A. LANE & T. MORE.

MILLING LATHE.

APPLICATION FILED AUG. 21, 1916.

1,286,659.

Patented Dec. 3, 1918.

6 SHEETS—SHEET 1.

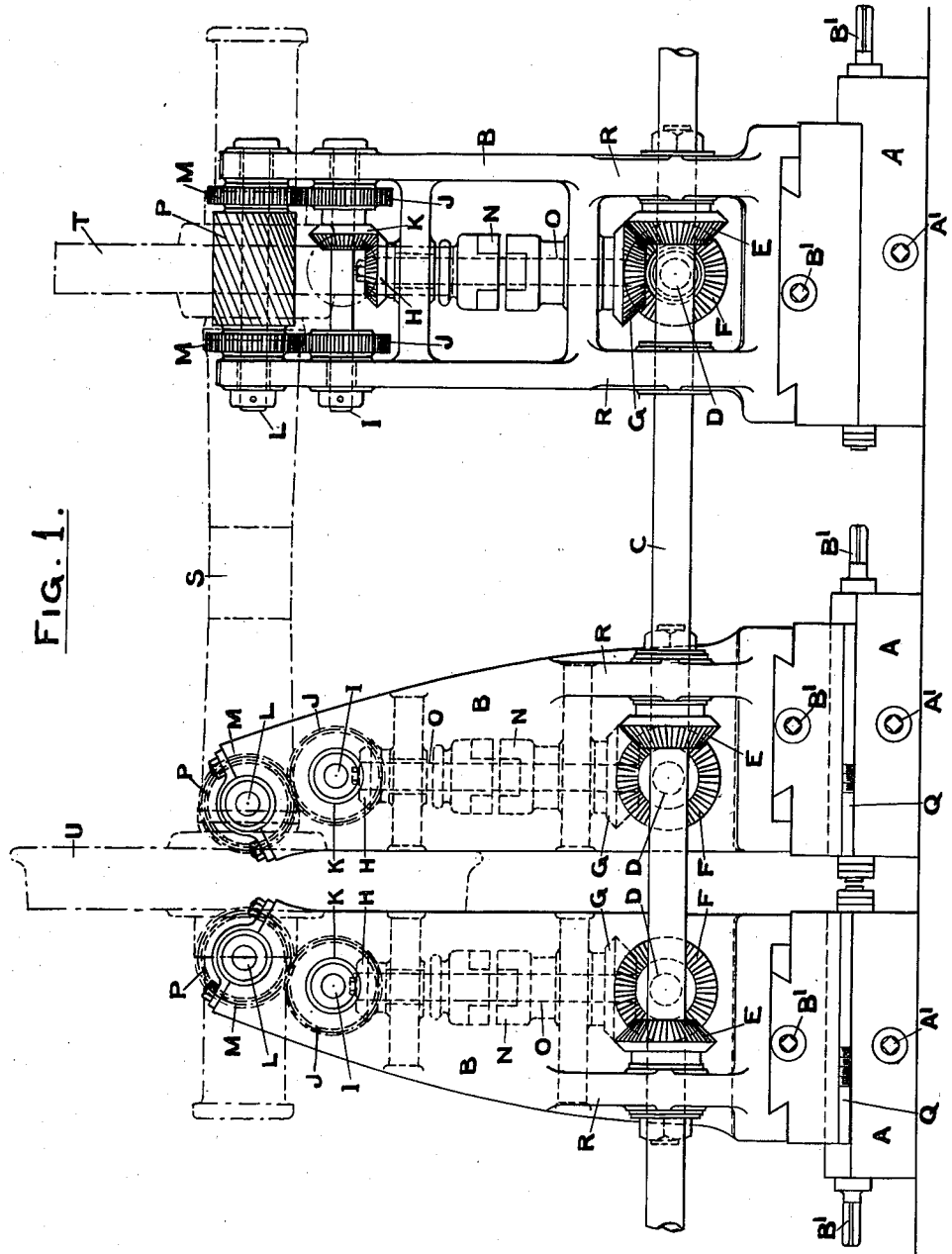


FIG. 1.

