(No Model.) 2 Sheets—Sheet 1.

W. W. VINT & A. L. HAGGAS.

SPINNING MACHINE SPINDLE.

No. 540,523. Patented June 4, 1895.

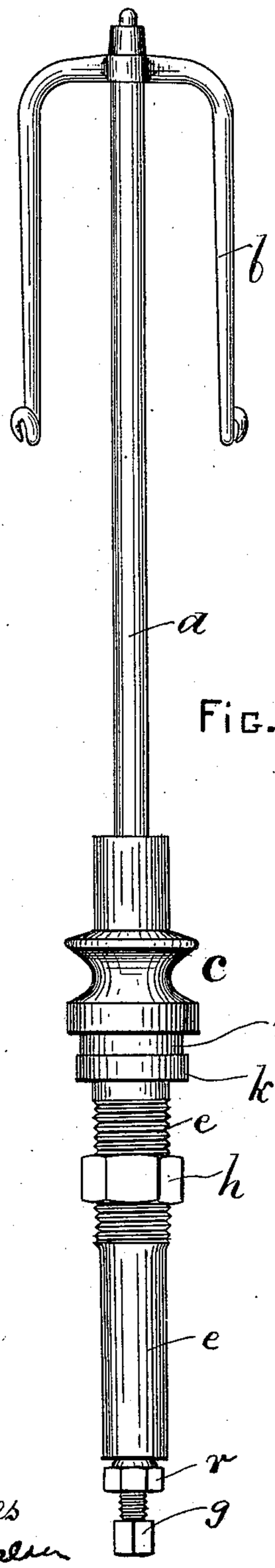

Fig. 1

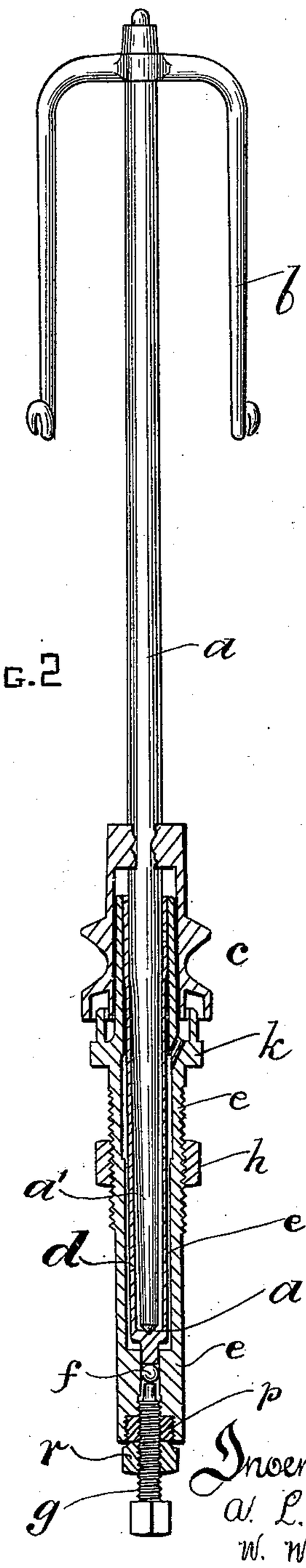

Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

W. W. VINT & A. L. HAGGAS.

SPINNING MACHINE SPINDLE.

No. 540,523. Patented June 4, 1895.

