J. L. WENNSTROM.

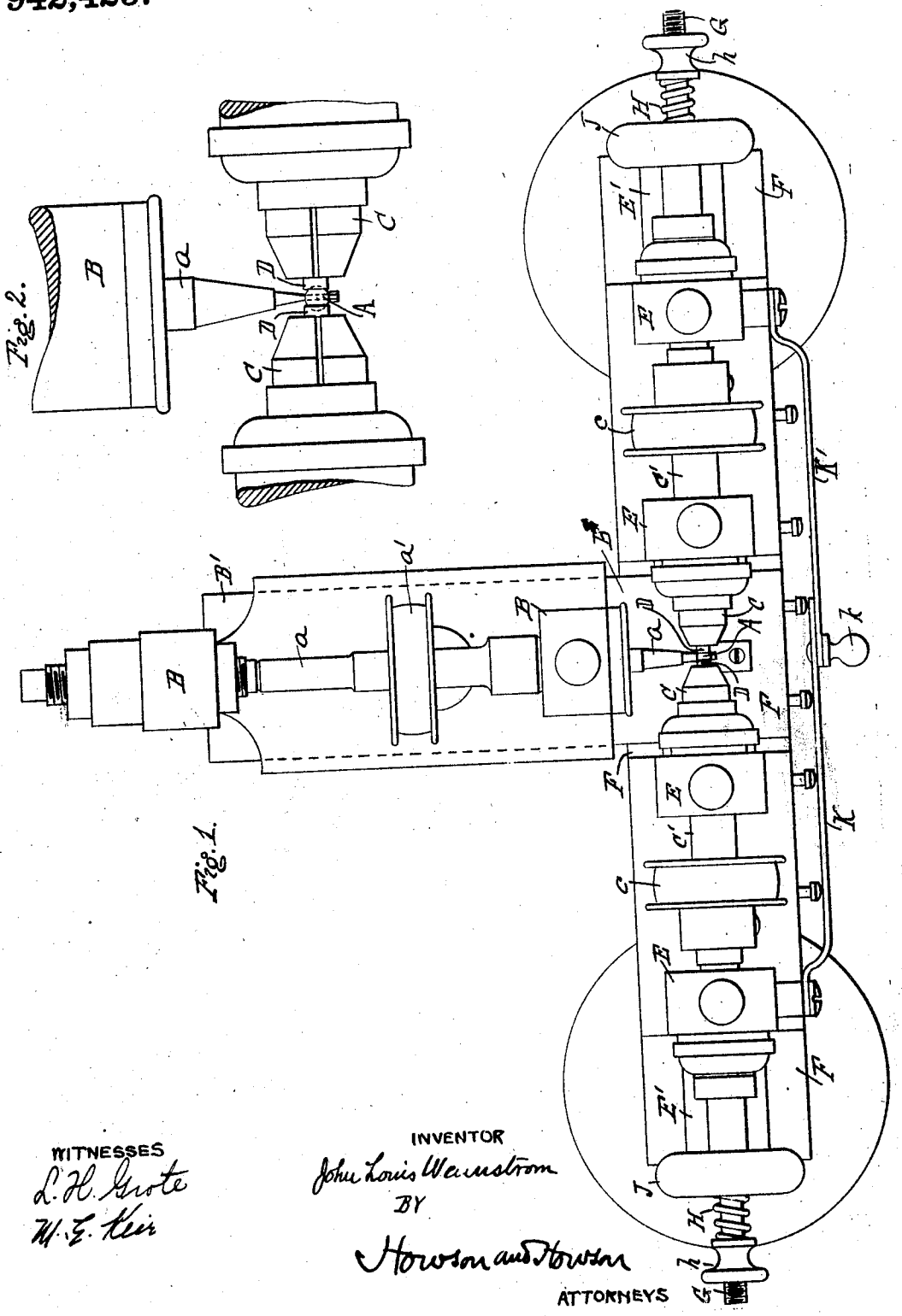
MACHINE FOR CUPPING SAPPHIRES AND OTHER PRECIOUS STONES.

