Feb. 20, 1923. 1,445,857.

W. N. STEVENS.

CYLINDER GRINDING MACHINE.

FILED DEC. 12, 1921. 2 SHEETS—SHEET 1.

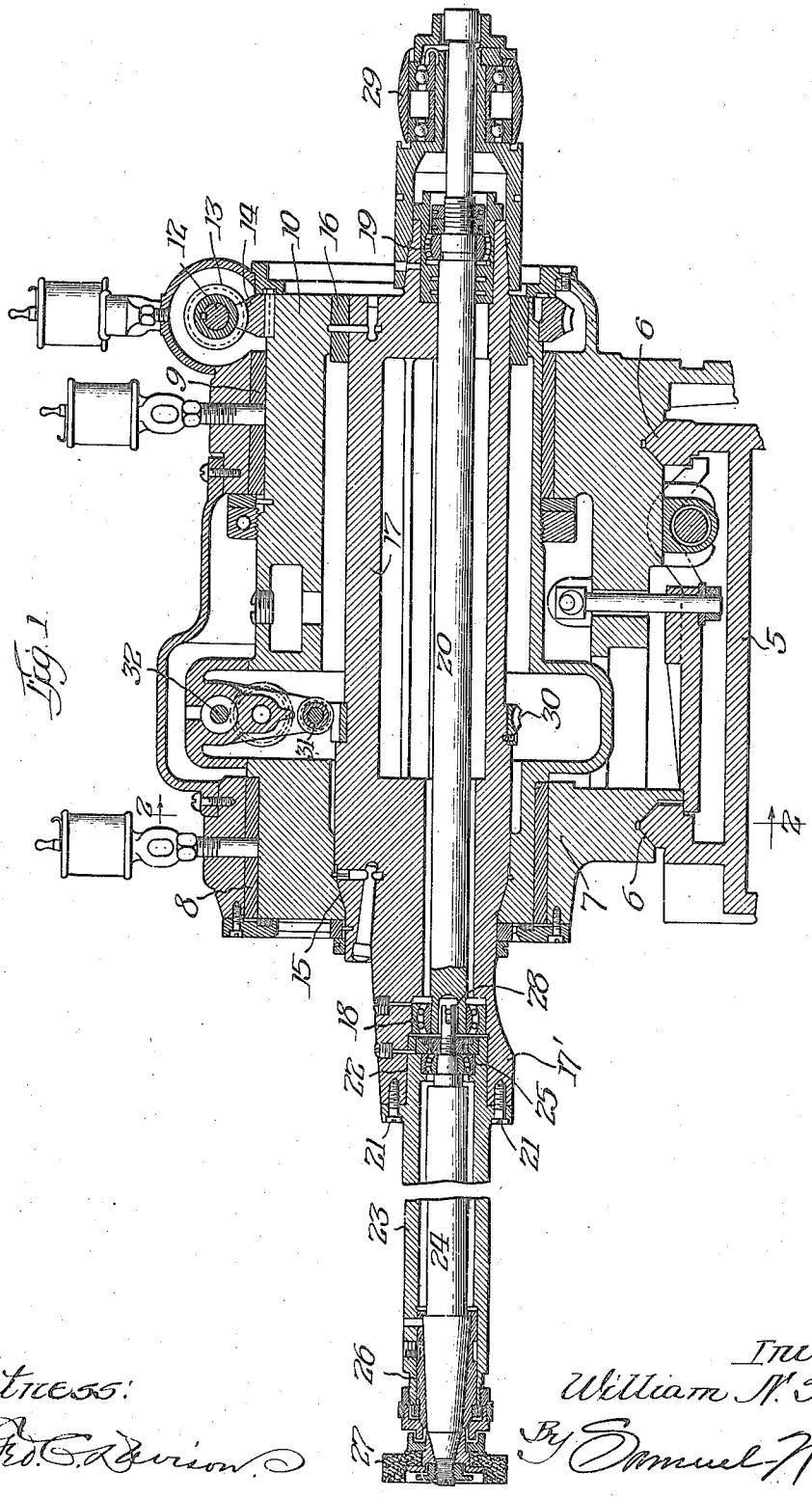


Fig. 1

Witness:
Fred. C. Dorrison

Inventor
William N. Stevens
By Samuel N. Pond,
Atty.

Feb. 20, 1923. 1,445,857.

W. N. STEVENS.

CYLINDER GRINDING MACHINE.

