pivotally mounted at **55**. An adjustable stop **56** in head **54** limits the movement of piston **51** and the parts actuated thereby. Specifically, this stop prevents roller **49** from being urged against the work with too great a force. The pivot **55** is slightly to the rear of the platform pivot **36**. The reason for this will be discussed later.

The means for tilting platform **35** is a hydraulic jack comprising a cylinder **60** pivotally mounted on a trunnion **61**. An elongated piston **62** slidably mounted in said cylinder is pivotally attached to platform **35** by means of a trunnion **63**.

A wheel and axle assembly **17** is rolled off tracks **70** to the flange supporting guides **37** and **38** of platform **35**. Said wheels are rolled to the position shown in Figure 4, where they are located by rollers **45** and **49** in a position directly beneath centers **20** and **21**. Fluid under pressure is then introduced into the lower end of jack cylinder **60** to move piston **62** upwardly, tilting platform **35** about its pivot **36**. Because of the relative positions of pivot **36** and pivot **55**, the car wheels **17** are raised substantially vertically to an elevation where they are in substantial alignment with centers **20** and **21**.

Center **20** is first moved axially into engagement with the center held in the car wheel axle by means of gear motor **30**. Then fluid under pressure is introduced into cylinder **26** to move center **21** into engagement with the opposite end of said axle. Pressure is maintained in the head end of cylinder **26** during the grinding operation, so that endwise adjustment of the car wheel assembly may be effected in either direction solely by screw **29** when driven by motor **30**. The movement of the work centers into the axle provides a slight lift to the car wheel assembly, so that the flanges of the wheels clear the guide surfaces **37** and **38**.

Grinding wheels **13** are moved rapidly into grinding position by means of feed motor **16**. Thereafter, the grinding feed may be effected either manually by hand wheels **15** or by some suitable automatic feed. During the grinding operation, the assembly **17** is rotated by frictional engagement of roller **45** with the treads of the car wheels. Said rollers are driven through a chain belt **47** by motor **46**.

After the wheels have been ground, fluid under pressure is directed to the rod end of cylinder **26** to withdraw center **21** from the work. At the same time, gear motor **30** may be actuated to withdraw center **20** from the work.

When released from the centers, the assembly will again rest on the wheel flanges on guides **37** and **38**. Platform **35** is still in an inclined

position, but the wheel assembly is prevented from moving thereon by gravity toward the rear of the machine by rollers **49**, which are held in the position shown in Figure 4 by piston **51**. Fluid under pressure is then directed into the head end of cylinder **52**, moving piston **51** to the left and oscillating bracket **48** in a clockwise direction, so that rollers **49** drop away from the car wheels and permit the assembly to roll along the flange guides to the rear of the machine, from which it is removed to another track **71**.

Fluid under pressure is exhausted from the lower end of cylinder **60**, allowing piston **62** and platform **35** to return to position to repeat another wheel and axle assembly.

I claim:

1. In a car wheel grinder, a base, means for rotatably supporting car wheel and axle assemblies thereon, including spaced center members upon which said axles are mounted, guides along which the assembly may be moved into the machine in one direction before grinding, including a platform substantially flush with the floor level and having spaced guide means for guiding and supporting said car wheels on the flanges thereof, and means for locating said car wheels on said platform in substantially vertical alignment with said center members, including a pair of rollers pivotally mounted in tandem relation on the underside of said platform, one of said rollers serving to engage the tread of said car wheels for driving same, the other serving to limit the extent of movement of the car wheels along said platform.

2. In a car wheel grinder, a base, means for rotatably supporting car wheel and axle assemblies thereon, including spaced center members upon which said axles are mounted, guides along which the assembly may be moved into the machine in one direction before grinding, including a platform substantially flush with the floor level and having spaced guide means for guiding and supporting said car wheels on the flanges thereof, and means for locating said car wheels on said platform in substantially vertical alignment with said center members, including a pair of rollers pivotally mounted in tandem relation on the underside of said platform, one of said rollers serving to engage the tread of said car wheels for driving same, the other serving to limit the extent of movement of the car wheels along said platform, said second roller being removable at the end of the grinding operation to permit the car wheels to move along said platform to the rear of the machine.

3. In a car wheel grinder, a base, means for rotatably supporting car wheel and axle assemblies thereon, including spaced center members upon which said axles are mounted, guides along which the work piece may be moved into the machine in one direction before grinding, including a pivoted platform substantially flush with the floor level, means for locating said car wheels on said platform in substantially vertical alignment with said center members, including rollers in tandem relation pivotally attached to said platform and adapted to engage the tread of a car wheel, movement of said rollers being controlled by a linkage having a main pivot point offset from the pivot point of said platform, and means for elevating said platform and said rollers to place said work in position to be engaged by said center members, the resultant path

of said rollers due to the offset pivot points being substantially a straight vertical line.

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