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6 SHEETS—SHEET 2.

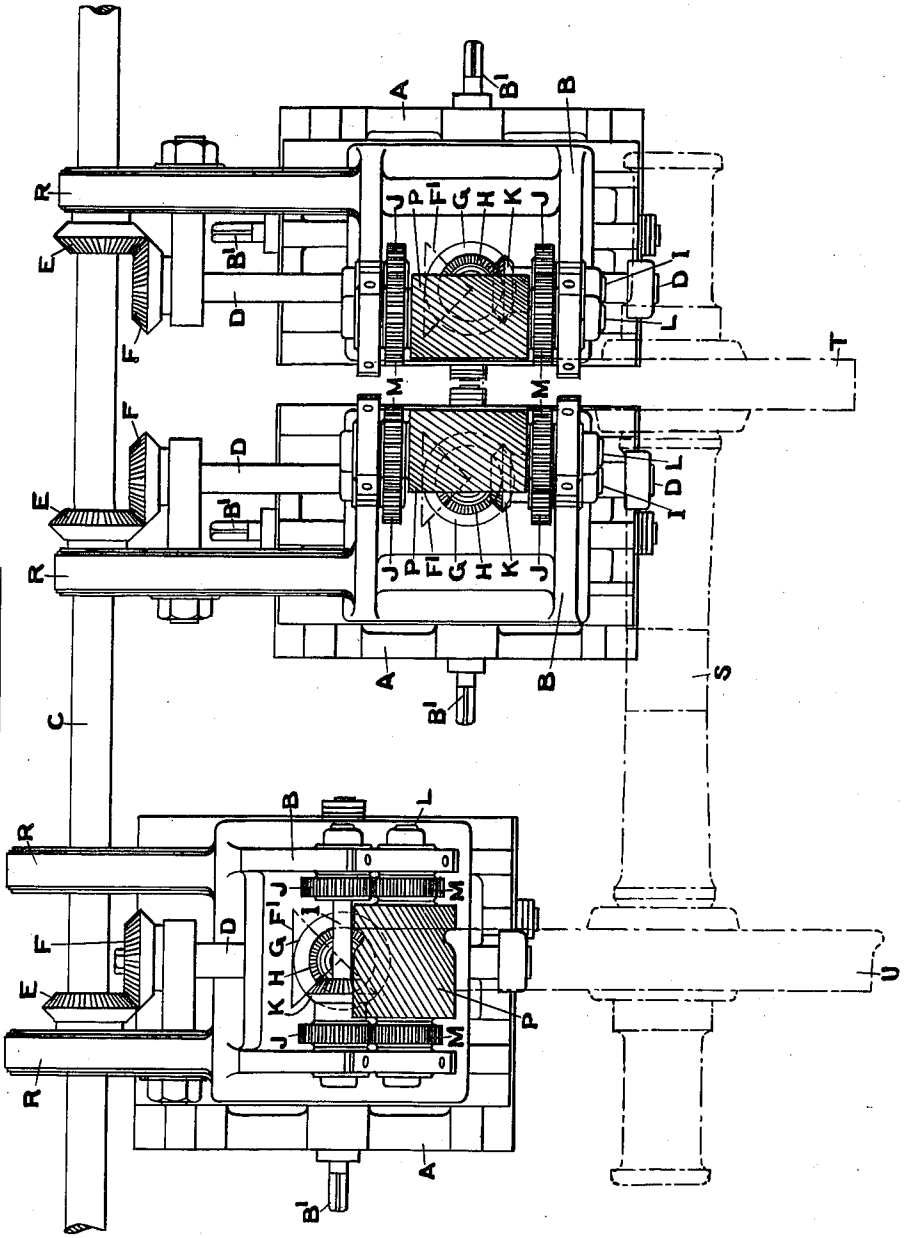


FIG. 2 (PART).