FILED DEC. 12, 1921. 2 SHEETS—SHEET 2.

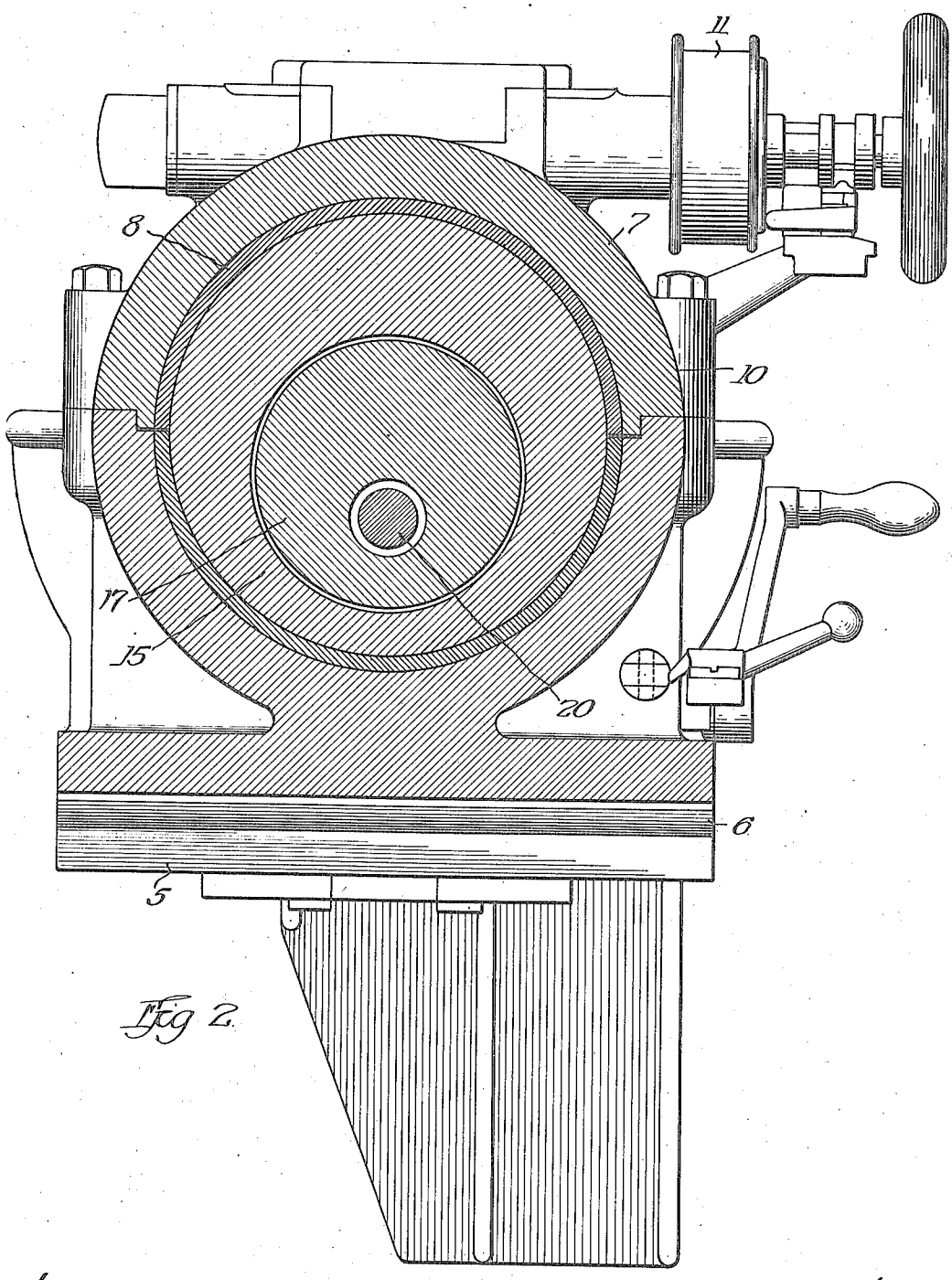


Fig 2.

Witness:
Geo. G. Davis

Inventor:
William N. Stevens
By Samuel N. Pond,
Atty

Patented Feb. 20, 1923. 1,445,857

UNITED STATES PATENT OFFICE.

WILLIAM N. STEVENS, OF MADISON, WISCONSIN, ASSIGNOR TO GISHOLT MACHINE COMPANY, OF MADISON, WISCONSIN, A CORPORATION OF WISCONSIN.