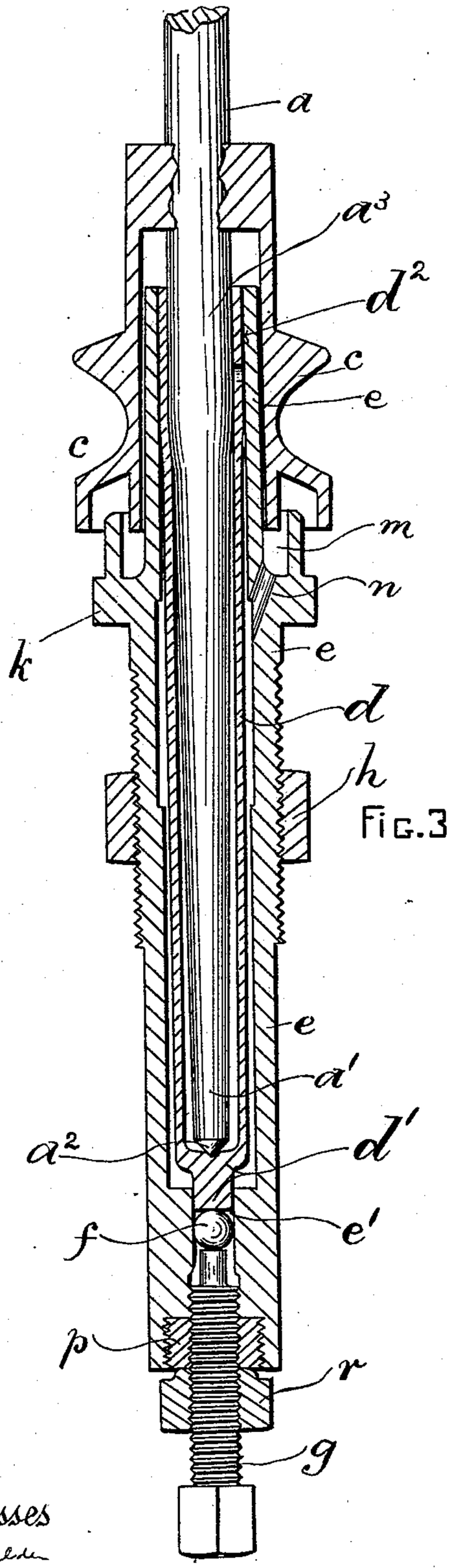

Fig. 3

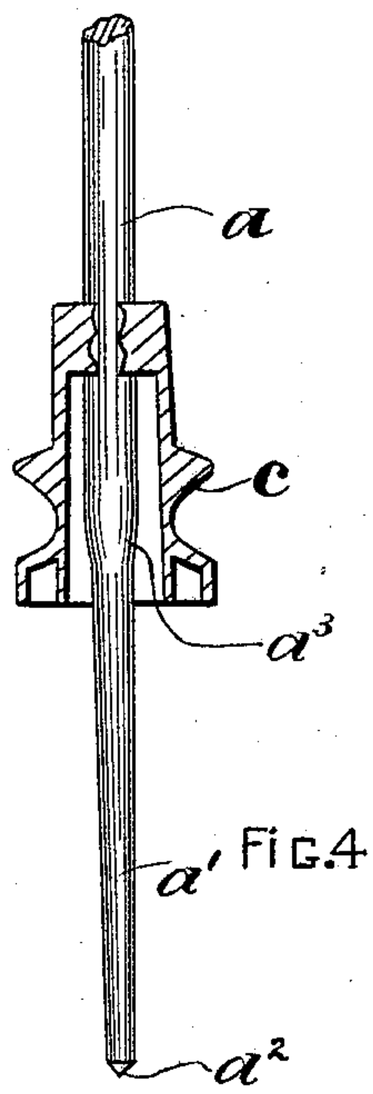

Fig. 4

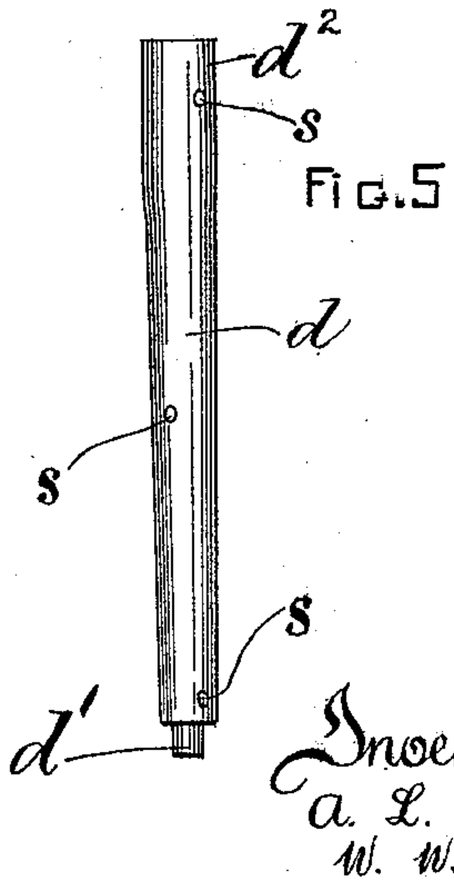

Fig. 5

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UNITED STATES PATENT OFFICE.