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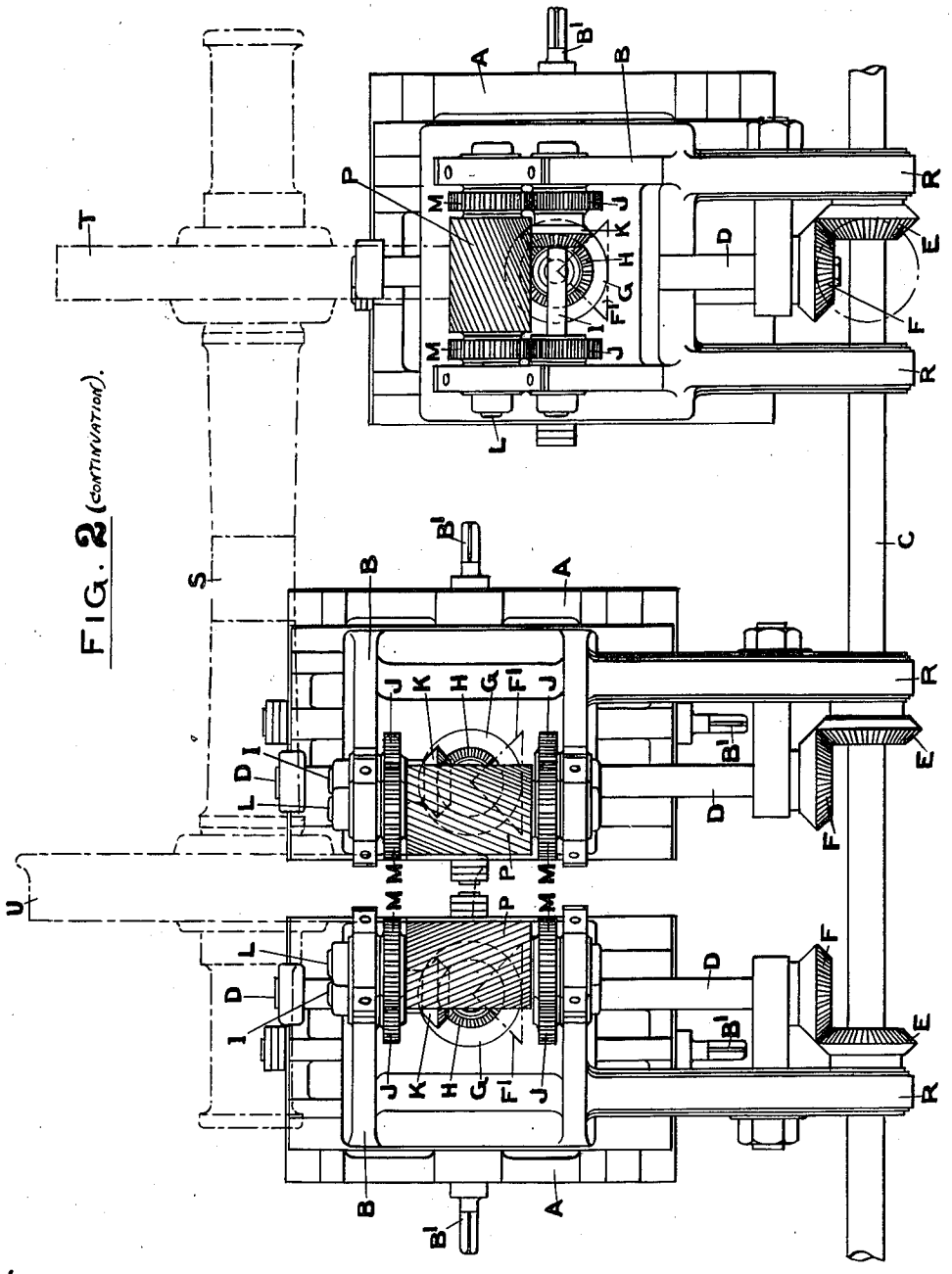
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6 SHEETS—SHEET 3.

FIG. 2 (CONTINUATION).