CYLINDER-GRINDING MACHINE.

Application filed December 12, 1921. Serial No. 521,593.

To all whom it may concern:

Be it known that I, WILLIAM N. STEVENS, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Cylinder-Grinding Machines, of which the following is a specification.

This invention relates to machines for grinding or regrinding the bores of engine cylinders, and my present improvement relates more particularly to the spindle support; the main general object of the invention being to reduce and prevent as much as possible the chatter and vibration in cylinder grinding machines as now built.

This object is attained according to the present invention through a modification of the adjjustable eccentric that carries the spindle and its bearings, and is itself mounted in the rotating drum of the machine; the modification referred to consisting substantially of extending the solid eccentric some distance beyond that end of the drum which is nearest to the grinding wheel, and locating the intermediate bearing of a two part flexible spindle within such forwardly projecting portion of the eccentric.

My invention, its novel structural features, and the advantages inhering therein will be readily understood by persons skilled in the art from the following description, taken in connection with the accompanying drawings wherein I have illustrated a practical embodiment of the principle of the invention, and in which—

Fig. 1 is a longitudinal section through the spindle carriage and bearings, showing also the upper portion of the bed in transverse section; and

Fig. 2 is an enlarged transverse section on the line 2—2 of Fig. 1.

Referring to the drawing, 5 designates the bed of the machine carrying V-shaped ways 6 on which latter is slidably mounted the spindle carriage 7. In front and rear bearings 8 and 9 of the spindle carriage is rotatably mounted the drum 10 driven from a pulley 11 through a worm shaft 12, worm 13 and worm-wheel 14, as usual in this type of machine.

Eccentrically journaled in front and rear bearings 15 and 16 of the drum 10 is an eccentric 17, and eccentrically journaled in front and rear bearings 18 and 19 of the eccentric 17 is the rear section 20 of the spindle. The eccentric 17 is a solid or one piece member and it will be observed from Fig. 1 that it is formed with an integral extension 17′ that projects some distance forwardly of the front end of the carriage 7 and drum 10, this projecting portion of the eccentric carrying the spindle bearing 18. On the projecting portion 17′ of the eccentric is mounted and secured, as by screws 21 and a socket 22, a forwardly projecting flanged sleeve 23, in which latter is housed the forward section 24 of the spindle, this latter being journaled in a rear bearing 25 carried by the rear portion of sleeve 23 within the projecting portion of the eccentric and a forward bearing 26 carried by the forward end of the sleeve 23. On the forward end of the spindle section 24 is mounted the usual grinding wheel 27. The two spindle sections are coupled by a universal joint 28, and on the rear end of the rear section 20 is mounted the spindle drive pulley 29.

On the eccentric 17 is a worm gear 30 engaged by a worm 31 in turn operated through intermediate gearing (not shown) from a hand shaft 32 for adjusting the eccentricity of the spindle by partially rotating the spindle eccentric 17 in one direction or the other, all as well understood in this class of machines.

By forming the eccentric 17 with a solid integral extension 17′ that projects forwardly of the drum, and mounting the meeting ends of the two spindle sections in said projection, and also supporting the spindle bearing sleeve on said projection, the transverse rigidity of the portion of the spindle which projects forwardly of the drum is substantially increased, and the lateral vibration or chatter of such projecting portion of the spindle is correspondingly decreased, whereby, as the drum rotates carrying the grinding wheel 27 bodily around the bore of the cylinder that is being reground, the grinding wheel itself more perfectly maintains its prescribed path of travel and lateral vibration and chatter thereof are practically eliminated.

I claim:

1. In a cylinder grinding machine of the class described, the combination of a car-

riage, a drum rotatably mounted therein, an eccentric mounted in said drum and having an integral portion projecting beyond the forward end of the latter, a spindle sleeve attached to and projecting beyond the projecting portion of said eccentric, a rear spindle section having its forward end journaled within the projecting portion of said eccentric, a forward spindle section having its rear end independently journaled within the forwardly projecting portion of said eccentric, and a flexible joint uniting the meeting ends of said spindle sections.

2. A construction as defined in claim 1, wherein the integral projecting portion of the eccentric is formed with a socket in which the rear end of the spindle sleeve is fitted, and the rear journal bearing of the forward spindle section is located in the portion of said spindle sleeve lying within said socket.

WILLIAM N. STEVENS.