APPLICATION FILED FEB. 27, 1909.

Patented Dec. 7, 1909.

942,425.

3 SHEETS—SHEET 1.



WITNESSES

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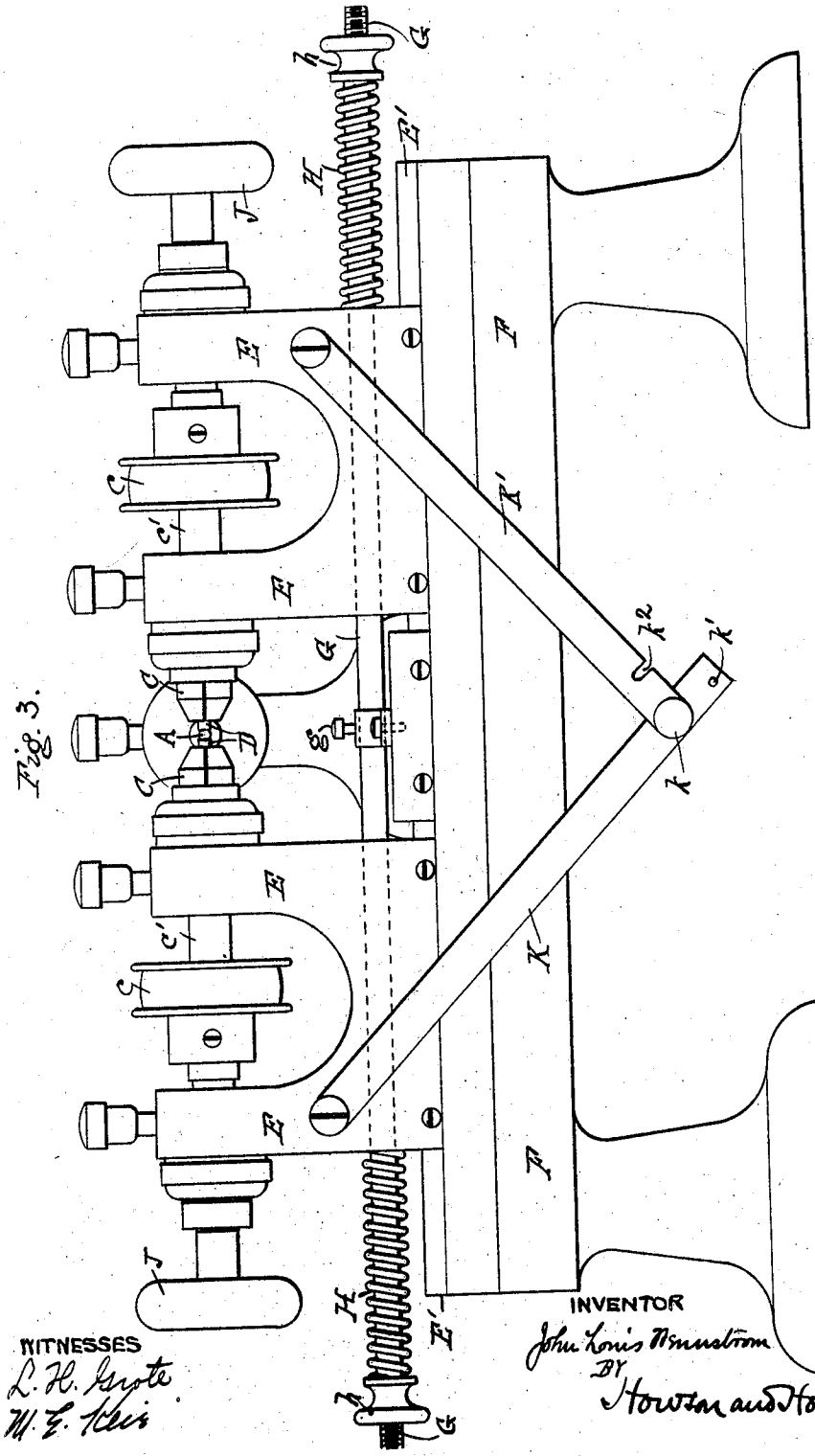

Fig. 3.