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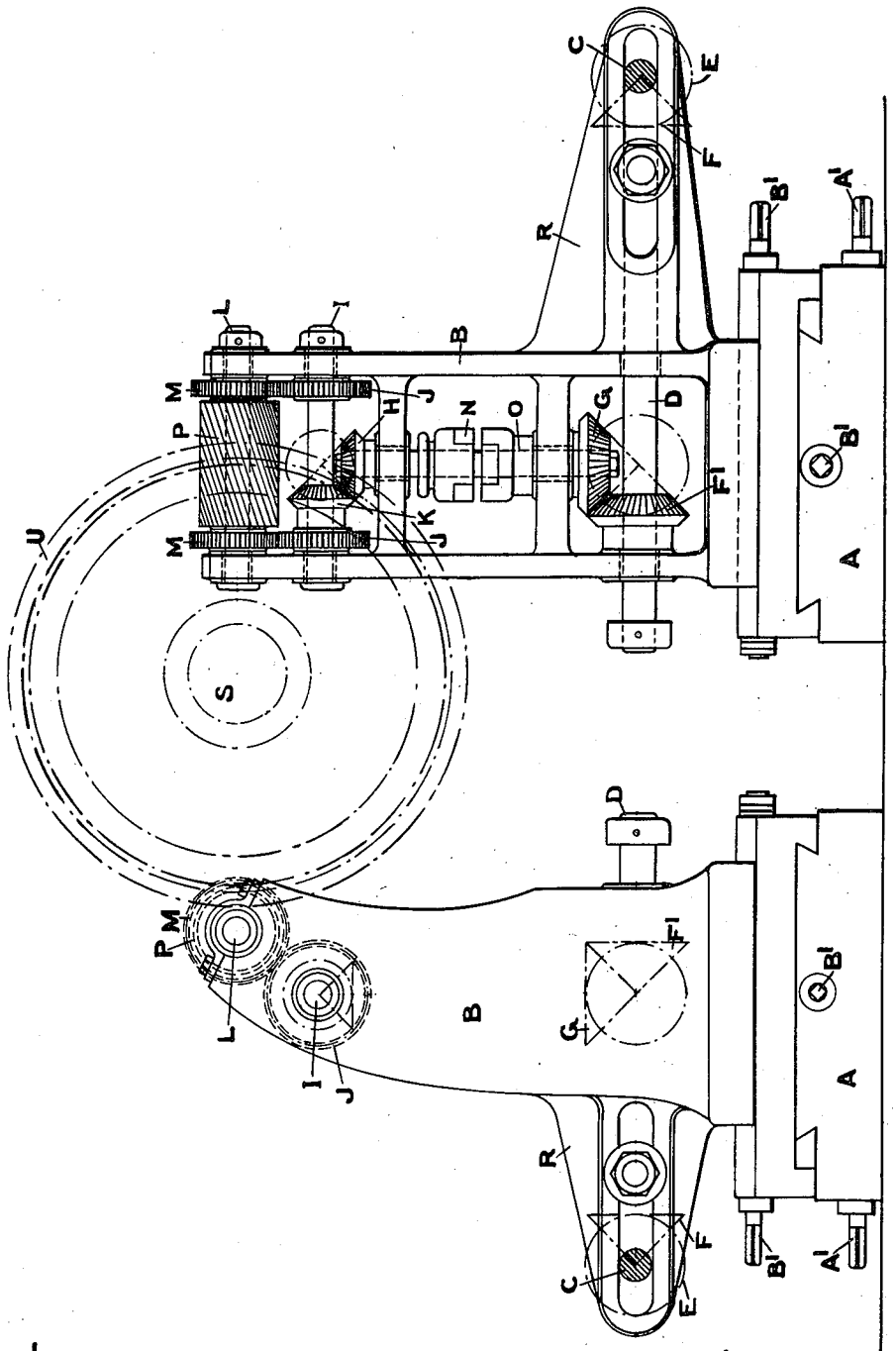
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6 SHEETS—SHEET 4.

FIG. 3.