WILLIAM W. VINT AND ARTHUR LISTER HAGGAS, OF OAKWORTH, ENGLAND.

SPINNING-MACHINE SPINDLE.

SPECIFICATION forming part of Letters Patent No. 540,523, dated June 4, 1895.

Application filed March 3, 1894. Serial No. 502,191. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM WHITLEY VINT and ARTHUR LISTER HAGGAS, subjects of the Queen of Great Britain, residing at Oakworth, near Keighley, in the county of York, England, have invented a new and useful Improvement in Spinning-Machine Spindles, of which the following description, together with the accompanying sheets of drawings, is a specification.

Our invention relates to the class of spindles known as "flier" spindles and has for its object the production of spindles that may be rotated at a high rate of speed without incurring excessive vibration while the power necessary for effecting such rotary motion is considerably diminished, this object being attained by the novel devices and formations hereinafter described and particularly pointed out in the claim.

Figure 1 is an elevation illustrative of a spindle and made in accordance with our invention. Fig. 2 is a view similar to and on the same scale as Fig. 1, but shows certain parts of the bearings in section. Fig. 3 is a part sectional elevation illustrative of the lower part of our improved spindle and its bearings on an enlarged scale. Figs. 4 and 5 are drawings in detail on the same scale as Figs. 1 and 2 and illustrate parts hereinafter referred to.

The spindle *a*, its flier *b* and the whirl or grooved driving pulley *c* which is securely fixed to the spindle *a* are of a well known type, and are arranged to revolve in connection with our improved parts as follows: The lower end *a'* of the spindle *a* fits, so as to rotate freely within the loose revoluble sleeve or bush *d*, its pivotal extremity a^2 and its shoulder at a^3 being the only parts of it that are in contact with the bush *d*. This bush *d* has its extremity *d'* formed to enter the opening *e'* made in the bottom of the bearing sleeve *e* in which opening it freely revolves while it is also in contact with the upper inner surface of said sleeve *e* at d^2 these being the only parts of the bush *d* which are in contact with the sleeve *e*. An antifriction ball *f* mounted within the opening *e'* and freely revolving upon the upper end of the adjustable screw *g*, is employed as a support for said bush *d* and consequently for the spindle *a*, the outer ends of the bush *d* and the screw *g* being formed in each case to present a flat surface to the ball *f* so that said bush *d* practically revolves on a point.

The bearing sleeve *e* is fixed in the usual and well known manner to the machine's rail or framework, by means of the nut *h* and the shouldered part *k* being mounted and formed thereon. The usual receptacle *m* and opening *n* for the lubricant are also employed.

The bearing sleeve *e* and bush *d* form the support and bearing for the spindle *a* and on this spindle *a* being rotated, while at the same time the bush *d* is left free to rotate with it, or as nearly with it as circumstances will allow, it follows that the friction upon said spindle *a* must be divided between it and its bush *d*. Hence this said spindle *d* is not in this case retarded so much as it is when it revolves in stationary bearings.

Into the lower end of the sleeve *e* we screw a bush *p* formed of soft metal, through which the adjusting screw *g* passes by which means, on the nut *r* being tightly screwed against this soft metal *p* all openings are securely closed and the possibility of any leakage of the lubricant from this part is entirely avoided.

To facilitate the lubricating of the spindle *a* within the bush *d*, openings *s* are made in this bush *d* to allow said lubricant to flow freely within, on passing from the outer receptacle *m*.

Having now described our said invention, what we claim is—

In a spindle-bearing for spinning-machines, the combination of a supporting sleeve adapted to be fixed to the machine-frame and having a screw-threaded socket at the lower end, a soft-metal bushing screwing into said socket and itself internally screw-threaded, an adjusting-screw entered through said bushing, a check-nut on said screw and designed to be tightened against the soft-metal bushing, an anti-friction ball on the upper end of the screw, a loose bush journaled in the fixed sleeve and resting on said ball, and the spindle journaled in said loose sleeve.

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