WITNESSES

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Fig. 5.

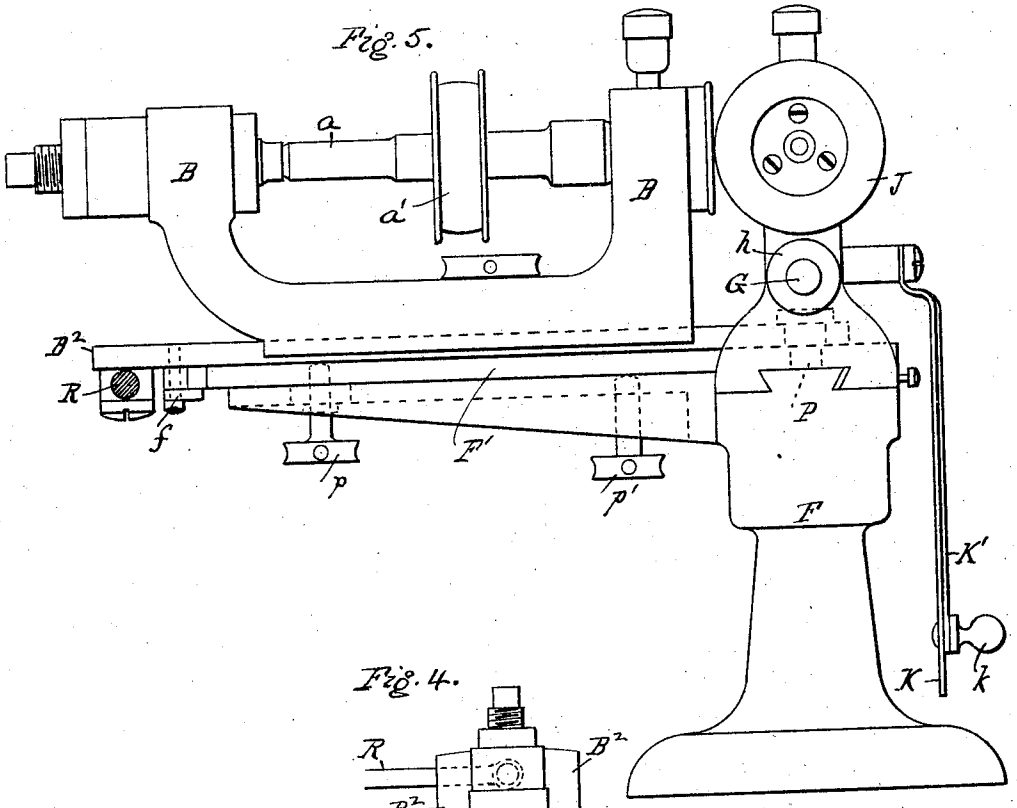
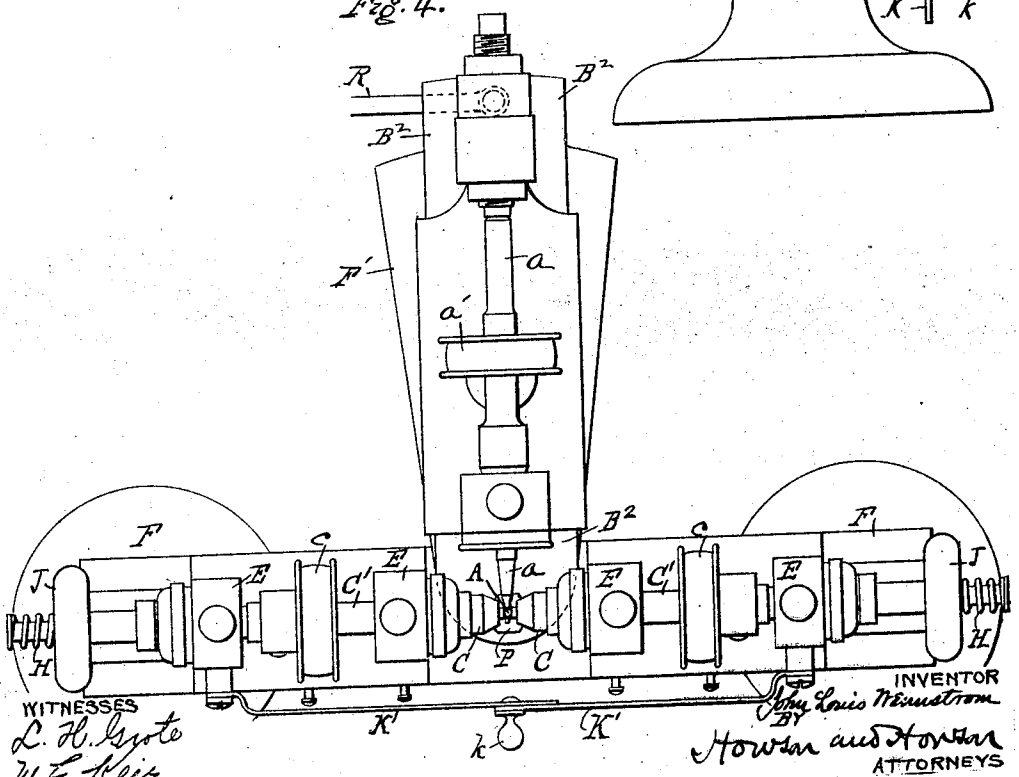