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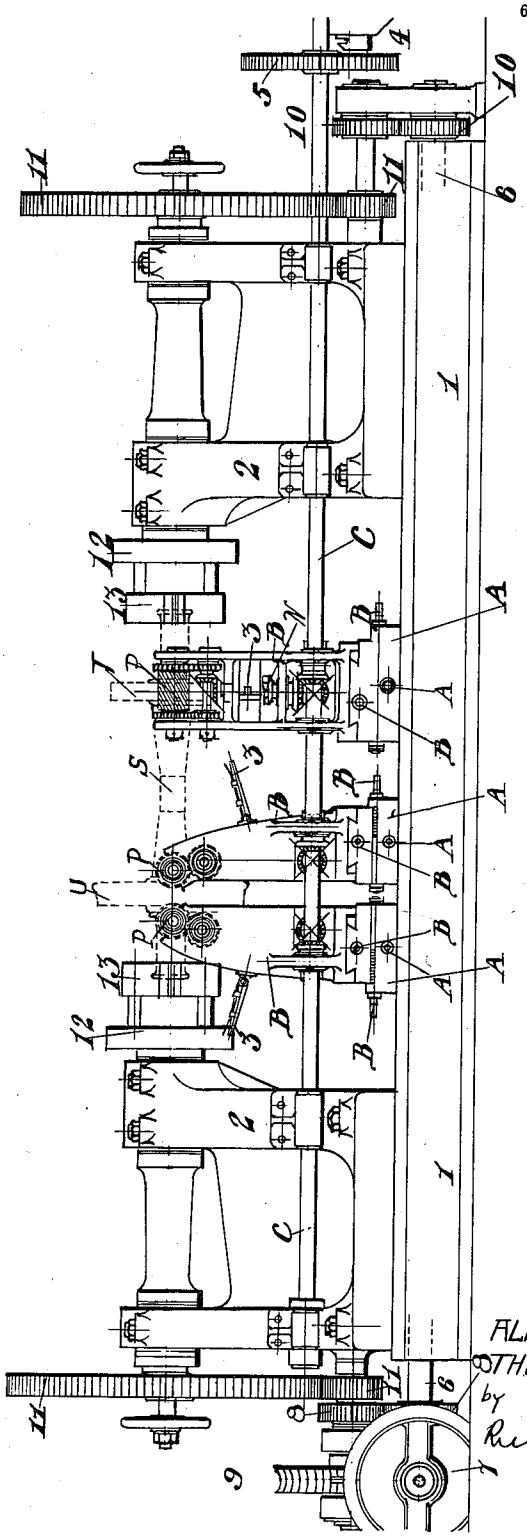
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6 SHEETS—SHEET 5.

FIG 4



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MILLING LATHE.

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6 SHEETS—SHEET 6.

