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Bonacini

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(54) **MACHINE FOR FITTING AND REMOVING WHEEL TIRES FOR VEHICLES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 90 days.

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(52) **U.S. Cl.** **157/1.24; 157/20**

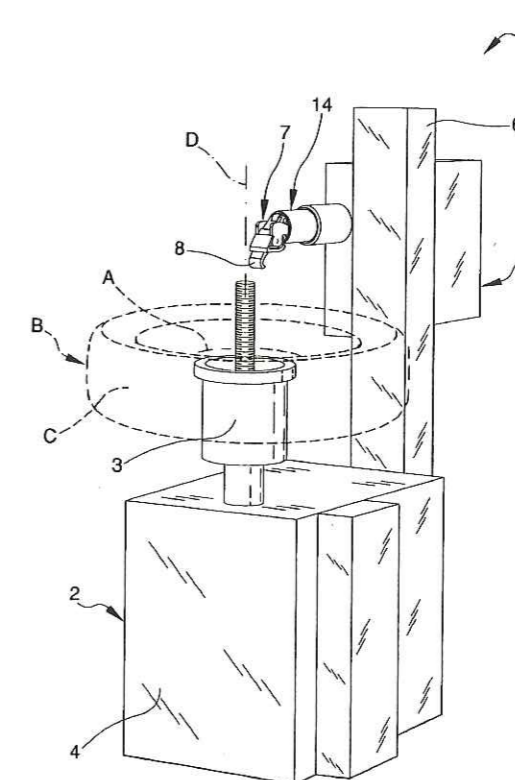
(58) **Field of Classification Search** 157/1.24, 157/1.17, 20, 11, 1.1, 1.22, 1.28, 1, 24
See application file for complete search history.

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(57) **ABSTRACT**
A machine for fitting and removing wheel tires for vehicles includes a supporting structure of a clamping and rotating device for clamping and rotating the wheel rim and an operating head for fitting/removing a tire onto/from the rim. The operating head has a removal tool associated with a first actuator and turnable between a first clamping position in which the tool is tilted towards the rotation axis of the rim, and a second entrainment position in which the tool extends along a direction substantially parallel to the rotation axis of the rim. The operating unit includes an arrangement for transforming the movement generated by a second actuator into the sideways movement of the operating head along a curved direction and near and away to a section of the annular flange of the rim.

29 Claims, 6 Drawing Sheets



MAINTENANCE FEE NOTICE

If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.

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If the application for this patent was filed on or after June 8, 1995, the term of this patent begins on the date on which this patent issues and ends twenty years from the filing date of the application or, if the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121, or 365(c), twenty years from the filing date of the earliest such application ("the twenty-year term"), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b), and any extension as provided by 35 U.S.C. 154(b) or 156 or any disclaimer under 35 U.S.C. 253.

If this application was filed prior to June 8, 1995, the term of this patent begins on the date on which this patent issues and ends on the later of seventeen years from the date of the grant of this patent or the twenty-year term set forth above for patents resulting from applications filed on or after June 8, 1995, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b) and any extension as provided by 35 U.S.C. 156 or any disclaimer under 35 U.S.C. 253.