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN LOUIS WENNSTROM, OF SUFFERN, NEW YORK, ASSIGNOR TO AMERICAN GEM MINING SYNDICATE OF ST. LOUIS, MISSOURI, A CORPORATION OF MONTANA.

MACHINE FOR CUPPING SAPPHIRES AND OTHER PRECIOUS STONES.

942,425. Specification of Letters Patent. Patented Dec. 7, 1909.

Application filed February 27, 1909. Serial No. 480,336.

To all whom it may concern:

Be it known that I, JOHN LOUIS WENNSTROM, a citizen of the United States of America, residing in Suffern, in the county of Rockland, in the State of New York, have invented a certain new and useful Improved Machine for Cupping Sapphires and other Precious Stones, of which the following is a specification.

My invention relates to machines for grinding out concavities in sapphires, diamonds and other precious stones to adapt them to be used as bearings for the spindles of armatures in electric meters and the like.

The main object of my invention is to so construct a machine for this purpose as to increase the speed of production.

In machines as heretofore made for cupping diamonds, the chuck holding the stone to be cupped has been held in a fixed position rotarily against a revolving convex grinding wheel, and then if it was found that the position of the stone, owing to its grain, did not give satisfactory results, the grinding would be stopped and the diamond fixed in another position and so on until by such experimentation, the best position for work on that particular diamond was found. To avoid this tedious trying of different positions to strike the grain of the stone being cupped, I mount the diamond holding chuck spindle in bearings and provide a pulley by which constant rotary motion may be imparted to it, while constant rotary motion is at the same time imparted to the spindle carrying the grinding ball and lying in a line at right angles or nearly so to the chuck spindle. By this means the grain of the stone being cupped is continuously changing its position with relation to the direction of rotation of the grinding ball. To further increase the speed of production, I provide two diamond holding chucks on opposite sides of the grinding ball and means to press them up equally against opposite sides of the revolving grinding ball.

In the accompanying drawings Figure 1 is a plan view of a machine embodying my improvements; Fig. 2 is a view of the grinding head and diamond holding chucks, drawn to a larger scale; Fig. 3 is a front elevation; Fig. 4 is a plan view of a modification drawn to a smaller scale; Fig. 5 is an end elevation.