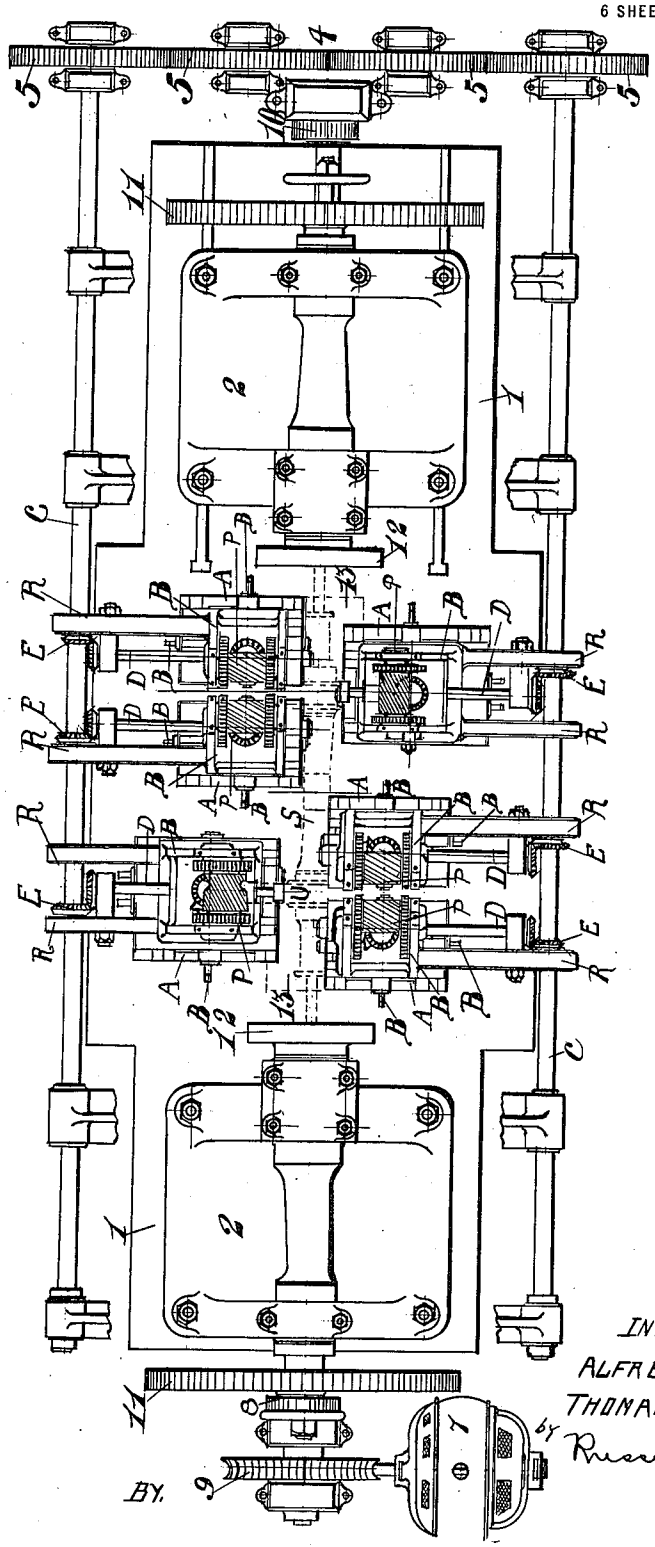


FIG. 5

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UNITED STATES PATENT OFFICE.

ALFRED LANE, OF RAWDON, AND THOMAS MORE, OF LEEDS, ENGLAND.

MILLING-LATHE.

1,286,659. Specification of Letters Patent. Patented Dec. 3, 1918.

Application filed August 21, 1916. Serial No. 116,194.

To all whom it may concern:

Be it known that we, ALFRED LANE and THOMAS MORE, subjects of the King of Great Britain and Ireland, residing, respectively, at Rawdon and at Leeds, both in the county of York, England, have invented a new and useful Improvement in Milling-Lathes, of which the following is a specification.

This invention relates to machines for milling to the required dimensions, instead of turning in the usual way, wheels and tires on axles, more especially for locomotives, coaches, wagons, and like railway vehicles, said machines being characterized by the employment (simultaneously or otherwise) of two milling cutters built up to suit the peripheral contour either of the wheel body or of the tire, and two pairs of parallel milling cutters for the sides, instead of ordinary turning tools.

Description of Drawings.

Figure 1 is a partial front elevation of our improved apparatus, showing three milling cutters (one peripheral and two side) in their operative positions on a tired wheel and on a wheel body, with their adjustable upright supporting pedestals and the driving gear for actuating the cutters.

Fig. 2 is a partial plan of the apparatus with six milling cutters (two peripheral and two pairs of side) in their simultaneously operative positions on a tired wheel and a wheel body.

Fig. 3 is a partial end elevation of the apparatus, showing one milling cutter operating on the peripheral face or tread of a tire, and one of a pair of milling cutters operating on the sides of the tire.

Fig. 4 is a front elevation (on a smaller scale) of the complete wheel-and-tire milling lathe in accordance with our invention. Fig. 5 is a plan of the same.

According to our said invention the bed-plate 1, together with the front and back head-stocks 2 for carrying the axle and wheels between the centers, are of the type ordinarily adopted for wheel turning lathes, and are shown in Figs. 4 and 5 of the drawings.