Referring to Figs. 1 to 3, A is the rotary grinding ball carried on the outer end of a spindle *a* mounted in bearings in a head B, which is supported on a horizontal slideway B^1 on the fixed frame F of the machine. The spindle *a* is provided with a belt pulley a^1 by which it may be revolved. D, D are the two diamond carrying studs in chucks C, C, on spindles C^1, C^1, which are mounted to turn in bearings in heads E, E. These spindles C^1, C^1 are provided with belt pulleys *c*, *c*, by which they may be revolved. The heads E, E are mounted upon horizontal slide ways E^1, E^1, on the frame F at right angles to the slide B^1 for the grinding head, and on opposite sides of the grinding ball, so that the two diamonds may be caused to bear against opposite sides of that ball. This is effected by passing through the two chuck heads E, E a guide rod G clamped centrally in position on the bed of the frame by a screw *g*. On the ends of the rod extending beyond the chuck heads are spiral springs H between the said heads and nuts *h* adjustably mounted upon the threaded ends of the rod G, so that these springs tend to push the heads toward each other and the stones in the chucks against the grinding ball. To separate the heads E, E for the insertion or removal of the diamond studs into or from the chucks I provide a pair of levers K, K^1, hinged to the heads E, E and to each other, giving a toggle action. When the grinding is in progress, these levers are in the position shown in Fig. 3, but by lifting the central joint, as by a handle *k*, the heads E, E may be separated; when the levers K, K^1 are raised to carry the joint *k* past the longitudinal line passing through the centers at which the levers are hinged to the heads E, E, the pin k^1 on the lever K will engage the notch k^2 in the lever K, so that the heads will be kept spread apart, until the levers are lowered again. J, J are handles by which the chucks C, C may be opened and closed.

In Figs. 4 and 5, I have shown a modification, in which provision is made for changing the position of, or oscillating the grinding head on a vertical axis coinciding with the center of the grinding ball. For this purpose instead of mounting the grinding head B upon a slideway B^1, rigidly fixed to or forming part of the frame F, as described above, I mount said head upon a slide way

B^2, Figs. 4 and 5, which is pivoted upon a vertical pivot P, vertically under the center of the grinding ball A. This slideway B^2 is supported upon a horizontal plate F^1, Fig. 5, projecting from the frame of the machine and is held down upon the frame at its outer end by a gib *f* or other suitable means. A connecting rod R is pivoted to the outer end of the pivoted slideway B^2 for connection to a crank, eccentric or other suitable means, whereby oscillating motion may be imparted to the slideway and grinder head upon the vertical pivot P. Suitable adjusting means *p*, p^1 (Fig. 5) may be provided to allow of proper adjustment of the grinder head to insure an accurate proportioning of the grinding ball with relation to the two stones to be cupped. The pivot P may have slight vertical play in its bearing so as to allow of the requisite slight vertical movement of the parts for such fine adjustment.

I claim as my invention—

1. A machine for cupping sapphires or other stones, comprising a frame and a rotary spindle carrying a grinding ball, two sliding heads carrying rotary spindles with chucks, and means to automatically press the stones, carried by the chucks simultaneously against opposite sides of the grinding ball.

2. A machine for cupping sapphires or other stones, comprising a frame and a rotary spindle carrying a grinding ball with two sliding heads carrying rotary spindles with chucks adapted to hold the stones on opposite sides of the grinding ball, and spring means for normally pressing the stones against the ball.

3. A machine for cupping sapphires or other stones, comprising a frame and a rotary spindle carrying a grinding ball with two sliding heads carrying rotary spindles with chucks to hold the stones on opposite sides of the grinding ball, spring means to press the heads toward each other and the stones against the grinding ball and means to separate the two heads against the pressure of the springs.

4. A machine for cupping sapphires or other stones, comprising a frame and a grinding head having a rotary spindle carrying a grinding ball with two sliding heads carrying rotary spindles with chucks adapted to hold the stones on opposite sides of the grinding ball, means for normally pressing the stones against the ball, and means for oscillating the grinding head on an axis coinciding with the center of the grinding ball.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN LOUIS WENNSTROM.

Witnesses:

WALTER ABBE,

L. H. GROTE.