The various milling cutters and their operating mechanism are supported upon bottom saddles A fitted to the bed-plate 1 of the machine, provision being made for longitudinal adjustment of each saddle A upon the bed-plate by rack or screw and an external actuating spindle A^1, to take in varying lengths of axles S. On the bottom saddles A are mounted upright pedestals B which carry vertical shafts O, intermediate cross shafts I, and the milling cutters P on upper terminal cross shafts L. These pedestals B are also arranged for adjustment by screws B^1, both longitudinal and transverse, to suit the varying diameters and widths of wheel bodies T and tired wheels U. The pedestals B have slotted side brackets R to carry the longitudinal side shafts C and to take up the adjustable movement required for the varying diameters of wheels T and U, and graduated scales Q are provided for the adjustment of the milling cutters.

The simultaneous rotary movement of the milling cutters P is actuated by the said longitudinal shafts C running along each side of the machine, on which shafts are fitted bevel wheels E gearing into corresponding bevel wheels F on the outer ends of bottom cross shafts D. At the inner ends of the bottom cross shafts D are fitted bevel wheels F^1 gearing into corresponding bevel wheels G giving motion to the aforesaid vertical shafts O. The upper ends of the vertical shafts O are likewise connected by bevel wheels H and K to the aforesaid intermediate cross shafts I, which in turn are connected by pinion wheels J and M to transmit motion to the aforesaid upper terminal cross shafts L on which the milling cutters P are mounted.

Suitable clutches N controlled by levers 3 are provided on the vertical shafts O to separately disengage the action of any of the cutters without stopping the machine.

The longitudinal side shafts C are driven by variable speed motor 4 with toothed gearing 5 or worm gearing to give the constant speed necessary for milling cutters operating on various classes of material.

Through the center of the bed-plate 1 of the machine, running longitudinally, the feed shaft 6 will be arranged, coupled to a variable speed motor 7 by toothed gearing 8 and worm gearing 9, and connected by toothed gearing 8, 10 and 11 with the shafts running through the head-stocks 2, to give the necessary reductions of speed required for the feed, which will also constitute the drive of the machine. On the shaft in each fixed head-stock 2 carrying the center will be fitted a face-plate 12 of suitable diameter, and on each end of the axle S and collar

will be gripped a clip 13, or other suitable device, engaging into the face-plate 12 on the shaft in the fixed head-stock 2 for driving the wheels T and U on the axle S between the centers.

The machine is arranged with six milling cutters P for each pair of wheels or tires, each cutter P being separately mounted and controlled on its own adjustable upright pedestal B, and each wheel or tire being adapted to be operated on by three milling cutters P simultaneously, that is to say, one peripheral milling cutter and a pair of side milling cutters. The two peripheral cutters, and likewise the two pairs of side cutters, are arranged respectively on opposite sides of the machine as shown in Figs. 2 and 5, the machine thus occupying the minimum floor space.

We claim:

1. In a milling lathe for cutting to the required dimensions a pair of wheel bodies or tired wheels on an axle, the combination of two oppositely-located milling cutters operative respectively on the peripheral contours of said pair of wheels, two pairs of oppositely-located milling cutters operative respectively on the sides of said pair of wheels, and means for separately mounting and controlling said six milling cutters whereby they are operative either simultaneously or otherwise.

2. A milling lathe for cutting to the required dimensions a pair of wheel bodies or tired wheels on an axle, comprising in combination, a bed-plate 1, front and back head-stocks 2 carrying said axle and wheels, a variable speed motor 7, a longitudinal feed shaft 6 coupled to said motor and geared at opposite ends to the respective shafts of said head-stocks, two oppositely located milling cutters operative respectively on the peripheral contours of said pair of wheels, two pairs of oppositely-located milling cutters operative respectively on the sides of said pair of wheels, a corresponding series of base saddles A and pedestals B adapted to support the respective milling cutters P and their operating mechanism, means for longitudinal adjustment of each said base saddle upon the bed-plate, means for both longitudinal and transverse adjustment of each said pedestal upon its respective base saddle, a variable speed motor 4, a pair of longitudinal side shafts C coupled to said motor and supported on opposite sides of the machine in slotted bearings carried by said pedestals, shafts and gearing supported by said pedestals for separately transmitting rotary movement from said side shafts to the respective milling cutters, and clutch mechanism N, 3, for separately disengaging any of said milling cutters, whereby said series of six milling cutters are operative either simultaneously or otherwise, substantially as herein set forth.

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